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Exploring the Impact of College Students' Future Time Insights on Career Decision-making Difficulties: A Big Data Technology-based Approach



Abstract: - Career decision-making difficulty is an important factor affecting the smooth employment of college students. Big data technology provides college students with more comprehensive, accurate and personalized career decision support, which helps them make more informed career choices and maximize their personal career development. Previous studies have shown that the Internet and digitization have significant information effect, which have important influence on the improvement of future time insight and career decision-making difficulties. Under the background of digitization, to explore the relationship between future time perspective and career decision-making difficulties of college students based on the Socioemotional Selectivity Theory, and to investigate the role of self-efficacy. 1092 college students were investigated by using the Scales. The result shows that the future time perspective predicts college students' career decision-making difficulties negatively; Self-efficacy plays a mediation role between future time perspective and career decision-making difficulties. The research reveals the mechanism of future time perspective on college students' career decision-making difficulties.

Keywords: College Students, Future Time Perspective, Self-efficacy, Future Decision-making Difficulties, Influence.

I. INTRODUCTION

The increasing accessibility of higher education in China and the subsequent increase in the number of graduates have exacerbated employment difficulties. According to the relevant statements of the official college student employment report released by the Ministry of Education, more than 11.53 million Chinese college students will graduate in 2023, an increase of 7.2% over 2022 [1]. In China, finding a better job is considered one of the main reasons why students go to university, and career decisions are very important for college students. However, if college students cannot make decisions about their careers, future career choices may face uncertainty, which can negatively impact their future career and employment success.

Big data technology, applied to all aspects of life, is not only an important driving force for the development of modern society [2]. It is also a powerful source of technical support for college students' career decisions. Specific support performance involves at least four aspects, helping college students to match their interests and abilities with their careers, which is more conducive to career selection. Secondly, it provides complete job market information to avoid the negative impact of employment information asymmetry. Moreover, through technical support, big data career planning is provided for college students to clarify specific career development paths. Finally, through big data, it can help college students to check the gaps, find the deficiencies, and provide improvement countermeasures.

College students are adult individuals whose main task is to explore, choose and commit to their future career, the aim is to match college students with the future careers [3]. However, in recent years, due to the increase in the scale of college enrollment in China and the development of AI, the supply of human resources in the job market exceeds the demand, and college students show more vulnerability and substitution of digital technology in the labor market [4].

Therefore, in making career decisions in the digital age, the difficulty of career decision making of college students is very prominent [5], it also makes career decisions one of the most challenging in life. Career decision difficulty is defined as "an individual cannot independently make career decisions and career choices at a certain time [6]. It is the wavering state that college students encounter in the process of employment, which is manifested as individuals not knowing what career they will pursue in the future, and not knowing how to match themselves from several career choices. Studies have shown that career decision-making difficulties are the key factor of dissatisfaction for graduates, which will affect career decision-making results in two ways: First, insufficient preparation leads to individual inability to make decisions. Second, the lack of career information or

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inconsistent information leads to individuals making mismatched decisions, either way, which will have a negative impact on college students' employment satisfaction [7]. Therefore, the challenge of how to take full advantage of digitized information to alleviate the difficulties of career decision-making is urgently needed.

College students are bounded rational people, thinking about how to get better employment opportunities by recalling past and thinking about future behavior, and this ability to think about future thinking has a positive impact on their own judgments, decisions, and behaviors, which scholars call future time perspective. According to the definition, future time perspective is an individual's cognitive belief and expectation of future time, which is an individual's personality trait, while the specific content of future time cognition, experience and action tendency reflects the realization of career goals [8]. Individuals with future time insight focus on future long-term consequences rather than short-term outcomes. Occupational psychology research has shown that higher future time insight means lower identity diffusion and higher decisive [9-10].

Bandura believes that self-efficacy is "an individual's belief in the ability to achieve certain achievements in future activities" [11]. An individual's expectations and perceptions of the future are largely determined by the judgment of how well the individual will perform in a given situation. In the difficult situation of career decision making, self-efficacy describes the confidence and ability of college students to achieve a specific goal in a specific situation. The stronger the confidence and ability of individuals to perform specific behaviors, the better they can regulate behaviors, reduce anxiety and actively overcome difficulties. A large number of studies have shown that self-efficacy can well predict college students' career decisions in a positive way, and the higher the self-efficacy, the more significant the improvement of college students' employ-ability, which is a key factor for college students to achieve their career goals, thus, the less career decisions of college students. Self-efficacy is considered to be a basic element of human motivation and emotional response and may play a mediating role in the relationship between future time insight and career decision difficulty.

It can be seen that future time insight becomes a favorable factor for college students' career decision-making difficulties. However, what is the pathway of future time insight on career decision-making difficulties? Will self-efficacy play a role between future time insight and career decision-making difficulties? These questions require further research.

From the perspective of theory and practice, this research is of great significance. According to social situation theory, an individual's perception of future time affects an individual's current behavior [12]. Individual behavior is influenced by the individual's perception of the future. Therefore, in the context of digitization, combining future time insight and self-efficacy with career decision-making difficulties, and exploring the mechanism and conditions of the impact of future time insight on college students' career choice difficulties is the proper meaning under the new situation.

II. THEORETICAL ANALYSIS AND RESEARCH HYPOTHESIS

A. *Future Time Perspective and Career Decision-making Difficulties*

Career decision is an important part of college students' employment in the age of data and is related to their future development. Most of the existing studies on the factors influencing college students' career decision-making difficulties focus on the individual factors of decision-makers [13]. However, the situational factors that affect the difficulty of career decision-making are not given due attention. According to social situation theory, college students' own expectations and thoughts about the future greatly affect their career judgments, career decisions, and career choices. Studies by scholars have shown that individuals with strong perspective into future time have a strong sense of time, and have strong self-planning and control of the future [14]. If college students have a clear and definite perception of future time, they will obtain symmetrical information through the Internet and pay more attention to long-term planning. Empirical studies have also shown that future time perspective correlates with college students' career decisions, suggesting that college students during college are more likely to lock their temporal perspective on a negative past, which prevents them from looking to their future [15]. But if positive insight into the future is conducive to clarifying career decisions, promoting college students' self-goal pursuit, and playing an important role in maintaining mental health.

It can be seen that in the information age, the collection, storage and processing of data have become easier and faster to improve the future insight of college students. Individuals can have better expectations for the future, make long-term plans and implement them step by step, pay more attention to future careers, become more sensitive to career information, and tend to make more reasonable career decisions. Career decisions are less likely to be difficult.

Therefore, based on the above theoretical analysis, this research proposes hypothesis 1.

H₁: Future time perspective negatively predicts career decision-making difficulties of college students.

B. Self-efficacy and Career Decision-making Difficulties

In order to make an in-depth analysis of career decision difficulties, it is necessary to consider the key factors that affect career decision difficulties. Scholars put forward the aspects of population characteristics and family conditions and use of digital technology. Scholarly research has concluded that gender, family size, economic conditions, and college students' ability to search for information contribute to college students' difficulties in career decision-making [16].

In the era of digital economy, the Internet is an information medium, and smart phones and computers are terminals that update massive information all the time, spreading relevant knowledge about the job market, social security, labor contract law, etc. digitization has realized accurate push, strengthened college students' understanding of employment policies, and stimulated their awareness of employment rights protection and social welfare security. Researchers think that Self-efficacy is a psychological cognition that means a person is confident that he or she is capable of fulfilling different conditions of a particular task in order to achieve a desired outcome, it reflects optimistic confidence and the belief that one can effectively cope with adversity on all fronts. Azizli et al. (2015) believe that individuals with a high sense of self-efficacy are closer to success [17], because when encountering difficulties, individuals with a high sense of self-efficacy will arouse positive emotions, encourage themselves, reduce self-inhibition, enhance their assumptions of future success, and encourage themselves to make more sustained efforts to overcome various difficulties, so as to approach success.

College students with higher independence level and stronger self-confidence will be more actively prepared for employment, more active in acquiring vocational abilities and the acquisition of the digitization information and employment information is more active, and more positive in facing difficulties, which means fewer difficulties in making career decisions [18]. Moreover, college students with high motivation have lower difficulty in making career decisions, think more consciously about their future career path earlier, have stronger goal-oriented motivation, make plans for their future in advance, show more optimistic personality, and take the initiative to understand the job market and future employment trend.

Therefore, in career decision-making, although there may be various career traps, interpersonal tensions, lack of job search skills and other difficulties, college students' self-efficacy often turns into a favorable yearning for career decision-making. Based on the above analysis, this research proposes a research hypothesis 2.

H₂: Self-efficacy has a negative effect on college students' career decision-making difficulties.

C. Future Time Perspective and Self-efficacy of College Students

According to the theory of social cognition, self-efficacy is the self-confidence that the individual copes with different circumstances and obtains success. Self-efficacy affects individual's thoughts, motivations, attitudes, and behaviors [19]. Therefore, the sense of self-efficacy plays a direct role in the development of the individual. Correspondingly, the development of the individual will also affect the self-efficacy. Generally, the individual has the self-confidence of success and the experience of success or failure. Furthermore, this experience will influence the thinking and choice of the future and the formation of individual self-efficacy. Scholars believe that individuals with high sense of self-efficacy are generally confident in their future. Meanwhile, they have clear career direction and strong purpose of learning, tend to establish long-term goals, and are willing to devote energy and effort to the goal. The reason for such behavior is that the individual has high future time perspective [20].

It was also found that college students' academic self-efficacy had a significant predictive effect on future efficacy and behavioral commitment in the dimension of future time perspective [21]. Believe that college students have a high level of future time perspective, can actively participate in various practical training. They can improve their self-confidence, which have positive influence on self-efficacy. So puts forward the hypothesis 3.

H₃: there is a significant positive correlation between future time perspective and self-efficacy.

D. Mediation Role of Self-efficacy

It is vital to investigate how future time insight influences college students' professional decision-making challenges in order to better prevent and lessen these issues. Researchers think that some mediating variables may have an impact on how future time perspective affects an individual's state and behavior [22]. This research indicates that self-efficacy is a significant mediating component that merits consideration based on the literature review. One key element influencing the job decisions of college students is their level of self-efficacy [23].

Future time perspective is a prejudgment of future behavior tendency, which is a positive psychological tendency. It can improve the effectiveness of decision making by influencing individual subjective initiative, thus affecting college students' self-efficacy, etc. empirical research shows that college students with higher future time perspective have higher self-efficacy.

Bandura's (1986) social cognitive theory believes that individual decision-making behavior is closely related to self-efficacy [24]. According to this theory, when college students choose various occupations, if they have low self-efficacy and lack confidence in the decision-making process, they will easily have difficulties in career decision-making. Therefore, college students with higher time perspective in the future may be more inclined to improve their self-confidence and professional ability, and have a higher sense of self-efficacy, so as to overcome the difficulties in career decision making. Therefore, college students with higher future time perspective ability may have higher self-efficacy, and thus are less prone to career decision-making difficulties. Hypothesis 4 is proposed.

H₄: *self-efficacy plays a mediating role between future time perception and career decision difficulty.*

Based on the above analysis, the theoretical model of this study is proposed as shown in Figure 1.

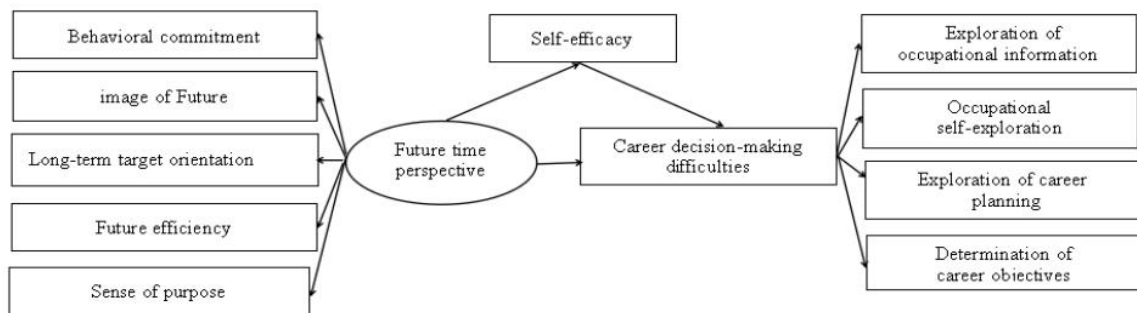


Figure 1: Hypothesis Model

III. METHODS

A. Research Participant

The questionnaires were distributed to 1200 college students by sampling method. The final effective samples were 1092. The effective recovery rate of questionnaire was 91%. Among them, there are 537 girls (49.18%) and 555 boys (50.82%). Among the cultivation level, there are 37 postgraduates (3.39%), 796 undergraduates (72.89%) and 259 higher vocational students (23.72%). There are 364 (33.33%) urban households, and 728 (66.67%) rural residents. There were 466 students (42.67%) with left-behind experience. 992 (90.84%) had experience with the use of digital technology in career decision making. Among the types of risk preference, 111 people (10.16%) were risk-taking, 644 people (58.97%) were middle type, and 337 people (30.86%) were conservative. There were 498 people (45.6%) with innovation and entrepreneurship competition experience. There were 603 people (55.22%) with training experience in innovation and entrepreneurship.

B. Research Tools

1) Future time perspective scale

According to Seijts (1998)'s revised method [25], the Chinese version of College students' Future Time Perspective Scale was translated and revised. The scale was compiled by domestic scholar Song Q ZH (2004) with good reliability and validity [26]. The scale includes five dimensions: behavioral commitment, future efficiency, long-term target orientation, sense of purpose, and image of future. For example, 20 items in total including I have a goal to work on every day, and I think my future is mainly determined by fate. Using Likert 5-level score, 1=complete non-conformance, 5=full conformance. For each item, the subject only needs to answer their actual status quo and real feelings. Higher scores indicate greater future time perspective. The Cronbach's alpha coefficient was 0.942 and the KMO value was 0.960.

2) General self-efficacy scale

The Chinese version of General Self-efficacy Scale revised by Zhang Jianxin and Schwarzer (1995) has good reliability and validity [27]. The scale has 10 items (e. g., if I try my best, I can always solve the problem). Using the Likert 5-level score, 1=complete non-conformance, 5=full conformance. According to the score, self-efficacy

can be divided into three grades: high, medium, and low. 20-29 is low level, 30-40 is medium level, and 41-50 is high level. The Cronbach's alpha coefficient is 0.959 and KMO is 0.955.

3) *Career decision-making difficulties scale*

Adopting the Career Decision-making Difficulties Scale made by Du Rui et al, 16 questions were divided into 4 dimensions: exploration of occupational information, occupational self-exploration, exploration of career planning, and determination of career objectives [28]. Using the Likert 5-level score, 1=complete non-conformance, 5=full conformance. The higher the score, the more the career decision-making difficulties. The lower the score means the less career decision-making difficulties. The Cronbach's alpha is 0.966 and KMO is 0.973.

4) *Program and data processing*

Based on the classification standard of university type, cultivation level, and subject, the survey was carried out by questionnaire in colleges and universities of Jiangxi. Investigators were trained in advance, familiarized with the purpose and significance of the questionnaire, and understood the items of the questionnaire. Participants were asked to complete the questionnaire independently according to their actual situation. The participants responded independently and anonymously within 20 minutes according to uniform questionnaire guidelines. All raw data shall be uniformly numbered, double entered and verified. SPSS25 and Amos24.0 were used to collate and analyze the data.

IV. RESULTS

A. *Control and Inspection of Common Method Variances*

In this study, there may be common method variances problems. Necessary controls have been made during the investigation, such as protecting the anonymity of respondents, and interpreting the data to subjects only in scientific research. In order to reduce the influence of common method bias on our results, it is necessary to test the existence of common method bias before analyzing the data [29]. Harman one-way test was used for statistical control before analyzing the data, i. e. all variable items were analyzed by non-rotating principal component factors. The findings indicate that five factors have eigenvalues larger than 1, and the first factor's variance contribution ratio is only 23.55%, below the essential requirement of 40%. As a result, the study's findings show no significant common technique variance [30].

B. *Descriptive Statistics and Correlation Analysis*

According to descriptive data, the average self-efficacy score falls within the medium range, ranging from 20 to 30. Future time viewpoint score falls within the general kind. Future time perspective was significantly positively correlated with future professional decision-making challenges, self-efficacy, and both. Furthermore, there are strong favorable associations between self-efficacy and difficulty making professional decisions and experiences of being left behind in rural areas, participating in innovation and entrepreneurial competitions, and receiving training in these areas. Table 1 displays the use of gender as a control variable for these three variables in the follow-up study.

Table 1: Descriptive Statistics and Related Analysis of Each Variable

	1	2	3	4	5	6
1 Future Time perspective	1					
2 Self-efficacy	.760**	1				
3 Career decision-making difficulties	.744**	.840**	1			
4 Experience of rural left-behind	.152**	.112**	.116**	1		
5 Experience of innovation and entrepreneurship competition	.306**	.269**	.272**	.144**	1	
6 Training experience of innovation and entrepreneurship	.143**	.160**	.211**	.196**	.484**	1
<i>M</i>	3.588	3.572	3.595	5.62	4.70	6.71
<i>SD</i>	0.669	0.722	0.722	0.738	0.609	0.970

Note: ** P < 0.01, *** P < 0.001.

C. *One-way Analysis of Variables*

The author examines the variations in future time perspective, self-efficacy, potential gender, household registration type, study grade, and digital technological competence in relation to challenges in making profession decisions by one-way analysis of variables. Table 2 presents the findings.

Table 2: Difference Test of One-way Analysis of Variables

Variables		Gender	Household registration type	Grade of study	Risk preference	Digital technology capability
Future time perspective	F	3.675	1.441	2.709	0.557	8.721
	Sig.	.046	.230	.013	.694	.003
Self-efficacy	F	0.674	5.794	1.545	4.326	4.588
	Sig.	.412	.016	.160	.002	.032
Career decision-making difficulties	F	3.495	2.489	2.192	2.795	10.052
	Sig.	.042	.115	-.042	-.025	-.002

Note: ** P < 0.01, *** P < 0.001.

From the analysis of variance table, for gender, F value of future time perspective is 3.675, and Sig is 0.046. Self-efficacy has a F value of 0.674 and a Sig of 0.412. The career decision-making challenges have a Sig of 0.042 and a F value of 3.495. It suggests that while there is no substantial difference in self-efficacy between the sexes, there is a significant gap between them in terms of future time perspective and difficulty making professional decisions. The future time perspective and career decision-making challenges scores are lower for females than for males. In terms of household registration type, F value of self-efficacy of college students in agricultural household register is 5.794 and Sig is 0.016, which indicates that there is significant difference in self-efficacy in household registration type, there was no difference in future time perception and career decision difficulty among household registration types. Compared with non-agriculture college students, the self-efficacy score of agricultural college students is lower than that of non-agriculture college students. In grade of study, F value of future time perspective is 2.709 and Sig is 0.013. F value of career decision-making difficulties is 2.192, and Sig is -0.042, which indicates that there are significant differences in future time perspective and career decision-making difficulties in grade of study. The higher the grade of study, the higher the score of future time perspective, and the less of career decision-making difficulties. The increase of grade indicates that knowledge accumulation is richer, social experience is more, professional ability is higher, and it is closer to get employment. It understands the cruelty of employment market and stimulates college students to think about future career choices actively. About the risk preference, F value of future time perspective is 0.557 and Sig is 0.694. F value of self-efficacy is 4.326 and Sig is 0.002. F value of career decision-making difficulties is 2.795 and Sig is -0.025, which indicates that there is significant difference between self-efficacy and career decision-making difficulties in risk preference, but there is no difference in future time perspective. Students with risk-taking preferences scored higher scores on self-efficacy, and career decision-making difficulties were less than conservative ones. Therefore, the gender, household registration type, grade of study, student cadre experience and risk preference are controlled in the subsequent mediation effect analysis.

Particularly noteworthy is the impact of digital technology on college students' career decision-making difficulties. Compared with traditional offline recruitment, with the use of data platforms and technologies by both college students and employers, on the one hand, employers, through digital platforms, have real-time access to college students' search records, browsing time, clicking preferences, etc., on job search websites [31]. On the other hand, college students collect and understand a large amount of information about employment positions and rights and interests through online education platforms, social networks, and recruitment websites. The advantages of low cost and high efficiency have made Internet platforms have become the preferred channel for college students to search for jobs. According to the survey data compilation, the summary of college students' digital platform job search reveals the advantages of digitization on college students' career decision-making. See Table 3 for details.

The results of the one-way ANOVA in the study showed that in terms of digital technology ability, F value of future time insight is 8.721, Sig is 0.003, F value of self-efficacy is 4.588, Sig is 0.032, F value of career decision difficulty is 10.052, Sig is 0.002, indicating that there are significant differences in digital technology ability. College students with high digital technology ability, Future time insight, self-efficacy and difficulty making career decisions scored higher. This result confirms the important facilitating influence of digitization on university students' career decisions.

D. Mediation Effect Analysis

Firstly, regression analysis was carried out with future time perspective as independent variable and career decision difficulties as dependent variable. It was found that the standardized regression coefficient $B=-0.744$, $SE=0.022$, $p<0.001$, indicating that the future time perspective negatively affects career decision-making difficulties, hypothesis 1 is verified.

Table 3: Digital technology and College Students' Career Decisions

Use of digital technology	Means	Addressing Difficult Career Decision Points	Frequency	Percentage
Information gathering and selection.	Use job boards and apps	Understand the needs and trends of different industries and positions	992	90.84%
	Follow industry reports and data	Get the latest reports and data on industry developments	733	67.12%
	Access to social media and online communities	Get first-hand information and experience sharing	977	89.47%
Self-assessment and Orientation	Online Career Tests	Understanding your career preferences	889	81.41%
	Skills assessment and certification	Test and enhance your professional skills	764	69.96%
Simulation Practice and Experience	Virtual internships and programs	Understanding the work content and environment of different occupations	755	69.14%
	Online Mock Interviews	Improve interview skills and self-confidence	902	82.60%
Networking & Expansion	Professional Social Platforms	Access to career opportunities and internal referrals	747	68.41%
	Online communities and forums	Exchange of job search experience and career information	933	85.44%
Career Decision Support & Counseling	Online Career Counseling	Get Professional Advice	821	75.18%
	Decision-making tools and models	Assist yourself in making career choices	671	61.45%
Continuous Learning and Enhancement	Online Courses & Training	Continuous learning of new knowledge and skills	999	91.48%
	Tracking Industry Trends	Maintain sensitivity and foresight to industry dynamics	771	70.60%

The results of the correlation analysis met the statistical requirements for further mediation effect testing of self-efficacy. All variables were standardized and tested for mediation effects of self-efficacy using structural equation model (SEM). The structural equation model is constructed by taking future time perspective as independent variable, career decision-making difficulties as dependent variable and self-efficacy as mediation variable. The fitting index of the model was $\chi^2/df=2.563$, $RMSEA=0.059$, $TLI=0.894$, $GFI=0.922$, $AGFI=0.963$. The TLI reached the general acceptance criterion (>0.8 , <0.9), the other indexes reached the ideal acceptance criterion, and the model fitted well. The results of path analysis based on the model are shown in Figure 2. It is found that future time perspective ($\beta=-0.53$, $P<0.001$) has significant path coefficient for career decision-making difficulties, indicating that future time perspective has a direct positive effect on self-efficacy. The path coefficient of future time perspective to self-efficacy ($\beta=0.76$, $P<0.001$) was significant, and hypothesis 2 was verified. The path coefficient of self-efficacy to career decision-making difficulties ($\beta=-0.65$, $P<0.001$) was also positively significant, and hypothesis 3 was verified. Path analysis shows that self-efficacy plays a mediation role between future time perspective and career decision-making difficulties in the future.

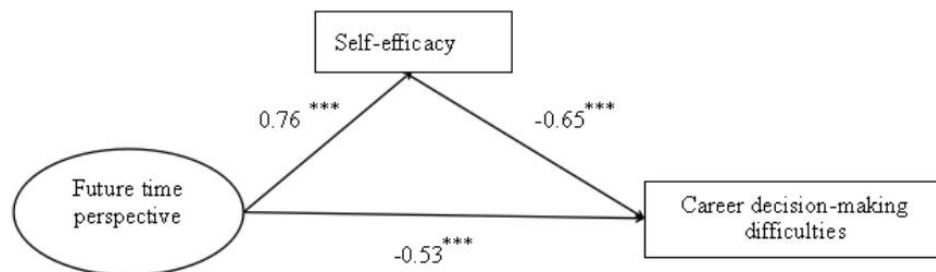


Figure 2: Standardized Path Diagram of Self-efficacy Mediation

In order to test the significance of the mediation effect, the Bias-Corrected Bootstrap test in the Bootstrap method which provides the most accurate confidence interval estimation and with the highest statistical power is used. 5000 replicate samples are set in AMOS with 95% confidence interval selected. If the lower limit and upper limit of the confidence interval contain zero values, it indicates that the mediation effect is not significant; otherwise, it is significant [32]. Table 4 shows that the mediation effect of self-efficacy is significant, with

indirect effect value of -0.498, 95% confidence interval [-0.053, -0.079]. This indicates that the impact of future time perspective on career decision-making difficulties is generated through the path of self-efficacy, and the mediation effect is significant, and hypothesis 4 is verified.

Table 4: Bootstrap Analysis of Mediation Effect Test of Self-efficacy

Path	Normalized Path Effect Values	95% Upper and Lower Confidence Intervals
Future time perspective-self-efficacy-career decision-making difficulties	0.762*-0.654=-0.498	[-0.053, -0.079]

Note: ** $P < 0.01$, *** $P < 0.001$.

V. DISCUSSION

A. Relationship between Future Time Perspective and Career Decision-making Difficulties

The correlation analysis found that the future time perspective was negatively correlated with career decision-making difficulties, that is, when college students had more future time perspective, the less difficult career decision-making. It shows that when college students have a higher sense of future purpose, goal orientation and behavioral commitment, future image and future effectiveness, their cognition and judgment of career are improved and they are in a positive state. This finding is consistent with previous research [33]. Relative to a higher level of future time perspective, a lower level of perspective may be related to the age of college students, educational level, discipline, family economic situation, innovation and entrepreneurship experience, etc. The research shows that there are differences in future time perspective and career decision-making difficulties among undergraduates at different levels and subjects. Among the three groups of students, such as literature and history, science and engineering, and medicine, undergraduates' future time perspective is the highest on average, while that of college students is the lowest. It shows that with the increase of age and education level, college students mature gradually, accumulate more experience in life and richer social experience, have higher ability of social life, and have more reasonable cognition, attitude and behavior to future and social development. It has a clearer understanding of the future career development. Facing the employment pressure, they can arrange self-study and practice, increase knowledge and skills, and pay more attention to the information of the employment market. It has the strongest self-confidence in the future and overcomes the career decision-making difficulties, which is basically consistent with previous research [34]. At the same time, college students' social cognition is also quietly affecting their future time insight and career decision-making difficulties. Under the influence of the Internet and digitization, college students are easily affected by the impact of the network culture of enjoyment, egoism and equality, which to some extent affects the spirit of striving, overcoming difficulties and daring to be the first in contemporary college students, thus affecting their future planning.

B. Mediation Effect of Self-efficacy

Early research by Saks and Ashfourth (2000) confirmed that self-efficacy is an important factor in career choice, suggesting that positive behavior is positively correlated with the number of job interviews and employment status [35]. For college students in particular, perseverance is considered the best indicator of their success throughout the career selection process. This research shows that self-efficacy plays a mediating role in the impact of future time perspective on college students' career decision-making difficulties. When college students have low perspective into future time, college students are more likely to have low self-efficacy, which will further lead to increased career decision-making difficulties. The level of future time perspective is negatively correlated with career decision-making difficulties, which means that individuals with higher future time perspective level can understand and evaluate the future more comprehensively and dialectically, treat themselves correctly and be full of confidence and expectation, and are good at turning negative aspects into positive aspects with practical actions. The fulfillment mechanism is to predict changes in behavior through self-regulating models. This research result is consistent with the previous research results. Therefore, when college students receive correct career guidance, strengthen their self-efficacy under the influence of school, family and self-influence, and form positive coping ways to their careers, they may play an important role in overcoming career decision-making difficulties.

VI. CONCLUSION AND IMPLICATIONS

This study explores how future time insight affects college students' career decision-making difficulties in the context of digitization. The results show that: Future time perspective predicts college students' career decision-making difficulties negatively; Self-efficacy plays a mediation role between future time perspective and career

decision-making difficulties. Gender, type of domicile, and digital technology ability play a role in the process of influencing factors, with the use of digital technology embodying the most significant positive effects through career information collection and screening, network building and expansion, and online communities and forums. This suggests that in the process of improving college students' career decision-making ability, we should not only emphasize future time insight, but also the power of digital technology and college students' self-psychology.

The research results provide theoretical significance for research in related fields. First of all, there are many factors influencing college students' career decision-making difficulties, and there are not many studies on the impact of future time perspective and self-efficacy on college students' career decision-making difficulties, which enriches the previous research. Second, focusing on the mediating role of self-efficacy clarifies the influence mechanism between future time perspective and career decision-making difficulties, which can enhance the self-efficacy level of college students and help them face their future careers with more confidence.

VII. LIMITATIONS AND FUTURE RESEARCH

There are still some limitations in this study. Firstly, although this article attempts to analyze the influence of future time perspective on college students' career decision-making psychology and behavior. Because of the complexity of the subjects involved, there is still the possibility that the logical relationship between them is not fully and completely clarified. Secondly, this study is a cross-sectional study, which cannot get exact causal inferences among variables. Because in practice, there will be differences in the future time perspective of college students from different regions and individualities.

DATA AVAILABILITY STATEMENT

The initial data have been provided in this paper, further information about the original data, can contact the corresponding author directly.

AUTHOR CONTRIBUTIONS

Li Chen was responsible for the literature and wrote the original manuscript, while Xuewen Jin was responsible for data collation. All authors involved in the manuscript have read and approved the submitted version.

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CONFLICT OF INTEREST

The authors state that the study was conducted without any business or financial relationships with conflicts of interest.

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