

Shaping future career success in Chinese adolescents: a chain mediation model of perceived parental career support, future work self-salience, and academic engagement

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KEYWORDS

Adolescents
Career adaptability
Perceived parental career support
Future work self-salience
Academic engagement

ABSTRACT

Grounded primarily in Career Construction Theory, this study examined the association between perceived parental career support and career adaptability among Chinese adolescents and tested whether future work self-salience and academic engagement were involved in this association as potential mediators. In the Chinese senior high school context, students are often required to make consequential educational and career-related decisions while access to systematic career education may be uneven, making family-based resources particularly salient. Although previous studies have linked perceived parental career support, future-oriented self-concepts, and engagement to career development outcomes, the sequential mechanism involving future work self-salience and academic engagement has rarely been examined in adolescent samples. Using a cross-sectional paper-and-pencil survey conducted in 2024, the study included 778 students in Grades 10-12 from a senior high school in Guizhou, China ($M = 16.89$, $SD = 1.06$; 41% male). Pearson correlation analyses and bootstrapped mediation analyses (PROCESS Model 6, 5,000 resamples) showed that perceived parental career support, future work self-salience, and academic engagement were all positively associated with career adaptability. Significant indirect associations were observed through future work self-salience, through academic engagement, and through the sequential pathway from future work self-salience to academic engagement. These findings highlight the potential relevance of coordinated school-family support for adolescents' career development, while the cross-sectional design does not allow conclusions about causal direction.

Éxito profesional futuro en adolescentes chinos: mediación en cadena del apoyo parental, la saliencia del yo laboral futuro y el compromiso académico

PALABRAS CLAVE

Adolescentes
Adaptabilidad profesional
Apoyo parental percibido para la carrera
Saliencia del yo laboral futuro
Compromiso académico

RESUMEN

Basado en la Teoría de la Construcción de la Carrera, este estudio examinó la relación entre el apoyo parental percibido para la carrera y la adaptabilidad profesional en adolescentes chinos, así como el posible papel mediador de la saliencia del yo laboral futuro y el compromiso académico. En el contexto de la educación secundaria superior en China, donde los estudiantes afrontan decisiones educativas y profesionales relevantes y el acceso a la orientación vocacional es desigual, los recursos familiares adquieren especial importancia. La muestra incluyó a 778 estudiantes de los grados 10 a 12 de una escuela secundaria en Guizhou (China) ($M = 16.89$, $DE = 1.06$; 41% hombres). Se realizaron análisis de correlación de Pearson y modelos de mediación con bootstrapping (Modelo 6 de PROCESS, 5,000 remuestreos). Los resultados mostraron que el apoyo parental percibido, la saliencia del yo laboral futuro y el compromiso académico se relacionaban positivamente con la adaptabilidad profesional. Asimismo, se observaron efectos indirectos significativos a través de la saliencia del yo laboral futuro, del compromiso académico y de la vía secuencial que conecta ambas variables. Estos resultados subrayan la relevancia de la coordinación entre la familia y la escuela en el desarrollo profesional adolescente, si bien el diseño transversal limita la interpretación en términos causales.

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Adolescence is a critical period during which individuals begin to form expectations, plans, and commitments regarding their future careers (Cristy & Kurniawati, 2023; Hirschi, 2009). During this developmental phase, adolescents' capacity to navigate career-related transitions has been linked to their academic advancement and career pathways long into adulthood (Blustein et al., 2002; Yan et al., 2024). In the Chinese educational context, students are often expected to make consequential academic and career-related decisions, such as selecting university majors, at an early stage. In recent years, increasing attention has been devoted to adolescents' career development, particularly in light of policy initiatives emphasizing the importance of career guidance in secondary education (e.g., General Office of the State Council of the People's Republic of China, 2019). However, despite these efforts, prior research suggests that access to systematic career education and professional support remains uneven in practice (Gu et al., 2020). As a result, many high school graduates in China encounter difficulties in developing a clear sense of vocational identity when selecting university majors following the Gaokao (China's National College Entrance Examination). Against this backdrop, identifying factors related to adolescents' career adaptability is of particular importance.

In the Chinese senior high school context, career guidance is typically delivered through school-based activities and classroom-level instruction rather than individualized counseling for all students, and access to professional counseling varies across schools and regions (e.g., Gu et al., 2020). Under these conditions, families often play a prominent role in providing informational and emotional support for adolescents' educational and career-related decisions. In the present study, Career Construction Theory (Savickas, 2005) is used as a guiding framework to examine adolescents' adaptive resources (career adaptability) and their associations with contextual support and individual motivational and behavioral processes. This perspective allows the proposed model to inform school- and classroom-based practices by highlighting potential targets for coordinated school-family support.

Within Career Construction Theory, career adaptability is conceptualized as a central psychosocial resource that enables individuals to cope with current and anticipated career-related tasks, transitions, and challenges (Savickas, 2005). It comprises four dimensions—concern, control, curiosity, and confidence—which collectively reflect individuals' readiness to manage career development processes. Although the theory was originally developed in Western contexts, the present study applies it in a context-sensitive manner to examine adolescents' adaptive resources within educational constraints rather than to assume unconstrained individual choice.

For adolescents, the development of career adaptability is particularly important, as it has been linked to more effective career decision-making, greater psychological resilience, and more adaptive responses to academic and career-related demands (Cardoso et al., 2018; Rudolph et al., 2017; Wang et al., 2024). Individuals with higher levels of career adaptability tend to possess stronger internal resources for managing career-related

changes (Safavi & Bouzari, 2019). In addition, career adaptability has been related to clearer vocational goals and greater involvement in career planning (Germeijs & Verschueren, 2007; Negru-Subtirica & Pop, 2016), as well as lower perceived academic pressure and more effective coping with career-related challenges (Jia et al., 2022; Wang et al., 2022). Taken together, career adaptability provides a useful framework for understanding how adolescents respond to developmental challenges in educational contexts.

According to Career Construction Theory, career adaptability develops through the dynamic interplay between contextual resources and individual psychological processes (Savickas & Porfeli, 2012). Among these contextual resources, perceived parental career support has been identified as a salient influence in adolescents' career development (Lent et al., 1994). It typically includes emotional encouragement, informational guidance, and practical assistance that facilitate career exploration and decision-making (Dietrich & Kracke, 2009). Prior research indicates that perceived parental career support is positively related to adolescents' career adaptability (Guan et al., 2015; Šimunović et al., 2020; Xu et al., 2025). At the same time, the nature of parental involvement may matter. For instance, controlling forms of support may undermine adolescents' autonomy and reduce their proactive engagement in career preparation (Dietrich & Kracke, 2009; Guan et al., 2015; Savickas & Porfeli, 2012). These findings highlight the importance of examining not only whether perceived parental career support is linked to career adaptability, but also how such associations may operate through adolescents' internal motivational and self-regulatory processes.

In addition to contextual influences, personal factors also play a key role in adolescents' career development (Savickas, 1997). Future work self-salience refers to the clarity and accessibility of individuals' representations of their future work identities (Strauss et al., 2012). A salient future work self provides direction and motivation by linking present actions with future career goals, thereby supporting proactive career-related behaviors. Within Career Construction Theory (Savickas, 2005), future work self-salience can be understood as an internal mechanism that is closely related to career adaptability (Guan et al., 2014; Savickas & Porfeli, 2012). Empirical studies have shown that higher levels of future work self-salience are associated with greater engagement in self-development activities and higher levels of career adaptability (Guan et al., 2014; Li et al., 2022; Ling et al., 2022; Lu & Jia, 2022; Strauss et al., 2012; Teng et al., 2022). In addition, perceived parental career support may be linked to adolescents' future work self-salience by fostering intrinsic motivation and encouraging exploration of career-related goals (Liang et al., 2020; Ryan & Deci, 2000). Through such processes, adolescents may develop clearer and more salient future work selves, which in turn may be associated with higher levels of career adaptability.

Beyond identity-related processes, behavioral engagement represents another important mechanism in adolescents' development. Academic engagement, characterized by vigor, dedication, and absorption (Schaufeli et al., 2002), reflects the

Figure 1
Theoretical research model

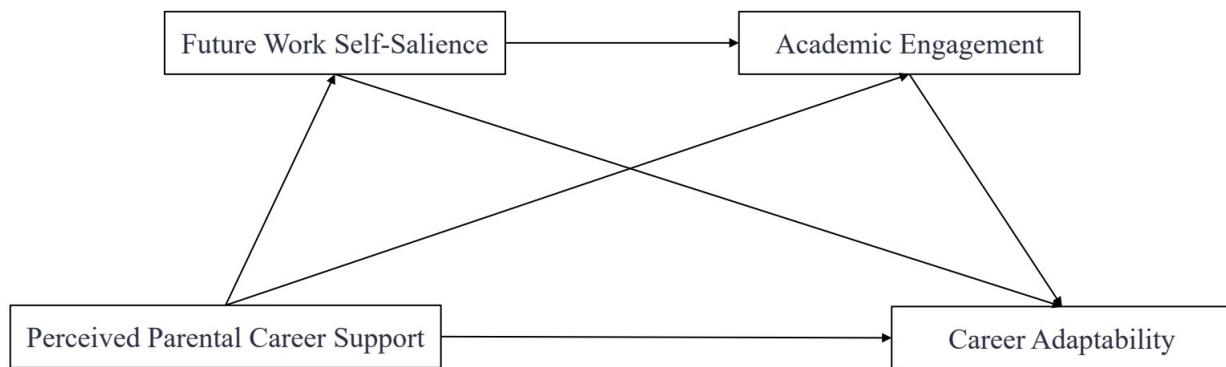


Table 1
Demographic information

Variables		Number of people (n)	Percentage (%)
Grade	Grade 10	172	22.1
	Grade 11	314	40.4
	Grade 12	292	37.5
Hometown	Urban area	61	7.8
	Rural area	717	92.2

extent to which students invest effort in learning activities. Previous research suggests that future work self-salience is related to higher levels of academic engagement, as clearer future goals are connected with to sustained effort and persistence (Guan et al., 2014). In turn, academic engagement has been consistently linked to career adaptability (Liu et al., 2023; Oliveira & Marques, 2024). Accordingly, academic engagement may function as a behavioral pathway through which motivational processes are connected to career adaptability.

Although prior studies have examined the relationships among perceived parental career support, career adaptability, future work self-salience, and academic engagement, these variables have often been investigated in isolation or in partial models. In particular, limited research has examined whether the association between perceived parental career support and career adaptability can be explained through a sequential mechanism involving both motivational (future work self-salience) and behavioral (academic engagement) processes among adolescents. Addressing this gap may contribute to a more integrated understanding of how contextual and individual factors jointly relate to adolescents’ career development.

The present study

This study examined the associations among perceived parental career support, future work self-salience, academic

engagement, and career adaptability among Chinese adolescents. Grounded primarily in Career Construction Theory, parental career support was conceptualized as a contextual resource associated with adolescents’ career adaptability, while future work self-salience and academic engagement were considered as potential mediating mechanisms. Accordingly, we hypothesized that perceived parental career support would be positively associated with career adaptability (H1). We further hypothesized that future work self-salience (H2) and academic engagement (H3) would each mediate this association. Finally, we proposed a sequential indirect pathway in which perceived parental career support would be associated with higher future work self-salience, which in turn would be associated with higher academic engagement and, ultimately, career adaptability (H4). The hypothesized model is presented in Figure 1.

Procedure

Participants

Participants were 778 adolescents from a senior high school in Guizhou, China ($M = 16.89$, $SD = 1.59$; 41% male), recruited via convenience sampling (see Table 1 for demographic details). A total of 859 questionnaires were collected; 778 valid responses (90.57%) were retained after data screening and exclusion criteria (see Procedure). Table 1 presents demographic information.

Method

Data were collected in 2024 using a paper-and-pencil survey administered in classroom settings. Participants were recruited via convenience sampling through the school. Participation was voluntary and anonymous, and informed consent was obtained from the school, students, and their parents prior to data collection. The study protocol was approved by the Ethics Committee of Guizhou Normal University (approval date: GZNUPSY.N.202404E [0011]). Trained research assistants supervised the administration process and provided standardized instructions to ensure consistency. Responses were excluded if they met any of the following criteria: (a) excessive missing data (e.g., more than 20% unanswered items), (b) failing the control/attention-check item, and/or (c) extreme values exceeding three standard deviations from the sample mean on composite scores; in such cases, the entire questionnaire was removed from the dataset. Data were entered and verified prior to analysis.

Instruments

Perceived parental career support. The degree of perceived parental career support was assessed using the 5-item support subscale from the career-specific *Parental-Career Related Behaviors Scale* (Dietrich & Kracke, 2009), which was adapted into Chinese by Guan et al. (2015). A sample item is “My parents talk to me about my vocational interests and abilities.” Participants rated each item on a 5-point Likert scale ranging from 1 = *Completely disagree* to 5 = *Completely agree*. A higher mean score indicated a higher level of perceived parental career support. In the current sample, this subscale demonstrated excellent internal consistency (Cronbach’s $\alpha = .93$; McDonald’s $\omega = .96$).

Future work self-salience. Future work self-salience was gauged by the 4-item Chinese *Future Work Self Scale* (Guan et al., 2014), adapted from Strauss et al. (2012). Respondents were asked to envision their future work self and then indicate the clarity and salience of that image on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*). A sample item is “I am very clear about who and what I want to become in my future work.” Higher total scores reflect a more vivid and well-defined future work self. In the current sample, this scale demonstrated excellent internal consistency (Cronbach’s $\alpha = .89$; McDonald’s $\omega = .93$).

Academic engagement. The academic engagement scale employed in this study is the *Utrecht Work Engagement Scale-Student* (UWES-S), which was originally developed by Schaufeli et al. (2002). It was subsequently translated and adapted for a Chinese context (Fang et al., 2008). This scale consists of 17 items, rated on a 7-point frequency rating scale ranging from 1 = *Never* to 7 = *Always*. A sample item is “When studying, I feel bursting with energy.” Total scores were computed by summing item responses, with higher scores indicating stronger academic engagement. In the current sample, this scale demonstrated excellent internal consistency (Cronbach’s $\alpha = .97$; McDonald’s $\omega = .98$).

Career adaptability. Career adaptability was evaluated using the *Career Adapt-Abilities Scale-Short Form China* (CAAS-SF) (Yu et al., 2020). This 12-item scale is derived from the international CAAS-SF (Maggiore et al., 2017). Participants assessed their strengths across items on a 5-point scale from 1 = *Not strong* to 5 = *Strongest*. A sample item is “I prepare for the future.” Total scores were computed by summing item responses, with higher scores denoting greater career adaptability resources. In the current sample, this scale demonstrated excellent internal consistency (Cronbach’s $\alpha = .91$; McDonald’s $\omega = .95$).

Statistical analysis

Prior to analysis, perceived parental career support was computed as the mean of the five items, whereas future work self-salience, academic engagement, and career adaptability were computed as summed scores. Missing values were handled prior to scoring (no missing item responses remained after data processing), and scores were not standardized across instruments with different response ranges. Demographic variables (age, gender, and grade) were included as covariates to reduce potential confounding due to developmental-stage and gender-related differences in adolescent career development (e.g., Hirschi, 2009); grade was dummy-coded (Grade 10 as the reference group).

Because all variables were assessed using self-report measures, potential common method bias was evaluated. We conducted confirmatory factor analyses (CFA) to compare the hypothesized four-factor measurement model (perceived parental career support, future work self-salience, academic engagement, and career adaptability) with a single-factor model. In addition, Harman’s single-factor test was conducted (Podsakoff et al., 2003), with a first-factor variance below 40% indicating that common method bias was unlikely to be a major concern. All statistical analyses were performed using SPSS 26.0 and the PROCESS macro (Version 4.0) (Hayes, 2017).

The analysis proceeded in three stages. First, descriptive statistics summarized the demographic characteristics of the sample. Second, bivariate relationships among the key study variables were examined using Pearson correlations. Finally, to test the specific chain mediation hypothesis (i.e., perceived parental career support \rightarrow future work self-salience \rightarrow academic engagement \rightarrow career adaptability), we conducted a bootstrap analysis with 5,000 resamples. An indirect effect was considered statistically significant if the 95% bias-corrected confidence interval did not include zero.

Model testing followed the specifications of PROCESS Model 6, with parental career support as the independent variable (X), career adaptability as the dependent variable (Y), and future work self-salience (M1) and academic engagement (M2) as the first- and second-order mediators, respectively. Demographic variables (gender, age, and grade) were included as covariates to reduce potential confounding due to developmental-stage and gender-related differences in adolescent career development (e.g., Hirschi, 2009); grade was dummy-coded.

The analysis estimated three antecedent paths ($a_1: X \rightarrow M_1$; $a_2: X \rightarrow M_2$; $a_3: M_1 \rightarrow M_2$) and two consequent paths ($b_1: M_1 \rightarrow Y$; $b_2: M_2 \rightarrow Y$), allowing the total effect to be partitioned into a direct effect (c') and the indirect effects a_1b_1 , a_2b_2 , and $a_1a_3b_2$.

Results

Common method bias

CFA results indicated that the hypothesized four-factor model showed good fit, $\chi^2(659) = 3251.64$, CFI = .99, TLI = .99, RMSEA = .07, SRMR = .05, whereas the single-factor model fit the data substantially worse, $\chi^2(665) = 37868.32$, CFI = .92, TLI = .92, RMSEA = .27, SRMR = .18. These results suggest that common method bias is unlikely to fully account for the observed associations.

The Harman's single-factor test further indicated that common method bias was unlikely to be a major concern in this study. An unrotated exploratory factor analysis extracted six factors with eigenvalues above 1, and the first factor accounted for 39.74% of the total variance.

Means, standard deviations, and correlations

Descriptive statistics and Pearson correlation coefficients among the study variables are presented in Table 2. Perceived parental career support was positively related to future work self-salience, academic engagement, and career adaptability. Future work self-salience was also positively related to academic engagement and career adaptability. Academic engagement was positively related to career adaptability. All correlations were statistically significant ($p < .01$).

Chain mediating effect analysis

The results of the mediation model are presented in Figure 2. The total effect model revealed a statistically significant positive association between perceived parental career support and adolescents' career adaptability. After including future work self-salience and academic engagement as mediators, perceived parental career support remained significantly associated with career adaptability. Perceived parental career support was positively associated with future work self-sa-

Table 2

Descriptive statistics and correlation matrix for all variables

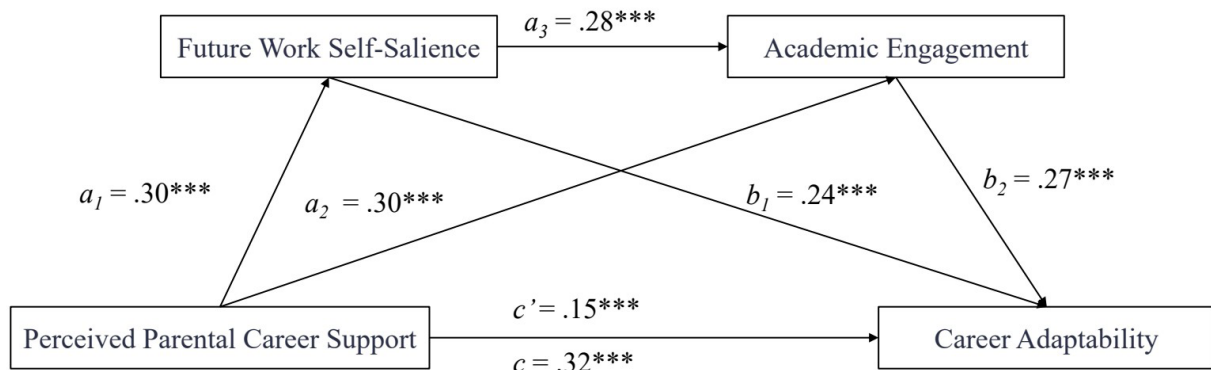
	M	SD	1	2	3	4	5	6	7	8
1 Perceived parental career support	3.25	.92	1							
2 Future work self-salience	16.24	4.65	.31**	1						
3 Academic engagement	64.35	16.31	.4**	.38**	1					
4 Career adaptability	46.16	6.69	.33**	.39**	.42**	1				
5 Age			-.04	.03	.01	.04	1			
6 Gender			-.10**	-.07	-.14**	-.12**	-.07*	1		
7 Grade			-.04	.01	-.003	-.01	.72**	-.01	1	
8 Hometown			-.01	-.01	.03	-.02	.01	.02	.003	1

Note. Gender was coded as 0 = male (reference group), 1 = female.

* $p < .05$. ** $p < .01$. *** $p < .001$. Correlations are reported to two decimals; values smaller than .01 are reported to three decimals.

Figure 2

Mediating effects of future work self-salience and academic engagement on the relationship between perceived parental career support and career adaptability



Note. Standardized coefficients are shown. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3
Standardized indirect effects from parental support to career adaptability

	Indirect effect	Boot SE	Boot CI LL	Boot CI UL
Total indirect (Ind_total)	.17	.02	.13	.22
Via future work self-salience (Ind1: a ₁ b ₁)	.07	.02	.05	.11
Via academic engagement (Ind2: a ₂ b ₂)	.08	.02	.05	.11
Via future work self-salience and academic engagement (Ind3: a ₁ a ₃ b ₂)	.02	.01	.01	.04

Note. Indirect effects are completely standardized. Bootstrapping was based on 5,000 resamples. Boot CI LL and Boot CI UL denote the lower and upper limits of the 95% bias-corrected confidence interval.

lience and academic engagement, and future work self-salience was positively associated with academic engagement. Both mediators were significantly associated with career adaptability.

Bootstrapping analyses indicated significant indirect associations between perceived parental career support and career adaptability (see Table 3). The mediation model explained 9.9% of the variance in future work self-salience ($R^2 = .1$), 24.8% in academic engagement ($R^2 = .25$), and 27.1% in career adaptability ($R^2 = .27$). Overall, the pattern of results was consistent with partial mediation (see Figure 2).

Discussion

The present research examined the associations among perceived parental career support, future work self-salience, academic engagement, and career adaptability among Chinese adolescents. Overall, the results were consistent with the hypothesized sequential mediation model, with significant indirect associations via future work self-salience and academic engagement, including the sequential pathway.

Regarding H1, the findings indicated that perceived parental career support was positively associated with adolescents' career adaptability. This result is consistent with Career Construction Theory (Savickas, 2005), which highlights the role of contextual resources in the development of adaptive career-related capacities. When adolescents perceive higher levels of parental career support (e.g., emotional encouragement, informational guidance, and instrumental assistance), they may demonstrate greater adaptive readiness to cope with career-related tasks and transitions, which is related to higher levels of career adaptability (e.g., Guan et al., 2015; Šimunović et al., 2020; Xu et al., 2025). One plausible interpretation is that adolescents who perceive greater parental support may be more likely to access relevant information, receive encouragement in career exploration, and feel more confident in their ability to navigate career-related decisions. In the Chinese senior high school context, where educational and career decisions are often high stakes, parental support may be particularly salient as a contextual resource linked to adolescents' adaptive responses. These processes may be associated with higher levels of career adaptability. However, given the cross-sectional design of the present study, these findings should be interpreted in terms of associations rather than causal relationships.

The mediating role of future work self-salience

Regarding H2, the findings were consistent with future work self-salience serving as an indirect pathway linking perceived parental career support to career adaptability. Specifically, parental career support was positively associated with future work self-salience, which was in turn positively associated with career adaptability. This pattern aligns with Career Construction Theory (Savickas, 2005), which emphasizes the interplay between contextual resources and future-oriented self-representations in shaping adaptive career resources. Adolescents' career adaptability reflects both intrapersonal processes and contextual factors (Creed et al., 2009; Liang et al., 2020). From this perspective, future work self-salience can be viewed as a psychological resource, whereas perceived parental career support represents a salient contextual resource. One plausible interpretation is that adolescents who perceive greater parental career support may be more likely to develop a clearer and more coherent future work self, which may in turn be linked to higher career adaptability. Overall, the findings point to future work self-salience as a meaningful link between perceived parental career support and adolescents' career adaptability.

The mediating role of academic engagement

Regarding H3, the findings were consistent with academic engagement serving as an indirect pathway linking perceived parental career support to career adaptability. Perceived parental career support was positively associated with academic engagement, and academic engagement was positively associated with career adaptability. This pattern indicates that engagement may be relevant when considering how contextual support is linked to adolescents' adaptive career resources. This indirect association is consistent with prior work linking perceived parental career support to higher engagement (Deng & Yang, 2022; Jiang et al., 2022; Lei & Yin, 2024; Song et al., 2024) and linking engagement to adaptive career outcomes (Datu & Buenconsejo, 2021; Oliveira & Marques, 2024). Academic engagement can be understood as a malleable state that is responsive to contextual influences, including family contexts (Peng et al., 2022), and in the present study, it was positively related to career adaptability. Prior research also suggests that learning-related competencies and engagement are relevant correlates of career adaptability (Savickas & Porfeli, 2012; Šverko & Babarović, 2019). One

plausible interpretation is that sustained engagement may be linked to the accumulation of psychosocial resource (Datu & Buenconsejo, 2021), which in turn may relate to adolescents' capacity to cope with career-related challenges. Accordingly, perceived parental career support may be indirectly associated with career adaptability partly through adolescents' academic engagement.

The chain mediating effect between future work self-salience and academic engagement

Regarding H4, the findings supported a sequential indirect pathway linking perceived parental career support to career adaptability via future work self-salience and then academic engagement. That is, perceived parental career support was associated with higher future work self-salience, which was associated with higher academic engagement, and academic engagement was in turn associated with higher career adaptability. This sequential pattern is consistent with the idea that future-oriented self-clarity and sustained engagement may jointly relate to adolescents' adaptive career resources. Consistent with identity development perspectives (Marcia, 1980), the construction of future orientations represents an important developmental process during adolescence. Empirical evidence suggests that clearly articulated future purposes are related to stronger academic engagement (Damon et al., 2019), potentially through future-time perspective (De Volder & Lens, 1982) and goal-setting processes (Nurmi, 1991). In this view, aspirations may be linked to students' tendency to focus on goal-relevant actions, such as maintaining academic engagement (Burns et al., 2021). Adolescents with clear aspirations also tend to report higher academic engagement (Damon et al., 2019; Hill & Wang, 2015), whereas without a clear sense of purpose, academic activities may be experienced as less meaningful (Hill et al., 2018). Thus, a more vivid future work self may be associated with more goal-congruent academic behaviors, whereby students invest effort in learning activities that align with their future plans.

In addition, adolescents who perceive higher parental career support may also report a clearer future work self, which may be linked to higher academic engagement and, in turn, higher career adaptability. Despite the prevalence of diffuse purpose during adolescence (Liang et al., 2017), parents can represent an important contextual influence associated with the goals youth adopt, the strategies they employ, and the attainability of these goals (Hill et al., 2018; Liang et al., 2018). Prior studies also suggest that perceived parental career support is related to youths' future aspirations and academic engagement (Hill & Wang, 2015). One plausible interpretation is that when adolescents perceive greater career support from parents, they may be more likely to clarify their future work selves, which may in turn be linked to greater academic engagement. This increased clarity may encourage adolescents to allocate more effort and time to their studies. Over time, academic engagement may be related to experiences that support self-understanding and adaptive career-related attitudes, which may be relevant to adolescents' career adaptability.

To provide a more balanced interpretation of the findings, alternative explanations should also be considered. Although the present study is consistent with a sequential pathway linking perceived parental career support, future work self-salience, academic engagement, and career adaptability, other models may also be plausible. For example, academic engagement may function as an antecedent of future work self-salience, as students who are more actively engaged in learning may develop clearer and more salient future career goals. In addition, the relationships among these variables may be reciprocal in nature. For instance, career adaptability may also be associated with higher levels of academic engagement or relate to the development of a more salient future work self over time. These alternative pathways are consistent with the dynamic and reciprocal nature of career development emphasized in Career Construction Theory. Because the study is cross-sectional, the observed associations do not establish temporal ordering or causal direction. Future research using longitudinal or experimental designs is needed to further examine these alternative pathways and clarify the temporal ordering among these variables.

Limitations and future directions

This study has yielded useful insights, yet several methodological and conceptual limitations merit discussion. First, the reliance solely on self-report measures poses a risk of common method bias. Future research could strengthen validity through multi-source assessments (e.g., parent-reported support measures, teacher evaluations of student engagement) and mixed-method designs incorporating in-depth interviews to capture nuanced experiential dimensions.

Second, the use of a one-school convenience sample from Guizhou limits the generalizability of the findings. In addition, because participants were drawn from a single school, observations may not be fully independent. We did not apply multilevel modeling or cluster-robust standard errors; therefore, standard error estimates may have been affected and results should be interpreted with caution. Students from a single school may differ from adolescents in other regions and school contexts in terms of socioeconomic background, access to career education resources, and parental involvement patterns, which may be related to the observed associations (Cheung & Pomerantz, 2015). Therefore, the results should be interpreted cautiously and may not represent all Chinese high school students. Future research should replicate the model using multi-site samples across regions and school types and, where possible, probability-based sampling to strengthen external validity.

Most critically, the cross-sectional design precludes causal inference. Moreover, alternative temporal orderings and reciprocal relations among the focal variables cannot be ruled out and should be examined using longitudinal or cross-lagged designs. Longitudinal tracking of developmental trajectories (e.g., annual assessments from middle school through college) or randomized interventions enhancing perceived parental career support (e.g., career communication training programs) would

help clarify temporal ordering and test alternative pathways among the studied constructs.

Practical implications

The present findings have several practical implications for supporting adolescents' career development in the Chinese senior high school context. First, given the positive association between perceived parental career support and career adaptability, schools may consider strengthening school-family collaboration by providing parents with brief, structured guidance on career-related communication (e.g., how to offer informational and emotional support without becoming overly controlling). Second, because future work self-salience was linked to career adaptability and also formed part of the sequential pathway with academic engagement, career education activities that help students articulate and elaborate their future work selves may be useful. For example, counselors or class teachers could incorporate short future-oriented exercises (e.g., writing tasks about a desired future occupation, identifying feasible learning goals, and mapping steps toward that future) into routine guidance. Third, the association between academic engagement and career adaptability suggests that career guidance may benefit from being integrated with learning support. Interventions that encourage students to connect daily academic efforts with longer-term career goals (e.g., goal-setting and reflection activities) may help students maintain engagement while preparing for career-related tasks. Finally, these implications should be interpreted cautiously because the cross-sectional design does not establish causal direction; nevertheless, the pattern of associations highlights potential targets for coordinated school and family support.

Conclusions

This study demonstrated a significant association between perceived parental career support and adolescents' career adaptability. This relationship was consistent with a sequential indirect pathway in which perceived parental career support was linked to future work self-salience, which was in turn linked to academic engagement, and, ultimately, career adaptability. Overall, these findings underscore that adolescents' career adaptability may be related to an interplay of external support and future-oriented self-perceptions alongside engaged academic behavior, although causal interpretations are limited by the cross-sectional design.

Author contributions

Conceptualization: S. X.
 Data curation: S. L.
 Investigation: S. X., S. L.
 Validation: S. L.
 Resources: Y. G.
 Supervision: M. S.
 Visualization: Y. G.

Funding acquisition: M. S.
 Project administration: M. S.
 Writing – Original draft: S. X.
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Conflicts of interest

The authors declare that they are no conflict of interest.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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