The Relationship between Academic Performance, Achievement Motivation and Career Adaptability of Chinese High School Students

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Abstract: Given the importance of career adaptability to personal career and success, there is growing interest in how to cultivate youth's career adaptability in schools. This study explores the predictors of career adaptability and examines the mediating role of academic performance in the relationship between achievement motivation and career adaptability. Using the survey data of 147 Chinese high school students, a series of regression models find that academic motivation and academic performance have significant effects on career adaptability, as well as its four dimensions namely career concern, career control, career curiosity, and career confidence. Structural equation modeling further shows that achievement motivation can not only directly affect career adaptability, but also indirectly affect career adaptability through academic performance after controlling for the effects of gender, location, parent education, and family social and economic status. Research limitations and practical implications are finally discussed.

Keywords: career adaptability; academic performance; achievement motivation; high school students

1 Introduction

Recent decades have witnessed the increasing interest in individual career development among scholars, policymakers, educators, and other education stakeholders across the globe (Hirschi, 2009). Originally, career adaptability was proposed by Super and Knasel (1981) based on the previous concept of career maturity, and then Savickas (1997) theoretically expounded on career adaptability based on career construction theory. One of Savickas' contributions was that starting from Super's life-span model, he expanded the scope of

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career adaptability from the work world to the living world, emphasizing individual ability to adapt and balance in various social roles. His definition of career adaptability was widely cited, referring to "the readiness to cope with the predictable tasks of preparing for and participating in the work role and with the unpredictable adjustments promoted by the changes in work and work conditions" (Savickas, 1997, p. 254).

As the concept and theory of career resilience mature, empirical research has received increasing attention. For instance, Savickas and Porfeli (2012) organized multinational researchers from 13 countries to carry out an empirical study about the scale validation of career adaptability, providing a high-quality measurement tool for other empirical studies, like the correlational studies of career adaptability and other variables, as well as the experimental studies on improving career adaptability. One correlational study of 577 Spanish university students showed that career adaptability was positively associated with self-regulation, vocational identity, and academic engagement, and was negatively associated with academic burnout (Merino-Tejedor et al., 2016). One quasi-experimental study of college students found that providing career adaptability resources could improve career control and career curiosity, leading to better employment in the long run (Koen et al., 2012). Obviously, there emerges an increasing prevalence of career adaptability, which might be due to multiple practical reasons, such as the increasing job uncertainty and severe youth employment situation (Zhao & Xue, 2012).

However, most previous studies emphasized the career adaptability of college students, especially in the Chinese context. For instance, Zhao (2012) examined the relationship between career adaptability and family social and economic status of 2,150 Chinese college students and found that college students with high family social economic status had the highest career adaptability, followed by college students with low family social and economic status, and those with middle family social economic status had the lowest career adaptability. Su and Dong (2015) investigated the mediating role of achievement motivation in the relationship between parenting behavior and career adaptability with a sample of 503 college students. But the development of career resilience was generally considered to be a long-term process that began in childhood (Hartung et al., 2008). Therefore, further research may focus on younger groups other than college students, and explore the potential influencing factors of individual early career adaptability. To approach this research gap, the current study explores the factors that may affect the career adaptability of high school students, and it examines the mediating role of academic performance in the relationship between achievement motivation and career adaptability. The reasons for choosing high school students are twofold: (1) for high school students able to attend college, their career awareness and career planning determine their college preferences and choices, which in turn affect their subsequent career development; and (2) for high school students who directly enter the labor market after graduating from high schools, their career adaptability directly affects their career development, making it more important to be cultivated and studied. Additionally, the participants in the current study come from mainland China, providing a diverse sample for the existing research.

2 Literature Review

2.1 Academic Performance and Career Adaptability

When it comes to the potential predictors of career adaptability, many studies support the crucial role of academic performance on career adaptability (Akkermans et al., 2018; Datu & Buenconsejo, 2021). In general, students with high academic

performance tend to be more eager to enter college, are they able to transit from school to work more efficiently, and choose jobs that better match their educational background (Vuolo, 2014). For instance, an early study demonstrated that as adolescents spent more time in the education system, their career development was increasingly related to their educational development, and academic achievement had a strong influence on the career paths of students during the transition to adulthood (Heckhausen & Tomasik, 2002). A longitudinal study involving both America and Finland samples also found that, for both countries, children academic functioning at age eight had a long-term positive influence on their occupational attainment in adulthood after controlling for the influences of other personal variables (Dubow et al., 2006). Another longitudinal study with three-wave data of 1,151 adolescents further examined the precise links between career adaptability dimensions and academic performance, and found that academic performance could unilaterally affect career control and career confidence while the relation of academic performance and career concern was reciprocal (Negru-Subtirica & Pop, 2016). Although many studies have revealed the relationship between career adaptability and academic performance, to the best of our knowledge, there is no evidence to support this link in the Chinese context. As a consequence, it is advisable to use Chinese samples to examine the link between career adaptability and academic performance.

2.2 Achievement Motivation and Career Adaptability

Achievement motivation is a social motivation, referring to the intrinsic motivation and psychological tendency to strive for excellence and achieve higher goals, which also have an influence on personal career adaptability (Ebenehi et al., 2016; Fang et al., 2018; Su & Dong, 2015; Wu et al., 2016). Multiple studies on the relationship between achievement motivation and career adaptability found that students with high achievement motivation were more concerned about their future career development, more daring to explore different jobs, and they could coped with career role changes, showing higher career adaptability (Cheng, 2010; Wang & Zhang, 2010). In addition, a study on the relationship between college students' personality characteristics and career adaptability found that achievement motivation played a partial mediating role between positive personality and career adaptability, supporting the association between achievement motivation and career adaptability (Wu et al., 2016). In short, given that this relationship is well examined in many Chinese samples, personal achievement motivation should be regarded as an important predictor of career adaptability.

2.3 Achievement Motivation and Academic Performance

It is generally believed that achievement motivation can predict academic performance. A large number of studies showed that achievement motivation had a significant predictive role on academic performance, and this predictive relationship appeared in all education levels (Bakar et al., 2010; Deng, 2013; Emmanuel et al., 2014; Li & Zhou, 2011; Turner et al., 2009). In particular, a set of Chinese researchers found that achievement motivation had a significant impact on students' academic performance, including Chinese, mathematics and English (e.g. Fu et al., 2014), which constituted an important part of the current high school academic evaluation. Motivation towards success had a positive predictive effect on performance, and motivation to avoid failure had a negative predictive effect on performance (Deng, 2013). Therefore, academic performance is likely to play a mediating role between achievement motivation and career adaptability, since the relationships among these three concepts have been separately explored and supported before. However, there is little research on this mediating role of academic performance,

especially for the research on the relationship between achievement motivation and career adaptability in the Chinese context.

Based on previous studies, our research will focus on Chinese high school students and explore the relationships among academic performance, achievement motivation, and career adaptability. Specifically, we will examine the following research questions:

1. What are the effects of academic performance, achievement motivation on career adaptability after controlling for the effects of demographic variables?

2. What is the mediating role of academic performance on the relationship between achievement motivation and career adaptability?

3 Methodology

3.1 Sample

The participants of the current study were 200 students in a senior high school in Hebei province, a central area in mainland China. The students were encouraged to participate in the survey and finally, 200 students voluntarily finished the questionnaires. These respondents were excluded via two criteria: (1) if the answers had missing values; (2) if the answers to all items were almost the same. After data cleaning, there were 147 questionnaires eligible for further statistical analysis, with an effective rate of 73.5%. Among the 147 participants, 84 were male, accounting for 57.14% of the sample; 63 were female, accounting for 42.86% of the sample. The description information of the demographic variables was shown as follows.

3.2 Measurements

Career Adaptability

Regarding the tools for measuring career adaptability, the commonly used scales are Career Future Inventory (CFI; Rottinghaus et al., 2005) and Career Adapt-Abilities Scale (CAAS; Savickas, &

Table 1: Descriptive information of participants

Variables	Types	Number	Percentage %
Gender	Male	84	57.14
	Female	63	42.86
Location	Rural	69	46.94
	Town	39	26.53
	Urban	39	26.53
Family social economic status	Much worse than others	8	5.44
	Worse than others	29	19.73
	Similar to others	86	58.50
	Better than others	20	13.61
	Much better than others	0	0.00
Parent highest education	Elementary school and below	10	6.80
	Junior high school	66	44.90
	Senior high school	46	31.29
	College	9	6.12
	University and above	10	6.80

Porfeil, 2012). The CFI scale includes five dimensions, namely career agency, negative career outlook, career awareness, career support, and work-life balance. The CAAS scale includes four dimensions, namely career concern, career control, career curiosity, and career confidence. In the current study, we adopted the CAAS scale to measure career adaptability. The reasons for choosing CAAS scale were twofold: (1) compared to CFI scale, the CAAS scale was not limited to the professional world, which might be more suitable for high school students who had not yet entered the labor market; and (2) the CAAS scale had high reliability and validity, showing excellent measurement equivalence across 13 countries including China. In particular, Hou et al. (2012) developed and validated a Chinese version of the CAAS scale. The current study selected this version to measure the career adaptability of Chinese high school students. This scale consisted of 24 items, including four dimensions, namely career concern, career curiosity, career control, and career confidence, and each dimension contained 6 items. The example items of the four subscales included "thinking about what my future will be like", "becoming curious about new opportunities", "making decisions by myself", and "taking care to do things well" respectively. The higher the total score of the scale, the stronger the career adaptability. In this study, the reliability was 0.868, and factor loadings were all above 0.7, indicating that the reliability and validity were satisfactory.

Achievement Motivation

A widely used scale of achievement motivation is the Achievement Motivation Scale (AMS), which was validated by Norwegian psychologists Gjesme and Nygard (1970; 1973), and has been revised several times. The Chinese version was developed by Ye and Hegtvet (1992) with the samples of 298 college students and 503 high school students. The scale included two subscales, namely the motive to approach success and the motive to avoid failure, and each dimension has 15 items. All items were scored on a 4-point Likert scale, ranging from "very inconsistent" to "strongly consistent". The more consistent the items, the higher the score, and the higher level of motivation to pursue success and avoid failure. The overall score for achievement motivation was the score for success motivation minus the score for avoiding failure. Multiple studies used this scale to measure achievement motivation and showed high reliability and validity, especially Wen et al. (2014) employing it to evaluate the Chinese high school students. The example items included "I like to do my best work", "I am attracted to difficult tasks" and "I would like to have difficult jobs assigned to me". In this study, the reliability was 0.877, and factor loadings were all above 0.7, indicating that the reliability and validity were satisfactory.

Academic Performance and Demographic Variables

Academic performance was based on students' final exam scores in reading, math, and English. Demographic variables consisted of gender, location, family social and economic status, and parent highest education. The variable of a location referred to whether the student lived in a rural, town, or urban area. Family social and economic status referred to the student's perception of his or her family background. Parent highest education referred to the highest education level of parents, ranging from elementary school to university.

3.3 Data Analysis

The data analysis contained two steps. First, correlation analysis and linear regression were conducted to explore the effects of achievement motivation, academic performance, and demographic variables on career adaptability. Second, structural equation modeling (SEM) was used to examine the mediating role of academic performance in the relationship between achievement motivation

and career adaptability. Although the number of participants was relatively small, it was still acceptable to run SEM analysis (Wolf et al., 2013) owing to the three rules about sample size requirement for SEM: (1) a minimum sample size of 100 or 200 (Boomsma, 1982; 1985); (2) 10 cases for each variable (Nunnally, 1967); and (3) 5 or 10 cases for each parameter (Bentler & Chou, 1987).

4 Results

4.1 Regression Results

Pearson correlation matrix among achievement motivation, academic performance, and career adaptability was examined first (Table 2). Results showed that most correlation coefficients were statistically significant. The correlation coefficient of career adaptability and career confidence was the highest, whereas the correlation coefficient of achievement motivation and avoid failure was the lowest. Interestingly, avoiding failure was only significantly associated with career concerns in terms of career adaptability. In short, the correlations among these variables laid a solid foundation for further analysis.

After controlling for the effects of gender, location, family social and economic status, and parent highest education, the study conducted a set of regression models to examine the effects of academic performance, achievement motivation, the motive to success, and avoid failure on career adaptability. The results of regression models with career adaptability as the dependent variable were shown in Table 3. It found that: (1) academic performance and achievement motivation had significant positive effects on career adaptability when adding them to the regression models separately; (2) academic performance had a significant positive effect on career adaptability, while achievement motivation had a marginally significant positive effect on career adaptability when adding them to the model simultaneously; (3) if adding academic performance, the motive to success, and avoid failure to the regression model, only academic performance and motive to success had significant effects on career adaptability; and (4) comparing the five models horizontally, model 5 was the best based on the predictive effects and the goodness of fit. In model 5, the adjusted goodness of fit was 0.235, indicating that the independent variables could explain 23.5% of the change in career adaptability.

Similarly, a set of parallel models to Model 5 were conducted to examine the effects of these independent variables on career adaptability as well as the four sub-dimensions (Table 4). Results showed that academic performance had significant effects

Table 2: Correlations among key variables

	Academic performance	Achievement motivation	Motive to success	Avoid failure	Career adaptability	Career concern	Career control	Career curiosity
Achievement motivation	0.291***							
Motive to success	0.200*	0.587***						
Avoid failure	-0.169	-0.682***	0.191*					
career adaptability	0.231**	0.279***	0.474***	0.090				
career concern	0.115	0.162*	0.418***	0.182*	0.646***			
career control	0.199*	0.287***	0.323***	-0.057	0.739***	0.186*		
Career curiosity	0.119	0.132	0.330***	0.137	0.790***	0.371***	0.455***	
Career confidence	0.269**	0.260**	0.360***	0.010	0.838***	0.409***	0.578***	0.541***

Table 3: Regression results of career adaptability

Variables	Model1	Model2	Model3	Model4	Model5
Gender	-3.702**	-2.405	-1.853	-1.313	-1.882
	(1.836)	(1.884)	(1.788)	(1.883)	(1.778)
Location	1.443	2.070*	1.647	2.091*	1.809
	(1.173)	(1.203)	(1.148)	(1.204)	(1.137)
Family SES	2.485*	1.471	1.774	1.116	0.057
	(1.401)	(1.486)	(1.277)	(1.352)	(1.358)
Parent education	-1.162	-0.540	-0.972	-0.548	0.281
	(0.966)	(0.957)	(0.902)	(0.907)	(0.878)
Academic performance		0.039**		0.029*	0.027*
		(0.016)		(0.016)	(0.015)
Achievement motivation			0.354**	0.294†	
			(0.162)	(0.179)	
Motive to success					0.738***
					(0.184)
Avoid failure					0.060
					(0.184)
Intercept	87.645***	68.306***	85.968***	71.896***	41.863***
	(4.808)	(9.077)	(4.474)	(8.965)	(11.070)
N	139	130	139	130	130
R^2	0.056	0.103	0.126	0.148	0.276
R^2_a	0.028	0.067	0.093	0.106	0.235

Table 4: Regression results of career adaptability and its dimensions

Variables	Career adaptability	Career concern	Career control	Career curiosity	Career confidence
Academic performance	0.027*	0.007	0.008	0.003	0.010*
	(-0.015)	(0.005)	(0.005)	(0.005)	(0.005)
Motive to success	0.738***	0.247***	0.140**	0.182***	0.169***
	(-0.184)	(0.056)	(0.067)	(0.062)	(0.057)
Avoid failure	0.060	0.038	-0.039	0.073	-0.011
	(-0.184)	(0.044)	(0.070)	(0.046)	(0.057)
Gender	-1.882	1.379**	-0.753	-1.509**	-0.999
	(-1.778)	(0.589)	(0.652)	(0.710)	(0.619)

Variables	Career adaptability	Career concern	Career control	Career curiosity	Career confidence
Location	1.809	0.693*	0.405	0.417	0.293
	(-1.137)	(0.363)	(0.421)	(0.436)	(0.401)
Family SES	0.057	-0.617	0.660	-0.234	0.248
	(-1.358)	(0.510)	(0.567)	(0.536)	(0.480)
Parent education	0.281	0.393	-0.133	0.216	-0.195
	(-0.878)	(0.298)	(0.334)	(0.312)	(0.378)
Intercept	41.863***	3.871	15.173***	11.055***	11.764***
	(-11.07)	(3.258)	(3.911)	(3.754)	(3.775)
N	130	130	130	130	130
R^2	0.276	0.274	0.154	0.170	0.195
R^2_a	0.235	0.232	0.106	0.122	0.149

on career adaptability and career confidence, the motive to success had significant effects on career adaptability and all dimensions, while avoiding failure had no significant effect on career adaptability and its dimensions. Therefore, compared to avoiding failure, the motive to success was more predictive to career adaptability.

In addition, the effects of achievement motivation, motive to succeed and avoid failure on academic performance were also examined to provide a basis for SEM analysis. Results showed that achievement motivation, motive to succeed, and avoid failure had significant effects on academic performance, with the coefficients of 1.774, 1.983 and -1.603. Since the associations among achievement motivation, academic performance, and career adaptability were supported by regression models, it is advisable to conduct SEM analysis to explore the mediating role of academic performance in the relationship between achievement motivation and career adaptability.

4.2 SEM Results

Since both the total score of achievement motivation and the two subdimension scores were highly related to academic performance and career adaptability, academic performance might be potential mediating variables in the relationships between career adaptability and achievement motivation as well as its dimensions. Therefore, three SEM models were examined to explore which mediation model was the best. The results showed that mediation model 1 was the best compared to the other two mediation models, since its values of GFI, AGFI, TLI, and CFI were higher than 0.9 and the value of RMSEA was lower than 0.05, indicating excellent model fit (Table 5). Figure 1 showed that the standardized regression coefficients were 0.27, 0.29, and 0.21 respectively, which reached a 0.05 significance level. Therefore, the mediation model of achievement motivation, academic performance, and career adaptability was supported, in which the direct effect of achievement motivation on career adaptability was 0.27 and the indirect effect was 0.06. In addition, mediation model 2 showed that motive to success could significantly affect career adaptability directly and indirectly through academic performance, indicating that motive to success might be the core factor of achievement-motivation in predicting career adaptability. Mediation model 3 showed that the effect of avoiding failure on academic

Table 5: Fitness of each mediation model

Model	CMIN	DF	P	CMIN/DF	GFI	AGFI	TLI	CFI	RMSEA
Mediation model 1	9.654	8	0.290	1.207	0.979	0.944	0.980	0.990	0.039
Mediation model 2	21.523	8	0.006	2.690	0.950	0.870	0.861	0.926	0.113
Mediation model 3	15.175	8	0.056	1.897	0.963	0.902	0.910	0.952	0.082

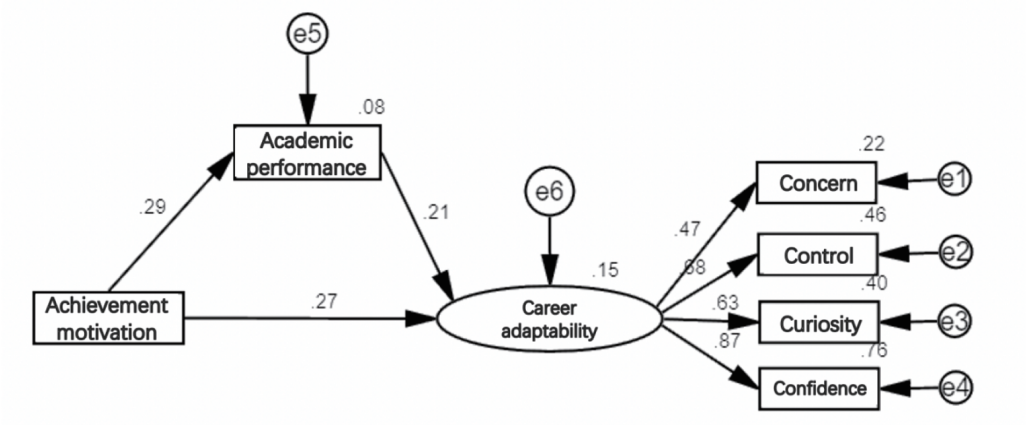

Figure 1: Mediation model 1

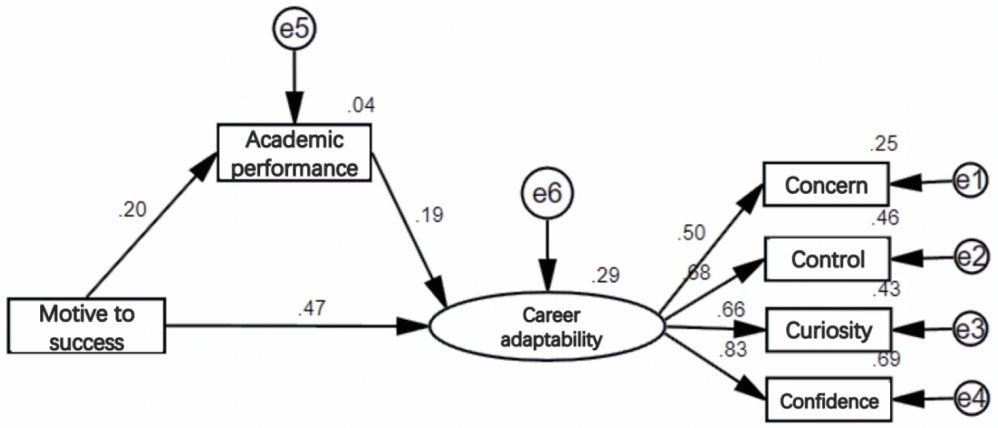

Figure 2: Mediation model 2

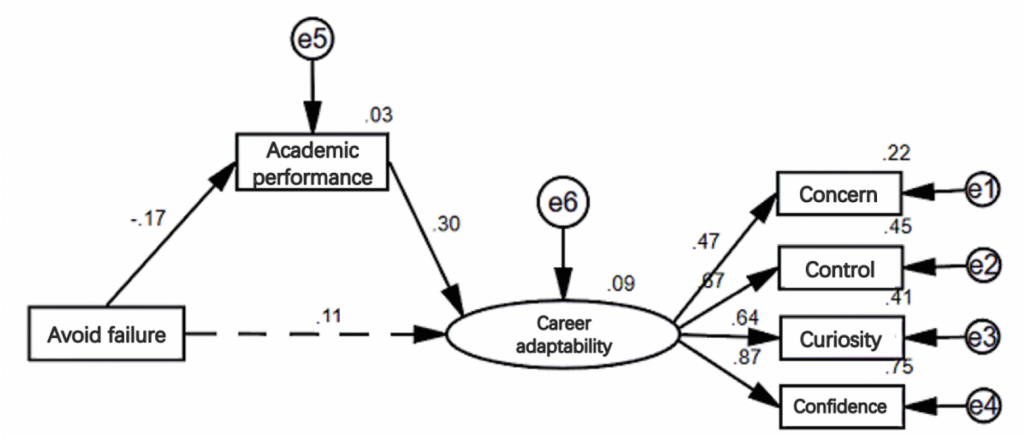

Figure 3: Mediation model 3

performance was significantly negative, whereas the effect of avoiding failure on career adaptability was not significant.

5 Discussion

The current study explored the effects of achievement motivation and academic performance on career adaptability after controlling for the effects of demographic variables and examined the mediating role of academic performance in the relationship between achievement motivation and career adaptability using survey data of 147 Chinese high school students. Multiple regression results showed that after controlling for the effects of gender, location, parent education, and family social and economic status, achievement motivation and the academic performance had significant effects on career adaptability, as well as its four dimensions namely career concern, career control, career curiosity, and career confidence. SEM analysis further showed that achievement motivation could not only directly affect career adaptability, but also indirectly affect career adaptability through academic performance. In particular, the motive to success might be the core factor of achievement-motivation in predicting career adaptability, since it could significantly affect career adaptability directly and indirectly.

The current study has three major contributions. First, most previous studies mainly focused on the effect of achievement motivation on career adaptability (e.g. Cheng, 2010; Wang & Zhang, 2010) or the effect of academic performance on career adaptability (e.g. Dubow et al., 2006; Negru-Subtirica & Pop, 2016), but little research examined the relations among the three factors simultaneously. The current study addressed this gap and supported the mediating role of academic performance in the relationship between achievement motivation and career adaptability in the Chinese context. Second, the current study further explored which type of motivation played a crucial role in career adaptability, and found that motive to success seemed to be the dominant predictor since it could affect career adaptability directly with a high coefficient of 0.47 and it could affect career adaptability indirectly through academic performance. As to avoid failure, its direct effects on career adaptability were not significant, indicating that encouraging students to stop avoiding failure was not useful for cultivating career resilience. Therefore, in order to improve high school students' career adaptability, it is advisable to improve students' achievement motivation, especially the motive to success. Additionally, the improvement of achievement motivation could contribute to the increase of academic performance. Third, the current study found that academic performance could significantly affect career adaptability, indicating that students with high academic performance tended to have high career adaptability, while students with low academic performance tended to have low career adaptability. Given that low-achieving students might go straight into the workforce instead of college, it is rather important to focus on their career development, especially the cultivation of career adaptability to help students transition from school to work. In order to improve high school students' career adaptability, it is advisable to improve students' achievement motivation, which may also be beneficial to their academic performance. Overall, the current study provided a promising approach for developing the career adaptability of Chinese high school students.

There are two limitations in the current study. First, the number of participants was relatively small, which may bias the results. Thus the findings in the current study should be interpreted with caution. Second, the current study only provided quantitative evidence for the mediating role of academic performance in the relationship between achievement motivation and career adaptability, lacking the support of qualitative data. Further research with larger sample sizes, more diverse samples and richer qualitative data

are encouraged to explore the associations of career adaptability and other factors. Overall, the current study examined the mediating role of academic performance in the relationship between achievement

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