

From Adaptive Readiness to Adaptation Results Testing the Career Construction Model of Adaptation in Chinese Adolescents

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Xiao-jing Zhang¹ , Mark L. Savickas², Yi-dan Ma³, Chang-jun Li⁴, Wei-feng Xue³, and Rui Wang⁵

Abstract

China's college entrance examination reforms necessitate a new view of adolescent career development along with suitable assessment instruments for career intervention with secondary school students. We conducted two studies to address this need. The first study examined the evidence for the validity and reliability of the Student Career Construction Inventory (SCCI). The results of the Confirmatory Factor Analysis (CFA) supported the four-factor structure of the SCCI. The findings suggest that the SCCI is an effective measure of career-construction behaviors among Chinese secondary school students. The second study evaluated the applicability of the career construction model of adaptation (CCMA). The model was empirically tested using the validated SCCI. The results of the serial mediation analysis confirmed that adaptive readiness indirectly influences adaptability resources, adapting responses, and adaptation results in the CCMA model.

Keywords

career construction behaviors, students career construction inventory, career construction model of adaptation, adolescents, resilience, school life satisfaction

¹Jingjin No. 2 Middle School Chongqing, Chongqing, China

²Department of Family and Community Medicine, Northeast Ohio Medical University, Rootstown, OH, USA

³Department of Psychology, Institute of Education Science, Leshan Normal University, Leshan, China

⁴School of Politics and Law, Hebei North University, Zhangjiakou, China

⁵School of Economics, Guizhou University, Guiyang City, China

Corresponding Author:

Xiao-jing Zhang, Jingjin No. 2 Middle School Chongqing, No. 288, Degan Street, Jiangjin District, Chongqing 402284, China.

Email: 170263220@qq.com

Introduction

Living in a dynamic global environment, employees are now confronted with more frequent transitions between different careers and organizations than ever before (Rudolph & Baltes, 2017). People no longer serve and commit to one organization and institution for life. Career mobility across organizations and institutions has become the norm. Therefore, the question of how individuals adapt to a changing and uncertain career environment has become a central issue in contemporary career theory (Watson, 2008). However, traditional career theories (matching or development theories) only emphasize commitment and stability and cannot answer the above questions (Savickas, 2013). Career construction theory (CCT), in contrast, well explains how individuals accomplish the process of adaptation in a changing and complex environment from the perspective of individual self-construction and social construction (Savickas, 2005, 2013).

Career construction theory holds adaptability as a core element and points out that the essence of individual career development is a dynamic construction process of pursuing mutual adaptation between the subjective self and the external world (Savickas, 1997, 2002, 2005, 2013). Career construction is defined as a representation of reality that individuals co-construct with society in a given context (Hou et al., 2014) and focuses on adapting to career development tasks and challenges (e.g., the transition from school to society, change from one career to another, change from one organization to another). The career construction model of adaptability (Savickas, 2005; Savickas & Porfeli, 2012), as a useful resource for individuals to build successful careers (Savickas, 2005), has received increasing attention from researchers.

The Career Construction Model of Adaptation

The CCT presents a comprehensive model with “adapt” at its core, suggesting that successful adaptation (adaptation results) at each career stage of an individual is influenced by a series of preparation and performance components: adaptive readiness, adaptability resources, and adapting responses. The CCMA refers to a sequence of adaptive readiness, adaptive resources, adapting responses, and adaption results, with each component being influenced by relevant contextual factors such as social support and environmental circumstances (Creed et al., 2009; Savickas, 2005, 2013; Savickas & Porfeli, 2012). This model states that people exhibit different levels of adaptive outcomes because they are differently prepared for internal or external change, while having different psychological resources to cope with change, and therefore exhibit different levels of action when change is needed. In other words, the CCMA argues that those who are ready and willing to change (i.e., adaptive readiness) are prone to have more psychological resources (i.e., adaptability resources) and be more capable of coping with changing internal or external conditions (i.e., adapting responses), resulting in higher levels of positive adaptive outcomes (i.e., adaption results) (Savickas & Porfeli, 2012).

Adaptive Readiness. In CCMA, adaptive readiness is the subjective willingness or preparedness to adapt, which is the internal motivation for adaptability, and can be expressed as personality traits such as proactivity and conscientiousness, as well as specific goal orientations, preferences, and self-perceptions. Individuals who are more adaptively motivated tend to have more proactive and resilient when they perceive a need to change themselves or their jobs. Adaptive readiness can be measured by variables such as proactive personality, openness to experience, conscientiousness, and flexibility (Leung et al., 2022; Tokar et al., 2020; Öztemel & Akyol, 2021). In the present study, we used resilience to indicate adaptive readiness. Resilience is a psychological asset that reflects an individual’s disposition to recover quickly

from adversity, setbacks, and failures, and even to transform and grow positively (Luthans et al., 2007). A critical aspect of resilience is the ability to adopt positive and healthy ways of coping with stress at minimal physical and psychological cost, not only to bounce back quickly but also to become stronger in the process (Gogo et al., 2019). Adolescents with higher levels of resilience are more motivated and skilled to implement different solutions to achieve their goals and have fewer mental health problems (Bockting et al., 2013; Davydov et al., 2010; Suárez-Soto et al., 2018; Xu et al., 2020), and have higher levels of career adaptability (Bimrose & Hearne, 2012; Buyukgoze-Kavas, 2016; Li, 2021; Pan et al., 2021). For these reasons, resilience was used as an indicator of adaptive readiness when testing the CCMA.

Adaptive Resources. The second dimension of the model is adaptive resources. Unlike resilience, adaptability is not a personality trait. It is a psychosocial resource. That is activated to deal with career transitions. Career adaptability refers to the capacity of workers to effectively resolve intricate and ambiguous problems over the course of their careers. This ability is both self-regulating and flexible, allowing individuals to adapt to changing circumstances and demands in the workplace. This concept was first introduced by Savickas and Porfeli in 2012, and has since become a critical focus area for businesses and academics alike. As such, career adaptability is a crucial skill for professionals to develop in order to succeed in today's dynamic and ever-changing job market. Career adaptability is the most critical element of CCT, supporting the development and use of adaptive resources that drive specific behaviors or behavioral tendencies, such as proactive career planning and career exploration (Urbanaviciute et al., 2014). Individuals with high levels of career adaptability can more easily cope with career-related issues and are adept at taking advantage of career development opportunities and challenges to smoothly integrate into new career roles.

Adaptive Responses. The adaptive response indicates the performance of actual behaviors that construct a career (Savickas et al., 2018; Savickas & Porfeli, 2012) and is the third dimension of the model. Specifically, for adolescents and emerging adults, adaptive responses involve specific behaviors that individuals generate when faced with career development tasks and changing internal and external conditions, such as exploring, planning, deciding, and committing. The most widely used instrument by researchers to operationally define adaptive responses is the Student Career Construction Inventory (SCCI; Savickas et al., 2018).

Adaptation Results. Adaptation results are the last dimension of the model and refer to the degree or state of relative adaptation to the career choices or challenges faced by an individual (Šverko & Babarović, 2019). Adaptation results are evaluated by various outcomes, such as decidedness, vocational identity, school or job satisfaction, and success.

Studies on the Career Construction Model of Adaptation

The CCMA provided a new interpretation for the study of occupational behavior and triggered a series of studies to verify career construction theory (Maggiori et al., 2017). Career construction behaviors (adaptive responses) are an important component of the model, and the publication of the SCCI in 2018 provided a valid tool to measure adaptive responses for those studies with students as subjects, and empirical studies have confirmed that this dimension is significantly correlated with the other three dimensions of the CCMA (Savickas et al., 2018; Öztemel & Akyol, 2021).

To date, in addition to the aforementioned studies, four other empirical studies have tested the four-dimensional structure of the CCMA in its entirety. First, Perera and McIlveen (Perera & McIlveen, 2017) attempted to conceptualize CCMA in terms of four dimensions and yielded results that are consistent with the CCT model, suggesting that higher levels of adaptation behaviors and better adaptation outcomes are associated with higher levels of adaptivity and adaptability. Second, Šverko and Babarović (Šverko & Babarović, 2019) tested the model with two studies (the relationship between adaptive responses and adaptive readiness, and the entire model containing the four dimensions), and the results of both studies showed significant relationships between the dimensions of the model. Third, Tokar et al. (2020) examined the full CCMA model with workers suffering from Chiari Malformation, a chronic condition that can result in a range of cognitive, sensory, motor, and psychosocial issues, and the results showed direct and indirect correlations between the four constructs, supporting the applicability of the model in a population of Chiari Malformation workers. Finally, Lenug et al. (2022) tested the CCMA using a group of Hong Kong high school students as participants; data were collected from two-time points, and the results indicated that the model could be used to explain and predict the transition experiences of high school students facing rapid social change. Additionally, the results of several meta-analytic studies (Johnston, 2018; Rudolph et al., 2017a, 2017b) support the association between the dimensions of the CCMA.

Overall, the results of the above empirical studies and meta-analyses support the relationship between the components of the CCMA. However, some shortcomings remain, including the need for more studies that incorporate all four dimensions to test the full adaptive model to fully test their direct and indirect effects (Rudolph et al., 2017b) and to obtain more findings on the differential prediction of adaptive resources on career planning responses and outcomes (Savickas, 1997; Xu, 2020). Along these themes, the present study aimed to test a model of career adaptability in a sample of Chinese secondary school students, with measures covering all four components of the adaptability process, to examine the aforementioned gaps in the literature.

The China Context

China has seven million middle school students, accounting for 4.96% of the national population (National Bureau of Statistics of China, 2021). With the introduction of the "Implementation Opinions of the State Council on Deepening the Reform of the Examination Enrollment System" (China State Council, 2014), most provinces in China have issued their reform plans for the college entrance examination, adopting a "3 + 1+2" structure and abandoning the traditional liberal arts and sciences separation. In the new college entrance examination system, the total score of the examination is composed of three compulsory subjects (i.e., Chinese, mathematics, and foreign language), one restricted subject (either physics or history), and two elective subjects, chosen from chemistry, biology, politics, geography, and any two other subjects.

A highlight of the reform is that students have several options; however, this level of choice comes with new challenges for middle school career education and students' career development. Career education and guidance in middle school is required for education reform and is crucial for inspiring students and improving their overall quality of life (Liu et al., 2021; Lu & Jiang, 2021). Therefore, many middle schools in China have begun to incorporate career education into the curriculum. However, the lack of practical research on career construction theory and the lack of standardized Chinese assessment tools for adolescent career development in China (Hou et al., 2014) makes it difficult for teachers and career development

consultants to scientifically assess, intervene, and predict adolescent career development scientifically.

Most of the empirical studies on CCMA have been conducted in Western societies with an individualistic cultural climate (Öztemel & Akçol, 2021). However, only few researchers have addressed this area in Eastern cultural regions, and its cross-cultural appropriateness is questionable (Zhao & Guo, 2010). Specifically, China is a society in which collectivist cultural characteristics are more predominant, with a cultural characteristic of ascribing everything to relationships (Yang & Yu, 1992). In a Chinese culture characterized by a “relational orientation,” individuals are described as being more group-oriented and concerned with the perspectives of kin and their external roles. In contrast, in Western societies, where individualistic cultures predominate, individuals are described as self-oriented, encouraged to pursue their own goals independently, and concerned with internal abilities, thoughts, and feelings (Markus & Kitayama, 1991; Triandis, 1995, 2001). Consequently, the career development of individuals belonging to different cultures has many different characteristics. For example, when making career decisions in collectivist cultures, individuals are more concerned about the opinions of their parents, and this reliance is seen as a sign of responsibility and filial piety that is worthy of respect (Chen & Zhang, 2014; Hou et al., 2009). However, in individualistic cultures, individuals are defined as “healthy” development steps to separate from the family and begin to trust their own decision-making abilities (Gysbers et al., 2003). When it comes to career development, individualistic cultures prioritize self-reliance and personal exploration, while collectivistic cultures value the opinions of close family and friends and rely on their support. These differing cultural values may affect the relationship of the four elements in the CCMA model.

Emphatically, aside a study conducted in Hong Kong, China, which fully investigated CCMA (Leung et al., 2022), this is the first study to fully examine the CCMA in mainland China. Due to special reasons such as history and geography, Hong Kong students grow up in an environment that is very different from that of mainland students in terms of traditional culture, way of thinking, living habits and systems, resulting in their values and outlook on life being different from those of mainland students (Chen, 2019; Huang, 2020). Because of the cultural differences between the two places, mainland students studying in Hong Kong or Hong Kong students studying on the mainland will encounter the problem of cultural maladjustment (Huang, 2015; Liu & Xu, 2008; Yang, 2012).

Based on the above, we consider it necessary to investigate the applicability of the CCMA in the Chinese secondary school student population to reveal the cross-cultural applicability of the model. Exploring the reliability of the CCMA model in adolescent populations can provide an effective theoretical guidance tool for a wide range of secondary school students and career counselors, with great theoretical and practical implications. Therefore, we believe this study is groundbreaking for career education and counseling practitioners in mainland China, as well as for other researchers interested in the CCMA.

Modeling Testing and Hypotheses

Based on the above theoretical and experimental explanations, we propose four hypotheses regarding the relations between the four dimensions of CCMA: the hypothesis that the four dimensions would be positively correlated (H1); the hypothesis that career adaptability (H2), adaptation responses (H3), and sequential career adaptability and adaptation responses (H4) mediate the relationship between resilience and school life satisfaction. In the analysis of serial-mediated effects, all the path parameters are estimated simultaneously; however, three mediating effects are tested in the structural model (Hayes, 2017). This approach has the

advantage of being able to distinguish between the indirect effects of CAAS (H2) and the indirect effects of SCCI (H3) in the CCMA model. This approach also enables us to detect indirect effects through two mediating variables in a series (H4) (Taylor et al., 2008). In summary, we preferred to test the CCMA using serial-mediated effects analysis.

To prepare for the test of the CCMA model, we examined the factor structure of the SCCI (Savickas et al., 2018) and assessed the applicability of the SCCI among Chinese secondary school students. According to Hofmann (1995), there are three hypotheses related to the factor structure of a set of data in the CFA: a hypothesis about the number of factors, a hypothesis specifying whether the factors are expected to be correlated or uncorrelated, and a hypothesis structure matrix specifying the factors for which the variables are expected to load. Based on this, we examined the following three hypotheses: the SCCI has four dimensions concerning crystallizing, exploring, deciding, and preparing (H5); there are significant correlations between these four dimensions of the SCCI (H6); and all items' loadings are similar to the dimensions of the original scale (H7).

Method

With reference to previous studies (Tokar et al., 2020; Öztemel & Akyol, 2021), two independent studies were designed in the present research to extend our understanding of CCMA and to make important contributions to CCT theory. In Study 1, the validity of the SCCI (Savickas et al., 2018) was verified in a Chinese junior and senior secondary school student population. As well, the convergent validity of SCCI factors from the best-fitting CFA model was evaluated in a preliminary way. Based on evidence from past research (Öztemel & Akyol, 2021; Savickas et al., 2018; Wang et al., 2019; Yuen et al., 2010), SCCI components were expected to have significant correlations with measures of career adaptability, self-efficacy (talent development self-efficacy and career exploration self-efficacy). To examine the construct validity of the SCCI, the Career Adapt-Abilities Scale (CAAS; Savickas & Porfeli, 2012; Hou et al., 2012) was utilized. Use was also made of the Career and Talent Development Self-Efficacy Scale (CTD-SES; Yuen et al., 2010).

In Study 2, CCMA consisted of four dimensions (adaptive readiness, adaptability resources, adapting responses, and adaptation results), and the complete four-dimensional structure was tested empirically. Finally, an attempt was made to explain the relationship between the four dimensions in the model.

Study 1

Participants and Procedure. A convenience sample of 585 Chinese adolescents was recruited from three secondary schools in Beijing ($n = 111$, 19%), Shanghai ($n = 147$, 25.1%), and Chongqing ($n = 327$, 55.9%). Participants completed the paper-pencil questionnaire from November to December 2022. The sample included 265 boys (45.3%) and 320 girls (54.7%), aged 12–19 years ($M = 15.29$; $SD = 1.96$). To conduct the statistical analysis, gender was coded 1 for *boys* and 2 for *girls*, while age was measured as a continuous variable.

We made sure to follow all the necessary regulations set by the Chinese Psychological Association and submitted the study's details to the ethics committee of Leshan Normal University as per their requirements. Career counselors administered the assessments with small groups of students. Participants were informed that they would receive a personalized report of their results, and their data would be confidential. The study's aims and procedures were explained. Participants were also asked to read the questionnaire instructions before completing it. They were free to withdraw from participation at any stage of the research.

Development of the Chinese version of the Student Career Construction Inventory. We developed an 18-item SCCI China Inventory based on the SCCI English Form proposed by Savickas et al. (2018). First, permission was obtained from the questionnaire developer via email to revise the Chinese version of the questionnaire. Second, the scale was translated into Chinese by two graduate students majoring in career development and then back-translated into English by another Chinese graduate student majoring in English, following a standardized translation procedure. Third, the Chinese version of the scale was compared and revised by the research team members. Finally, 30 junior and senior secondary students were randomly selected to complete the questionnaire and were asked to provide feedback on the clarity and comprehensibility of the questions. The students gave their feedback that the questions were easy to understand and had no ambiguity. At this point, the Chinese translation process of the SCCI was completed.

After the data from Study 1 were retrieved, preliminary cleaning, internal consistency, criterion validity, and confirmatory factor analysis were conducted to test the reliability and validity of the scale.

Measures

Student Career Construction Inventory. The SCCI was developed by Savickas et al. (2018) to measure the development and completion of students' career-constructing behaviors. The questionnaire consists of four subscales: crystalizing (e.g., "Recognizing my interests and abilities"), exploring (e.g., "Reading about occupations"), deciding (e.g., "Finding a line of work that suits me"), and preparing (e.g., "Beginning the training needed for my preferred job"), and the sum of the scores of the four subscales constitutes the total questionnaire score. Higher scores on the measure indicate greater levels of career construction behavior. Participants rated items on a 5-point Likert scale ranging from 1 (I have not thought about it much) to 5 (I have already done this) to rate the extent to which they agree with each statement. Reliability was assessed using Cronbach's alpha: total score (.94), crystallizing subscale (.87), exploring subscale (.87), deciding subscale (.92), and preparing subscale (.86).

Career Adapt-Abilities Scale. Working together, the CAAS was developed in English by Savickas and Porfeli (Savickas & Porfeli, 2012) and in Chinese by Hou et al. (Hou et al., 2012). To measure a person's level of career adaptability resources. The instrument uses four subscales that assess respondents' levels of concern (e.g., "Preparing for the future"), control (e.g., "Taking responsibility for my actions"), curiosity (e.g., "Investigating options before making a choice"), and confidence (e.g., "Learning new skills"). Subscale scores combine to obtain a total score as an indicator of career adaptability. Each of the 24 items requires participants to self-report their degree of ability in the corresponding career adaptability domain. Item responses are given on a 5-point Likert scale ranging from 1 ("not strong") to 5 ("strongest"). Reliability was assessed using Cronbach's alpha: total score (.94), concern subscale (.87), control subscale (.87), curiosity subscale (.92), and confidence subscale (.86).

Career and Talent Development Self-Efficacy Scale. In 2010, Yuen, Gysbers, Chan, Lau, and Shea coined the term "career and talent development self-efficacy" in the field of career guidance. This specific type of self-efficacy focuses on helping students recognize and develop their skills and talents, which will be beneficial for their future careers. Talent development self-efficacy and career exploration self-efficacy were measured by the Talent Development Self-Efficacy Scale (TDSS; e.g., "Recognize my potential strengths in extra-curricular activities") and the Career Development Self-Efficacy Scale (CESS; e.g., "Cultivate

my interests according to the career I choose”), two subscales of the CTD-SES (Yuen et al., 2010). Specifically, TDSS examines student capabilities related to academic subjects and extracurricular activities, and CESS examines student competencies related to the exploration of career paths, goals, and the relationships between career paths and study habits. Each of the two subscales contains 6 items measured on a 6-point Likert scale ranging from 1 (extremely lacking in confidence) to 6 (extremely confident), where higher scores indicate greater talent development and career exploration self-efficacy. Cronbach’s alpha for the TDSS and CESS subscales were .79 and .81 respectively (Yuen et al., 2010). In our study, Cronbach’s alpha for the two subscales were .87 and .90.

Results

Preliminary Analyses. Before examining the measurement properties of the scales, preliminary data cleaning was first performed. Missing and extreme values were identified through frequency statistics and checking the minimum and maximum scores. Then, 10 cases exceeding 1.7% were excluded based on Tabachnick and Fidell’ (2013) recommendation. According to Tabachnick and Fidell, since the proportion of missing values was only .01%, the average of the distribution does not change when the lost data are filled in with the mean, so the mean of the variables was substituted for the missing values. A total of 585 samples eventually entered the subsequent statistical processing. The assumption of univariate normality was satisfied for all the study variables involved in the study (i.e., $-2 < \text{skewness} < +2$ and $-7 < \text{kurtosis} < +7$; Curran et al., 1996). Data were analyzed using Statistical Package for the Social Science (SPSS) version 22.

Structure of the SCCI Chinese version. This study assessed the applicability of the SCCI hierarchical structure to a sample of Chinese secondary school students using four different levels of confirmatory factor analysis (CFA). CFA was conducted using Analysis of Moment Structure (AMOS) version 21.0. The χ^2 goodness-of-fit test, comparative index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) were used to assess model-data fit. In general, a model is considered to have an acceptable fit when the χ^2/df is equal to or lower than 5 (Bollen, 1989), CFI and TLI values are greater than .90, RMSEA is between .05 and .08, and the SRMR is equal to or lower than .08 (Browne & Cudeck, 1992; Hu & Bentler, 1999). Results of the CFA (see Table 1) indicated that a one-factor model of career construction did not have an acceptable model fit. Two-factor and three-factor models had improved fit. The differences observed in the CFI ($\Delta = .032$) and RMSEA ($\Delta = .021$) fit indices when comparing the three-factor and four-factor (second-order) models were significant, exceeding the recommended threshold of .01 (Cheung & Rensvold, 2002; Davidov et al., 2008). Notably, the second-order four-factor model demonstrated superior fit over the three-factor model. The model displayed an adequate fit (see Table 1).

Table 1. Goodness-of-fit Statistics for SCCI.

Model	S-B χ^2	df	CFI	TLI	RMSEA	SRMR
One-factor	1838.81***	135	.752	.719	.147	.093
Two-factor	1414.201***	134	.813	.787	.128	.075
Three-factor	839.758***	132	.899	.871	.099	.055
Four-factor (Second-order)	601.554***	131	.931	.92	.078	.05

Note. *** $p < .0001$; SCCI = Student Career Construction Inventory.

CFA results revealed that the factor loadings for the items were found to be adequate (Table 2), the original SCCI's 18 items and 4-subfactor structures were taken as a basis and no changes were made to this structure. The results showed that all the items were loaded without any modification on the same dimensions as in the original scale. Moreover, correlation analysis was performed to test the relations between the dimensions (Table 3). The results of the correlation analysis confirmed that the four dimensions were positively correlated with each other, with correlation coefficients ranging from .51 to .71 ($p < .01$). These findings supported the hypotheses that the SCCI has four dimensions (H5), these four dimensions have significant positive correlations with each other (H6), and all the items load on dimensions are consistent with the dimensions of the original scale (H7).

Reliability, and Convergent Validity of the SCCI. Table 3 presents means, standard deviations, internal consistency estimates, and intercorrelations of SCCI Subscales, Total Scale, CAAS and CTD-SES Subscales.

Cronbach's α was used to evaluate the internal consistency of the scale. All the reliability coefficients of each sub-dimension and the total were higher than .70, which is the critical value (DeVellis, 2003).

The correlations between the SCCI, CAAS, and CTD-SES Subscales were calculated to demonstrate further evidence of construct validity. The results of the correlation analysis showed that the SCCI total score correlated positively with the CAAS ($r = .67, p < .01$), positively with the TDSS ($r = .56, p < .01$), and positively with the CESS ($r = .72, p < .01$).

Study 2

Participants and Procedure. The sample size is 720 junior and senior secondary school students recruited from three comprehensive middle schools in Beijing ($n = 251, 34.86\%$), Shanghai ($n = 228, 31.7\%$), and Chongqing ($n = 241, 33.5\%$). There were 310 (43.06%) boys and 410 (56.94%) girls aged 13–19 years ($M = 15.65; SD = 1.62$).

For Study 2, we followed a procedure similar to that of Study 1. As in Study 1, all required details were submitted to the ethics committee of Leshan Normal University. The career counselors were responsible for administering a small group assessment to the students. We provided the participants with an explanation of the purpose and procedures of the study and assured them that their responses would be kept confidential. Additionally, we requested the participants to read the questionnaire instructions before completing it and emphasized that they could withdraw from the study at any point in time. Furthermore, we informed the participants that they would receive a personalized report of their results.

After collecting data for Study 2, we conducted preliminary cleaning, internal consistency test, kurtosis and skewness checks, and correlation analyses to ensure the data was suitable for structural modeling tests.

Measures

The Resiliency Scale. We operationally defined resilience using the Resilience subscale of the Positive Psychological Capital Questionnaire (PPQ; Zhang et al., 2010). The Resiliency Scale contains seven questions (e.g., "I can recover quickly from setbacks") and is a self-report questionnaire that assesses psychological resilience (Zhang et al., 2010). Participants rated items on a seven-point Likert scale ranging from 0 (not true at all) to 7 (true all the time). Higher scores indicate greater levels of resilience. In this study, the internal consistency for the Resiliency Scale was .79.

Table 2. SCCI items and Standardized factor Loadings.

Item (First-Order Factor Loadings)	Crystallizing	Exploring	Deciding	Preparing
CRY 01. Forming a clear picture of my personality. 清晰认识我的性格	.68			
CRY 02. Recognizing my interests and abilities. 明确我的兴趣和能力	.82			
CRY 03. Determining what values are important to me. 确定我看重的价值观念	.71			
CRY 04. Knowing how other people view me. 知道他人如何看待我	.53			
CRY 05. Identifying people that I want to be like. 确定我想成为怎样的人	.72			
CRY 06. Finding out what my interests are. 找出我的兴趣所在	.74			
EXP 01. Learning about different types of jobs. 了解不同类型的工作		.77		
EXP 02. Reading about occupations. 阅读一些职业资料		.85		
EXP 03. Investigating occupations that might suit me. 调查可能适合我的职业		.87		
DEC 01. Deciding what I really want to do for a living. 决定我真正想要赖以谋生的工作			.83	
DEC 02. Finding a line of work that suits me. 找出一些事适合我的工作			.87	
DEC 03. Selecting an occupation that will satisfy me. 选择一个让我满意的职业			.87	
DEC 04. Planning how to get into the occupation I choose. 计划如何进入我选择的行业			.80	
DEC 05. Reassuring myself that I made a good occupational choice. 让自己放心, 我做了一个很好的职业选择			.84	
PRE 01. Finding opportunities to get the training and experience I need. 寻找机会获得我需要的培训和经验				.73
PRE 02. Beginning the training needed for my preferred job. 为我喜欢的职业开始我需要的训练				.76
PRE 03. Qualifying for the job I like best. 有资格胜任我最喜欢的工作				.86
PRE 04. Getting a job once I complete my education or training. 一旦完成我的教育或培训, 就可以得到一份工作				.76
Construct Item (Second-Order Factor Loadings)	Factor Loading			
SCCI adapting 1. Crystallizing	.68			
2. Exploring	.85			
3. Deciding	.93			
4. Preparing	.82			

Note. $N = 585$; SCCI = Student Career Construction Inventory; all factor loadings are significant at $p < .001$.

Table 3. Means, Standard Deviations, Internal Consistencies, and Intercorrelations of SCCI Subscales, Total Scale, CAAS, and CTD-SES Subscales.

Variables	M	SD	α	1	2	3	4	5	6	7
1. SCCI crystallizing	3.58	.92	.87							
2. SCCI exploring	2.81	1.16	.87	.55**						
3. SCCI deciding	2.76	1.10	.92	.54**	.71**					
4. SCCI preparing	2.59	1.00	.86	.51**	.58**	.71**				
5. SCCI adapting	3.00	.86	.94	.80**	.82**	.89**	.82**			
6. CAAS adaptability	3.41	.74	.94	.65**	.49**	.50**	.56**	.67**		
7. TDSS Self-efficacy	3.96	1.02	.87	.56**	.39**	.43**	.48**	.56**	.66**	
8. CDSS Self-efficacy	3.70	1.12	.90	.55**	.54**	.67**	.62**	.72**	.62**	.66**

Note. ** $p < .01$; SCCI = Student Career Construction Inventory; CAAS = Career Adapt-Abilities Scale; CTD-SES = Career and Talent Development Self-Efficacy Scale, TDSS = Talent Development Self-Efficacy Scale, CDSS = Career Development Self-Efficacy Scale.

Career Adapt-Abilities Scale. The Career Adapt-Abilities Scale (CAAS; Hou et al., 2012; Savickas & Porfeli, 2012), which has been used in more than 300 studies was selected for this study to operationally define adaptive resources. The description of the CAAS can be found in the methods section of Study 1. In Study 2, reliability was measured using Cronbach’s α coefficients, which were found to be .98 for the total score, .93 for the concern subscale, .92 for the control subscale, .93 for the curiosity subscale, and .95 for the confidence subscale.

Students Career Construction Inventory. In this study, the SCCI was chosen to operationally define adaptive responses. A more thorough description of the SCCI can be found in the methods section of Study 1. Reliability was measured using Cronbach’s α coefficients, which were found to be .97 for the total score, .90 for the crystallizing subscale, .91 for the exploring subscale, .95 for the deciding subscale, and .92 for the preparing subscale.

School Life Satisfaction Rating Questionnaire for Adolescents. In the present study, we used school life satisfaction to operationally define adaptation results. School life satisfaction is an adolescent’s overall assessment of their quality of school life based on their chosen criteria (Gilman & Huebner, 2000; Tao et al., 2005). We used the School Life Satisfaction Rating Questionnaire for Adolescents (Tao et al., 2005) to operationally define school life satisfaction. Participants rated items on a 5-point Likert scale ranging from 1 (extremely unsatisfied) to 5 (extremely satisfied) to rate the extent to which they agreed with each statement (e.g., “The extent to which you feel satisfied with the help you receive from your teachers”). Higher scores indicate greater levels of school-life satisfaction. The internal consistency of the SLSRQA in the current sample was .92.

Results

Preliminary Analysis. Prior to testing the serial mediation model, we conducted preliminary analyses. First, we used the missing descriptive statistics to identify the characteristics of the participants. Second, we used Pearson correlations to examine the relationships among resilience, career adaptability, career construction behaviors, and school life satisfaction. Third, to test for common method bias, an exploratory factor analysis of all factor items simultaneously was performed using Harman’s one-way as suggested by Podsakoff et al. (2003). Statistical analyses were performed using SPSS 22 statistical software.

The preliminary analyses showed satisfactory asymmetry and kurtosis values for all items and a low error rate (<1%). Curran et al. (1996) recommended a score set with skewness within the range of “-2, +2” and kurtosis within the range of “-7+7”, indicating an approximately normal distribution. Thus, we retained all data in their original form. In addition, the Harman one-way test found that the explanatory rate of the first principal component variance of the unrotated factor extraction was 35.62%, which did not reach the critical value of 40% (Podsakoff & Organ, 1986), indicating that homogeneous variance was not the main reason for the synergistic variation among the variables in this study and further data analysis could be taken.

Descriptive statistics and correlations among the variables were then investigated, and the results are presented in Table 4.

Descriptive Statistics, Reliabilities, and Correlational Analysis. Cronbach’s alpha was used to test the internal consistency. As seen in Table 5, these results indicate that the reliability of all scales used in the study was adequate. The correlation coefficients showed a moderate relationship between the four variables. Resilience was positively correlated to career adaptability ($r = .44, p < .01$), career construction behaviors ($r = .35, p < .01$), and school life satisfaction ($r = .51, p < .01$). In contrast, career adaptability was positively correlated to career construction behaviors ($r = .66, p < .01$) and school life satisfaction ($r = .46, p < .01$), and career construction behaviors were positively correlated to school life satisfaction ($r = .40, p < .01$). These relationships indicate that the four variables are appropriate for model testing (Tabachnick & Fidell, 2013).

Serial Mediation Effect of Career Adaptability and Career Construction Behaviors in the Relationship Between Resilience and School Life Satisfaction. The serial mediation tests were run using the PROCESS macro v2.15 (Model 6) in SPSS (Hayes, 2017). To test the direct and indirect

Table 4. Means (M), Standard Deviations (SD), Correlations, and Reliabilities.

Variables	M	SD	α	Skew	Kurtosis	1	2	3
1. RS	2.29	.77	.79	.37	.08			
2. CAAS	3.00	.90	.94	.29	-.52	.44**		
3. SCCI	3.10	.98	.93	.01	-.75	.35**	.66**	
4. SLSRQA	3.47	.64	.92	-.23	.68	.51**	.46**	.40**

Note. RS = The Resiliency Scale; CAAS = Career Adapt-Abilities Scale; SCCI = Student Career Construction Inventory; SLSRQA = School Life Satisfaction Rating Questionnaire for Adolescents; α = Cronbach’s alpha, ** $p < .01$.

Table 5. Regression Coefficients and Standard Errors for the Serial Mediation Model.

Antecedents	CAAS			SCCI			SLSRQA		
	B	SE	p	B	SE	p	B	SE	p
RS	.366	.028	<.001	.069	.028	<.05	.224	.020	<.001
CAAS				.686	.034	<.001	.159	.030	<.001
SCCI							.076	.027	<.01

Note. B = regression coefficient, SE = standard error; RS = The Resiliency Scale; CAAS = Career Adapt-Abilities Scale; SCCI = Student Career Construction Inventory; SLSRQA = School Life Satisfaction Rating Questionnaire for Adolescents.

effects, we used 5,000 bootstrap samples with 95% confidence intervals (CIs). If the CI does not center on zero, the corresponding effect is statistically significant (Fang et al., 2012; Fritz & Mackinnon, 2007; Mackinnon, 2008). All paths in the model from adaptive readiness to adaptation results are shown in Figure 1 and the results of serial mediation analysis are shown in Table 5 (B refers to the B path in the serial mediation model).

The result showed that the total effect of resilience on school life satisfaction was significant ($B = .307, p < .001$), and the direct effect remained significant ($B = .224, p < .001$) after putting the mediation variables of career adaptability and career construction behaviors into the model. First, H1 was supported by the results of the analysis. The results showed a set of significant positive correlations between the four dimensions: resilience was positively associated with career adaptability ($B = .366, p < .001$), which in turn was related to school life satisfaction ($B = .159, p < .001$); resilience was positively associated with career construction behaviors ($B = .069, p < .05$), which in turn was related to school life satisfaction ($B = .076, p < .01$); career adaptability was positively associated with career construction behaviors ($B = .686, p < .001$); resilience was positively associated with school life satisfaction ($B = .224, p < .001$). Second, H2 was supported by the results of the analysis. The results showed that career adaptability mediated the relationship between resilience and school life satisfaction (indirect effect = .058, 95% CI = [.034, .085]). Third, H3 was supported by the results of the analysis. The results showed that career construction behaviors mediated the relationship between resilience and school life satisfaction (indirect effect = .005, 95% CI = [.001, .014]). Finally, H4 was supported by the results of the analysis. The results showed that career adaptability and career construction behaviors serially mediated the relationship between resilience and school life satisfaction (indirect effect = .019, 95% CI = [.006, .034]).

Discussion

The present study investigated the career construction model of adaptation (Savickas, 2005; Savickas & Porfeli, 2012) using a sample of Chinese adolescents. Two studies were carried out for this purpose. In the first study, we examined the higher-order structure of the SCCI (Savickas et al., 2018), which was accepted as a mediator of the model, adapting responses (Savickas & Porfeli, 2012), and found that the data results supported its theoretical hypotheses. In addition, the findings suggested that the SCCI is a valid tool for Chinese adolescents. In the second study, we tested a chain mediation model in which adaptive readiness

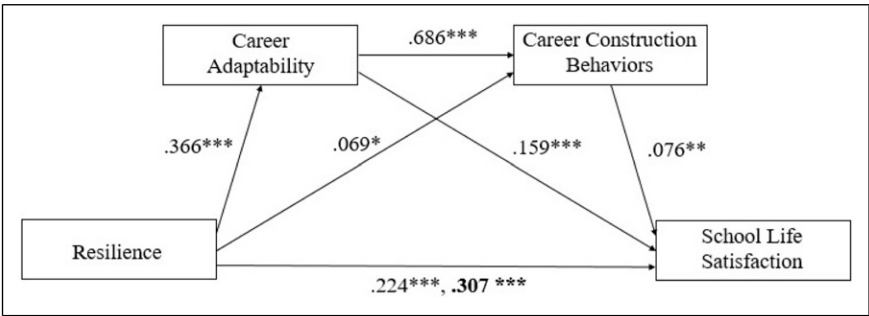


Figure 1. The proposed serial mediation model of the CCMA.
Note. The proposed serial mediation model of the CCMA. $N = 720$. The total effect of resilience was shown in bold.
* $p < .05$, ** $p < .01$, *** $p < .001$.

(i.e., adaptivity) for similar traits facilitates adaptive resources, which in turn constrain adaptive responses, leading to adaption results. The results support the direct and indirect theoretical hypothesized relationships between all four dimensions of CCMA. Adaptive readiness significantly predicted career adaptability, adapting response, and adaption results; career adaptability significantly predicted adapting response and adaption results; and adapting response significantly predicted adaption results. Furthermore, as hypothesized by the CCMA, both career adaptability and adapting response individually mediated the relationship between adaptive readiness and adaption results, while career adaptability and adapting response acted as a chain mediator between adaptive readiness and adaption results.

As far as we know, this is the first independent test of the structure of the SCCI in a Chinese adolescent population since its formal publication by Savickas et al. (2018). The CFA results show that the theoretically assumed stratification structure of the SCCI fits our data fairly well. Item and higher-order factor loadings were generally consistent with those reported by previous findings (Savickas et al., 2018; Öztemel & Akyol, 2021). The internal consistency of the SCCI subscales is also similar to the findings of Savickas et al. (2018). The present study provided evidence for construct validity by establishing predicted connections with measures of career adaptability (CAAS; Savickas & Porfeli, 2012; Hou et al., 2012) and self-efficacy in career and talent development (CESS and TDSS; Yuen et al., 2010). Overall, the CFA results and descriptive statistics support the use of the SCCI with the Chinese adolescent population.

The CCMA was tested in Study 2. CCT mapped a continuum from adaptive readiness to adaptability resources, adapting responses, and adaption results (Savickas, 2005, 2013). Although previous studies revealed that career adaptability is significantly related to school life satisfaction (Liu et al., 2012; Xie et al., 2014), and resilience (Li, 2021; Shao et al., 2021), the number of studies testing the entire model remains limited. The present study demonstrates how adaptive readiness, directly and indirectly, influences adaption results, and it provides important clues for exploring the internal mechanisms of adaption results (school life satisfaction) in secondary middle school students. Furthermore, in addition to replicating some of the studies that partially tested the CCMA, this study provides important insights into the internal mechanisms of how the four dimensions of the adaptation model interact with each other.

These results reveal potential mechanisms for the components between adaptive readiness and adaption results. First, adaptive readiness positively predicted adaption results. The positive correlation between adaptive readiness and adaption results is consistent with previous studies (Öztemel & Akyol, 2021; Rudolph et al., 2017a, 2017b; Savickas et al., 2018; Šverko & Babarović, 2019; Tokar et al., 2020; Youssef & Luthans, 2007) and suggests here that secondary school students with higher levels of resilience have more motivation and skills to implement different solutions to achieve their goals, and when faced with career adaptation-related problems and adversity, they are more likely to develop specific coping strategies to overcome internal or external obstacles and continue to progress toward their current career goals until they achieve them. Second, there are three types of mediation effects in the four-stage CCMA: career adaptability and adapting responses are separate mediators, and these two variables are also serial mediators. That is, career adaptability partially mediated the relationship between adaptive readiness and adaptation results, which is in accordance with previous studies (Öztemel & Akyol, 2021; Rudolph et al., 2017a, 2017b; Savickas et al., 2018; Šverko & Babarović, 2019; Tokar et al., 2020). This result suggests that secondary school students with higher levels of resilience are more likely to develop higher levels of career adaptability, which in turn would help them to produce better adaptation results. Similarly, adapting responses played a partially mediating role in the relationship between adaptive readiness and adaptation results, which is in line with previous studies (Öztemel & Akyol,

2021; Rudolph et al., 2017a, 2017b; Savickas et al., 2018; Šverko & Babarović, 2019; Tokar et al., 2020). This finding suggests that secondary school students with higher levels of resilience will engage in more career construction behaviors, allowing secondary school students to be better prepared for current and future career development tasks to facilitate the production of better adaption results.

Based on the findings, resilience, which represents adaptive readiness, had an indirect effect on school satisfaction, which represents adaption results, through career adaptability and adapting responses. In other words, career adaptability and adapting responses acted as chain mediators partially mediating the effect of adaptive readiness on adaption results, which is consistent with the results of previous studies (Öztemel & Akyol, 2021; Rudolph et al., 2017a, 2017b; Savickas et al., 2018; Šverko & Babarović, 2019; Tokar et al., 2020). That is, it can be interpreted that secondary school students with higher levels of resilience can achieve higher levels of adaptation results by having higher levels of career adaptability and engaging in more career construction behaviors. In contrast to previous research, the present study has discovered that psychological resilience can serve as an indication of adaptive readiness. This could be attributed to the influence of traditional Chinese culture, which places great emphasis on fostering the spirit of “hard work and endurance” (Zhang, 2000). The culture has several popular sayings concerning career development, such as “If a man is to be given a great task by the heavens, he must first endure hardship and toil”, “Good health is essential for success, and a true gentleman always seeks self-improvement”, and “A great man can bend and stretch as required”. These sayings encourage a resilient mindset in individuals as they navigate various challenges in their career development. The cultural impact on adolescents’ career development is reflected in career construction theory, which suggests that psychological resilience can indicate adaptive readiness.

One point worth highlighting is that the three mediating effects from adaptive readiness to adaption results found in this study were significant but with small effect sizes, possibly due to cultural differences. The present study found that the three mediating effect sizes for adaptive readiness on adaption results ranged between .005 and .058. These results are consistent with the results of a previous study by Öztemel and Akyol in a collectivist cultural context, which showed mediation effect sizes ranging from .007 to .008 (Öztemel & Akyol, 2021). However, this range was significantly lower than the results of a study by Tokar and colleagues in an individualistic cultural context (.044–.165; Tokar et al., 2020). These differences in the relationships of the CCMA model may be attributable to different cultural orientations. Although the mediating effect was significant in the collectivist cultural context, the effect size was small. Therefore, the CCMA should be used with caution to guide practice in collectivist cultural contexts. We should not over-interpret the mediating effect, while taking into account the influence of specific cultural contexts.

Limitations and Implications for Future Research

Despite our encouraging findings, there are at least four limitations to our study that warrant acknowledgment. First, this study was a cross-sectional self-report study with Chinese junior and senior secondary school students in three regions, which limits causal inferences and the generalizability of the results. Second, we did not obtain information about the ethnic background and socioeconomic status of the participants. Therefore, future studies should consider these variables to verify whether these factors influence perceptions of career adaptability. Third, self-reported measures were used to assess career adaptability and other indicators. Thus, common method variance could have impacted the results. Fourth, to view the simple and clear internal mechanism of CCMA, all four dimensions of CCMA are

represented by scale total scores. However, it was necessary to determine which dimensions of career adaptability and adapting responses support the model.

Future research should test the conceptual model with adolescents from different regions and cultures; use a longitudinal design approach to examine career adaptability and other related factors through self-reported, parent-reported, and behavioral assessment outcome variables; and, focus should be placed on the roles played by the dimensions of the subscales corresponding to the four factors in the CCMA model. Nevertheless, our findings provide important information regarding the psychometric characteristics and the use of the SCCI questionnaire.

Education and Counseling Implications

The SCCI has important implications for organizational and individual career management and counseling. It provides a scientific and effective evaluation instrument for the research and practice of middle school career development and education in China, which can evaluate students' career construction behaviors and the effect of school career education. The major components of the SCCI highlight the different activities used to develop middle students' adaptability. Hence, the items in the scale could guide middle school students and their instructors in preparing for future difficulties and uncertainties in career development.

This study indicates that resilience can influence middle school students' school-life satisfaction through career adaptability and career construction behavior. Educators can assess resilience to identify and help students with inadequate career adaptation behaviors and develop courses that intervene in resilience levels to promote the career development of all students. Moreover, counselors can help clients observe their role models and make appropriate self-assessments to shape their career development.

Conclusion

The results of this study support the reliability and validity of the SCCI for measuring the career construction behavior of Chinese middle school students. It also uncovered the sequential mediating role of adaptability resources and adapting responses in the CCMA, as measured by the CAAS and the SCCI. Further research is needed to examine the reliability and validity of the SCCI in different cultural contexts and to explore the effects of different measurements in the CCMA.

Declaration of Conflicting Interests

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ORCID iD

Xiao-jing Zhang  <https://orcid.org/0000-0002-2492-8538>

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