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Original Article

A comparative cross-cultural study on the influence of family structure on the education of contemporary adolescents in China and Kyrgyzstan

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SUMMARY

Objective

The relevance of study stems from the need for a profound understanding of how various aspects of family structure influence adolescent upbringing in contemporary China amid sociocultural transformation. The objective was to identify trends and factors shaping parenting practices in Chinese and Kyrgyz families.

Methods

The methodology combined quantitative and qualitative approaches, including Likert-scale questionnaires and statistical analysis using SPSS. A sample of 600 adolescents aged 12-18 was surveyed, enabling a comparative analysis of parenting practices across two cultural contexts.

Results

The findings revealed that Chinese adolescents reported significantly higher satisfaction with family relationships (4.2 vs. 3.8 in Kyrgyzstan, p = 0.032) and greater perceived emotional support from family (4.3 vs. 3.9, p = 0.018). Kyrgyz respondents experienced more stress due to family conflicts (3.8 vs. 3.2, p = 0.007), which negatively affected their academic performance (3.6 vs. 3.1, p = 0.025). A SWOT analysis highlighted the strengths of Chinese families in stability and support, whereas Kyrgyz families reported higher levels of emotional distress related to family conflicts. In China, adolescents from multigenerational families achieved an average academic performance score of 4.4, which was 19% higher than the 3.7 score seen in nuclear families. In Kyrgyzstan, the gap was 9%, with multigenerational families scoring an average of 3.6, compared to 3.3 in nuclear families.

Conclusion

The conclusions highlight that family structure significantly influences adolescents' emotional resilience, academic motivation, and social adaptation. This research can inform culturally sensitive family support programs in countries undergoing similar transformations.

Key words: social adaptation, intergenerational interaction, social environment, moral values, parental involvement

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Introduction

The contemporary system of adolescent upbringing in China is shaped by a complex interplay of interconnected social, economic, and cultural determinants. One of the key elements influencing upbringing processes is the family structure. In social sciences, the family is defined as a fun-

damental socialisation institution where individuals, during their formative years, assimilate core norms, values, and behavioural patterns.

Modern adolescent upbringing in Kyrgyzstan is similarly influenced by an intricate combination of traditional values and contemporary challenges. The family, as in China, remains a central institution in the upbringing process. However, in Kyrgyzstan, there is a stronger emphasis on extended family networks, where close-knit relationships with aunts, uncles, and grandparents play a vital role in child-rearing. These familial bonds foster a deep sense of social responsibility, while also serving as a primary source of emotional and financial support. Alongside these traditional values, Kyrgyzstan faces contemporary challenges such as urbanization, migration, and socioeconomic disparities, which influence the family's role in shaping adolescents' identities. These dynamics have shaped Kyrgyz families' approaches to instilling behavioural norms, cultural traditions, and moral values, much like their Chinese counterparts, but with unique cultural and social features.

A defining characteristic of the Chinese family is its long-standing tradition, where respect for elders and familial hierarchy have always played a pivotal role. However, with the development of modern society, urbanisation, and the intensification of globalisation, Chinese families are undergoing significant transformations. These changes pertain to both family composition and parenting methods, which, in turn, affect adolescents' character traits, their relationships with the external world, and their social adaptation.

In the first half of the 21st century, a trend towards an increase in single-parent families and shifts in child-rearing approaches has been observed, leading to disparities in upbringing practices across different social strata. The relevance of this study stems from the necessity of gaining an in-depth understanding of how various aspects of family structure – including family types, parenting approaches, as well as social and cultural changes – influence adolescent upbringing in contemporary China.

The research hypothesis suggests that adolescents from multigenerational families will report higher levels of satisfaction with family life, experience greater parental involvement, and demonstrate better social adaptation compared to adolescents from nuclear families. It is expected that the presence of extended family members will provide additional emotional support, improve family dynamics, and foster stronger interpersonal relationships, which, in turn, will positively impact adolescents' overall well-being and ability to adapt socially.

This study investigates the influence of family structure on adolescent outcomes through the frameworks of Family Systems Theory and Bronfenbrenner's Ecological Systems Theory. Family Systems Theory suggests that families operate as interconnected systems, where a change in one part affects the entire system, impacting aspects such as emotional support and conflict resolution. Multigenerational families provide broader support, enhancing emotional security and academic motivation, while nuclear families may offer less support due to isolation and individual burdens. Bronfenbrenner's theory emphasizes the adolescent's place within various interacting systems, highlighting the essential role of the family environment in development. In multigenerational families, extended relatives contribute positively to the microsystem, offering additional support and guidance that mitigate stress. Adolescents in nuclear families may experience increased emotional stress due to limited support. The study finds that family structure significantly influences emotional well-being, academic performance, and social adaptation through the quality of family interactions. Multigenerational families tend to provide better support, fostering healthier emotional development and adaptation, while nuclear families may struggle to meet these needs.

Within the framework of examining the influence of family structure on the upbringing of modern adolescents in China, a number of studies elucidating key aspects of this issue in regional and cross-cultural contexts have been analysed. The study by Luo et al. [1] highlighted the importance of parenting styles in Chinese families. The authors found that adolescents with two authoritative (yet not authoritarian) parents exhibited better psychological adaptation, indicating the decisive role of a democratic parenting model in fostering a healthy emotional family environment. The study of Bi and Wang [2] emphasised the significance of family communication for the psychological well-being of Chinese adolescents. The study confirmed that the quality of familial communication indirectly influenced life satisfaction through the development of adolescent autonomy and future orientation. This underscores the importance of emotional openness within the family as a resource for fostering independence and a positive outlook on the future among youth. The study by Jensen and Sanner [3] constitutes a scoping review of 283 scientific papers examining the relationship between family structure (e.g., intact/single-parent families, same-sex families, multigenerational families, etc.) and various aspects of well-being in both adults and children.

Wang et al. [4] analysed the impact of changes in China's demographic policy on the formation of new models of family life. The author found that the contemporary environment in single-child families, which fosters development and social engagement, contributed to higher social competence among adolescents. In contrast, traditional multi-child families predominantly main-

tained authoritarian approaches, which hindered the development of children's social skills. In the broader post-Soviet and Central Asian context, Osmonova et al. [5] examined the transformation of family structures in Kyrgyzstan. Their analysis revealed that factors such as education level, religion, labour migration, and biological predispositions significantly altered traditional perceptions of the family, including child-rearing practices. The authors emphasised the necessity of supporting family stability through social programmes.

The study by Vertel et al. [6] focused on the influence of family upbringing on the formation of children's values in the post-Soviet space. The authors identified five key parental strategies, highlighting that the COVID-19 pandemic exacerbated familial tensions, necessitating new approaches to relationship-building within families. Izzo et al. [7], in their systematic review, confirmed the association between family cohesion, effective communication, and children's sense of happiness. This finding applied to a broad age range (6-18 years) and provided compelling arguments for investing in the quality of family relationships as a key factor in a child's emotional development. In the study by Smailova et al. [8], the impact of socio-economic factors and parental (particularly maternal) education levels on the educational aspirations of adolescents in Kazakhstan, Kyrgyzstan, and Tajikistan was examined. The results indicated that familial support and cultural capital had a greater influence than material indicators. The research by Fismen et al. [9] found that adolescents from single-parent households (particularly in Northern Europe) and those living with grandparents were more likely to be overweight, pointing to insufficient social safeguards for such families.

Dzhanibekova et al. [10] analysed shifts in traditional family values under the influence of 20th-21st-century transformations. The author highlighted the complex dialectical relationship between social processes and the evolution of the family institution, particularly in transitional societies. Despite the breadth of existing research, a comparative analysis of the influence of multigenerational versus nuclear families on adolescent upbringing in the context of contemporary Chinese society remains understudied. Furthermore, the role of digital technologies in reshaping family upbringing in China has yet to be sufficiently explored.

The aim of this study was to identify contemporary trends and factors influencing adolescent upbringing in Chinese and Kyrgyz families amid sociocultural changes. The objectives of the study were as follows:

1. To explore cross-cultural differences in the perception of family relationships among adolescents in China and Kyrgyzstan, focusing on the impact of family structure on emotional well-being, academic performance, and social adaptation.
2. To assess the role of family structure, particularly the differences between multigenerational and nuclear families, in shaping adolescents' academic outcomes, stress levels, and parental involvement in the educational process.

Materials and methods

To examine the influence of family structure on adolescent upbringing in China and Kyrgyzstan, an empirical study was conducted, incorporating both quantitative and qualitative methods. The study involved 600 adolescents aged 12 to 18, with 300 participants – 150 from Peking University High School in Beijing and 150 from Shanghai High School in Shanghai in China, and 300 participants – 150 from Kyrgyz-Turkish Lyceum "Sebat" in Bishkek and 150 from Toktogul School-Gymnasium No. 1 in Bishkek in Kyrgyzstan. A purposive sampling strategy was employed, ensuring gender balance (150 boys and 150 girls per country) and representation across family socioeconomic status (SES). Inclusion criteria were: adolescents aged 12–18, enrolled in secondary education, voluntary participation, and informed consent from both the adolescents and their parents. Respondents who did not meet the age criterion, failed to provide consent, or submitted incomplete questionnaires were excluded.

The primary data collection method was a survey, which included nine closed-ended questions grouped thematically. The questions assessed adolescents' perceptions of family relationships, the role of parents in shaping behavior, and emotions related to family dynamics. The survey was administered in person in China and online via Google Forms in Kyrgyzstan. The study aimed to explore the impact of family structure, including both multigenerational and nuclear families, on adolescents' emotional well-being, academic performance, and social adaptation. In the Chinese sample, approximately 45% of participants were from only-child families due to the historical One-Child Policy, while in Kyrgyzstan, family sizes were generally larger. The study also accounted for other factors such as migrant status, with 30% of participants in China reporting at least one parent working away from home, compared to 12% in Kyrgyzstan. Family structure distribution showed that 40% of Chinese adolescents came from multigenerational families, compared to 35% in Kyrgyzstan, with the remainder coming from nuclear families.

Responses were recorded on a 5-point Likert scale (where 1 = "strongly disagree", 5 = "strongly agree"), enabling quantitative assessment of respondents' agreement levels. The survey was administered in stages. First, permissions were obtained from school administrations, alongside informed consent from parents and students. In most Chinese schools, surveys were

TABLE I. *Questionnaire statements.*

Block	Statement
Family relationships	I am satisfied with my relationship with my parents.
	My parents give me enough attention.
	There is mutual understanding in my family.
Behavioural influence	My parents influence my choice of friends.
	My parents' opinions matter to me when making decisions.
	My parents monitor my behaviour on social media.
Emotional state	Family conflicts cause me stress.
	I feel supported by my family.
	Family problems affect my academic performance.

Source: compiled by the authors.

conducted in person during class time, supervised by a teacher or researcher. Completion time was approximately 20 minutes. In select Kyrgyz institutions, remote surveys were administered via Google Forms under identical time and procedural conditions. The questionnaire items are presented in Table I.

The study employed localised versions of the questionnaire in Chinese and Kyrgyz languages. Quantitative data were processed using SPSS (Version 23). The data were analysed using descriptive statistics to identify key trends and differences between adolescents from China and Kyrgyzstan. To assess the statistical significance of intergroup differences, an independent samples Student's t-test was applied. Additionally, correlation analysis (Pearson's r) was used to examine the relationship between family dynamics and adolescent behaviour. Significant differences between the indicators in the two samples were confirmed at a statistical significance level of $p \leq 0.05$.

Parametric tests, specifically independent-samples t-tests and Pearson correlations, were used in this study despite the ordinal nature of the Likert-type data and the clustered structure (students within schools, schools within countries). Although Likert-type data are ordinal, research suggests that when the scale has at least five response options, it can be treated as approximately continuous [11]. Diagnostic checks for normality indicated that the data approximated normal distributions, and given the large sample sizes ($n \geq 30$ per group), parametric tests were deemed appropriate. While t-tests do not fully account for clustering, future analyses could use multilevel models to improve robustness. Non-parametric tests, such as the Mann–Whitney U test or ordinal regression, were considered alternatives, but the use of parametric tests remains justified given the sample size and the nature of the data.

Family structure was measured based on the number of generations living in the household. Multigenerational families were defined as households where three or more generations (e.g., grandparents, parents, and children) co-resided for at least six months. Nuclear families were defined as households consisting of only parents and children, without the inclusion of extended family members. The distribution of family structures across the two countries was as follows: In China, 40% of adolescents came from multigenerational families, while 60% came from nuclear families. In Kyrgyzstan, 35% of adolescents came from multigenerational families, while 65% came from nuclear families. The Table II below summarizes the distribution of family structures by country:

TABLE II. *Distribution of family structures by country.*

Country	Family Structure	Number of participants
China	Multigenerational	120
	Nuclear	180
Kyrgyzstan	Multigenerational	105
	Nuclear	195

Source: compiled by the authors.

All information collected during the study was anonymised and treated confidentially. Participants were informed that their participation was voluntary and that they could withdraw at any time without consequences. The study was conducted in accordance with the ethical guidelines outlined in international standards for social research [12].

Given that multiple comparisons were made across nine items, the false discovery rate (FDR) was controlled to minimize the risk of Type I errors. Specifically, the Benjamini-Hochberg procedure was applied to adjust the p-values for the multiple between-group comparisons. This method controls the expected proportion of false positives among all significant tests, ensuring more reliable results. After adjusting for the FDR, only those contrasts that remained significant after the adjustment were reported. This procedure provided a more conservative set of findings, ensuring that the conclusions drawn about the differences in family structure, parental involvement, and adolescent outcomes across the countries are robust and not due to random chance.

To mitigate potential mode-of-administration bias in survey responses due to differing methods used in China (paper-based) and Kyrgyzstan (online), it is essential to conduct robustness checks. Statistical models should incorporate the mode of administration as a covariate to control its potential impact on the study's findings, allowing an assessment of whether it introduces systematic differences in responses between the two countries. This adjustment is necessary to isolate the effects of family structure and other variables on adolescent outcomes, ensuring that conclusions are not skewed by the differing data collection methods. An ideal strategy would involve repeating key analyses within comparable administration strata, specifically for adolescents surveyed in person in China and those surveyed online in Kyrgyzstan. Consistent findings across both groups would enhance the robustness of the conclusions. Significant discrepancies could suggest that the mode of administration has influenced the results, necessitating further adjustments in the analysis.

Given the clustered nature of the data, where students are nested within schools and schools within countries, multilevel modeling was used to account for the correlation of responses within these clusters. Random intercepts for schools were included to address the fact that students within the same school are likely to share similar characteristics and responses. Fixed effects for countries were incorporated to control for country-level differences that may influence adolescent outcomes. This multilevel approach allowed for more accurate estimates by accounting for the hierarchical structure of the data, avoiding the underestimation of standard errors that can occur when treating students as independent observations. By applying this method, potential biases from clustered data were mitigated, ensuring that the conclusions drawn from the analysis are more robust and reliable.

To ensure equivalent measurement of constructs in both China and Kyrgyzstan, survey items were translated by bilingual experts using forward and backward translation, reviewed for accuracy. Internal consistency, assessed via Cronbach's alpha, ranged from 0.75 to 0.89 for both groups, indicating reliable measurement within domains. A Confirmatory Factor Analysis (CFA) demonstrated acceptable fit indices (CFI = 0.92, TLI = 0.90, RMSEA = 0.05), affirming similar factor structures. Measurement invariance tests showed configural and metric invariance, confirming that the items maintain the same meaning culturally, although scalar invariance was not fully achieved, indicating slight interpretative differences. These results establish the survey's validity and reliability across both cultural contexts.

In the study, participants self-reported their academic performance on a 5-point scale due to the lack of direct access to school records. This scale, ranging from 1 (very poor) to 5 (excellent), is utilized in both China and Kyrgyzstan, albeit with some discrepancies in grade distribution. In China, a 100-point grading system is common, categorizing scores as follows: 90-100 for excellent, 80-89 for good, 70-79 for average, 60-69 for poor, and below 60 as failing. These scores were translated into the 5-point scale utilized in the research. Conversely, Kyrgyzstan employs a direct 5-point grading scale, where 5 is excellent and 1 is failing. To facilitate consistent analysis, the researchers mapped grades from both countries onto a unified 5-point scale – aligning Kyrgyz grades with the study's framework. Despite inherent differences in national grading systems, this harmonization allowed for consistent reporting of academic performance for comparative purposes in the study.

To address potential cross-cultural differences in interpreting constructs like "social media monitoring," the study accounted for cultural variations in its understanding. In China, social media monitoring was seen primarily as parental control, reflecting stricter cultural norms, while in Kyrgyzstan, it was viewed more as a protective measure. These differences could influence survey responses and cross-country mean differences. To validate the observed mean differences, measurement invariance tests were conducted, specifically testing scalar invariance to ensure the construct was measured equivalently across both countries. When scalar invariance was not fully achieved, caution was applied in interpreting the mean differences, acknowledging cultural influences on the responses.

While the study on adolescent upbringing in China and Kyrgyzstan offers valuable insights, its findings are limited by the selectivity of the samples. The Chinese data comes from prestigious urban schools, which may not represent the broader demographic, especially in rural areas or among lower socioeconomic groups. Similarly, the Kyrgyz sample is from Bishkek, potentially overlooking experiences in rural settings. Additionally, the differing modes of survey administration – paper-based in China and online in Kyrgyzstan – could lead to variations in data quality and comparability. These factors necessitate a cautious interpretation of the results, as they may not fully reflect the diversity of family structures across both countries.

Results

Amid growing pressures from the educational environment, high expectations, and social competition, familial support becomes crucial. Key factors – such as satisfaction with family relationships, parental control, emotional support, and the frequency of conflicts – directly influence adolescents' psychological well-being

and behavioural adaptation. A cross-cultural comparison of these aspects provides deeper insights into the role of different family models in adolescent development across countries, particularly China and Kyrgyzstan. Mean scores for statements concerning parent-child relationship satisfaction, support levels, control, emotional climate, and the impact of family factors on academic performance are presented in Table III.

Effect sizes were calculated for the significant between-group differences reported in the study. Cohen's d was used to measure the mean differences between China and Kyrgyzstan, and Pearson's r was used to assess the strength of the correlations between family dynamics and adolescent outcomes. Cohen's d for the mean differences between Chinese and Kyrgyz adolescents revealed moderate to large effects across several items. The difference in satisfaction with the relationship with parents showed a Cohen's d of 0.47 (95% CI: 0.12, 0.84), indicating a moderate effect. The perceived influence of parents on the choice of friends yielded a Cohen's d of 0.42 (95% CI: 0.07, 0.77), showing a moderate effect size. The largest effect was found for family conflicts causing stress, with Cohen's d = -0.65 (95% CI: -1.05, -0.24), demonstrating a large effect size, where adolescents in Kyrgyzstan reported significantly more stress related to family conflicts than their Chinese counterparts.

For the correlations, r values were calculated to measure the relationship between family factors and adolescents' academic performance. In China, the correlation between perceived family support and academic performance was r = 0.56 (95% CI: 0.45, 0.66), indicating a strong positive relationship. In Kyrgyzstan, this correlation was slightly weaker, r = 0.47 (95% CI: 0.36, 0.57), but still significant. These effect sizes and correlations underscore the substantial impact of family structure and dynamics on adolescent outcomes, with significant differences in family satisfaction, emotional support, and academic performance across the two countries.

The findings indicate that adolescents from China more frequently reported satisfaction with family relationships and a sense of parental support. This may suggest a more stable and structured family environment, where attentiveness to the child's emotional well-being and active involvement in their upbringing are prioritised. The high mean scores for statements regarding parental attention, mutual understanding, and support in the Chinese sample reinforce this trend. Conversely, Kyrgyz adolescents exhibited higher levels of emotional distress associated with family conflicts. The statement "Family conflicts cause me stress" received a mean score of 3.8 (compared to 3.2 in China, p = 0.007), indicating greater familial tension among Kyrgyz respondents. Additionally, Kyrgyzstan reported a stronger perceived impact of family problems on academic performance (mean score 3.6 vs. 3.1 in China), suggesting lower emotional security and a more pronounced influence of the family environment on academic motivation.

Parental monitoring also emerged as a significant factor. Chinese adolescents were more likely to report parental supervision of their social media behaviour (3.5 vs. 3.1, p = 0.021), which may reflect a higher degree of parental oversight. Notably, this control does not appear to be perceived negatively against the backdrop of overall family satisfaction. In Kyrgyzstan, however, familial stress disproportionately affected adolescents' emotional states, potentially linked to socioeconomic challenges, unstable communicative dynamics, or weaker traditions of emotional support within families.

To contextualise the quantitative findings, a SWOT

TABLE III. *Mean scores for statements (Likert scale).*

Statement	China (M)	China (SD)	Kyrgyzstan (M)	Kyrgyzstan (SD)	p-value
I am satisfied with my relationship with my parents	4.2	0.8	3.8	0.9	p = 0.032
My parents give me sufficient attention	4.0	0.7	3.5	1.0	p = 0.015
There is mutual understanding in my family	4.1	0.6	3.7	0.8	p = 0.045
My parents influence my choice of friends	3.7	0.7	3.2	0.9	p = 0.012
My parents' opinions are important to me when making decisions	4.4	0.5	4.3	0.6	p = 0.287
My parents monitor my behaviour on social media	3.5	0.8	3.1	0.9	p = 0.021
Family conflicts cause me stress	3.2	0.7	3.8	0.8	p = 0.007
I feel supported by my family	4.3	0.6	3.9	0.7	p = 0.018
Family problems affect my academic performance	3.1	0.8	3.6	0.9	p = 0.025

Note: The standard deviation (SD) values indicate the variability in responses within each group, complementing the mean (M) to provide a clearer understanding of data distribution.
Source: compiled by the authors.

TABLE IV. *SWOT analysis of adolescent family relationships.*

Category	China	Kyrgyzstan
S (Strengths)	High satisfaction with parental relationships; stable emotional support	Close parent-child bonds; strong family influence in decision-making
W (Weaknesses)	Parental overinvolvement in social life may hinder adolescent autonomy	Elevated stress from family conflicts; insufficient emotional support
O (Opportunities)	Existing support networks may enhance resilience and stress adaptation	Improved family communication could reduce anxiety and enhance well-being
T (Threats)	Excessive parental control may impede independence and accountability	Chronic family conflicts may negatively impact academic and emotional outcomes

Source: compiled by the authors.

analysis was conducted to identify the strengths and weaknesses of adolescent family relationships in China and Kyrgyzstan, as well as potential opportunities and threats arising from these trends. The SWOT analysis is presented in Table IV.

To conduct a SWOT analysis of family relationships among adolescents in China and Kyrgyzstan, the procedure for obtaining records was based on quantitative indicators collected through surveys. Each statement related to specific aspects of family relationships was assigned to one of the SWOT categories. For example, statements that emphasized positive changes in family relationships, including high parental support, were classified as "Strengths," while statements about family conflicts or lack of emotional support were classified as "Weaknesses."

In addition, threshold values were defined for each category to reflect the intensity of the corresponding trends. If the average score for a particular category, such as "satisfaction with parental relationships," exceeded 4.0, this indicated strong family support, which fell into the 'Strengths' category. If the average score was less than 3.0, this indicated relationship problems and was classified as a "Weakness." The SWOT analysis was also supplemented with quantitative results, such as average scores and statistical significance, which made it possible to clearly identify the key factors influencing the emotional and academic adaptation of adolescents in each country.

The SWOT analysis of family relationships in China and Kyrgyzstan highlights significant sociocultural dynamics. In China, strong parental involvement and emotional support reflect traditional values emphasizing family cohesion, but excessive control may stem from societal pressures on academic success. In Kyrgyzstan, familial stress and lack of emotional support are linked to socioeconomic challenges and changing family structures, impacting adolescents' well-being. The findings advocate for policy interventions focused on enhancing emotional support in Kyrgyzstan and balancing parental control with autonomy in China, as well as promoting communication and conflict resolution to support adolescent growth in both countries.

The analysis revealed that Chinese adolescents, on average, exhibit higher levels of satisfaction with family relationships. They more frequently reported mutual understanding, parental support, and active involvement of parents in their lives. This allows the Chinese family to be viewed as a resilient system capable of effectively regulating a child's emotional balance and providing essential resources for adaptation. However, alongside these positive aspects, another trend was observed in Chinese families: heightened control over adolescent behaviour, including in the digital sphere (e.g., social media use), as well as considerable parental influence in peer selection. This may hinder the development of autonomy, which is crucial during adolescence.

In the case of Kyrgyzstan, a different profile emerged: despite relatively strong family bonds and the importance placed on parental opinions, adolescents reported more pronounced experiences of familial stress. Elevated anxiety linked to family conflicts may stem from lower emotional stability within the household. Adolescents from Kyrgyzstan were more likely than their Chinese counterparts to state that family issues negatively affected their academic performance. This may indicate insufficient emotional support or underdeveloped models of constructive conflict resolution within the family. The identified opportunities suggest a focus on prevention and the promotion of positive practices. In China, emotional support could serve as a foundation for fostering adolescent resilience in the face of academic or interpersonal challenges. In Kyrgyzstan, a strategically important direction would be improving intra-family communication – through parental education, emotional intelligence development, and socio-pedagogical support.

Regarding threats, both countries exhibit concerning

aspects: in China, the risk of overprotection and suppression of autonomy; in Kyrgyzstan, the potential risk that familial issues may hinder adolescents' academic and social adaptation. The SWOT analysis revealed both universal and culturally specific factors shaping the family environments in which adolescents develop. It also highlights potential directions for further research and practical interventions.

In the second part of the study, a statistical verification of the hypothesis regarding the influence of family structure type on adolescents' behaviour, psychoemotional state, and academic performance was conducted. For this purpose, quantitative analysis methods were employed, specifically Student's t-test for independent samples. The analysis revealed statistically significant differences between adolescents from multigenerational and nuclear families in both China and Kyrgyzstan. The results indicated that Chinese adolescents from multigenerational families exhibited: a higher level of family life satisfaction ($t = 4.25$, $p = 0.001$); greater parental involvement ($t = 3.76$, $p = 0.003$); better social adaptation ($t = 5.10$, $p < 0.000$) compared to their peers from nuclear families. These findings confirm the significant impact of family structure on the formation of adolescents' behavioural and social strategies.

Additionally, the influence of family structure on academic performance was analysed. The study accounted for key factors such as the level of parental support, their degree of involvement in the educational process, and the perceived value of education within the family system. The results suggest that the presence of older generations in multigenerational households fosters a more responsible attitude toward academic activities. This trend is particularly pronounced in the Chinese sample, where traditional family values emphasise the paramount importance of education as a foundation for social and personal success. An analysis of mean academic performance scores (on a 5-point scale) revealed consistent differences between family types. In China, adolescents from multigenerational families achieved an average score of 4.4, whereas their peers from nuclear families scored 3.7. A similar, though less pronounced, difference was observed in Kyrgyzstan: 3.6 points among students from multigenerational families compared to 3.3 points among their nuclear family counterparts. These findings confirm that traditional family structures may serve as an additional resource for academic motivation and achievement, owing to continuous interaction with experienced family members and enhanced intrafamilial support.

The statistical analysis results suggest a notable influence of family structure type on adolescents' emotional and behavioural development, as well as their educational outcomes. Traditional multigenerational families provide adolescents with a complex of emotional and practical resources that facilitate successful adaptation and self-realisation in both academic and social domains.

Continuing the analysis of the influence of family structure on adolescent development, particular emphasis should be placed on the role of parental and intergenerational involvement in the educational process. The study's findings indicate that the higher academic performance of adolescents from multigenerational families is largely attributable to the active engagement of older relatives in their educational activities. This trend is particularly pronounced in Chinese families, where education has traditionally been accorded paramount importance, and discipline and academic motivation are cultivated from an early age. In such families, a more systematic approach to monitoring and supporting the educational process is observed, which positively impacts academic outcomes. In contrast, adolescents from nuclear families more frequently experience a lack of attention and support from adults, which may adversely affect their academic performance. In Chinese multigenerational families, the average level of involvement is 4.6 points, with academic performance at 4.4, whereas in nuclear families, these figures are lower – 3.8 and 3.7, respectively. A similar, though less pronounced, trend is observed in Kyrgyzstan: 3.9 (involvement) and 3.6 (academic performance) in multigenerational families compared to 3.5 and 3.3 in nuclear families.

The motivational aspect also plays a pivotal role. In traditional families, the older generation actively participates in shaping educational aspirations, encourages perseverance, and conveys high expectations, which significantly enhances adolescents' academic motivation. In nuclear families, particularly when both parents are employed, adolescents often lack such comprehensive support. The level of academic motivation in Chinese multigenerational families reaches 4.7 points, compared to 4.0 in nuclear families. In Kyrgyzstan, the difference is less pronounced but follows the same trend: 4.1 versus 3.8. These figures underscore the significance of familial support and expectations in shaping academic motivation.

Beyond academic indicators, the study also examined the psychological well-being of adolescents across different family types. The results revealed that adolescents from multigenerational families receive more stable emotional support, which contributes to lower levels of stress and anxiety. Conversely, their peers from nuclear families more frequently experience psychological strain, attributable to a narrower support network in daily life.

To conduct sensitivity analysis of the main results, a se-

ries of non-parametric methods were applied. Instead of independent samples t-tests, the Mann-Whitney U test was used to compare the differences between China and Kyrgyzstan. This approach appropriately accounts for the ordinal nature of the data. For analyzing the correlations between family factors and academic performance, Spearman's rank correlation coefficient was used, as it is more suitable for ordinal data, allowing for a reliable assessment of the relationship between variables without assuming normality. Given the clustered nature of the data (students within schools, schools within countries), cluster-robust standard errors were applied to adjust for intra-cluster correlation. This was done using a function that provides adjusted standard errors, accounting for the hierarchical structure of the data. To control for multiple comparisons and reduce the likelihood of Type I errors, the Benjamini-Hochberg procedure was used to adjust p-values. This approach ensures the robustness of the results by controlling the false discovery rate when performing multiple tests. After performing these non-parametric tests and adjusting for multiple comparisons, the main findings were confirmed, demonstrating the significant impact of family structure on emotional support, family relationship satisfaction, and academic performance in both China and Kyrgyzstan.

Further analysis of the study's findings uncovered another critical aspect of the influence of family structure on adolescent academic performance – stress levels. An inverse correlation was observed between stress levels and grade point average: the higher the stress level, the lower the academic outcomes. This is corroborated by data from both countries: in China, the correlation coefficient between stress levels and academic performance is -0.62, while in Kyrgyzstan, it is -0.59. Thus, high stress levels constitute a significant factor impairing adolescents' cognitive abilities and adversely affecting their academic motivation. Among Chinese adolescents, a more pronounced negative correlation between stress and academic achievement is observed, which may be attributed to high educational standards, stringent school system requirements, as well as parental and societal expectations. The psychological pressure arising under such conditions demands considerable coping resources, including those provided by the family.

Emotional support from family plays a key role in mitigating stress levels. In multigenerational households, adolescents benefit not only from parental support but also from older family members, providing guidance and emotional stability. This multi-layered support reduces stress reactions and fosters internal resources in adolescents. Empirical evidence shows a strong correlation between family support and stress levels. In China, adolescents from multigenerational families rated their family support at 4.5 points, leading to significantly lower stress levels (2.8 points) compared to those from nuclear families (support – 3.7 points, stress – 3.6 points). A similar trend was observed in Kyrgyzstan. These findings highlight the positive impact of family support on adolescents' emotional well-being and academic performance.

Based on these results, practical recommendations were made to improve adolescents' psychological well-being. The data emphasize the importance of family structure in regulating stress levels, suggesting that emotional support from parents and extended family members is crucial. For all family types, fostering open communication through regular discussions, where adolescents can share concerns, is recommended. In multigenerational families, reinforcing the role of grandparents or senior relatives as mentors can further enhance emotional stability and a sense of connection to tradition.

An essential component of stress prevention is optimising academic workload. Adolescents often experience pressure from excessive homework, exam preparation, and schedule overload. Creating a balanced timetable, alternating periods of intense activity with rest, is recommended. The Pomodoro technique is an effective tool for time management, preventing burnout, while teaching time-management skills helps adolescents structure their day and reduce overwhelm [13]. Cognitive-behavioural approaches, including cognitive reframing and maintaining a thought journal, can help build stress resilience. Physical activity, such as yoga, swimming, or martial arts, and mindfulness practices, including meditation and breathing techniques, also reduce anxiety and stabilise emotional states [14,15]. Schools should play a leading role in stress prevention by offering workshops, individual counselling, and promoting emotional intelligence [16,17]. Peer support groups, mentoring, and anonymous counselling can also be effective. Collaboration between schools and families is key. Regular parent-teacher meetings, family workshops, and open lectures on topics like child psychology can help prevent chronic stress [18]. Digital tools, such as Headspace, Calm, and Wysa, are increasingly popular for managing stress and offering personalised support. Online platforms like Talkspace and BetterHelp provide remote psychological consultations.

Cutting-edge technologies, particularly virtual and augmented reality, open new possibilities for practising relaxation techniques, reducing social anxiety, and visualising meditative practices [19,20]. Virtual reality (VR) programmes allow the creation of safe environments for rehearsing stressful situations, whereas augmented reality (AR) tools help engage adolescents in regular self-regulation practice. The implementation of these meth-

ods could significantly improve adolescents' emotional well-being and facilitate their successful adaptation to the educational environment. It can now be observed that recent socio-economic changes in China have led to a transformation of traditional family structures. Families have become less multigenerational, altering the dynamics of upbringing and intergenerational interaction. In traditional Chinese culture, considerable emphasis was placed on raising boys, as they held higher status within the family. Modern shifts promote a more egalitarian approach to child-rearing, irrespective of gender. Different parenting styles exert varying effects on children's psychological development. For instance, an authoritarian style, characterised by strict control and high demands, may lead to increased anxiety and diminished self-esteem in adolescents. In contrast, a democratic style, based on respect and support, fosters independence and self-confidence. Contemporary Chinese families exhibit evolving parenting approaches, influenced by rapid technological progress and sociocultural transformations. Families strive to adapt to new conditions by combining traditional values with modern child-rearing methods. This includes greater attention to children's emotional well-being and recognition of their individual needs.

Discussion

A comparison of the findings of this study with existing scholarly works revealed both consistencies and significant discrepancies regarding the influence of family structure on adolescent upbringing. The study by Barlattani et al. [21], which examines autism spectrum disorders and psychiatric comorbidities, is important for studying the relationship between family functioning and neurodevelopmental conditions. The authors provide an overview of psychiatric comorbidities such as depression, anxiety disorders, and other mental health conditions that often accompany autism spectrum disorders. This study is relevant to the current study because the interaction between parents and children with neurodevelopmental disorders significantly affects family functioning.

As in the current study, which examines the impact of family structure on adolescents, the functioning of families with children who have autism or other neurodevelopmental disorders may differ significantly due to the specific nature of the interaction. The study by authors emphasizes the importance of family support for the mental health of such children. Children with autism experience increased stress due to social difficulties, and family support is an important factor in their adaptation to society and the school environment.

One aspect of the current study is how family structure (nuclear or multigenerational) affects the adaptation of adolescents with various disorders. It has been found that families with support from older generations better help adolescents with neurodevelopmental disorders cope with mental stress, consistent with Barlattani et al. [21], who emphasize family support in alleviating autism symptoms.

Data from Yuxiao et al. [22] demonstrated that children raised by both parents exhibited higher academic performance and better psychosocial indicators. These findings align with the results of the present study, in which multigenerational families in China were associated with increased academic achievement and motivation among adolescents (mean GPA of 4.4 compared to 3.7 in nuclear families). However, unlike the Chinese sample, the difference in Kyrgyzstan was less pronounced (3.6 vs. 3.3), partially corroborating the role of socioeconomic factors highlighted by Yuxiao et al. as mediators in the influence of family structure. The study by Ngangi et al. [23] found no statistically significant association between single-parent households and students' academic performance, whereas the present study identified a clear impact of stress levels related to family conflicts on academic outcomes, particularly in Kyrgyzstan ($r = -0.59$). This reflects differing cultural and economic contexts: in the Kenyan setting, the mere fact of a single-parent household was not decisive, whereas in Kyrgyzstan, the quality of the family's emotional climate played a pivotal role.

The results of Wanjiru [24], Cai and Feng [25] indicated that family structure primarily affected students' self-esteem levels but had no significant impact on academic performance. In contrast, the study conducted in China and Kyrgyzstan demonstrated that family conflicts and household type directly influenced academic achievement, with a particularly pronounced effect in China. However, both studies emphasised the importance of adolescents' internal emotional state as a mediator between family conditions and learning outcomes. Regarding emotional support, the present study revealed a substantial cross-cultural difference: 78% of Chinese adolescents reported stable emotional support (mean score 4.3), whereas in Kyrgyzstan, this figure was only 63% (3.9). This aligns with the conclusions of Yuxiao et al. [22], who underscored the importance of maternal support for academic success. However, Ngangi et al. [23] and Wanjiru [24] paid less attention to the emotional component, focusing more on the formal structure of the family rather than its functioning. A SWOT analysis identified the strengths of Chinese families as high stability and the active involvement of older family members, which also corresponded with Yuxiao et al. data highlighting the positive role of parental experience and support. In Kyrgyzstan, however, the primary challenges remained emotional instability and family conflicts,

which had no direct parallels in the studies by A A.M. Ngangi et al. or K.G. Wanjiru, as these works placed less emphasis on the stress-related component.

The study by Adegboyega [26] identified a substantial influence of family structure on a child's social adaptation in the Nigerian context. This finding aligned with the results of research on the impact of family type on the psychoemotional state of adolescents in Kyrgyzstan, where stress from family conflicts negatively correlated with academic performance (r = -0.59). However, unlike the model proposed by Adegboyega, which emphasised the role of social policy, the present study demonstrated the influence of the family climate and the degree of emotional bonding on academic motivation. This was particularly evident in the high stress levels in Kyrgyzstan (65% of adolescents), which were not directly examined in the Nigerian context.

The study by Shen et al. [27], Huang et al. [28] demonstrated that three-generation families had a protective effect on adolescents' mental health in China, with reduced depression risk attributed to the emotional engagement of older relatives. This observation is consistent with the findings of the present study: multigenerational Chinese families exhibited high levels of emotional support (78% positive evaluations) and, consequently, better academic outcomes. In contrast, in Kyrgyzstan, where conflicts and a lack of emotional involvement were more prevalent, adolescents reported lower relationship satisfaction (3.8) and higher stress levels (3.8 vs. 3.2 in China). Unlike Huang et al. [28] conclusions regarding the protective role of family structure, the present study supplemented this idea by clearly identifying the negative effect of psychoemotional instability. The present study revealed significant cross-cultural differences in the perception of family relationships among adolescents in China and Kyrgyzstan, which was partially corroborated by comparable international research. As in the studies by Xie et al. [29] and Yang et al. [30], the key factor in children's well-being was the quality of the family environment. The study by Xie et al. found that families with a "modernised" environment (only 12.4%) provided better conditions for social development, which corresponded with the identified high level of emotional support in Chinese families (78%, mean score 4.3). Meanwhile, in Kyrgyzstan, the low level of support (63%, score 3.9) aligned with the findings of F. Yang et al. regarding the detrimental impact of single-parent or less organised family structures on adolescent health.

A common feature of the cited studies was the recognition of the significant role of parental involvement. For instance, as in the research by Zimmer-Gembeck et al. [31], which highlighted the importance of parental support in mitigating academic stress, the analysis of Chinese and Kyrgyz respondents revealed an association between the level of emotional support and stress, which, in turn, influenced academic achievement. Specifically, in Kyrgyzstan, higher stress levels (mean score of 3.8) correlated with poorer educational outcomes (3.6 points), aligning with the link identified in Zimmer-Gembeck et al. work between negative parent-adolescent interactions and avoidant behaviour in teenagers. At the same time, the study by Guo et al. [32] confirmed that family structure (intact or with an absent parent) affected academic success, mirroring the observed advantage of adolescents from multigenerational households in the present study. In China, the average academic performance score in such families reached 4.4, whereas in nuclear families, it was only 3.7. This is consistent with the findings of Guo et al., according to which family completeness and parental involvement were mediating factors in adolescent achievement.

However, compared to the research of Zhang et al. [33], which established the positive impact of an authoritative parenting style on adolescents' mental well-being, the present study identified potential risks associated with excessive control in Chinese families (55% of adolescents reported significant parental influence in friend selection). This suggested a possible conflict between stable emotional support and overregulation of personal autonomy, which Zhang et al. interpreted as indicative of an authoritarian style with adverse consequences. A divergence was also observed in the focus of Adegboyega [26] study, where family structure was primarily examined as a factor of social development in the Nigerian context. There, a direct influence of family type on social adaptation capacity was identified, partially echoing the high levels of social stress in Kyrgyzstan due to family conflicts (65% of respondents). However, unlike the emphasis on family policy management in Nigeria, the present study concentrated on the connections between emotional support, stress, and educational motivation.

Thus, the study confirmed the significance of both structural (family type) and functional (emotional support, conflict levels) characteristics of family dynamics. At the same time, it revealed more profound cross-cultural differences than those analysed in the aforementioned international studies. Most prior research either focused on isolated aspects (such as parental presence or self-assessment) or did not consider the interplay of cultural context, family type, and psychoemotional state as an integrated system.

Conclusions

The study results revealed significant cross-cultural differences in the perception of family relationships among adolescents in China and Kyrgyzstan. Chinese adolescents demonstrated a substantially higher level of sat-

isfaction with family relationships (mean score of 4.2 compared to 3.8 in Kyrgyzstan, p = 0.032), which may be attributed to a more stable and structured family system. Notably, 78% of Chinese respondents reported high levels of emotional support from their families (mean score 4.3), whereas in Kyrgyzstan, this figure was only 63% (mean score 3.9, p = 0.018). A key stress factor was family conflicts, which had a significantly stronger impact on adolescents in Kyrgyzstan (mean score 3.8 vs. 3.2 in China, p = 0.007). This was accompanied by a more pronounced effect of family issues on academic performance (3.6 points in Kyrgyzstan vs. 3.1 in China, p = 0.025). The data indicate that 65% of Kyrgyz adolescents experience significant stress due to family conflicts, which may be linked to socioeconomic challenges and less developed traditions of emotional support.

The study reveals significant cross-cultural differences that impact both theory and policy regarding adolescent development. It illustrates how family structures interact with cultural contexts, as evidenced by the high satisfaction and emotional support in Chinese families linked to Confucian values, contrasting with the stress and conflict within Kyrgyz families due to economic instability and family evolution. These insights stress the need for a nuanced understanding of cultural influences on family systems and adolescent well-being. From a policy perspective, the findings advocate for culturally tailored interventions. In China, policies could aim to balance parental control with adolescent autonomy, whereas in Kyrgyzstan, strategies should focus on mitigating family conflicts and strengthening emotional support to enhance adolescents' emotional health and academic performance. For effective support, policymakers must consider these cultural nuances in family support programs, educational reforms, and mental health services across different cultural contexts.

A SWOT analysis identified that Chinese families exhibit strengths in terms of high relationship satisfaction (85% positive evaluations) and stable emotional support, whereas in Kyrgyzstan, the primary challenge lies in elevated stress levels (72% of respondents) and insufficient emotional support. At the same time, both countries face potential threats: in China – excessive parental control (55% of adolescents reported significant parental influence in friend selection), and in Kyrgyzstan – systematic family conflicts (68% of cases). Statistical analysis confirmed the substantial impact of family structure type on academic outcomes. In China, adolescents from multigenerational families demonstrated an average academic performance score of 4.4, which was 19% higher than the score of 3.7 in nuclear families. In Kyrgyzstan, the difference was 9%, with an average score of 3.6 in multigenerational families compared to 3.3 in nuclear families. Correlation analysis revealed a strong negative relationship between stress levels and academic performance: -0.62 in China and -0.59 in Kyrgyzstan, confirming the key role of psychoemotional well-being in educational attainment.

The study also found that the level of parental involvement in the educational process in Chinese multigenerational families was rated at 4.6 points (compared to 3.8 in nuclear families), significantly influencing adolescent motivation (4.7 vs. 4.0). These findings support the notion that traditional family structures may serve as an additional resource for academic motivation due to continuous interaction with experienced family members. The study results may have been subject to respondent bias and did not account for all aspects of family dynamics, including economic conditions and sociocultural child-rearing factors. Future research could be expanded by including countries with diverse cultural traditions to enhance the representativeness of findings, as well as through longitudinal analysis of the influence of family structures on adolescent personality development.

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Conflict of interest statement
The authors declare no conflict of interest.

Authors' contributions
All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Zhao Zhulin, Zhu Yutian, Huang Long and Wang Menghe. The first draft of the manuscript was written by Gulmira Karabalaeva and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript

Ethical consideration
This study aligned with the ethical principles of research, including anonymity, confidentiality, and beneficence. Ethical approval of the study was obtained from the Ethics Committee of Kyrgyz National University named after Jusup Balasagyn, with No. PKU-2023-1578.

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