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The Relationship Between Future Time Perspective and Personal Growth Initiative: The Longitudinal Mediating Role of Positive Psychological Capital

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Abstract

This study explored the longitudinal mediating effect of adolescents' positive psychological capital on the link between their future time perspective and personal growth initiative, to inform interventions for boosting adolescents' personal growth initiative. Cluster sampling by class recruited participants from Inner Mongolia and Hebei, China, with three-wave data collection at six-month intervals. Future time perspective, positive psychological capital, and personal growth initiative were measured, with SPSS 26.0 for correlation and variance analyses, and Mplus 8.3 for confirmatory factor and mediation tests. All variables had significant cross-time and concurrent positive correlations; measurement tools were stable across waves. The longitudinal mediation model fit well: T1 future time perspective predicted T2 positive psychological capital and T3 personal growth initiative, T2 positive psychological capital predicted T3 personal growth initiative, with positive psychological capital mediating 63.2% of the total effect. Thus, future time perspective indirectly impacts personal growth initiative via positive psychological capital, and nurturing both can improve adolescents' personal growth initiative.

1 Introduction

Adolescence is a crucial period for an individual's psychological and social development. The cognitive, emotional, and behavioral patterns formed during this stage significantly influence the adolescent's future life trajectory. From a longitudinal developmental perspective, the psychological and behavioral patterns established in adolescence not only possess immediate adaptive value but also exert a cumulative effect, continuously shaping psychosocial functioning into adulthood.

Future Time Perspective(FTP), defined as a cognitive and behavioral tendency oriented toward the future for self-development (Gan et al., 2024), plays a significant role in adolescents' future development. Previous research has found that FTP not only provides guidance and direction for individual behavior but also sustains intrinsic motivation. It shows a significant positive association with adolescents' academic achievement (Almarwani et al., 2025) and mental health (Tang et al., 2024). By facilitating prospective goal setting and strategy adjustment, FTP helps adolescents navigate various challenges encountered during their growth. This process enables them to adapt to their current social environment more proactively and effectively.

Personal Growth Initiative(PGI) refers to a positive and self-initiated internal tendency exhibited by individuals in the process of life development. Its core lies in the intention and behavior of actively seeking self-improvement and self-refinement, and it serves as an important indicator of mental health and successful development (Ayub, 2012;Sood & Gupta, 2014;Yakunina et al., 2013;Veronese, Guido et al., 2022;Romani-Sponchiado et al., 2023). It primarily consists of four components: readiness for change, planfulness, using resources, and initiative behavior (Robitschek et al., 2012).

Positive psychological capital(PPC), as a critical internal resource in individual development, is an optimistic mindset gradually formed during one's growth process. It serves as a positive force that facilitates sustainable personal development (Luthans, 2004), encompassing four core components: hope, optimism, resilience, and self-efficacy. Existing research has confirmed that positive psychological capital enhances individuals' adaptability and promotes positive development (Ilies et al., 2024). Among adolescents, it plays a key role by directly improving academic performance and mitigating the negative impact of stress on mental health (Zoromba et al., 2024; Bai & Bai, 2024), thereby helping adolescents recover from adversity and achieve growth.

Based on the aforementioned research findings, it can be inferred that positive psychological capital may also play a significant role in the relationship between future time perspective and personal growth initiative. For instance, adolescents with a high level of future time perspective typically demonstrate a tendency to set long-term developmental goals for themselves, while dimensions such as hope and optimism within positive psychological capital may provide the necessary psychological resources and intrinsic motivation during their pursuit of these goals (Rew et al., 2022). However, existing studies have predominantly focused on short-term effects or single dimensions, lacking longitudinal investigations into the long-term dynamic relationships among these three factors. Specifically, among adolescents, who are in a critical period of development, further empirical examination is needed to explore how the development of future time perspective influences their motivation and behavior for active growth through psychological capital

2 Methods

2.1 Participants

Participants were recruited from Inner Mongolia and Hebei provinces in China using a cluster sampling method by class. Longitudinal surveys were conducted three times at six-month intervals. The first wave (T1) collected 714 valid questionnaires, the second wave (T2) retained 612 valid responses, and the third wave (T3) retained 419 valid responses A total of 419 participants completed all three surveys. Among them, 198 were male (47.3%) and 221 were female (52.7%).

The age of participants ranged from 12 to 18 years, with a mean age of 14.37 ± 1.88 years.

2.2 Methods

2.2.1 Demographic Information: Included gender, age, grade level, and ethnicity.

2.2.2 Future Time Perspective Scale

The Future subscale from the Chinese version of the Zimbardo Time Perspective Inventory revised by Wang (2016) was used. It consists of 5 items rated on a 5-point Likert scale. Higher total scores indicate a higher level of future time perspective. In the three waves of this study, the Cronbach's α = 0.867, 0.762, 0.816.

2.2.3 Adolescent Personal Growth Initiative Scale

The Adolescent Students' Personal Growth Initiative Scale (ASPGIS), compiled by Guo (2018), was used. The scale consists of 22 items and includes four dimensions. It employs a 6-point Likert scale, where 1 indicates "completely disagree" and 6 indicates "completely agree." Among these, the growth hindrance dimension is reverse-scored. Higher total scores indicate a higher level of personal growth initiative in adolescents. The scale demonstrated good reliability, Cronbach's α = 0.880, 0.898, 0.917.

2.2.4 Positive Psychological Capital

The Positive Psychological Capital Questionnaire (PPQ) revised was used (Zhang et al., 2010). This scale comprises 26 items and employs a 7-point Likert scale. Higher total scores indicate a higher level of positive psychological capital. The scale showed good reliability, with overall Cronbach's α = 0.933, 0.891, 0.922.

2.3 Quality Control Procedures

First, informed consent was obtained from all participants. The principles of voluntary participation and confidentiality were strictly emphasized, and participants were informed of their right to withdraw at any time. Second, trained postgraduate psychology students read the instructions aloud, and the questionnaires were administered and collected uniformly within the respective classrooms. Third, the collected questionnaires underwent quality inspection, which included checking for missing responses, incorrect answers, response authenticity, and completion time. Finally, before data entry into SPSS 26.0, each questionnaire was assigned a unique identifier to ensure the accuracy and reliability of the entered data.

2.4 Statistical Analysis

SPSS 26.0 was used for data preprocessing. Missing values were examined using independent samples t-tests. Pearson correlation analysis was employed to assess relationships between variables, and common method bias was tested using Harman's single-factor test. Mplus 8.3 was utilized for measurement invariance testing and mediation effect analysis. The significance level was set at $\alpha = 0.05$.

3 Results

3.1 Common Method Bias Test

The common method bias test revealed that the variance explained by the first factor in the three waves of longitudinal data was 29.54%, 25.33%, and 29.75%, respectively. All values were below the critical threshold of 40% (Zhou & Long, 2004), indicating no serious issue of common method bias in the data of this study.

3.2 Measurement Invariance Across Time

The longitudinal measurement invariance of the assessment tools for future time perspective, positive psychological capital, and personal growth initiative across the three time points was examined using Mplus 8.0. Models were constructed according to established requirements (Vandenberg & Lance, 2000). The fit indices (CFI, TLI, RMSEA) for models M1, M2, and M3 all indicated a good model fit. In this study, configural invariance, weak (metric) invariance, and strong (scalar) invariance were supported, while strict invariance was not supported. Based on the changes in ΔCFI and ΔRMSEA (Cheung & Rensvold, 2002), the measurement tools for future time perspective, positive psychological capital, and personal growth initiative met the criteria for strong invariance, demonstrating measurement invariance across time and good stability and consistency across the three time points. Specific results are presented in Table 1.

Table 1
Results of Measurement Invariance Tests for Each Scale Across the Three Time Points

Variable	model	*χ2/ df*	CFI	TLI	RMSEA	ΔCFI	ΔTLI	ΔRMSEA
FTP	M1	1.336	0.987	0.985	0.028			
	M2	1.529	0.978	0.976	0.036	-0.009	-0.009	0.008
	M3	1.610	0.973	0.972	0.038	-0.005	-0.004	0.002
PPC	M1	1.313	0.956	0.952	0.027			
	M2	1.336	0.952	0.948	0.028	-0.004	-0.004	0.001
	M3	1.381	0.945	0.941	0.030	-0.007	-0.007	0.002
PGI	M1	1.293	0.962	0.958	0.026			
	M2	1.328	0.956	0.953	0.028	-0.006	-0.005	0.002
	M3	1.615	0.916	0.912	0.038	-0.008	-0.007	0.001

Note: M1 = Configural invariance, M2 = Weak (Metric) invariance, M3 = Strong (Scalar) invariance.

3.3 correlation analyses

Three-wave longitudinal data revealed that future time perspective, positive psychological capital, and personal growth initiative were all significantly correlated with each other across the three measurement points ($r = 0.098–0.643$, $p < 0.01$). Specific results are presented in Table 2.

Table 2
Correlations Among Variables Across the Tree Time Points (n = 419)

FTPT1	*M ± SD*	FTPT1	FTPT2	FTPT3	PGIT1	PGIT2	PGIT3	PPCT1	PPCT2	PPCT3
	19.76 ± 3.47	**1**								
FTPT2	18.87 ± 3.25	0.391**	1							
FTPT3	18.29 ± 3.64	0.243**	0.643**	1						
PGIT1	95.82 ± 14.16	0.347**	0.187**	0.108*	1					
PGIT2	90.29 ± 15.84	0.493**	0.458**	0.314**	0.483**	1				
PGIT3	90.18 ± 16.95	0.456**	0.559**	0.517**	0.366**	0.575**	1			
PPCT1	130.08 ± 22.37	0.434**	0.205**	0.098*	0.231**	0.440**	0.272**	1		
PPCT2	119.58 ± 21.01	0.496**	0.493**	0.340**	0.256**	0.578**	0.524**	0.568**	1	
PPCT3	121.57 ± 23.62	0.295**	0.517**	0.486**	0.171**	0.401**	0.572**	0.202**	0.589**	1

Note: *p < 0.05, **p < 0.01, ***p < 0.001. The same applies below.

3.4 Longitudinal Mediating Role of PPC between FTP and PGI

The longitudinal mediating effect of positive psychological capital was tested using the bias-corrected nonparametric percentile bootstrap method, with 2000 resamples (Wen & Ye, 2014). The analysis involved three steps: First, the raw data were standardized. Second, a longitudinal mediation model was constructed with FTP(T1) as the independent variable, PPC(T2) as the mediator, and PGI(T3) as the dependent variable. The model demonstrated a good fit ($\chi^2/df = 2.839$, CFI = 0.983, TLI = 0.958, RMSEA = 0.066). Third, the individual paths and the longitudinal mediation effect were examined. The results showed that FTP(T1) significantly predicted PPC(T2) ($\beta=0.32,\mathrm{p}<0.001$), PPC(T2) significantly predicted PGI(T3)($\beta=0.13,\mathrm{p}<0.005$), and FTP(T1) significantly predicted PGI(T3) ($\beta=0.14,\mathrm{p}<0.001$). Bootstrap resampling results indicated a significant longitudinal indirect effect through positive psychological capital, with an effect value of 0.24 (95% CI [0.179, 0.312]). The direct effect was also significant, with a value of 0.14 (95% CI [0.066, 0.221]). The indirect effect via positive psychological capital accounted for 63.2% of the total effect.

4 Discussion

This study reveals the mechanism through which Future Time Perspective influences Personal Growth Initiative via Positive Psychological Capital. This finding holds significant theoretical value and practical implications for adolescents, who are in a critical stage of development. On the one hand, adolescents have not yet formed a stable cognitive framework regarding the future, and their FTP—as a developmental psychological trait—remains malleable (Lü, 2014). On the other hand, PPC, serving as a key mediating variable, represents a dynamic and intervenable positive psychological state (Luthans et al., 2007) with strong potential for intervention during adolescence.

Based on a three-wave longitudinal tracking study of adolescents, the results showed that FTP, PPC, and PGI were all positively correlated with each other across the three measurement points. Moreover, FTP(T1) significantly predicted PGI(T3), which is relatively consistent with previous cross-sectional research findings (Horstmanshof, 2007; Zhu, 2025). Individuals with a higher level of future insight are more inclined to adopt proactive behaviors (Wu, 2020). From the Perspective of Expectancy-value Theory, adolescents' positive expectations and high value placed on the future (such as being admitted to a desired university or mastering a particular skill) can directly motivate their goal-oriented actions (D'Arrietta et al., 2025). In terms of the tracking duration, the period from T1 to T3 spanned a full year, and FTP still predicted PGI one year later, providing robust longitudinal evidence in support of expectancy-value theory.

Furthermore, the "Possible Selves" theory posits that individuals' positive imagination and psychological expectations regarding their future selves serve as the core intrinsic driver for goal setting and behavioral planning. In this study, the predictive effect of FTP(T1) on PPC(T2) validates this perspective: when adolescents can clearly envision the future and set long-term goals, they do not merely remain at the level of fantasy. Such forward-looking cognition can effectively activate their motivation to proactively accumulate resources to achieve their future self-goals (Rew et al., 2022). Adolescents who extend their time perspective and form clear, positive, and concrete plans for the future also accumulate higher levels of positive psychological capital. This process can be understood from two levels: First, at the cognitive construction level, a future-oriented time perspective helps adolescents transcend immediate academic pressure or interpersonal confusion, linking their current efforts to long-term self-development goals. This connection can provide adolescents with a sense of meaning and direction. Second, at the resource generation level, proactive planning and imagination of the future (e.g., "I want to become...") provide reliable resources for Positive Psychological Capital (self-efficacy, hope, resilience, optimism). For instance, it offers concrete material for the "pathways thinking" component of hope, while positive evaluations of the likelihood of goal attainment directly nurture an optimistic mindset. Particularly importantly, in the process of adolescent self-exploration, a stable, self-constructed vision of the future serves as a crucial foundation for the development of "self-efficacy" and "resilience". It helps adolescents interpret academic setbacks or other challenges as temporary obstacles on the path to long-term goals, rather than as negations of their self-worth, thereby forming a protective mechanism for the self.

Secondly, the predictive role of PPC(T2) on PGI(T3) reflects its "Resource Transformation" function in the developmental process of adolescents. According to the core premise of Conservation of Resources Theory (Hobfoll, 1989), individuals generally possess the tendency to strive for, maintain, and foster their own resources (Can Gür G., 2025). For adolescents, positive psychological capital (self-efficacy, hope, resilience, optimism) represents precisely such a core set of internal personal resources. When adolescents possess higher levels of hope, self-efficacy, resilience, and optimism, they are more inclined to cognitively reframe various challenges encountered in personal growth (e.g., mastering a new skill, improving interpersonal interactions, determining a future career path) as developmental tasks "within their capability to successfully manage and cope with," rather than perceiving them as negative stressors that "pose a potential threat or risk of failure." Specifically:

(1)Self-efficacy enables them to believe in their ability to plan and execute strategies.

(2)Hope fosters a positive coping mentality during the process of goal pursuit.

(3)Resilience allows them to recover quickly and persist when facing setbacks in their growth.

(4)Optimism leads them to maintain positive expectations about future growth outcomes and sustains their effort (Luthans, Youssef, & Avolio, 2007).

These resources work in concert to transform relatively abstract internal growth intentions into concrete components of personal growth initiative: "readiness for change," "planfulness," "using resources," and "initiative behavior" (Robitschek et al., 2012). For instance, an adolescent with higher positive psychological capital is more likely to proactively seek help from teachers and classmates, create phased plans for improving academic performance, and adjust their approach rather than simply giving up after experiencing exam failure.

The longitudinal mediation effect identified in this study (FTP(T1) → PPC(T2) l → PGI(T3)) indicates that PGI is jointly influenced by FTP and PPC, with PPC serving as a longitudinal mediator between FTP and PGI. FTP provides individuals with future-oriented goals, effectively activating the intrinsic motivation and willingness to pursue these goals. Meanwhile, PPC, as an internal resource, offers support and tools that help individuals maintain a positive attitude and coping ability when facing challenges. It also facilitates the transfer and transformation of resources. This transformative process ultimately externalizes abstract resources and motivations into concrete proactive growth behaviors, such as actively exploring new opportunities or engaging in continuous self-reflection and improvement (Ilies et al., 2024; Veronese, Guido et al., 2022).

This study also has certain limitations. First, the sample was primarily drawn from Northern China. Future research should replicate the findings among adolescents from broader geographical regions and diverse cultural and socioeconomic backgrounds to examine the generalizability of the model. Second, the six-month measurement intervals may have missed more nuanced short-term fluctuations. Future studies could employ more intensive longitudinal designs (e.g., diary methods or experience sampling) to more precisely capture the dynamic relationships among the variables. Third, the research relied mainly on self-report measures. Future investigations could be supplemented with multi-method assessments to validate the conclusions.

Declarations

Ethics approval and consent to participate

This study was reviewed and approved by the Medical Ethics Committee of Xilingol League Anshen Hospital (Approval No. 202601). The research was carried out strictly in accordance with the Measures for the Ethical Review of Biomedical Research Involving Human Subjects (2016, National Health Commission of China), the Personal Information Protection Law of the People's Republic of China, as well as the ethical principles outlined in the Declaration of Helsinki. All collected research data were processed anonymously without any identifiable personal information of participants. All participants voluntarily took part in this study.

Consent for publication

Not applicable. All data analyzed in this study are anonymous and do not contain individual personal information, images, videos, or identifiable personal details of any participant. Therefore, no consent for individual publication is required.

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Author Contribution

X.B. and Y.A. conducted the data collection. X.B. wrote the main manuscript text. All authors reviewed the manuscript.

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Data Availability

The datasets generated and analysed during the current study are not publicly available due to institutional data privacy restrictions but are available from the corresponding author on reasonable request.

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Figures

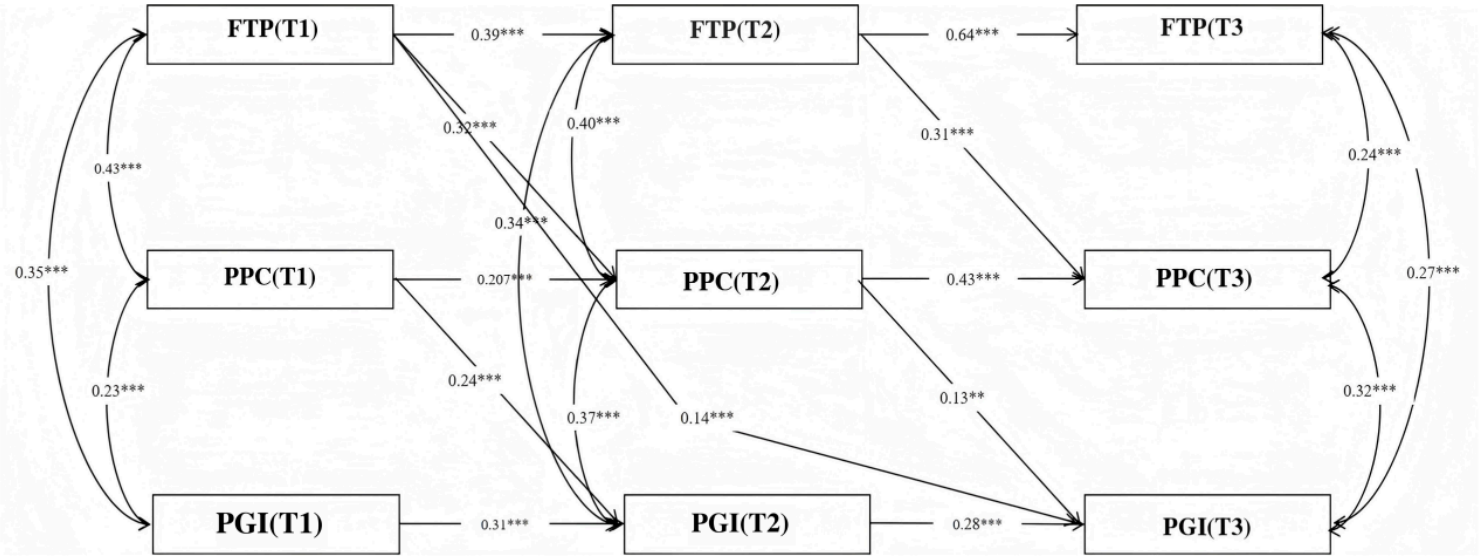

Figure 1

Unnumbered image in the Results section.