



Joint Trajectories of Parental Psychological Control and Autonomy Support and their Impact on Chinese Adolescents' Psychological Adjustment

Yuhan Luo¹ · Ruochen Li^{1,2} · Zhengqian Yang³ · Rui Luo³ · Hongyu Yu¹ · Fumei Chen⁴ · Yun Wang³

Received: 14 June 2025 / Accepted: 10 October 2025

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2025

Abstract

While parental psychological control and autonomy support have been studied as separate developmental processes in adolescence, their joint trajectories and combined effects on adolescent adjustment remain unclear. This study included 996 Chinese adolescents (Age (T1)=12.53±0.37, 49.6% boys) who were assessed at three time points with annual intervals. Parallel-process latent class growth modeling revealed four joint developmental trajectories: *Stable-Supportive Parenting* (31.4%), *Increasing-Adaptive Parenting* (8.7%), *Eroding-Support Parenting* (48.6%), and *Unilateral-Control Parenting* (11.2%). These trajectories demonstrated differential associations with adolescent outcomes, including internalizing and externalizing problems, prosocial behavior, and flourishing. The findings provide valuable insights into autonomy-related parenting processes and highlight practical implications for targeted interventions aimed at promoting optimal adolescent adjustment.

Keywords Psychological control · Autonomy support · Parallel-process latent class growth model · Psychological adjustment · Adolescence

Introduction

Adolescence is a period of developing self-awareness and pursuing greater autonomy (Sebastian et al., 2008), during which parents need to adjust their parenting behaviors to support adolescents in developing independent thinking and self-directed action. Parental autonomy support and psychological control, as key aspects of autonomy-related

parenting behaviors (Joussemet et al., 2008), were related to adolescent social adjustment varies across cultures (Chen et al., 2021; Lansford et al., 2018; Scharf & Goldner, 2018; Xiong et al., 2022), developmental areas (Desjardins & Leadbeater, 2017; Finkenauer et al., 2005; Vasquez et al., 2016), and developmental stage (Chyung et al., 2022; Rogers et al., 2020). Previous cross-sectional studies used person-centered approaches to capture the different parenting profiles by combining autonomy support and psychological control together (Ahn et al., 2025; Pereira et al., 2009; Shi & Tan, 2021). That indicated that the heterogeneity of autonomy support and psychological control existed within different families. However, longitudinal studies identified the different trajectories of each parenting behavior separately (Liu et al., 2025a, b; Zhou et al., 2024, 2025). The present study focused on the individual differences in the joint developmental trajectories of parental autonomy support and psychological control and their associations with Chinese adolescents' psychological adjustment.

✉ Fumei Chen
chenfumei@bnu.edu.cn

✉ Yun Wang
wangyun@bnu.edu.cn

¹ School of Education, Minzu University of China, Beijing, China

² Zhejiang Fashion Institute of Technology, Ningbo, China

³ State Key Laboratory of Cognitive Neuroscience and Learning, Beijing Normal University, Beijing, China

⁴ Collaborative Innovation Center of Assessment for Basic Education Quality, Beijing Normal University, Beijing, China

Parental Psychological Control and Autonomy Support

Parental autonomy support, aimed at promoting volitional functioning, bolsters adolescents' intrinsic motivation and fulfills their need for autonomy by offering choices, recognizing children's perspectives, and providing meaningful rationales when choices are constrained (Joussemet et al., 2008; Mageau et al., 2015; Soenens et al., 2007). In contrast, parental psychological control refers to behaviors that intrude upon children's thoughts and feelings through the excessive use of manipulative parenting techniques, such as guilt-induction, shaming, and love withdrawal (Joussemet et al., 2008; Wang et al., 2007).

Parental autonomy support and psychological control are conceptualized as separate constructs, they are not simply opposite ends of a continuum, but rather possess distinct correlates (Silk et al., 2003; Soenens et al., 2007). That is to say, the absence of autonomy granting does not necessarily imply the presence of psychological control. Theoretically, Vansteenkiste and Ryan (2013) clarified that autonomy support and psychological control represent different social environments, which can be alternatively need supportive, need depriving, or need thwarting. Empirically, person-centered cross-sectional studies, such as latent profile analysis (LPA), have identified a parenting profile where both parental autonomy support and parental control are at their high levels, accounting for 21%–29% of the total sample (Ahn et al., 2025; Pereira et al., 2009; Shi & Tan, 2021). To capture a family's overall autonomy-related parenting style, parental autonomy support and psychological control can be combined into distinct parenting profiles.

Heterogeneous Trajectories of Parental Psychological Control and Autonomy Support

Previous studies used variable-centered methods to describe the overall developmental trajectories of parental autonomy support and psychological control during adolescence. Consistent with adolescents' increasing need for autonomy, some studies have found that parental autonomy support tends to increase (Desjardins & Leadbeater, 2017; Liu et al., 2025a, b), while psychological control tends to decrease during this period (Desjardins & Leadbeater, 2017; Spitz et al., 2021; Sun et al., 2021). However, the developmental trends of parental autonomy support and psychological control are not uniform, as some studies have reached different conclusions. For instance, parental psychological control increased from for Chinese early adolescents (Chen et al., 2021; Yu et al., 2021), while adolescent-perceived parental autonomy support decreased from age 13 to age 19 among Dutch adolescents (Vrolijk et al., 2020); Conversely,

autonomy support remained stable from early to middle adolescence from Greece (Distefano et al., 2021), and child-reported psychological control remained stable in two years among Chinese high school students and American early adolescents (Chen et al., 2021; Liu et al., 2025a, b). The inconsistencies observed across these studies may suggest the existence of both within-group differences (i.e., distinct subgroups within parenting trajectories) and between-group differences (i.e., variations attributable to age and culture).

Recent studies have employed person-centered methods to explore the different developmental trajectories of parental autonomy support and psychological control (Heel et al., 2019; Liu et al., 2025a, b; Rogers et al., 2020; Zhou et al., 2024, 2025). These studies have identified 2 to 3 distinct trajectories for autonomy support and 2 to 4 trajectories for psychological control separately. However, the developmental characteristics of autonomy-related parenting behaviors within a family should be clearly identified by simultaneously considering the heterogeneity in the development of both autonomy support and psychological control (Van Petegem et al., 2017). Only one study had simultaneously incorporated both autonomy support and psychological control into the analysis of the joint developmental trajectories of parental behaviors among Swiss late adolescents, identifying three parenting trajectory classes: highly supportive parenting (the highest levels of perceived autonomy support and lowest levels of perceived psychological control, with a downward linear trend in psychological control), decreasing supportive parenting (moderate and a downward linear trend in perceived autonomy support and moderate psychological control), and stable controlling parenting (lowest on perceived autonomy support and highest on psychological control) (Sznitman et al., 2022). However, the rate of change in parenting behaviors is more rapid during middle adolescence compared to late adolescence (Rogers et al., 2020). Therefore, it is necessary to explore the heterogeneity in the development of parenting behaviors during middle adolescence.

Given this cultural and developmental diversity, those findings may not be universally applicable across different cultures. In China, Confucianism has profoundly shaped the behavior and values of the Chinese people, emphasizing collectivism and filial piety—respect for parents and elders (Chao, 1994; Zhang et al., 2017). Parents utilize certain approaches (e.g., *Guan* parenting) to demand that their children's actions align with social norms (Chao, 1994). Psychological control, often viewed negatively in Western contexts, is regarded as both necessary and acceptable in East Asian countries, as it is seen as a manifestation of parental responsibility and care (Chen et al., 2021; Pomerantz & Wang, 2009), whereas personal autonomy may not be as important as in the West (Qin et al., 2009). Empirical

studies found that Chinese parents are more psychological control but less autonomy supportive than the Western counterparts (Wang et al., 2007). Moreover, American parents increase their autonomy more than Chinese parents do through the early adolescent years (Qin et al., 2009). It could be inferred that the developmental trajectories of parental autonomy support and psychological control in China may differ significantly from those observed in other countries (e.g., Switzerland).

Heterogeneous Trajectories of Parental Psychological Control and Autonomy Support: Relations with Adolescent Psychological Adjustment

Self-determination theory posits that autonomy, competence, and relatedness are three basic psychological needs that drive human motivation and achievement (Ryan & Deci, 2017). The need for autonomy is about feeling in control of one's actions, competence is about mastering tasks and the environment, and relatedness is about feeling accepted by others. Autonomy is particularly crucial for motivation and well-being (Deci & Ryan, 2000). Extensive research has clearly and consistently found that parental autonomy support may be related to enhanced psychosocial functioning, including greater psychological well-being (see a review, Vasquez et al., 2016), more prosocial behaviors (Wong et al., 2021), and decreased externalizing and internalizing problem behaviors (Vroljik et al., 2020). Whereas parental psychological control, which involves tactics that encourage dependency and inhibit individuation, could disrupt adolescents' psychological adjustment (Scharf & Goldner, 2018), leading to more internalizing problems like depression and anxiety (Chyung et al., 2022; Desjardins & Leadbeater, 2017), and externalizing problems (Heel et al., 2019; Piquart, 2017). Nevertheless, prior research has limited its focus to specific aspects of developmental outcomes. Based on the Dual-Factor Model of Mental Health (DFM, Greenspoon & Saklofske, 2001) and previous studies (e.g., Lansford et al., 2018), this study thus incorporates both negative and positive aspects of adolescent psychological adjustment, including externalizing/internalizing problems and prosocial behaviors/flourishing.

Existing studies have separately examined the impact of developmental trajectory types of parental autonomy support and psychological control on adolescent psychological adjustment. For instance, externalizing problems (including rule-breaking behavior and aggressive behavior) varied across the three developmental trajectories of maternal autonomy support, whereas psychological control trajectories influenced rule-breaking behavior but not aggressive behavior (Heel et al., 2019). Another study has demonstrated that the developmental trajectories of psychological

control affect internalizing problems (including depression and anxiety), and their effect diminishes annually from ages 14 to 19 (Rogers et al., 2020). Recent studies conducted in China with elementary school students indicated that the developmental trajectories of autonomy support and psychological control significantly predict internalizing and externalizing problem behaviors independently (Liu et al., 2025a, b; Zhou et al., 2025).

Cross-sectional studies believed that the combination of autonomy support and psychological control captures the overall autonomy-related parenting atmosphere within the family, which collectively shapes adolescent psychological adjustment. Specifically, children in the Average profile (medium autonomy support and controlling parenting) had more externalizing problems than those in the Overinvolved profile (high autonomy support and controlling parenting), though no differences were seen in internalizing problems (Ahn et al., 2025). Another study showed that adolescents in the Unsupportive-Uncontrolling and Limited Supportive profiles had similarly high levels of internalizing problems, and those in the Unsupportive-Uncontrolling profile exhibited prosocial behavior levels comparable to those in the Controlling profile (Teuber et al., 2022). Only one study employing a longitudinal person-centered approach has revealed that different joint developmental trajectories of autonomy support and psychological control are associated with esteem and risk-taking (Sznitman et al., 2022). There is a need for further research to explore the link between joint developmental trajectories and various adolescent psychological adjustments.

Cultural normativeness theory provided a framework for understanding the different relationships between parenting practices and adolescent psychological adjustment across cultures and developmental areas (Deater-Deckard & Dodge, 1997; Lansford et al., 2005). When parents' behaviors align with their society's cultural norms, their behaviors are more likely to be associated with positive (or less adverse) outcomes for their children. In Chinese cultural contexts, which emphasize collectivism, the negative effects of psychological control were found to be associated with fewer decrements in children's emotional outcomes in China than in the United States (Xiong et al., 2022). In contrast, within Western cultural contexts that prioritize autonomy, the positive effects of autonomy support on children's emotional adjustment were stronger in the United States than in China (Wang et al., 2007). Meanwhile, the influence of parenting behaviors on prosocial conduct also exhibits cultural specificity. While psychological control increases adolescents' desire to conform to social expectations, it may inhibit the development of individual social skills, leading to reduced prosocial behaviors (Wong et al., 2021). Conversely, through reinforcement mechanisms such as gaining

external recognition or emotional support, psychological control may also contribute to the promotion of prosocial behavior (Agalar et al., 2025). However, the effects of different joint trajectories of parental autonomy support and psychological control on various developmental outcomes remain unknown among Chinese adolescents.

Current Study

While prior research has examined the distinct developmental trajectories of autonomy support and psychological control and their relationship with adolescent outcomes in China, less is known about their joint trajectories within families and how their effects vary across different developmental domains. To address these gaps, this study aimed to achieve two research objectives using a longitudinal person-oriented approach. First, it aimed to identify the number and characteristics of joint developmental trajectories of parental autonomy support and psychological control. The study hypothesized that distinct joint trajectory classes would be identified, in which the development of autonomy support and psychological control would not change in opposite directions. Second, the study sought to examine how these joint developmental trajectory classes are associated with psychological adjustment among Chinese adolescents. Specifically, both negative dimensions—externalizing and internalizing problems—and positive dimensions—prosocial behaviors and flourishing—of psychological adjustment were assessed. It was hypothesized that adolescents belonging to different parenting trajectory classes would demonstrate differential adjustment outcomes.

Methods

Participants

To evaluate developmental trajectories of perceived parental autonomy support and parental psychological control on adolescents' mental health, a three-wave longitudinal study of Chinese middle school students in central China was conducted. The study recruited 1083 participants who were in grade 7th from two middle schools in central China in November 2019 (T1). The data was collected three times with a one-year interval between each time. To fully utilize the data, participants who had completed at least two assessments were included in this study. Therefore, the final sample comprised 996 adolescents (Age at T1: 12.53 ± 0.37), among whom 484 (49.6%) are boys and 492 (50.4%) are girls. Nearly 83.6% of adolescents completed all three waves of assessment in the final sample. The average ages

of participating fathers and mothers were 42.18 (SD=4.83) and 40.14 (SD=4.72) years. The proportion of fathers and mothers who had a bachelor's degree or above was 29.3% and 24.5%, which was higher than 8.02% and 7.51% of the corresponding age group of the national population in 2019 (National Bureau of Statistics of the People's Republic of China, 2020).

Procedure

Before the first data collection, informed assent from adolescents and their parents and consent from school principals were obtained. Across all three occasions, the assessments were delivered by a group of trained and experienced teachers and postgraduates. Students finished the questionnaires in a regular classroom environment and were allowed to take sufficient time as needed to complete the questionnaires. A specific ID code and name were used separately in questionnaires and consent forms, to ensure anonymity and for data-matching purposes.

Measures

Perceived parental autonomy support (T1-T3)

Perceived parental autonomy support was measured by Chinese version of Perceived Parental Autonomy Support Scale (P-PASS) (Mageau et al., 2015; Shi & Tan, 2021), consisting of 12 items, divided into three dimensions, among which 4 items tapped *choice with certain limits* (e.g., "My parents hoped that I would make choices that corresponded to my interests and preferences regardless of what theirs were."), 4 items tapped *rationale for demands and limits* (e.g., "When I asked why I had to do, or not do, something, my parents gave me good reasons."), and four items tapped *acknowledgement of feelings* (e.g., "My parents were able to put themselves in my shoes and understand my feelings."). Adolescents were asked to rate each item from 1 (do not agree at all) to 7 (very strongly agree), with higher mean scores indicating a higher level of perceived parental autonomy support. Cronbach's alphas were 0.95 (T1), 0.96 (T2), and 0.96 (T3), respectively. The measurement model showed a good fit ($\chi^2[574] = 141.95$, $p < 0.001$, CFI=0.936, TLI=0.930, RMSEA=0.048, SRMR=0.041) and significant residual variance invariance across the three waves.

Perceived parental psychological control (T1-T3)

Perceived parental psychological control was measured by the Perceived Parental Psychological Control Scale (Wang et al., 2007), consisting of 18 items, divided into three dimensions: *guilt induction* (10 items, e.g., "My parents tell

me that I should feel guilty when I do not meet their expectations.”), *love withdrawal* (5 items, e.g., “My parents act cold and unfriendly if I do something they do not like.”), and *authority assertion* (3 items, e.g., “My parents tell me that what they want me to do is the best for me and I should not question it.”). Adolescents were asked to rate each item from 1 (not at all true) to 5 (very true), with higher mean scores indicating a higher level of perceived parental psychological control. In this study, the scale provided adequate internal consistency, with Cronbach’s α of 0.93 (T1), 0.94 (T2), and 0.95 (T3), respectively. The measurement model showed a good fit ($\chi^2[1331]=66.71, p<0.001$; CFI=0.905, TLI=0.898, RMSEA=0.048, SRMR=0.048) and significant scalar model invariance across the three waves.

Externalizing problems (T1&T3)

Externalizing problems was measured by two subscales of the Strengths and Difficulties Questionnaire (SDQ) (Du et al., 2008; Goodman et al., 2010): *conduct problems* (five items, e.g., “I am often accused of lying or cheating.”) and *hyperactivity /inattention* (five items, e.g., “I often fidget or feel impatient.”). Items are scored on a 3-point scale (0=not true, 1=somewhat true, 2=certainly true). Referring to previous studies (Goodman et al., 2010), the score of externalizing problems is summed by the mean score of the subscales of *conduct problems* and *hyperactivity /inattention*, which a higher mean score indicates a severer externalizing problem. In this study, Cronbach’s α values of externalizing problems were 0.70 (T1) and 0.73 (T3). The measurement model of externalizing problems showed a good fit ($\chi^2[150]=406.88, p<0.001$; CFI=0.910, TLI=0.886, RMSEA=0.041, SRMR=0.046) and significant configural model invariance across the two waves.

Internalizing problems (T1&T3)

Internalizing problems was measured by two subscales of SDQ, *emotional symptoms* and *relationship problems*, consisting of 10 items on a 3-point response scale (0=not true, 1=somewhat true, 2=certainly true) (Goodman, 2001; Du et al., 2008). Referring to previous studies (Goodman et al., 2010), the score of internalizing problems is summed by the mean score of the subscales of *emotional symptoms* (five items, e.g., “Often unhappy, depressed or tearful.”) and *relationship problems* (five items, e.g., “Rather solitary, prefers to play alone.”), with a higher mean score indicating severer internalizing problems. In this study, Cronbach’s α values of internalizing problems were 0.72 (T1) and 0.69 (T3). The measurement model of internalizing problems ($\chi^2[165]=334.228, p<0.001$; CFI=0.943, TLI=0.935, RMSEA=0.032, SRMR=0.041) and significant scalar

model invariance of internalizing problems across the two waves.

Prosocial behavior (T1&T3)

Prosocial behavior was measured by one of the subscales of SDQ, *prosocial behavior* (5 items, e.g., “Kind to younger children”) (Goodman, 2001; Du et al., 2008), with a higher mean score indicating more prosocial behaviors. In this study, Cronbach’s α values of the prosocial problem were 0.77 (T1) and 0.75 (T3). The measurement model showed a good fit ($\chi^2[37]=105.60, p<0.001$; CFI=0.958, TLI=0.949, RMSEA=0.0483, SRMR=0.042) and significant scalar model invariance across the two waves.

Flourishing (T1&T3)

Flourishing was measured by the Flourishing Scale (FS), a brief 8-item summary measure of the respondent’s self-perceived success in important areas such as relationships, self-esteem, purpose, and optimism (e.g., “I lead a purposeful and meaningful life”, “My social relationships are supportive and rewarding”, and “I am competent and capable in the activities that are important to me”) (Diener et al., 2010; Tong & Wang, 2017). Each item was scored on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Scores for all items were summed to create a mean score, with a higher mean score indicating a greater degree of flourishing. In this study, Cronbach’s α values of flourishing were 0.93 (T1) and 0.95 (T3). The measurement model showed a good fit ($\chi^2[109]=536.853, p<0.001$; CFI=0.926, TLI=0.918, RMSEA=0.063, SRMR=0.045) and significant scalar model invariance across the two waves.

Demographic characteristics

Previous studies have found that gender, age, and family socioeconomic status affect parenting behaviors and adolescent psychological adjustment (Sun et al., 2021; Sznitman et al., 2022; Teuber et al., 2022; Vrolijk et al., 2020). Therefore, adolescent age, gender, and family socioeconomic status are named as covariates. Demographic information, including gender (0=female, 1=male) and age at T1, was obtained in the first wave of the survey. Family socioeconomic status (SES) was measured using four indicators: paternal and maternal educational levels and their occupation. Principal component analysis (PCA) was used to construct SES, with higher scores indicating higher levels of family socioeconomic status.

Missing Values

Of the 1083 target students, 5.4%, 3.4%, and 16.4% had missing data on parental autonomy support, and 5.0%, 3.0%, and 16.3% on parental psychological control at T1, T2, and T3, respectively. To assess whether the data were completely missing at random (MCAR), a Little's MCAR test was significant at all study variables, $\chi^2[586]=892.77$, $p<0.001$, indicating that the data were not missing completely at random (MCAR). To evaluate some possible reasons for missing data, a series of univariate *t*-tests and χ^2 tests were performed. Results indicated no statistically significant differences between completers and dropouts in baseline characteristics, including gender ($t = -1.67$, $p=0.094$), age ($t = -0.15$, $p=0.878$), internalizing problems ($t=0.27$, $p=0.828$), prosocial behavior ($t = -1.49$, $p=0.136$), and flourishing ($t = -1.00$, $p=0.320$). However, students who had severer externalizing problems at T1 were more likely to miss data ($t=2.84$, $p=0.005$).

Data Analysis Plan

As the linear model provided the best fit for both variables, it was used to conduct the subsequent parallel-process latent class growth analysis (PP-LCGM). Unconditional PP-LCGM (without covariates) was conducted to identify latent classes of the joint development trajectories of adolescents' perceived parental autonomy support and psychological control over three waves (Jung & Wickrama, 2008). This approach has been widely used to examine the co-occurring developmental trajectories of two closely related constructs (Sznitman et al., 2022). Considering the inconsistent scoring means for parental autonomy support and psychological control, raw scores of parental autonomy support and psychological control were mean-centered in the analysis of PP-LCGM. Seven models (from one to seven classes) were estimated by Mplus 8.0 (Muthén & Muthén, 2017). The optimal number of trajectory classes was determined by multiple criteria (Jung & Wickrama, 2008), included (1) lower the Akaike's information criterion (AIC), the Bayesian information criterion (BIC) and sample-size-adjusted BIC (a-BIC); (2) higher entropy values; (3) statistically significant *p* values for both the Lo–Mendell–Rubin likelihood ratio test (LMR–LRT) and the bootstrap likelihood ratio test (BLRT); (4) the 5% number of simples in each class at least; (5) the theoretical meaningfulness of the trajectory classes classification. All the models were estimated using robust maximum likelihood estimation (MLR), which adjusts for data nonnormality and handles missing data.

After identifying the optimal unconditional model, covariance analysis was performed to identify the difference in four joint trajectory profiles of adolescents' perceived

parental autonomy support and psychological control on adolescents' psychological adjustment at T3. Students' gender, age, SES (T1), and the baseline of adolescents' psychological adjustment (T1) were defined as covariates in the variance analysis.

Results

Descriptive Statistics

Table 1 shows the bivariate correlation, means, and standard deviations of all variables. Internalizing and externalizing problems at T3 were negatively and significantly associated with parental autonomy support ($rs=-0.33$ to -0.17) but positively and significantly associated with parental psychological control ($rs=0.20$ to 0.31). Prosocial behavior at T3 was positively and significantly associated with parental autonomy support ($rs=0.17$ to 0.29), and negatively and significantly associated with parental psychological control ($rs=-0.14$ to -0.07). Flourishing at T3 was positively and significantly associated with parental autonomy support ($rs=0.28$ to 0.52) but negatively and significantly associated with parental psychological control ($rs=-0.28$ to -0.14).

Joint Development Trajectories of Parental Autonomy Support and Psychological Control

Unconditional parallel-process LCGA was conducted to identify profiles of the joint development trajectories of adolescents' perceived parental autonomy support and psychological control over three waves. According to Jung and Wickrama (2008), the four-class model was selected as the optimal model in LCGA, which meets the following criteria. First, the size of the smallest classes of the four-class model was larger than 30, which was adequate to meet statistical robustness and keep the model stable. Second, the bootstrapped likelihood ratio test (BLRT) of the four-class model is less than 0.05 significant level, suggesting that the model with 4 classes has a better fit than the model with 3 classes. Third, the Lo, Mendell, and Rubin likelihood ratio test (LMR) of the four-class model is less than the 0.05 significance level. Fourth, the number of information criterion indices of AIC, BIC, and aBIC of the four-class model is much smaller than one to three-class models. Fifth, the entropy of the four-class model is greater than 0.70, which means a relatively higher classification accuracy. Sixth, the theoretical interpretation of the four-class model is more meaningful than the three-class model. Above all, the development trajectory of parental autonomy support and psychological control is used to identify four classes. Please see details in Table 2.

Table 1 Descriptive Statistics and Correlation for Key Variables (N=996)

Variables	M±SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Parental autonomy support at T1	4.93±1.50	1												
2. Parental autonomy support at T2	4.93±1.48	0.42***	1											
3. Parental autonomy support at T3	4.89±1.37	0.36***	0.46***	1										
4. Parental psychological control at T1	2.81±0.94	-0.35***	-0.28***	-0.28***	1									
5. Parental psychological control at T2	2.78±0.94	-0.29***	-0.43***	-0.42***	0.35***	1								
6. Parental psychological control at T3	2.72±0.96	-0.26***	-0.33***	-0.49***	0.39***	0.52***	1							
7. Internalizing problems at T1	0.50±0.33	-0.27***	-0.19***	-0.16***	0.31***	0.17***	0.16***	1						
8. Externalizing problems at T1	0.53±0.31	-0.30***	-0.24***	-0.23***	0.30***	0.21***	0.21***	0.53***	1					
9. Internalizing problems at T3	0.49±0.32	-0.17***	-0.25***	-0.28***	0.22***	0.20***	0.29***	0.44***	0.31***	1				
10. Externalizing problems at T3	0.52±0.30	-0.20***	-0.27***	-0.33***	0.20***	0.25***	0.31***	0.27***	0.42***	0.58***	1			
11. Prosocial behavior at T1	1.49±0.41	0.27***	0.17***	0.13***	-0.05***	-0.08*	-0.07***	-0.24***	-0.31***	-0.13***	-0.19***	1		
12. Prosocial behavior at T3	1.56±0.40	0.17***	0.17***	0.29***	-0.07*	-0.13***	-0.14***	-0.15***	-0.21***	-0.32***	-0.46***	0.30***	1	
13. Flourishing at T1	5.59±1.17	0.50***	0.28***	0.24***	-0.17***	-0.14***	-0.18***	-0.40***	-0.39***	-0.26***	-0.30***	0.36***	0.23***	1
14. Flourishing at T3	5.25±1.21	0.28***	0.34***	0.52***	-0.14***	-0.21***	-0.28***	-0.20***	-0.27***	-0.40***	-0.45***	0.26***	0.45***	0.37***

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

The four joint trajectory profiles of perceived parental autonomy support and psychological control were depicted in Fig. 1; Table 3. Specifically, class 1, labeled as *Stable Supportive Parenting* ($n=314$, 31.4%), was characterized by a moderate to high initial level of parental autonomy support and a low initial level of parental psychological control (intercept=1.05, -0.59, $ps < 0.001$), with a stable tendency in autonomy support and a downward linear trend in psychological control (slope=-0.00, $p > 0.05$; slope=-0.02, $p < 0.001$). Class 2, labeled as *Increasing-Adaptive Parenting* ($n=87$, 8.7%), was characterized by a lower initial level of parental autonomy support and a moderate initial level of parental psychological control (intercept=-1.82, $p < 0.001$; intercept=0.08, $p > 0.05$). An upward linear trend was observed for parental autonomy support and a downward linear trend for parental psychological control (slope=0.85, -0.27, $ps < 0.01$). Class 3, labeled as *Eroding-Support Parenting* ($n=484$, 48.6%), was moderate on initial parental autonomy support and moderate to high on psychological control (intercept=0.17, $p > 0.05$; intercept=0.23, $p < 0.001$). A downward linear trend was observed for parental autonomy support, and parental psychological control remained stable (slope=-0.26, $p < 0.001$; slope=0.04, $p > 0.05$). Class 4, labeled as *Unilateral-Control Parenting* ($n=111$, 11.2%), showed a lower initial level of parental autonomy support but a higher initial level of parental psychological control (intercept=-1.77, 0.98, $ps < 0.001$), both of which remained stable (slope=-0.03, 0.11, $ps > 0.05$).

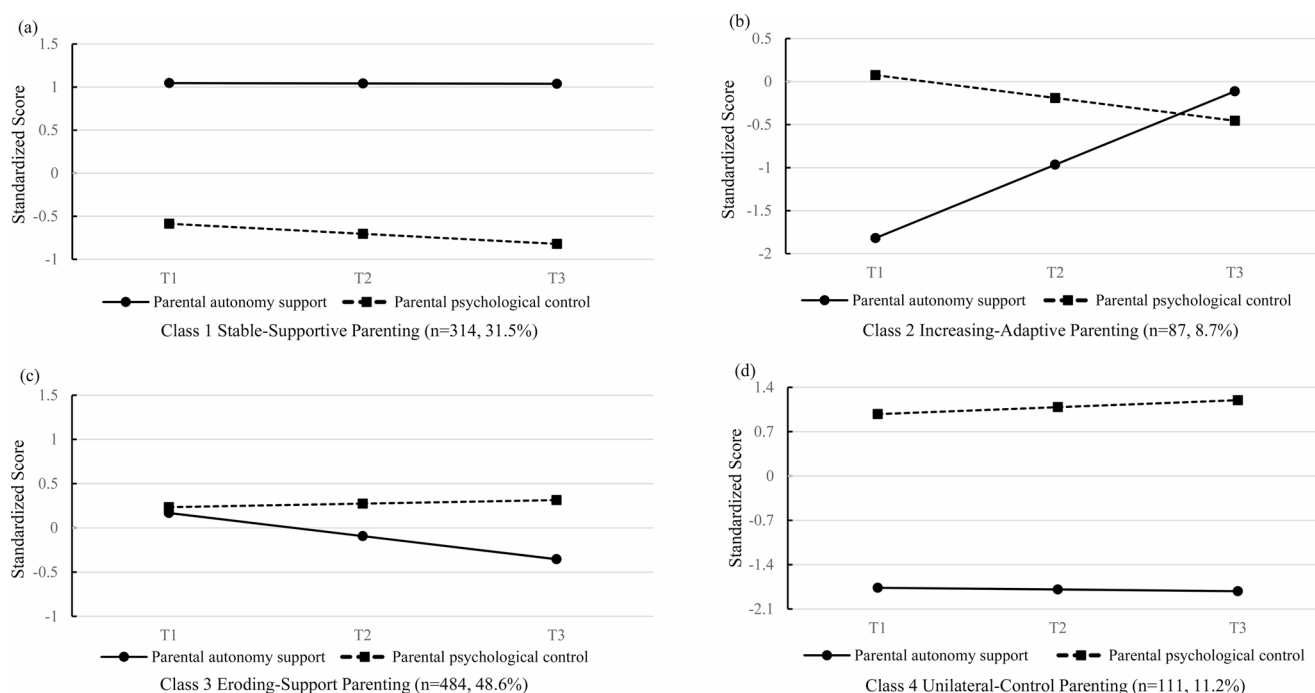
Class Differences in Adolescents' Psychological Adjustment

Analysis of covariance (ANCOVA) was used to address the effects of parenting behaviors on adolescent psychological adjustment, in which the four different developmental trajectories of perceived parental autonomy support and psychological control were considered as independent variables, adolescent self-reported internalizing and externalizing problems, prosocial behavior, and flourishing as dependent variables. Adolescents' gender, initial age, family SES, and the baseline level of psychological adjustment were controlled as covariates. The results showed that adolescents in the *Stable Support Parenting* class showed the lowest scores in externalizing and internalizing problems and the highest scores in prosocial behavior and flourishing. Adolescents in the *Unilateral-Controlling Parenting* class showed the highest scores in externalizing and internalizing problems and the lowest scores in flourishing and prosocial behavior.

Compared with adolescents in the *Stable Support Parenting* class, those in the *Eroding-Support Parenting* class, which enrolled the largest percentage of adolescents,

Table 2 Fit Statistics for Parallel Latent Class Growth Analyses

Classes	AIC	BIC	aBIC	Entropy	p(LMR)	p(BLRT)	number of people in each class (%)
1c	17827.246	17876.283	17844.523				
2c	16907.112	16980.669	16933.028	0.688	0.000	0.000	510 (50.8); 486 (48.8)
3c	16642.671	16740.746	16677.225	0.746	0.000	0.000	106 (10.6); 585 (58.7); 305 (30.6)
4c	16562.691	16685.285	16605.884	0.727	0.015	0.000	314 (31.5); 111 (11.1); 87 (8.7); 484 (48.6)
5c	16526.218	16673.33	16578.049	0.754	0.300	0.000	474 (47.6); 95 (9.5); 308 (30.9); 105 (10.5); 14 (1.4)
6c	16487.149	16658.780	16547.618	0.731	0.591	0.000	430 (43.2); 87 (8.7); 283 (28.4); 124 (12.5); 41 (4.1); 31 (3.1)
7c	16441.737	16637.886	16510.845	0.740	0.762	0.000	394 (39.6); 30 (3.0); 277 (27.8); 36 (3.6); 138 (13.9); 73 (7.3); 48 (4.8)

**Fig. 1** The joint developmental trajectories of perceived parental autonomy support and psychological control among Chinese adolescents**Table 3** Parameter Estimates for Each Sub-trajectory of Parental Autonomy Support and Psychological Control 4-class Solutions

Variables	Class	Intercept/M (SE)	p	Slope/M (SE)	p
Parental autonomy support	Class One	1.05 (0.06)	0.000	-0.00 (0.04)	0.932
	Class Two	-1.82 (0.38)	0.000	0.85 (0.29)	0.003
	Class Three	0.17 (0.13)	0.210	-0.26 (0.07)	0.000
	Class Four	-1.77 (0.20)	0.000	-0.03 (0.12)	0.828
Parental psychological control	Class One	-0.59 (0.05)	0.000	-0.12 (0.03)	0.000
	Class Two	0.08 (0.16)	0.630	-0.27 (0.08)	0.001
	Class Three	0.23 (0.07)	0.000	0.04 (0.04)	0.342
	Class Four	0.98 (0.08)	0.000	0.11 (0.06)	0.074

reported more internalizing and externalizing problems, and less prosocial behavior and flourishing, and adolescents in the *Increasing-Adaptive Parenting* class have comparable levels in internalizing and externalizing problems but lower levels in prosocial behavior and flourishing.

Increasing-Adaptive Parenting class, *Eroding-Support Parenting* class, and *Unilateral-Control Parenting* class showed the same level of prosocial behavior. Adolescents in the *Increasing-Adaptive Parenting* class and *Eroding-Support Parenting* class reported the same levels of flourishing. Please see details in Table 4; Fig. 2.

Discussion

Although previous studies had explored the heterogeneity of developmental trajectories of autonomy support and psychological control independently, and their relationship with adolescent developmental outcomes among Chinese adolescents (Liu et al., 2025a, b; Zhou et al., 2024, 2025), the joint developmental trajectories within families and their differential effects across developmental domains remain unclear. Hence, this study used a longitudinal person-oriented approach (PP-LCGM) to further investigate this issue,

Table 4 Descriptive Statistics and Effect Sizes (Cohen's d) for Group Differences in Outcomes after Controlling for Covariates

Outcomes	Stable-Supportive Parenting(C1)	Increasing-Adaptive Parenting(C2)	Eroding-Support Parenting (C3)		Unilateral-Control Parenting (C4)	
	M(SE)	M(SE)	M(SE)		M(SE)	
Internalizing problems	0.41 (0.02) ^d	0.44 (0.04) ^{cd}	0.52 (0.02) ^{bc}		0.63 (0.03) ^a	
Externalizing problems	0.44 (0.02) ^d	0.49 (0.04) ^{cd}	0.56 (0.01) ^{bc}		0.64 (0.03) ^a	
Prosocial behavior	1.68 (0.02) ^a	1.46 (0.05) ^b	1.51 (0.02) ^b		1.50 (0.04) ^b	
Flourishing	5.75 (0.07) ^a	5.22 (0.14) ^b	5.05 (0.06) ^b		4.60 (0.13) ^c	
Comparison class vs. reference class (Cohen's d)						
	Class 1 vs. Class 2	Class 1 vs. Class 3	Class 1 vs. Class 4	Class 2 vs. Class 3	Class 2 vs. Class 4	Class 3 vs. Class 4
Internalizing problems	0.045	0.093 ^{***}	0.253 ^{***}	0.035	0.155 ^{***}	0.133 ^{**}
Externalizing problems	0.061	0.107 ^{***}	0.240 ^{***}	0.036	0.138 ^{***}	0.099 [*]
Prosocial behavior	0.215 ^{***}	0.119 ^{***}	0.172 ^{***}	0.020	0.026	0.012
Flourishing	0.119 ^{***}	0.112 ^{***}	0.252 ^{***}	0.016	0.101 ^{***}	0.102 ^{***}

M=mean value, SE standard error; abcd Fisher's Least Significant Difference (LSD). The statistical significance of group mean differences is reflected by the asterisks following the corresponding Cohen's d values. A positive Cohen's d value indicates higher mean scores in the comparison versus the reference group

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

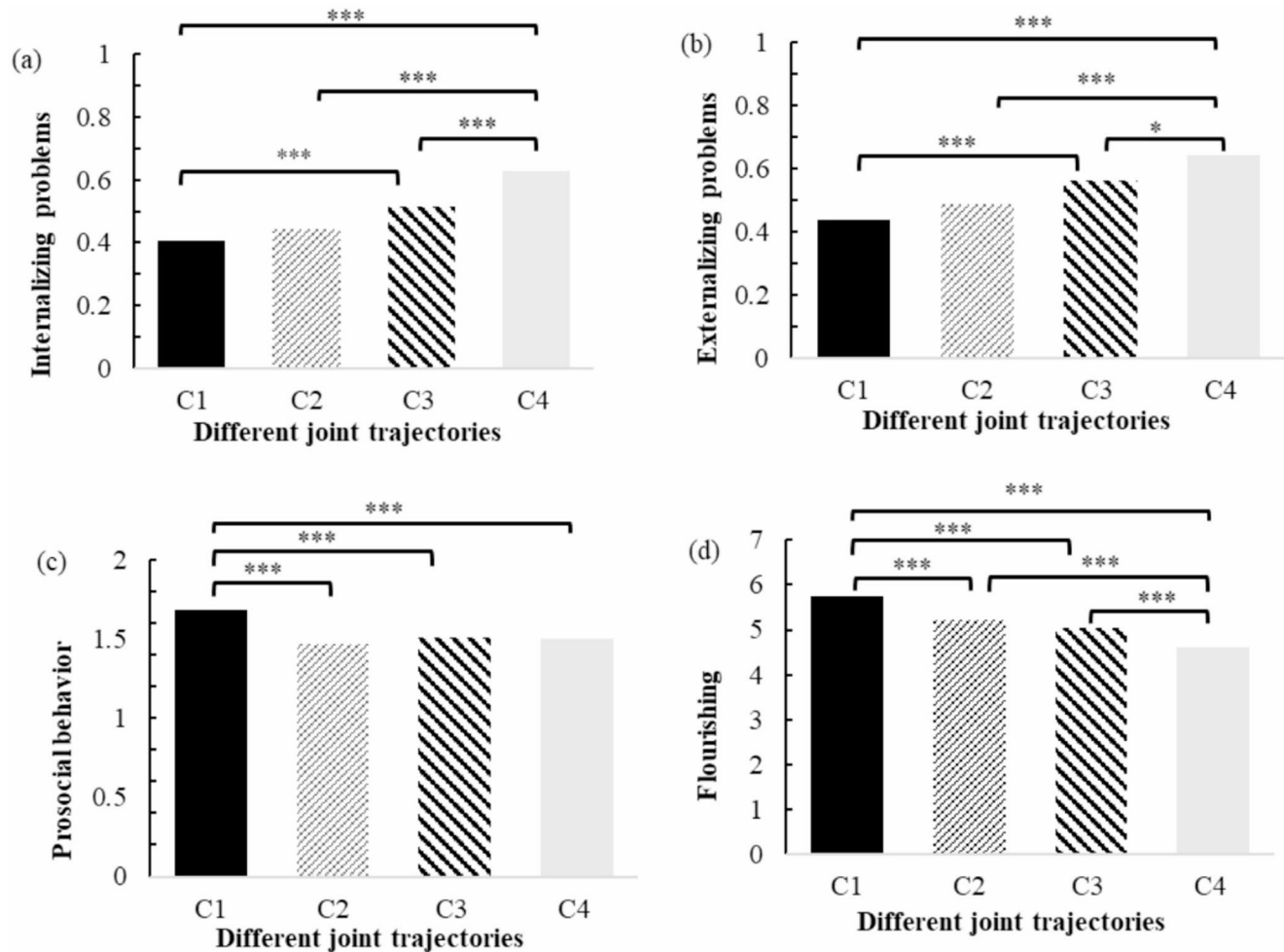


Fig. 2 Associations between different joint trajectories of parental psychological control and autonomy support and psychological adjustment after controlling for covariates, C1=Stable-Supportive

Parenting; C2=Increasing-Adaptive Parenting; C3=Eroding-Support Parenting; C4=Unilateral-Control Parenting, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

identifying four distinct classes. The results revealed significant differences in psychological adjustment across classes, and demonstrated that the relationships between class membership and psychological adjustment vary by developmental areas.

Joint Trajectories in Parental Autonomy Support and Psychological Control during Adolescence

Four classes of parenting developmental trajectories were identified using a longitudinal person-oriented method: *Stable-Supportive Parenting* (31.5%, sustained high autonomy support and initially low, decreasing psychological control), *Increasing-Adaptive Parenting* (8.7%, initially low but increasing autonomy support and initially moderate but decreasing psychological control), *Eroding-Support Parenting* (48.6%, initially moderate but decreasing autonomy support and persistently moderate-high psychological control) and *Unilateral-Control parenting* (11.2%, consistently low autonomy support and consistently high psychological control). This finding extended beyond the previous study by identifying four distinct trajectories of psychological control and three trajectories of supportive parenting independently among Chinese adolescents (Zhou et al., 2025). Consistent with prior studies, the largest proportion of adolescents in this sample belonged to the group with parents who became less supportive while remaining controlling – 48.6% in the current study compared to 44.3% among Swiss adolescents (Sznitman et al., 2022). This suggests that as adolescents seek greater autonomy and independence, many parents continue to employ low-support and controlling approaches toward their children's emotions and behaviors. The finding was also in accordance with a previous study suggesting that only a few proportions (11.2%) of parents still keep the same way to discipline children, which reflects that most parents were adjusting their parenting behaviors during adolescence (Heel et al., 2019; Liu et al., 2025a, b; Rogers et al., 2020; Sznitman et al., 2022; Zhou et al., 2024, 2025).

The relationship between parental autonomy support and psychological control is not unidirectional but individually different. Considering the intercept, as for *Increasing-Adaptive Parenting*, the initially lowest level of autonomy support does not correspond to the highest level of psychological control but to the moderate level of psychological control; as for *Eroding-Support Parenting*, the original level of autonomy support is moderate, while the initial level of psychological control is high, which are not compared to each other. Considering the slope, the findings showed that the decreasing tendency of psychological control doesn't mean the increasing tendency of autonomy support. As for *Stable-Supportive Parenting*, parental autonomy support

remained stable, while psychological control decreased; as for *Eroding Support Parenting*, parental autonomy support decreased, while psychological control remained stable. Notably, the developmental direction of parental autonomy support and psychological control is not opposite but multi-directional. The results validated Silk's (2003) opinion that the relationship between psychological control and autonomy granting was a nearly orthogonal relationship that parents could be neither absent from autonomy granting, nor from psychologically intrusive and controlling.

Joint Trajectories of Parenting and their Relationships with Adolescent Adjustment

The results illustrated that the beneficial effects of parental autonomy support and costs of psychological control can also be applied in Chinese cultural environment, supporting that self-determination theory is culturally universal (Bradshaw et al., 2025). Specifically, self-determination theory suggests that all human beings have the fundamental needs to feel related, competent, and autonomous to develop and function optimally (Deci & Ryan, 2000). The need for autonomy plays an important role in adolescents' internalization of societal norms and rules, the development of motivational orientations, and self-regulation, which are the underlying processes of psychosocial development (Bradshaw et al., 2025; Rogers et al., 2020; Ryan & Deci, 2017; Soenens et al., 2007). This study showed that, in line with previous studies (Ahn et al., 2025; Zhou et al., 2025), adolescents who were classified in *Stable Supportive Parenting* group had the best adjustment outcomes. That is to say, the fewest internalizing and externalizing problems, the most prosocial behaviors, and the highest level of flourishing. This was the reverse case for adolescents in the *Unilateral-Control Parenting* group. There could be an explanation that parental autonomy support as an autonomy-supportive context, including actively taking children's perspectives, as well as providing support and encouragement for self-expression, initiation, and self-endorsed activities, has proven to illustrate greater psychological health and well-being (Bradshaw et al., 2025; Lansford et al., 2014; Tanaka et al., 2023; Vasquez et al., 2016). Parental psychological control as a controlling context undermines intrinsic motivation and impedes internalization of societal norms and rules, for parents adopt manipulative strategies to control and regulate children's thinking and feeling (Chyung et al., 2022; Rogers et al., 2020; Scharf & Goldner, 2018).

The results showed that the relationship between parenting practices and adolescent psychological adjustment varies across developmental areas, supporting Cultural normativeness theory (Deater-Deckard & Dodge, 1997; Lansford et al., 2005). Specifically, compared with *Increasing-Adaptive*

Parenting (class 2) and *Eroding-Support Parenting* (class 3), adolescents in *Unilateral-Control Parenting* (class 4) had worse psychological adjustment, in terms of more externalizing and internalizing problems and less flourishing, but similar prosocial behaviors. It could be inferred that psychological control and autonomy support play a partial role of to guide children's prosocial behaviors to conform to social values in collective culture (Luebbe et al., 2018). One possible explanation is that prosocial behavior is more aligned with collectivist norms. In collectivist cultures, where adolescents generally exhibit higher overall levels of prosocial behavior, the negative impact on prosocial behavior resulting from high psychological control and low autonomy support (class 4) may be less pronounced. Alternatively, this may also be attributed to the complex mechanisms underlying psychological control. Existing research also found that psychological control contributed to the promotion of prosocial behavior (Agalar et al., 2025), and different dimensions of psychological control (guilt induction, love withdrawal, and solicitation) are associated with distinct patterns of prosocial behaviors in Chinese children (Zhang & Wang, 2024). All in all, empirical studies have proved that parental psychological control was negatively associated with prosocial behavior across cultures (Lansford et al., 2018). In this study, compared with internalizing and externalizing problems and flourishing, prosocial behavior has cultural distinctiveness, and the longitudinal person-centered method is accessible to find new conclusions about the relationship between prosocial behaviors and parenting in a cultural background.

The results indicated the important roles of the changes in parenting behaviors on adolescent adjustment. Comparing *Eroding-Support Parenting* (class 3) with *Stable-Supportive Parenting* (class 1), there were significant differences in both negative aspects and positive aspects of adolescent adjustment. That is to say, during adolescence, when parents reduce autonomy support to children, it may not only deteriorate the negative outcomes of development but also affect the positive outcomes of development. Meanwhile, comparing *Increasing-Adaptive Parenting* (class 2) with *Stable-Supportive Parenting* (class 1), it has been found that there was no difference in negative aspects of adjustment. That is to say, the improvement of autonomy-related parenting has an obvious effect on preventing children from more internalizing and externalizing problems. The results indicated the importance of considering developmental speed to understand the link between parenting practice and adolescents (Desjardins & Leadbeater, 2017; Qin et al., 2009).

Strengths and Limitations

This study has two notable strengths. First, it employs a three-time-point longitudinal design to examine the heterogeneous joint trajectories of psychological control and autonomy support from early to middle adolescence—a period when parenting behaviors change more rapidly than in late adolescence (Rogers et al., 2020). By incorporating both psychological control and autonomy support, this study explored the overall typology of autonomy-related parenting trajectory within the family and revealed the complex role of psychological control and autonomy support in shaping adolescents' psychological adjustment. Second, by including four adolescent developmental outcome variables, this study examined the impact of different parenting trajectories on adolescent outcomes from both positive and negative dimensions, as well as from a cultural perspective. The results highlight the heterogeneous effects of autonomy-related parenting trajectories on different developmental outcomes.

Though the current study used a person-centered method to better disclose individual differences in adolescents' perceived parenting behaviors, development trajectories, and their relationship with adolescents' adjustment. However, there were still some limitations in this study. First, this study only examined one form of parental control, i.e., psychological control. However, beyond psychological control, behavioral control was another form of parental control, which refers to parents communicating clear expectations about appropriate behaviors to children and monitoring children's behaviors (Barber et al., 2005; Soenens et al., 2007). Parental behavioral control contributes to adolescent positive development (Wang et al., 2007). Further study could examine the development trajectories of psychological control and behavioral control at the same time in order to have a deeper understanding of parental control and its effect on adolescent development. Second, our study only considered adolescent perception of parental autonomy support and psychological control. However, research has found that there exists a bias between parental perception and adolescent perception of parenting behaviors (Luo et al., 2020). Moreover, mother and father may adopt different autonomy-related parenting behaviors, which may have different roles on adolescent developmental trajectories (Liu et al., 2025a, b; Vrolijk et al., 2020). Therefore, further study could take parents' perception into consideration and make a distinction between maternal parenting behaviors and paternal parenting behaviors.

Conclusion

Previous cross-sectional studies with person-centered approaches indicated that psychological control and autonomy support can collectively form an overall autonomy-related parenting practice within the family context. However, longitudinal studies identified the different trajectories of each parenting behavior separately. Therefore, this study conducted a person-centered method to examine different joint trajectories of adolescent-perceived autonomy support and psychological control from early to middle adolescence and their effects on adolescents' adjustment. Four joint trajectory profiles of perceived parental autonomy support and psychological control were identified in the Chinese adolescent sample: *Stable-Supportive Parenting* (31.4%), *Increasing-Adaptive Parenting* (8.7%), *Eroding-Support Parenting* (48.6%), and *Unilateral-Control Parenting* (11.2%). Adolescents in *Stable Supportive Parenting* class had the best adjustment outcome, including lowest levels of internalizing and externalizing problems and the highest levels of prosocial behavior and flourishing, while adolescents in *Unilateral-Control Parenting* class had the poorest adjustment outcome. Moreover, the relationship between parenting practices and adolescent psychological adjustment varies across developmental areas. Compared with *Increasing-Adaptive Parenting* and *Eroding-Support Parenting*, adolescents in *Unilateral-Control Parenting* had more externalizing and internalizing problems and less flourishing, but similar prosocial behaviors. Comparing *Increasing-Adaptive Parenting* with *Stable-Supportive Parenting*, there were significant differences in prosocial behavior and flourishing, but no difference in internalizing and externalizing problems. These findings emphasize the significance of considering individual differences in understanding the joint developmental trajectories of psychological control and autonomy support, and cumulative effects on different aspects of adolescents' developmental outcomes.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s10964-025-02272-y>.

Acknowledgements We are grateful to the participating schools that helped collect the data. We also thank parents for granting permission and students for their participation. We are grateful to the adolescents of this study for their participation.

Authors' Contributions Y. L. conceived and designed the analysis and wrote the article; R. L. participated in statistical analysis and drafted the manuscript; Z. Y. participated in data collection, coordination of the study, and helped to draft the manuscript; R. L. helped with the statistical analysis and reviewed the manuscript; H. Y. helped to review the manuscript; F. C. conceived of the study, participated in its design and coordination, and helped to draft the manuscript; Y. W. conceived of the study, participated in its design and coordination, and helped to draft the manuscript. All authors read and approved the final manu-

script.

Funding This work was supported by the National Social Science Fund of China [Grant Number: 25CSH087], Open Research Fund of the State Key Laboratory of Cognitive Neuroscience and Learning, and the Fundamental Research Funds for the Central Universities [Grant Number: 2024ZLQN33].

Declarations

Ethics Approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Institutional Review Board of the Faculty of Psychology, Beijing Normal University (CNL_A_0003_004).

Informed Consent Informed consent was obtained from the parents or legal guardians of all participants, and assent was obtained from the participating adolescents.

Conflict of Interest The authors declare no competing interests.

References

- Agalar, A., Laible, D., Carlo, G., & Liew, J. (2025). Longitudinal associations between parental psychological control and adolescents' intergroup attitudes to prosocial behaviors towards ethnic outgroups. *Journal of Adolescence*, 97(1), 209–218. <https://doi.org/10.1002/jad.12411>
- Ahn, J. S., Kil, H., Ratelle, C. F., & Mageau, G. A. (2025). Profiles of autonomy support and controlling parenting: Mixing the two predicts lower child-perceived autonomy support. *Journal of Family Psychology*. <https://doi.org/10.1037/fam0001346>
- Barber, B. K., Stolz, H. E., Olsen, J. A., Collins, W. A., & Burchinal, M. (2005). Parental support, psychological control, and behavioral control: Assessing relevance across time, culture, and method. *Monographs of the Society for Research in Child Development*, 70(4), 1–147. <https://doi.org/10.1111/j.1540-5834.2005.00365.x>
- Bradshaw, E. L., Duineveld, J. J., Conigrave, J. H., Steward, B. A., Ferber, K. A., Joussemet, M., Parker, P. D., & Ryan, R. M. (2025). Disentangling autonomy-supportive and psychologically controlling parenting: A meta-analysis of self-determination theory's dual process model across cultures. *American Psychologist*, 80(6), 879–895. <https://doi.org/10.1037/amp0001389>
- Chao, R. K. (1994). Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training. *Child Development*, 65(4), 1111–1119. <https://doi.org/10.2307/1131308>
- Chen, H. Y., Ng, J., & Pomerantz, E. M. (2021). Why is self-esteem higher among American than Chinese early adolescents? The role of psychologically controlling parenting. *Journal of Youth and Adolescence*, 50(9), 1856–1869. <https://doi.org/10.1007/s10964-021-01474-4>
- Chyung, Y. J., Lee, Y. A., Ahn, S. J., & Bang, H. S. (2022). Associations of perceived parental psychological control with depression, anxiety in children and adolescents: A meta-analysis. *Marriage and Family Review*, 58(2), 158–197. <https://doi.org/10.1080/01494929.2021.1941496>
- Deater-Deckard, K., & Dodge, K. A. (1997). Externalizing behavior problems and discipline revisited: Nonlinear effects and variation by culture, context, and gender. *Psychological Inquiry*, 8(3), 161–175. https://doi.org/10.1207/s15327965pli0803_1
- Deci, E. L., & Ryan, R. M. (2000). The what and why of goal pursuits: Human needs and the self-determination of behavior.

- Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01
- Desjardins, T., & Leadbeater, B. J. (2017). Changes in parental emotional support and psychological control in early adulthood: Direct and indirect associations with educational and occupational adjustment. *Emerging Adulthood*, 5(3), 177–190. <https://doi.org/10.1177/2167696816666974>
- Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., won, Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research*, 97(2), 143–156. <https://doi.org/10.1007/s11205-009-9493-y>
- Distefano, R., Masten, A. S., & Motti-Stefanidi, F. (2021). Autonomy-supportive parenting in immigrant and non-immigrant youth during early adolescence. *Journal of Child and Family Studies*, 30(5), 1171–1183. <https://doi.org/10.1007/s10826-021-01943-1>
- Du, Y., Kou, J., & Coghill, D. (2008). The validity, reliability and normative scores of the parent, teacher and self-report versions of the strengths and difficulties questionnaire in China. *Child and Adolescent Psychiatry and Mental Health*, 2(8), 1–15. <https://doi.org/10.1186/1753-2000-2-8>
- Finkenauer, C., Engels, R. C. M. E., & Baumeister, R. F. (2005). Parenting behaviour and adolescent behavioural and emotional problems: The role of self-control. *International Journal of Behavioral Development*, 29(1), 58–69. <https://doi.org/10.1080/01650250440000333>
- Goodman, A., Lamping, D. L., & Ploubidis, G. B. (2010). When to use broader internalising and externalising subscales instead of the hypothesised five subscales on the strengths and difficulties questionnaire (SDQ): Data from British parents, teachers and children. *Journal of Abnormal Child Psychology*, 38(8), 1179–1191. <https://doi.org/10.1007/s10802-010-9434-x>
- Goodman, R. (2001). Psychometric properties of the strengths and difficulties questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40(11), 1337–1345.
- Greenspoon, P. J., & Saklofske, D. H. (2001). Toward an integration of subjective well-being and psychopathology. *Social Indicators Research*, 54, 81–108. <https://www.jstor.org/stable/27526929>
- Heel, M., Van, Noortgate, W., Van Den, Bijttebier, P., Colpin, H., Goossens, L., Verschueren, K., & Van Leeuwen, K. (2019). Parenting and externalizing problem behavior in adolescence: Combining the strengths of variable-centered and person-centered approaches. *Developmental Psychology*, 55(3), 653–673. <https://doi.org/10.1037/dev0000644.suppl>
- Joussemet, M., Landry, R., & Koestner, R. (2008). A self-determination theory perspective on parenting. *Canadian Psychology*, 49(3), 194–200. <https://doi.org/10.1037/a0012754>
- Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass*, 2(1), 302–317. <https://doi.org/10.1111/j.1751-9004.2007.00054.x>
- Lansford, J. E., Chang, L., Dodge, K. A., Malone, P. S., Oburu, P., Palmérus, K., Bacchini, D., Pastorelli, C., Bombi, A. S., Zelli, A., Tapanya, S., Chaudhary, N., Deater-Deckard, K., Manke, B., & Quinn, N. (2005). Physical discipline and children's adjustment: Cultural normativeness as a moderator. *Child Development*, 76(6), 1234–1246. <https://doi.org/10.1111/j.1467-8624.2005.00847.x>
- Lansford, J. E., Godwin, J., Al-Hassan, S. M., Bacchini, D., Bornstein, M. H., Chang, L., Chen, B., Bin, Deater-Deckard, K., Di Giunta, L., Dodge, K. A., Malone, P. S., Oburu, P., Pastorelli, C., Skinner, A. T., Sorbring, E., Steinberg, L., Tapanya, S., Alampay, L. P., Tirad, U., L. M., & Zelli, A. (2018). Longitudinal associations between parenting and youth adjustment in twelve cultural groups: Cultural normativeness of parenting as a moderator. *Developmental Psychology*, 54(2), 362–377. <https://doi.org/10.1037/dev0000416>
- Lansford, J. E., Laird, R. D., Pettit, G. S., Bates, J. E., & Dodge, K. A. (2014). Mothers' and fathers' autonomy-relevant parenting: Longitudinal links with adolescents' externalizing and internalizing behavior. *Journal of Youth and Adolescence*, 43(11), 1877–1889. <https://doi.org/10.1007/s10964-013-0079-2>
- Liu, X., Cui, L., & Yang, Y. (2025a). The developmental trajectory of Chinese adolescents' self-compassion and its relationship with parenting styles: A longitudinal study. *Journal of Youth and Adolescence*, 54, 665–681. <https://doi.org/10.1007/s10964-024-0208-7-3>
- Liu, Y., Wang, M., & Hu, Y. (2025b). Heterogeneous trajectories of parental psychological aggression from middle childhood to early adolescence in china: Associations with child- and family-level predictors and children's developmental outcomes. *Journal of Youth and Adolescence*, 54, 1079–1096. <https://doi.org/10.1007/s10964-024-02115-2>
- Luebbe, A. M., Tu, C., & Fredrick, J. W. (2018). Socialization goals, parental psychological control, and youth anxiety in Chinese students: Moderated indirect effects based on school type. *Journal of Youth and Adolescence*, 47(2), 413–429. <https://doi.org/10.1007/s10964-017-0784-3>
- Luo, R., Chen, F., Yuan, C., Ma, X., & Zhang, C. (2020). Parent-child discrepancies in perceived parental favoritism: Associations with children's internalizing and externalizing problems in Chinese families. *Journal of Youth and Adolescence*, 49(1), 60–73. <https://doi.org/10.1007/s10964-019-01148-2>
- Mageau, G. A., Ranger, F., Joussemet, M., Koestner, R., Moreau, E., & Forest, J. (2015). Validation of the perceived parental autonomy support scale (P-PASS). *Canadian Journal of Behavioural Science*, 47(3), 251–262. <https://doi.org/10.1037/a0039325>
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus User's Guide. Eighth Edition*. <https://www.StatModel.com>
- National Bureau of Statistics of the People's Republic of China. (2020). *China statistical yearbook 2019*. China Statistics.
- Pereira, A. I. F., Canavarro, C., Cardoso, M. F., & Mendonça, D. (2009). Patterns of parental rearing styles and child behaviour problems among Portuguese school-aged children. *Journal of Child and Family Studies*, 18(4), 454–464. <https://doi.org/10.1007/s10826-008-9249-3>
- Pinquart, M. (2017). Associations of parenting dimensions And styles with externalizing problems of children And adolescents: An updated meta-analysis. *Developmental Psychology*, 53(5), 873–932. <https://doi.org/10.1037/dev0000295.suppl>
- Pomerantz, E. M., & Wang, Q. (2009). The role of parental control in children's development in Western and East Asian countries. *Current Directions in Psychological Science*, 18(5), 285–289. <https://www.jstor.org/stable/20696050>
- Qin, L., Pomerantz, E. M., & Wang, Q. (2009). Are gains in decision-making autonomy during early adolescence beneficial for emotional functioning? The case of the united States and China. *Child Development*, 80(6), 1705–1721. <https://www.jstor.org/stable/25592104>
- Rogers, A. A., Padilla-Walker, L. M., McLean, R. D., & Hurst, J. L. (2020). Trajectories of perceived parental psychological control across adolescence and implications for the development of depressive and anxiety symptoms. *Journal of Youth and Adolescence*, 49(1), 136–149. <https://doi.org/10.1007/s10964-019-0107-0-7>
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. The Guilford Press.
- Scharf, M., & Goldner, L. (2018). If you really love me, you will do/be... parental psychological control and its implications for

- children's adjustment. *Developmental Review*, 49, 16–30. <https://doi.org/10.1016/j.dr.2018.07.002>
- Sebastian, C., Burnett, S., & Blakemore, S. J. (2008). Development of the self-concept during adolescence. *Trends in Cognitive Sciences*, 12(11), 441–446. <https://doi.org/10.1016/j.tics.2008.07.008>
- Shi, M., & Tan, C. Y. (2021). Parental autonomy-support, parental control, SES, and mathematics achievement: A latent profile analysis. *Journal of Research in Childhood Education*, 35(4), 535–549. <https://doi.org/10.1080/02568543.2020.1752336>
- Silk, J. S., Morris, A. S., Kanaya, T., & Steinberg, L. (2003). Psychological control and autonomy granting: Opposite ends of a continuum or distinct constructs? *Journal of Research on Adolescence*, 13(1), 113–128. <https://doi.org/10.1111/1532-7795.1301004>
- Soenens, B., Vansteenkiste, M., Lens, W., Luyckx, K., Goossens, L., Beyers, W., & Ryan, R. M. (2007). Conceptualizing parental autonomy support: Adolescent perceptions of promotion of independence versus promotion of volitional functioning. *Developmental Psychology*, 43(3), 633–646. <https://doi.org/10.1037/0012-1649.43.3.633>
- Spitz, A., Winkler Metzke, C., & Steinhausen, H. C. (2021). Growth trajectories of perceived parental behavior during adolescence. *Child Psychiatry and Human Development*, 52(6), 1154–1163. <https://doi.org/10.1007/s10578-020-01095-1>
- Sun, L., Ju, J., Kang, L., & Bian, Y. (2021). More control, more conflicts? Clarifying the longitudinal relations between parental psychological control and parent-adolescent conflict by disentangling between-family effects from within-family effects. *Journal of Adolescence*, 93, 212–221. <https://doi.org/10.1016/j.adolescence.2021.11.004>
- Sznitman, G. A., Antonietti, J. P., Van Petegem, S., Schwartz, S. J., Baudat, S., & Grégoire Zimmermann. (2022). Trajectories of perceived parenting across an educational transition: Associations with psychosocial development among Swiss adolescents. *Developmental Psychology*, 58(8), 1557–1573. <https://doi.org/10.1037/dev0001367.supp>
- Tanaka, A., Tamura, A., Ishii, R., Ishikawa, S., Ichi, Nakazato, N., Ohtani, K., Sakaki, M., Suzuki, T., & Murayama, K. (2023). Longitudinal association between maternal autonomy support and controlling parenting and adolescents' depressive symptoms. *Journal of Youth and Adolescence*, 52(5), 1058–1073. <https://doi.org/10.1007/s10964-022-01722-1>
- Teuber, Z., Tang, X., Sielemann, L., Otterpohl, N., & Wild, E. (2022). Autonomy-related parenting profiles and their effects on adolescents' academic and psychological development: A longitudinal person-oriented analysis. *Journal of Youth and Adolescence*, 51(7), 1333–1353. <https://doi.org/10.1007/s10964-021-01538-5>
- Tong, K. K., & Wang, Y. Y. (2017). Validation of the flourishing scale and scale of positive and negative experience in a Chinese community sample. *Plos One*, 12(8), 1–10. <https://doi.org/10.1371/journal.pone.0181616>
- Van Petegem, S., Zimmer-Gembeck, M. J., Soenens, B., Vansteenkiste, M., Brenning, K., Mabbe, E., Vanhalst, J., & Zimmermann, G. (2017). Does general parenting context modify adolescents' appraisals and coping with a situation of parental regulation? The case of autonomy-supportive parenting. *Journal of Child and Family Studies*, 26(9), 2623–2639. <https://doi.org/10.1007/s10826-017-0758-9>
- Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, 23(3), 263–280. <https://doi.org/10.1037/a0032359>
- Vasquez, A. C., Patall, E. A., Fong, C. J., Corrigan, A. S., & Pine, L. (2016). Parent autonomy support, academic achievement, and psychosocial functioning: A meta-analysis of research. *Educational Psychology Review*, 28(3), 605–644. <https://doi.org/10.1007/s10648-015-9329-z>
- Vroljik, P., Van Lissa, C. J., Branje, S. J. T., Meeus, W. H. J., & Keizer, R. (2020). Longitudinal linkages between father and mother autonomy support and adolescent problem behaviors: between-family differences and within-family effects. *Journal of Youth and Adolescence*, 49(11), 2372–2387. <https://doi.org/10.1007/s10964-020-01309-8>
- Wang, Q., Pomerantz, E. M., & Chen, H. (2007). The role of parents' control in early adolescents' psychological functioning: A longitudinal investigation in the United States and China. *Child Development*, 78(5), 1592–1610. <https://doi.org/10.1111/j.1467-8624.2007.01085.x>
- Wong, T. K. Y., Konishi, C., & Kong, X. (2021). Parenting and prosocial behaviors: A meta-analysis. *Social Development*, 30(2), 343–373. <https://doi.org/10.1111/sode.12481>
- Xiong, Y., Qin, L., Wang, Q., Wang, M., & Pomerantz, E. M. (2022). Reexamining the cultural specificity of controlling and autonomy-supportive parenting in the United States and China with a within-individual analytic approach. *Developmental Psychology*, 58(5), 935–949. <https://doi.org/10.1037/dev0001329.supp>
- Yu, X., Fu, X., Yang, Z., Zhang, M., Liu, X., Fu, Y., & Lv, Y. (2021). Bidirectional relationship between parental psychological control and adolescent maladjustment. *Journal of Adolescence*, 92, 75–85. <https://doi.org/10.1016/j.adolescence.2021.08.007>
- Zhang, R., & Wang, Z. (2024). Parent-child discrepancies in perceived parental control and their associations with children's prosocial behaviors in early adolescence within Chinese families. *Journal of Youth and Adolescence*, 53(5), 1101–1118. <https://doi.org/10.1007/s10964-023-01938-9>
- Zhang, W., Wei, X., Ji, L., Chen, L., & Deater-Deckard, K. (2017). Reconsidering parenting in Chinese culture: subtypes, stability, and change of maternal parenting style during early adolescence. *Journal of Youth and Adolescence*, 46(5), 1117–1136. <https://doi.org/10.1007/s10964-017-0664-x>
- Zhou, H. Y., Liu, J. Y., & Deng, C. (2024). Trajectories of perceived parental psychological control and the longitudinal associations with Chinese adolescents' school adjustment across high school years. *Journal of Youth and Adolescence*, 53(9), 2060–2079. <https://doi.org/10.1007/s10964-024-01995-8>
- Zhou, J., Zheng, X., & Gong, X. (2025). Developmental trajectories of parental psychological control and supportive parenting in Chinese early adolescents: Relations to internalizing and externalizing problems. *Journal of Youth and Adolescence*, 54, 2222–2235. <https://doi.org/10.1007/s10964-025-02187-8>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.

Yuhan Luo is a lecturer at the Minzu University of China. Her major research interests include the roles of family context in socio-emotional/mental health development from childhood to adolescents.

Ruochen Li is a teaching assistant at Zhejiang Fashion Institute of Technology. Her major research interests include effects of parenting on adolescents' psychological adjustment.

Zhengqian Yang is a PhD student at the Beijing Normal University. His major research interests include co-occurrence of adolescent developmental problems.

Rui Luo is a PhD student at the Beijing Normal University. Her major research interests include resilience and adolescents' well-being.

Hongyu Yu is an associate professor at the Minzu University of China. Her major research interests include the development of children and adolescents.

Fumei is an associate professor at the Beijing Normal University. Her major research interests include family and the development of children and adolescents.

Yun Wang is a professor at the Beijing Normal University. Her major research interests include the development of children and adolescents.