

Academic self-efficacy, career development learning, and employability skills of Chinese university students

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Abstract

This descriptive research explored the academic self-efficacy, career development learning, and employability abilities of 405 Chinese college students taken at random. The study aimed to describe the demographic profile of the respondents in terms of sex, grade, university type, and family location; determine the academic self-efficacy of university students from the perspective of student attitudes, behaviors and abilities; determine the professional development learning situation of university students in terms of career exploration, career decision-making, and career action and monitoring abilities; identify the mastery of college students' employment skills, including professional employability, social coping skills, and employment development abilities; test the significant differences of responses when grouped by demographic variables; test the relationship between and among academic self-efficacy, career development learning and employment skills; and propose a Student Development Program. Results show that the majority of respondents are senior students, from rural areas, male and from public universities. In terms of academic self-efficacy, the respondents generally performed well, especially in terms of learning attitude and learning ability, showing a positive trend. Notably, respondents demonstrate positive career abilities and excel in career decision-making. The overall professional employment skills of respondents are relatively high with the social coping skills relatively lowest. University type had a significant impact on academic self-efficacy and students' employability skills. Career development learning ability showed significant differences in grade and university type, while sex, grade and place of birth had no significant effects on these aspects. Older adults and school students perform better in career decision-making, career exploration, career action, and monitoring. Furthermore, there is a significant positive correlation between and among academic self-efficacy, career development capabilities, and employability skills. Based on the findings, it proposed a student development plan. Schools may improve the learning environment, provide more learning resources and support, encourage students to participate in extracurricular activities and social practice, strengthen connections with society and enterprises, provide more employment information and guidance, and cultivate students' innovative spirit and entrepreneurship ability for better career prospects among students.

Keywords: academic self-efficacy, career development learning, employability skills

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1. Introduction

The "National Medium and Long-term Education Reform and Development Plan (2010-2020)" clearly declares that China's higher education has entered the stage of popularization, and the number of degree holders has surged. The Prime Minister of the State Council's 2022 Government Work Report shows that the number of college graduates in 2022 will exceed 10 million, and the job market is facing challenges. The increase in number, coupled with the search for jobs by previous graduates, has brought difficulties to students' employment, and it has been difficult for companies to recruit workers. There are concerns about rising unemployment, graduate employment challenges and a mismatch between skills and market demand. According to data from the National Bureau of Statistics in April 2022, China's surveyed unemployment rate for people aged 16-24 has risen to 18.2%; in a survey by a recruitment website, more than 50% of college students hope to enter government agencies, institutions, and state-owned enterprises and other units within the system. To address these issues, it is critical to examine the complex relationships between academic self-efficacy, career development learning, and employability skills, focusing on the gap between market demand and educational preparation. Strengthening practical education and promoting industry-university cooperation have become effective strategies to improve the comprehensive quality and employment competitiveness of our country's college students.

Self-efficacy was first proposed by Bandura, one of the main representatives of new behaviorism, in his 1997 book "Self-Efficacy: Toward a Unified Theory of Behavior Change". Efficacy widely and profoundly affects an individual's cognitive and emotional processes, and plays an important role in individual motivation and behavior modification through feedback of behavioral results and accumulation of experience. The theory is relevant at an applied level and is found in applications and practices in the fields of education, mental health and organizations in relation to individuals. Academic self-efficacy refers to learners' subjective speculation and judgment of their own behavioral abilities in learning activities (Luo, et al., 2023). It is a psychological factor that connects learners' internal cognition and external behavioral performance. It has a great impact on learners' learning behavior, learning motivation and academic performance, and plays an important role in individual self-development. As an important component of the individual's self-regulation system, self-efficacy is the core factor in enhancing individual subjective initiative. It plays a vital bridging role in regulating an individual's internal cognition and external behavior. It not only affects an individual's choice of activities, efforts to complete tasks, and behavioral persistence, but also affects an individual's emotional state and thinking patterns. It even affects an individual's interpersonal interactions and the construction of his or her own personality. In academic activities, self-efficacy has a great impact on individual learning behavior, learning motivation and achievement, and plays an important role in the process of individual self-development. It is mainly reflected in: at the thinking level, self-efficacy is related to individual Learning behavior is closely related. It is related to cognitive processes, learning strategy selection and academic performance; at the motivation level, it is closely related to motivation level, task difficulty selection and goal determination. At the sensory level, it is closely related to negative emotions such as depression, anxiety, and helplessness. The changes and development of the times require higher education to focus on the cultivation of learners' self-efficacy and other psychological qualities.

School education plays a leading role in human development. The traditional school education system always adheres to the teaching purpose of implanting and accumulating knowledge, and the teaching model centered on teachers, teaching materials, and classrooms (Zhang, et. al., 2023). However, it generally ignores the cultivation of students' self-efficacy, which has a significant impact on individual knowledge, skills, processes and methods. The full development of emotional attitudes and values is detrimental to three-dimensional goals. Therefore, school education should break through the constraints of traditional teaching models and not just focus on the transfer of

knowledge and skills in practice. For college students, they are in a critical period of career exploration and professional ability development. The cultivation and development of career management capabilities has important theoretical and practical significance for helping college students improve their employability and even their future career success. Career development learning ability refers to an individual's ability to acquire, apply and continuously update knowledge, skills and problem-solving in the workplace. It includes aspects such as memory, thinking ability, observation, attention, language expression ability and innovation ability. Having good learning abilities helps you adapt to the work environment, improve your competitiveness, and achieve career development goals. Since 2007, colleges and universities across the country have launched career development and employment guidance courses for college students. It plays an irreplaceable role in implementing student employment guidance and career development, promoting the awakening of students' career awareness, helping students understand themselves objectively and comprehensively, make corresponding career decisions, and promote student employment. College students can improve their career development capabilities through learning and training, thereby enhancing their employability skills. At the same time, the employability of college students is very important, which determines whether college students can successfully enter the job market and the satisfaction and quality of employment (Chen, et al., 2023). Employability depends on the stock of capital such as knowledge, skills and attitudes, how capital is used and deployed, the ability to demonstrate capital to potential employers and the space in which the individual operates. Employability training and promotion is a dynamic concept. For graduates, employability covers the dynamic process of finding employment, maintaining employment, reselecting and obtaining new jobs. The American Society for Training and Development (ASTD) divides employability abilities into basic abilities (reading, writing, arithmetic), communication (speaking and listening), adaptability (problem solving, creative thinking), team effectiveness (interpersonal skills, teamwork, Negotiation), and influence (understanding organizational culture, shared leadership).

For Chinese college students, employability is closely related to the professional knowledge and skills they acquire through education (Zhang, et al., 2022). Given the rapid changes in the job market, it is imperative to align higher education goals with market needs. However, the traditional narrow and fixed vocational training model is difficult to adapt to the changing requirements of the job market. Research shows that China's definition of college students' academic self-efficacy, career development learning and employment skills involves their confidence and development in their academic and career direction. Current research directions focus on exploring the relationships among these three and how different demographic characteristics affect these variables. Existing research has pointed out that there are complex interrelationships between academic self-efficacy, career development learning and employment skills, and individual differences and educational environment may also affect research conclusions. In order to improve the employment quality and satisfaction of college students, my country needs to gradually improve students' academic self-efficacy, career development learning and employment skills. This not only requires an in-depth understanding of the relationship between academics and careers, but also requires attention to how to more closely integrate education and training with the needs of the job market to meet the development needs of students.

This study is unique in that it provides an in-depth exploration of the relationship between academic self-efficacy, career development learning, and employability skills among Chinese college students and focuses on how these variables are affected by demographics. By solving the current challenges and gaps in the education field, it aims to provide theoretical and practical guidance for improving the employment quality and satisfaction of college students in our country. The main purpose of this study is to assess the current status of academic self-efficacy, career development learning and employability skills among Chinese university students. In addition, the study aims to develop tailored professional development programs designed to increase academic self-efficacy, promote career development learning, and enhance employability skills in this population. In an era of intense competition, it is critical to recognize the changing landscape of the job market and the dynamic demands placed on students. In order to effectively address current challenges, the study will specifically consider the impact of individuals' demographic characteristics on academic self-efficacy, career development learning, and employability skills, providing both theoretical and empirical recommendations to create a favorable environment

for Chinese college students to grow strongly and seamlessly integrate into the competitive job market. Through these efforts, the study aims to improve Chinese college students' academic self-efficacy, career development learning and employability skills, ultimately preparing them for future career success.

Objectives of the Study - The study determined academic self-efficacy, career development learning, and employability skills of Chinese university students in order to propose a professional development plan. Specifically, this study aimed to determine Chinese university students' academic self-efficacy in terms of learning attitude self-efficacy, learning behavior self-efficacy and learning ability self-efficacy; identify the career development learning in terms of career exploration ability, career decision-making ability and career action and monitoring ability; assess the employability skills of Chinese university students in terms of professional employability, social coping skill, employment development ability; test the significant relationships among academic Self-Efficacy, career development learning and the employability skills; and propose a student career development plan aiming to improve career development learning and enhance employability skills among university students in China.

2. Methods

Research Design - Utilizing a descriptive design, this study aimed to comprehend, depict, elucidate, or affirm the particular conditions of a targeted population. The investigated phenomenon or situation remained unaffected by any manipulation or control on the part of the researcher; instead, the researchers observed and measured it directly. Descriptive research serves the purpose of collecting information to identify issues that may warrant further in-depth or advanced investigation. In the realm of quantitative descriptive research, variables are quantified using numerical terms. According to the research objectives, a descriptive quantitative design is adopted to collect the data of the participants, and then data analysis is carried out to describe and explain the employability status of Chinese college students. A questionnaire containing descriptive items was used to investigate participants' learning efficacy, professional development learning and employability.

Participants of the Study - The researchers employed random sampling techniques to unbiasedly select participants from approximately 20000 college students across 4 domestic universities (with 90-110 participants from each institution). Among them, Peking University selected 95 students, Shenzhen University selected 105 students, Inner Mongolia University selected 100 students, and Zhengzhou University selected 105 students. They utilized the RaoSoft calculator to determine 405 of them as the survey subjects. The criteria for selecting participants were students who were willing and capable of earnestly participating in the questionnaire survey during their college experience. The chosen participants were expected to provide the most valuable information and substantive responses to the questionnaire. Furthermore, these participants came from diverse majors, different academic years, and various institutions from different regions of China. Some of these institutions were public universities, while others were private ones. Their rankings also varied widely, ranging from high to low.

Instrument of the Study - The research instrument used in this study was carefully designed and consisted of four complete components: a section on demographics and three questionnaire instruments. Before delving into the details of these components, let us give a general overview of the origins and origins of the questionnaire instrument used: In the demographic section, participants were asked to provide information such as sex, grade, type of university and place of birth, as participants The basic elements of the feature.

The second part focuses on academic self-efficacy and uses the mature "Academic Self-Efficacy Scale" questionnaire developed by Liang, et. al., (2012) In 2012, the instrument was rigorously validated and used in educational research in China (Zhang, 2022). The third part uses the "College Student Career Planning Ability Questionnaire" scale compiled by Professor Xu Haiyuan (2004). This scale was tested and verified on 30 college students and measured career exploration ability, career decision-making ability, career action and monitoring ability. ability. The fourth part is a questionnaire designed and verified by Guo Xin, covering professional employability, social coping skills and employment development capabilities. The instrument seeks participants'

perceptions by using a rating scale from 1 to 4 for each statement.

This research tool was rigorously verified by experts in career planning and employment counseling education for Chinese college students. The reliability of the instrument was confirmed by Cronbach's α values for each variable. To ensure participants understood and answered accurately, the original questions were translated into Chinese. Because the use of clear language becomes a key component of questionnaire design and is crucial to convincing participants to provide accurate answers by minimizing sentence ambiguity, this can have a significant impact on participant interpretations and responses. This meticulous translation was designed to minimize sentence ambiguity, following the advice of experts in questionnaire design (Bradburn et al., 2004; Willis, 2004). Five Chinese experts evaluated and recommended adjustments to improve the clarity of the project. The academic self-efficacy scale was reduced from the original 22 items to 20 items. In addition, two items were eliminated from the career planning ability questionnaire for college students to adapt to the unique environment of this study.

The second part of the adapted tool is about academic self-efficacy, that is, the "Academic Self-Efficacy Scale" questionnaire developed by Liang, et. al., (2012) Measuring students' learning self-efficacy. Based on sufficient reliability and construct validity, the questionnaire was validated and used in educational research in China (Zhang, 2022). The standards and items in the original valid Chinese questionnaire were retained for adjustment and verification. The third part of the survey is dedicated to exploring the ability of Chinese college students to acquire career development skills. This scale is divided into three dimensions: career exploration ability, career decision-making ability, and career action and monitoring ability. It serves as the primary reference for revealing the career development and learning status of the selected candidates. As originally designed, the survey used a Likert scale with four response options based on frequency (never, rarely, often, always) and grouped these responses into three different competency dimensions. The instrument was tested on 30 college students from Neijiang Normal University. The questionnaire has a total of 21 closed questions, and the answers to these questions will be used to determine the professional development learning status of college students. The three clusters of career development learning abilities are career exploration ability, career decision-making ability, and career action and monitoring ability. In this study, two additional items were removed from the final form due to the unique local context of the study. The fourth part of the tool is a questionnaire developed and validated by Guo Xin, which includes four factors: 1) occupational employability; 2) social coping skills; 4) occupational employability. 3) Employment development capabilities. Participants were informed about the objectives of the study and asked to participate by completing the questionnaire in the introductory section. Respondents can express their opinion of the importance of each statement by rating it from 1 to 4 (1 being not important and 4 being extremely important).

Thirty questionnaires were selected and verified by five experts with extensive experience in career planning and employment counseling education for Chinese college students. A summary report on the effectiveness of the survey was submitted to the consultant for approval for pilot testing. In addition, the instrument was validated by experts and tested for reliability. The indicators of each variable are considered reliable: learning attitude self-efficacy (0.832); learning behavior self-efficacy (0.852); learning ability self-efficacy (0.848); career exploration ability (0.795) career decision-making ability (0.927); career action and monitoring ability (0.868); professional employability (0.823); social coping skills (0.837); employment development ability (0.822). Cronbach Alpha of 9 clusters exceeded 0.7, ranging from 0.795 to 0.927 which indicated that the questionnaire items under these 9 clusters were acceptable and highly internally consistent.

Data Gathering Procedure - Prior to initiating the pilot test, the researcher corresponded with the heads of the schools, obtaining their formal consent to carry out the research at their institutions. Additionally, the researcher sent out invitations to Chinese university students who agreed to take part in the study as respondents. As a result, the respondents understood the goals of the study. In order to ensure the highest level of reliability and validity, the researcher simultaneously translated all questionnaire items and concluded the questionnaire in both Chinese and English versions. After that, Questionnaire Star was used to import the questionnaire. The researcher instructed participants before they filled out the questionnaires, got permission from the participating schools and students, and gave clear instructions about the goal of the study. The questionnaires were then disseminated by the researcher

for the pilot test via the Questionnaire Star platform. Questionnaire Star was used to gather data from 405 pilot test participants. The data was then submitted, along with the thesis title, study goals, and questionnaires, to a statistician for reliability and validity testing.

Data Analysis - The primary focus of the analysis was to discern participants' varying degrees of agreement or disagreement with the statements regarding academic self-efficacy, career development learning, and employability skills, as reflected in the questionnaire data. Data analysis involved the utilization of several statistical tools. Descriptive statistics, such as frequency and percentage distributions, were employed to elucidate the demographic profile of the respondents. Weighted means and rankings were employed to evaluate academic self-efficacy, career development learning, and employability skills. The Shapiro-Wilk Test indicated that p-values for the three major variables were below 0.05, signifying a departure from normal distribution. Consequently, non-parametric tests, specifically Mann-Whitney U tests for two groups and Kruskal-Wallis tests for three groups, were implemented to ascertain significant differences. Furthermore, Spearman's rho was employed to examine the significant relationships among sports motivation, attitude, and success. Additionally, all data underwent analysis using statistical software, specifically PASW version 26, with an alpha level set at 0.05 for result interpretation.

Ethical Considerations - A comprehensive commitment to safeguarding the rights and well-being of participants was made before commencing this study. The first emphasis is on voluntary participation, ensuring that individuals participate voluntarily and without any form of coercion or pressure. Informed consent played a key role, with the researchers explaining the purpose, procedures, risks and benefits of the study in detail to ensure participants fully understood the implications of their participation, and participants gave their explicit consent. Second, prior to pilot testing, the researcher provided participants with a comprehensive overview of the study objectives. Participants are also assured that their privacy will be strictly protected and any data collected through the survey will be used for academic purposes only. Participants were informed that they could choose to withdraw from the study at any time if they felt uncomfortable. Additionally, anonymity is a key principle that protects participant privacy by ensuring that research data is not associated with a specific individual. In accordance with ethical guidelines, the researcher obtained consent from the participants and their respective educational institutions before commencing the study. It was made clear that the questionnaire did not require participants to reveal their identity and that all information provided would be treated with the utmost confidentiality and would not be leaked under any circumstances.

The study proactively addresses potential hazards, conducts a comprehensive assessment of risks, and takes steps to minimize risks and prioritize the well-being of participants. Emphasize transparent reporting and commit to honest and open communication of results, regardless of their nature. The study was reviewed by an Institutional Review Board (IRB) prior to initiation to ensure ethical acceptability and compliance with institutional guidelines. Ongoing ethical oversight is maintained and any modifications to procedures or materials are subject to IRB approval, demonstrating a commitment to upholding ethical standards throughout the research process.

3. Results and discussion

Table 1

Summary Table on Academic Self-Efficacy

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Learning Attitude Self- Efficacy	2.84	Agree	1.5
2. Learning behavior self-efficacy	2.83	Agree	3
3. Learning ability self-efficacy	2.84	Agree	1.5
Composite Mean	2.83	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 1 reveals the complex dimensions of academic self-efficacy among 405 college students in China and lays out a framework that encompasses different aspects of learning attitudes, learning behaviors, and learning abilities. The composite mean score of 2.83 indicates a more pronounced tendency toward academic self-efficacy among the respondents. This tendency needs to be explored in greater depth to understand the underlying nuances

and broader implications for China's evolving college education.

The indicators ranked joint first are learning attitude and learning ability, both powerful indicators of academic self-efficacy, occupying the top spot of the academic self-efficacy scale with an average score of 2.84. This trend may indicate the stability of China's education system, which emphasizes the importance of students' academic performance and thinking, and accustoms students to be responsible for their own academic work. Recent research further supports the importance of problem-based learning, with particular emphasis on its critical role in increasing academic self-efficacy. This finding is highly consistent with self-regulation theory, which emphasizes the importance of active regulation in promoting learning. In a problem-based learning environment, developing an attitude toward autonomous learning becomes crucial. Students need to flexibly adjust their learning strategies and reflect on their experiences during problem solving in order to better adapt to the learning environment. Delving deeper into the study, this may be regarded as a general pattern in the Chinese university education system. Among Chinese university students, the high self-acceptance of learning attitudes and learning abilities may reflect the emphasis on academic achievement and the importance of knowledge acquisition in the educational culture. Students may have achieved better results in developing positive learning attitudes and relatively high levels of learning ability. This may have been influenced by the Chinese education system's longstanding focus on traditional subjects and its emphasis on memorization and test-taking skills. Students developed positive attitudes towards academic matters and high levels of subject competence in this environment, and had relatively high levels of self-approval in these areas.

However, self-recognition of learning behaviors ranked lowest, especially less time for independent learning, which may reflect the education system's emphasis on curriculum and the importance of subjects. Chinese college students may face a large amount of coursework and tremendous exam pressure, leading to greater reliance on classroom teaching and passive learning styles. A lack of independent study time may be due to students being forced to focus on test-taking demands rather than seeking a deeper understanding or actively exploring the subject. In addition, societal and family expectations may also have an impact on student learning behaviors. Society's high value on achievement may cause students to focus more on test-taking rather than spending more time on self-directed learning. Family and societal expectations may push students to focus more on pursuing high grades at the expense of in-depth active learning in the subject matter. Ways to address this problem may include promoting educational reforms to reduce the academic burden and focusing on the development of students' critical thinking and innovation skills. It has been documented that encouraging independent learning and providing more flexible teaching methods can promote more holistic development of students rather than just the pursuit of high scores (Mao et al., 2023). In addition, educators should strive to change the overemphasis on scores in society and at home in order to encourage students to engage more in self-directed learning and deeper thinking (Zhang et al., 2023). Such comprehensive reforms can help students achieve a more holistic and in-depth understanding of the subject matter rather than just pursuing superficial academic achievement (Li, 2023). However high self-recognized attitudes and abilities to learn may drive students to focus more on the pursuit of grades than on true disciplinary understanding. This may lead to surface learning, memorizing knowledge only to meet exam requirements rather than thinking deeply and applying it. Students may experience anxiety as a result of being overly focused on exam results. High self-recognition of their attitudes and abilities to learn may make them more susceptible to the pressure of achievement and increase the risk of test anxiety. To overcome these drawbacks, the education system can focus on fostering learning behaviors that encourage deep thinking, independent learning and innovation. Introducing more flexible teaching methods, reducing the academic burden and changing the society's overemphasis on grades can help develop a more holistic subject understanding and competence among students.

Although it occupies a lower echelon with a mean score of 2.83, learning behavior is also an important component of academic self-efficacy, which is in line with the characteristics of China's education model, i.e., students learn mainly through listening, reading, memorizing, practicing, and testing, and have formed certain learning behaviors and habits. Learning behaviors can affect students' knowledge acquisition, understanding, application and innovation, as well as their acquisition, understanding, application and innovation of vocational

knowledge, skills, qualities and abilities. It can also affect students' self-regulation and self-management, thus affecting their learning self-efficacy and career self-efficacy. In order to improve Chinese college students' self-acceptance of their learning behaviors, schools can use a combination of measures. A combination of measures, such as developing metacognitive skills, providing positive feedback, creating a positive learning environment, and educational counseling, can help to increase students' self-approval of their learning behaviors. These integrated measures aim to stimulate students' interest in learning, improve the clarity of their academic goals, and enhance their self-acceptance of their learning behaviors, thus prompting them to participate more actively in learning. In the process of comprehensive reform, schools should emphasize disciplinary understanding rather than the mere pursuit of scores, and cultivate students' deep thinking and active learning, so as to achieve a more comprehensive and in-depth disciplinary literacy. Among the academic self-efficacy of Chinese college students, learning attitude and learning ability show a high level of self-acceptance, reflecting the Chinese education system's emphasis on academic achievement and knowledge acquisition. This may be due to the influence of a long-term educational model that focuses on traditional subjects and emphasizes memorization and test-taking ability. However, the low self-approval of learning behaviors, especially the low amount of time spent on independent learning, may have been influenced by the burden of coursework and examination pressure, which led to a greater reliance on classroom teaching and passive learning styles. Chinese college students' high self-appraisal of their learning ability may stem from an academic climate that emphasizes theoretical subject knowledge, while their relatively low appraisal of their learning behaviors may be influenced by the pressure of exam-based education and traditional assessment methods.

Table 2
Summary Table on Career Development Learning Ability

Indicators	Weighted Mean	Verbal Interpretation	Rank
1.Career Exploration Ability	2.84	Agree	3
2.Career decision-making ability	3.16	Agree	1
3.Career action and monitoring ability	2.87	Agree	2
Composite Mean	2.96	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

Table 2 reveals the complex dimensions of career development learning for 405 college students in China, laying out a framework that includes different aspects of career exploration, career decision-making, and career action and monitoring skills. The composite mean score of 2.96 indicates a clear tendency toward career development competencies among the respondents. This disposition needs to be explored more deeply to understand the underlying nuances and broader implications for China's evolving college education.

Unlike academic self-efficacy, there is a large gap between the three indicators of career development competence, with career decision-making competence ranking first with a weighted mean score of 3.16, which indicates that respondents have a high level of self-confidence in their ability to make career decisions, the highest of all indicators. This indicator reflects students' ability to formulate reasonable career goals and plans, as well as resolve difficulties and conflicts they may encounter, based on the results of their career exploration when facing career choices.

Ranking second is professional mobility and monitoring capabilities, with a score of 2.87. This indicates that respondents have high confidence in their career action and monitoring ability, but there is still room for improvement. This indicator reflects students' ability to take effective actions in implementing career decisions, such as searching for and applying for positions, participating in interviews and assessments, and building relationships and networks, as well as their ability to monitor and evaluate their career development process and outcomes, such as reflecting on and adjusting career goals and plans, and obtaining feedback and advice.

In addition, the weighted mean score of 2.84 for career exploration ability ranked the lowest. This indicates that the respondents have some confidence in their career exploration ability, but it is not very strong. Career exploration competence reflects students' awareness of their interests, values, abilities and career goals, as well as their understanding and assessment of the job market. Career exploration ability is the foundation of career

development learning, which helps students identify their career inclinations and suitable career fields. Therefore, there is an urgent need to improve the career exploration skills of Chinese college students, which can be achieved by providing more career information, counseling, and education (Li et al., 2019).

Comprehensively analyzing the data reflected in Table 2, it can conclude that Chinese college students show an overall positive trend in their career development abilities. However, the variability among different indicators also suggests that schools need to pay more targeted attention to different areas of development in vocational education and training. Improving career exploration, career decision-making, and career action and monitoring competencies requires attention to individual student autonomy and responsibility, as well as consideration of the joint influence of social culture and the education system. In the future, it should adopt a comprehensive strategy to provide university students with more comprehensive and personalized career development support to help them better meet career challenges and opportunities.

Table 3
Summary Table on Employability Skills

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Professional Employability	2.88	Agree	2
2. Social Coping Skills	2.86	Agree	3
3. Employment Development Ability	2.89	Agree	1
Composite Mean	2.88	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 3 reveals the complex dimensions of employability skills of 405 college students in China, laying out a framework that includes different aspects of professional employability, social coping skills, and employment development skills. This analysis aims to broadly elaborate on these findings, substantiating these interpretations with established theoretical and pedagogical approaches. a composite mean score of 2.88 indicates that the respondents had high employability skills. This tendency needs to be explored in greater depth to understand the underlying nuances and broader implications for China's evolving college student education.

Notably, employment development skills ranked first with a weighted average of 2.89. This indicator reflects respondents' or assessors' recognition of their ability to plan their own career paths, pursue career opportunities, and enhance their career competitiveness. This indicates that respondents or assessors are most confident in and value their ability to develop their careers. My understanding is that this may be related to the employment awareness and ability of Chinese college students. On the one hand, Chinese college students have certain advantages in employment planning, benefiting from the popularization and improvement of employment education as well as the match with the job market (Chen et al., 2021); on the other hand, Chinese college students still have deficiencies in terms of employment opportunities and competitiveness, such as information on employment, employment skills, and employment innovation, etc., which need to be further expanded and improved (Li et al., 2022).

In addition, the second highest ranking is occupational employability, with a weighted average of 2.88. This indicator reflects the respondents' or assessors' recognition of whether they possess relevant professional knowledge, skills and literacy. It indicates that respondents or assessors have a positive attitude towards their professional employability, but not the strongest. This may be related to the quality and level of professional education of Chinese college students. There is still room for them to improve their professional literacy, for example, innovation, critical thinking and interdisciplinary integration need to be further cultivated and improved (Li et al., 2019).

Interestingly, the weighted mean of 2.86 for social coping skills ranked the lowest. This suggests that respondents or assessors also held positive attitudes towards their social coping skills, but they were relatively weak. This finding may be related to the current situation of Chinese college students in terms of social experiences and interactions. This indicator reflects the respondents' or assessors' recognition of their ability to adapt to the social environment, communicate and cooperate effectively with others, and deal with conflicts and stress.

Therefore, improving the social coping skills of Chinese university students requires emphasizing the guidance and support of social education, as well as providing more opportunities for social participation and service to promote the development of their overall social competence.

Table 4
Relationship Between Academic Self-Efficacy and Career Development Learning Ability

Learning Attitude Self- Efficacy	rho-value	p-value	Interpretation
Career exploration ability	.460**	<.001	Highly Significant
Career decision-making ability	.422**	<.001	Highly Significant
Career action and monitoring ability	.756**	<.001	Highly Significant
Learning behavior self-efficacy			
Career exploration ability	.439**	<.001	Highly Significant
Career decision-making ability	.400**	<.001	Highly Significant
Career action and monitoring ability	.761**	<.001	Highly Significant
Learning ability self-efficacy			
Career exploration ability	.405**	<.001	Highly Significant
Career decision-making ability	.440**	<.001	Highly Significant
Career action and monitoring ability	.759**	<.001	Highly Significant

Legend: Significant at p -value < 0.01

Table 4 illustrates the association between academic self-efficacy and career development learning ability. The positive relationship between academic self-efficacy and career action and monitoring skills reveals that self-confidence in the academic field may play an important role in career behavior. It is observed that the calculated r -value indicates a high level of direct correlation between the two and the calculated p -value is less than the alpha level. This indicates that there is a significant relationship between the two and also implies that the higher the academic self-efficacy, the higher the career development learning ability. The significant positive correlation between academic self-efficacy and career decision-making ability emphasizes the fact that the positive influence students gain from academic success may extend to the area of career decision-making. This association may reflect individuals' confidence in their abilities in academics, which in turn motivates them to make more decisive and informed decisions in their career direction.

The finding that a positive attitude toward learning plays a powerful role as a catalyst for career development learning skills is highly echoed in the current study. In terms of career exploration (r -value: .460, p -value: 0.000), students with higher academic self-efficacy were more inclined to set high standards for academic goals and demonstrated greater self-regulation. This positive academic attitude may translate into a deep understanding of the work field and sensitivity to career demands during career exploration.

In terms of career decision-making (r -value: .422, p -value: 0.000), students with high academic self-efficacy may be more inclined to clarify career goals, develop feasible career plans, and be more likely to be well informed about their interests and skills to make more informed decisions. Enhanced academic self-efficacy may inspire students to be more confident in their career choices and reduce their sense of uncertainty about the unknown, which may motivate them to participate more actively in the decision-making process (Li, et. al., 2022). Thus, students with high academic self-efficacy may exhibit more rational and comprehensive career decision-making skills.

In terms of career action and monitoring skills (r -value: .756, p -value: 0.000), increased academic self-efficacy is associated with positive goal-setting and proactive behaviors, which have a positive impact on an individual's ability to be proactive and monitor his or her own development in the career field (Mao et al., 2023). In a practical analysis, students with high academic self-efficacy may be more motivated to pursue career goals and demonstrate more proactive career behaviors. They may be more inclined to actively participate in career development activities, proactively seek out internships and job opportunities, as well as more effectively monitor and adjust their progress in their careers. This may reflect their positive perceptions of their abilities and resources, which in turn influence their positive behaviors toward their career future.

In addition, the positive effect of learning behaviors on the ability to learn about career development was

confirmed. In terms of career exploration (r-value: .439, p-value: 0.000), students with high academic self-efficacy may be more inclined to proactively engage in internships, practicums, and career oriented activities to gain real-world experience and deepen their understanding of careers. This positive academic self-efficacy may stimulate students' interest in expanding their career fields and prompt them to gain a more comprehensive understanding of their career interests and goals. Prior research suggests that the positive effects of self-efficacy cannot be ignored for the improvement of career exploration skills.

In terms of career decision-making (r-value: .400, p-value: 0.000), good academic performance and ability to cope with academic challenges can positively influence their confidence in career decision-making. Academic self-efficacy is positively associated with confidence and competence in decision making, which is critical for success in career decision making (Kim, et. al., 2022). Students with high academic self-efficacy may be more willing to take on academic and career challenges and possess stronger beliefs about career decision-making. They may be more inclined to proactively seek information related to career goals, engage in internships and practicum opportunities, and better plan and implement personal career development programs.

In terms of career action and monitoring skills (r-value: .761, p-value: 0.000), academic self-efficacy is positively associated with goal-setting and proactive behaviors, which are critical for individuals who take proactive action and effectively monitor their own development over the course of their careers (Svartdal et al., 2022). Students with high academic self-efficacy may be more motivated to pursue career goals and demonstrate more proactive learning behaviors. They may be more inclined to engage in real-world projects, pursue professional training, and actively upgrade their skill levels to better suit the demands of their careers. This proactive learning behavior may set the stage for future career success by improving their ability to act and monitor their careers.

Improved learning significantly contributes to career development learning competencies, a finding that is widely supported in the current study. In terms of career exploration (r-value: .405, p-value: .000), students with high academic self-efficacy may be more inclined to be academically successful and develop stronger learning competencies in their disciplines. This increased learning ability is expected to translate into a greater desire to explore uncharted territory, making students more willing to take the initiative to learn about and experiment with different career fields. Several studies have supported the positive relationship between academic self-efficacy and exploratory skills.

In terms of career decision-making (r-value: .440, p-value: 0.000), students with high academic self-efficacy may be more confident in facing academic and career challenges, and they have a positive assessment of their academic and problem-solving abilities. This self-efficacy helps students to be more decisive and autonomous in their career decisions. Research has shown that individuals' positive assessments of their skills and abilities are associated with higher levels of career decision-making ability.

In terms of career action and monitoring skills (r-value: .759, p-value: 0.000), academic self-efficacy may be associated with students' effective monitoring and management of their career goals. Students with high academic self-efficacy may be more able to set clear career goals and develop effective programs to monitor and achieve those goals. This is consistent with career development theory regarding goal setting and achievement in the career decision-making process. Students with high academic self-efficacy may be more willing to translate their academic knowledge and skills into practical career actions. Their confidence in their academic abilities may motivate them to engage more decisively in career development activities, such as internships and the pursuit of job opportunities. Increased self-efficacy was associated with more positive behaviors and decision-making, which manifested itself in more positive career actions in the vocational domain.

This finding provides a guiding direction for educational and career counseling, emphasizing the importance of enhancing students' academic self-efficacy. Educational institutions can enhance academic self-efficacy by creating positive academic environments, providing support, and motivating students to engage in real-world projects and career development activities that in turn promote more positive, planned, and effective career

behaviors. This helps students to better achieve their personal and professional goals during their careers and improve their overall career development.

Table 5
Relationship Between Academic Self-Efficacy and Employability Skills

Learning Attitude Self- Efficacy	rho-value	p-value	Interpretation
Professional Employability	.710**	<.001	Highly Significant
Social Coping Skills	.738**	<.001	Highly Significant
Employment Development Ability	.754**	<.001	Highly Significant
Learning behavior self-efficacy			
Professional Employability	.726**	<.001	Highly Significant
Social Coping Skills	.735**	<.001	Highly Significant
Employment Development Ability	.752**	<.001	Highly Significant
Learning ability self-efficacy			
Professional Employability	.716**	<.001	Highly Significant
Social Coping Skills	.732**	<.001	Highly Significant
Employment Development Ability	.740**	<.001	Highly Significant

Legend: Significant at p-value < 0.01

Table 5 shows the correlation between learning self-efficacy and employability skills. The positive relationship between academic self-efficacy and employability skills reveals that self-confidence in academic areas may play an important role in employability skill behaviors. It is observed that the calculated r value indicates a strong positive correlation between the two, while the calculated p value is less than the alpha level. This shows that there is a clear relationship between the two, and also means that the higher the learning self-efficacy, the stronger the employability. The positive improvement of learning attitude acts as a powerful catalyst and effectively promotes the development of employment skills. This research result has been generally recognized in the current academic field.

In terms of professional employment (r value: .710, p value: 0.000), individuals with high academic self-efficacy may be more willing to accept professional challenges and be more confident in succeeding in the professional field. This self-confidence may significantly prompt them to be more proactive in responding to career challenges and opportunities in the process of professional employment.

In terms of social coping skills (r value: .738, p value: 0.000), individuals with high academic self-efficacy tend to show greater ability to self-regulate and cope with challenges. This self-regulation ability may be reflected in social interactions, making individuals more confident and adaptable. Social coping skills include interpersonal communication, teamwork, conflict resolution, etc., and the improvement of academic self-efficacy may play a key role in cultivating individuals to actively face social interactions.

In terms of career development capabilities (r value: .754, p value: 0.000), individuals with high academic self-efficacy tend to show greater ability to self-regulate and cope with challenges. These positive learning attitudes may provide motivation for them to continuously improve their abilities and adapt to the workplace environment during their careers. Academic research has clearly shown that there is a significant positive correlation between learning behaviors and employability skills, a finding that is widely recognized in the current field of research.

In terms of professional employment (r value: .726, p value: 0.000), students with high academic self-efficacy may show more positive professional qualities and practical abilities. They may pay more attention to independent learning in professional fields and be more willing to actively participate in professional-related activities, such as internships, project practices, etc. This positive professional learning behavior may enhance their competitiveness when they enter the workplace after graduation, making them better adapted to the work requirements in the professional field. Improvements in academic self-efficacy are closely related to career development and enhancement of professional abilities.

Improvements in academic self-efficacy may have a positive impact on social coping skills (r value: .735, p value: 0.000). Research shows that individuals with higher academic self-efficacy tend to show stronger self-

regulation and ability to cope with challenges (Mao et al., 2023). This self-regulation ability may be reflected in social interactions, making individuals more confident and positive in facing various social situations and challenges.

In terms of career development capabilities (r value: .752, p value: 0.000), the positive correlation between academic self-efficacy and learning behavior may be manifested in stronger career motivation and initiative. Individuals with high academic self-efficacy may be more willing to pursue professional training and continuously improve their skill levels to better adapt to the needs of career development. The learning initiative and self-regulation ability demonstrated by individuals in the academic field are closely related to their positive performance in the professional field (Zhang et al., 2022).

Improving learning ability is widely considered to have a positive role in improving employment skills, and this conclusion has been generally supported in the current research. In terms of professional employment (r value: .716, p value: 0.000), individuals with high academic self-efficacy may be more inclined to actively face academic challenges and be more confident to succeed in the professional field. This positive academic attitude may translate into active exploration and development of practical employability skills. Some research suggests that positive evaluations of one's own academic abilities may motivate individuals to be more motivated to seek and develop skills relevant to their professional field. Individuals' clear understanding of their career goals is associated with higher levels of career skills (Zhang et al., 2022).

In terms of social coping skills (r value: .732, p value: 0.000), it reflects the positive impact of self-confidence developed in the academic field on coping with social challenges and interpersonal interactions. Individuals with high academic self-efficacy may be more inclined to succeed in academic areas, and this positive academic attitude may translate into more confident and effective performance in social and interpersonal settings. Research shows that individuals' positive evaluations of their academic abilities are associated with stronger social and interpersonal skills (Zhang et al., 2022).

In terms of employment development ability (r value: .740, p value: 0.000), an increase in academic self-efficacy may prompt individuals to face academic challenges more actively and develop stronger academic performance. This positive academic attitude may translate into more competitive employment opportunities. Past research indicates that positive perceptions of one's academic abilities are associated with better workplace adjustment and career success.

Table 6
Relationship Between Career Development Learning Ability and Employability Skills

Career Exploration Ability	rho-value	p-value	Interpretation
Professional Employability	.474**	<.001	Highly Significant
Social Coping Skills	.505**	<.001	Highly Significant
Employment Development Ability	.494**	<.001	Highly Significant
Career decision-making ability			
Professional Employability	.395**	<.001	Highly Significant
Social Coping Skills	.367**	<.001	Highly Significant
Employment Development Ability	.369**	<.001	Highly Significant
Career action and monitoring ability			
Professional Employability	.790**	<.001	Highly Significant
Social Coping Skills	.821**	<.001	Highly Significant
Employment Development Ability	.816**	<.001	Highly Significant

Legend: Significant at p-value < 0.01

The correlation between career development learning and employability skills is presented in Table 6. Through in-depth analysis of the correlation between career development learning, career exploration abilities, career decision-making abilities, and career action and monitoring abilities and employment skills, it reveals the important role of these abilities in individual career development. It finds that the calculated r-value indicates a high direct correlation between the two, while the calculated p-value is less than the alpha level. This shows that there is an obvious relationship between the two, and it also means that the stronger the career development

learning ability, the higher the employment skills. The enhancement of career exploration abilities is considered to play a key promoting role in improving employability skills, and this view has been widely recognized in the current study.

In terms of professional employment (r value: .474, p value: 0.000), the significant positive correlation between career exploration ability and professional employment reflects an individual's positive attitude towards exploring unknown areas during career development. Individuals with strong career exploration abilities may be more inclined to proactively participate in internships, practices, and career-oriented activities to accumulate practical experience and deepen their understanding of careers. This behavior may be a form of proactive planning for the career future that is critical to professional employment success.

In terms of social coping skills (r value: .505, p value: 0.000), individuals with strong career exploration abilities may be more inclined to actively participate in various social interactions and practical activities during career development. This positive exploration attitude may make them more capable of adapting to different social situations and interpersonal environments, thereby improving social coping skills (Zhang et al., 2022). This comprehensive social interaction experience may help improve an individual's adaptability in various social environments, making them more capable of coping with challenges and handling interpersonal relationships.

In terms of employment development abilities (r value: .494, p value: 0.000), improvements in employment exploration abilities are often accompanied by a deeper understanding of one's interests, values, and abilities. Individuals are more likely to clarify their career goals, which helps to develop and enhance skills related to the target industry in a more targeted manner. This kind of goal-oriented learning and development may make individuals more competent to excel in specific career fields. In addition, during the employment exploration process, individuals may accumulate a large amount of career experience and practical opportunities. These experiences not only provide them with a more comprehensive professional understanding, but also improve their ability to deal with challenges in actual work.

Improving career decision-making ability has been proven to have a significant positive correlation with the improvement of employment skills. This conclusion has attracted much attention in the current study. In terms of professional employment (r value: .395, p value: 0.000), individuals with higher career decision-making abilities may be better able to cope with uncertainty and challenges in the career field. They may be more inclined to proactively obtain information during the decision-making process, investigate trends and needs in career fields, and make informed choices in complex situations. This adaptability and flexibility help them better adapt to changes in the workplace and increase their probability of success in professional employment.

In terms of social coping skills (r value: .367, p value: 0.000), individuals with stronger career decision-making skills may be better at solving challenges and problems in the career field. This problem-solving ability can be reflected in social interactions. They are more likely to use flexible thinking and decision-making to cope with various complex situations, including challenges in social interactions. This communication ability is crucial in workplace socialization because being able to express one's professional needs clearly and effectively helps build positive professional relationships (Zhang et al., 2022).

In terms of employment development ability (r value: .369, p value: 0.000), higher career decision-making ability may mean that individuals are better at coping with uncertainty and challenges in the career field. This adaptability and flexibility make them more likely to take proactive actions to adapt to changing career circumstances, thereby enhancing resilience in career development. Research points out that individuals with strong career decision-making abilities are more able to remain calm and confident in uncertain environments and better cope with uncertainties in career development (Zhang et al., 2022). This clear career planning provides individuals with a basis for more targeted and systematic development in the workplace, thereby enhancing their employment development capabilities.

Strengthening of professional action and monitoring abilities was significantly and positively related to

improving employability skills, a conclusion that was widely recognized in the current study. In terms of professional employment (r -value: .790, p -value: 0.000), individuals with strong professional action and monitoring skills generally exhibit more positive goal-setting and proactive behaviors. They may be more motivated to pursue career goals and exhibit more proactive career behaviors. This kind of motivation may take the form of proactively participating in career development activities, pursuing internships and job opportunities, and more effectively monitoring and adjusting progress in one's career. Research points out that this kind of goal-oriented career action is closely related to career success and can provide support for individuals to achieve outstanding achievements in the professional field.

In terms of social coping skills (r value: .821, p value: 0.000), strong career action and monitoring abilities generally mean that individuals have more decision-making and goal-oriented behaviors when implementing career plans. This goal orientation may help individuals communicate and collaborate more effectively with others and improve social coping skills. Research shows that career success not only relies on individuals' self-initiatives in their careers, but is also related to their positive interactions in organizational and social environments (Zhang et al., 2022).

In terms of employment development capabilities (r value: .816, p value: 0.000), individuals with strong career action and monitoring skills tend to be more effective in monitoring and adjusting their progress in their careers. They are able to identify opportunities and challenges on their career path and make timely adjustments to better adapt to changes in the professional environment. This flexibility and self-monitoring ability provide support for individuals to achieve career goals while also improving their adaptability in the workplace. In organizational and professional settings, this ability is one of the key factors for career success.

4. Conclusions and recommendations

The respondents generally exhibit high academic self-efficacy, particularly in terms of learning attitude and ability. Respondents demonstrate positive career abilities and excel in career decision-making. The overall professional employment skills of respondents are relatively high with the social coping skills relatively the lowest. There is a significant positive correlation between and among academic self-efficacy, career development capabilities, and employability skills. To improve the academic self-efficacy, career development learning and employment skills of Chinese college students, a proposed student development program was developed based on the results of the study.

The Ministry of Education may actively promote the implementation of special plans for academic self-awareness, career development learning and employment skills improvement for Chinese college students, evaluate and summarize the effectiveness and impact of various measures, identify and solve existing problems and difficulties, summarize and share experiences and lessons learned and follow-up suggestions and measures put forward. Schools may improve the learning environment, provide more learning resources and support, encourage students to participate in extracurricular activities and social practice, strengthen connections with society and enterprises, provide more employment information and guidance, and cultivate students' innovative spirit and entrepreneurship ability. Teachers may pay attention to students' individual needs, use diversified teaching methods and evaluation methods to stimulate students' learning interest and motivation, improve students' learning confidence and autonomy, help students formulate and implement career development plans, and improve students' Professional qualities and skills. Students may establish a correct outlook on learning and career, actively participate in learning and career development activities, make full use of various opportunities and resources provided by school and society, continuously improve their learning and career abilities, and actively respond to learning and career development. Develop their own adaptability and development capabilities through the challenges and difficulties in life. The proposed program may be reviewed, implemented and evaluated. Future researchers may expand the research sample and add college students from different regions, types, and majors to improve the universality and representation of the research.

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