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Examining Career Calling Through Career Exploration: The Influence of Decision Self-Efficacy and Openness

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Abstract: In today's rapidly changing social and employment environment, young university students face unprecedented career development challenges. They must not only acquire strong professional knowledge and skills but also navigate the complex job market. Career calling, as a profound professional value, provides individuals with a clear sense of purpose, laying a solid foundation for their career development. Therefore, cultivating career calling has gained increasing attention in higher education, which is essential for developing future social workers who are both responsible and purposeful. This study aims to reveal the impact of individuals' career exploration on career calling and its underlying mechanisms, as well as the influence of personality differences during the exploration process. The study was conducted in two universities in Guangdong Province, China, using online questionnaires that yielded 421 valid responses. The results confirmed that career exploration positively influenced career calling, with career decision-making self-efficacy mediating this relationship. Additionally, openness to experience moderates the connection between career exploration and career calling. These findings offer valuable insights for educators and career counselors, helping them develop effective strategies and interventions to support university students in finding and realizing their career calling.

Keywords: career exploration; career calling; career decision-making self-efficacy; openness to experience



Citation: Su, Xiaomin, Anuar Ahmad, and Jamsari Alias. 2024. Examining Career Calling Through Career Exploration: The Influence of Decision Self-Efficacy and Openness. *Social Sciences* 13: 685. <https://doi.org/10.3390/socsci13120685>

Academic Editor: Nigel Parton

Received: 8 October 2024

Revised: 25 November 2024

Accepted: 3 December 2024

Published: 18 December 2024



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1. Introduction

With the significant changes in the work environment caused by globalization and technological advancements, job roles and work responsibilities are continuously evolving (Lysova et al. 2019). Given career uncertainty and emerging occupational challenges, companies and various organizations are increasingly focusing on enhancing employees' career experiences, promoting their development, and providing deeper purpose and meaning in their work (Lysova et al. 2019; Spurk 2021). Consequently, career calling is gaining significant attention in the fields of occupational psychology and behavioral management.

Calling was originally conceptualized with a religious background. In Christianity, calling refers to God's calling of an individual to a particular religious work or social service work (Duffy et al. 2014; Zhang et al. 2015), such as a priest, an acolyte, etc. Over time, the concept of "calling" has gradually transcended religious boundaries and has been introduced into the field of career development, where it is viewed as an individual's sense of meaning and purpose related to their professional role in life (Duffy et al. 2018). Dik and colleagues (Dik and Duffy 2009) defined career calling as a transcendent summons that is oriented toward achieving meaning and purpose while also embracing altruism. Career calling has been shown to facilitate individuals' career planning (Dik et al. 2019), enhance

work engagement, reduce occupational burnout and fatigue, and increase job satisfaction and well-being (Shang et al. 2022; Ehrhardt and Ensher 2021). Additionally, it improves employees' loyalty and sense of responsibility, fosters organizational performance, and contributes to social progress and overall welfare (Xu et al. 2023).

Although existing studies have shown that career calling is significantly associated with career outcomes, there is insufficient understanding of the specific processes and mechanisms of how individuals develop a sense of career calling (Xu et al. 2023). Super's career development theory emphasizes that career development is a life cycle process, and individuals play different career roles at different stages to face different development needs and challenges (Smart and Peterson 1997). Moreover, individuals possess subjective agency, and when confronted with life experiences, they actively seek and construct meaning—both consciously and unconsciously—to help maintain psychological stability and a sense of direction in the face of challenges (Sturges et al. 2019). That is, individuals not only actively accept their experiences but also adjust their goals and expectations, positively attributing meaning to these experiences in order to adapt to difficulties and overcome them. This process is crucial to the development of career calling, which plays an important role in facilitating career goal setting and enhancing career commitment. The Social Cognitive Career Theory (SCCT) further elucidates individuals' proactive behavior and self-regulation abilities, emphasizing that individuals actively adjust their behavior through self-efficacy and anticipated outcomes, thereby making appropriate career decisions (Lent 2002). This provides an important perspective for understanding how individuals seek and attain meaning in their careers. Hence, the development of career calling is a gradual process in which individuals attribute meaning to their work, with career exploration serving as a key behavior in this process. Based on this, the study seeks to answer the following questions: How does career exploration influence the development of career calling? What mechanisms underlie this influence? Are there individual differences that affect this process?

This study utilizes SCCT as a theoretical framework and focuses on college students to explore the effective mechanisms through which they identify and affirm their career calling during career exploration. Additionally, the research examines individual personality differences in this process, providing a new perspective for understanding the formation mechanisms of career calling among college students. This approach not only expands theoretical insights into career calling and its antecedents but also assists educators and career counselors in designing more effective career guidance programs to cultivate future workers with a strong career calling.

2. Theoretical Foundation and Hypotheses

2.1. Career Exploration and Career Calling

Career exploration refers to the proactive actions and reflections individuals undertake to understand and evaluate different career options, enabling them to make informed career choices, which involves the exploration of oneself and the environment and the breadth of exploration (Kracke 1997). Through the exploration process of gathering information, self-assessment, experiences and trials, decision-making, and planning, individuals gain a deeper understanding of their personality, interests, abilities, and values, while also acquiring information related to different careers, including job requirements, work environments, career development opportunities, and industry trends (Kracke 1997; Lent et al. 2016). As can be seen, career exploration emphasizes the importance of the person's proactive role and reflective thinking in career development (Jiang et al. 2019), and it aims to help individuals make informed career choices within a dynamic job market, ensuring a good fit between the person and the environment (P-E fit) to achieve career satisfaction and success (Shang et al. 2022).

Dik and Duffy's discussion of the concept of career purpose presents a multidimensional understanding that encompasses external sources, purpose and meaning, as well as public interest and well-being (Duffy et al. 2014; Dik and Duffy 2009). The first dimen-

sion refers to a calling that transcends personal fulfillment, suggesting that an external force, such as religious beliefs or social responsibility, motivates individuals to engage in specific life roles. The second dimension regarding purpose and meaning reflects how individuals achieve deep personal satisfaction and a sense of existence through work, which is often closely connected to their interests, skills, values, and broader life goals. The third dimension highlights the social and ethical values of a calling, emphasizing how professional actions can fulfill values and purposes oriented toward others, which are not only a personal need but also closely related to social responsibility and contributions.

The development of career calling is a process involving deep self-understanding and a strong desire to find meaning in life (Duffy et al. 2018). It requires extensive self-reflection and inquiry through a thoughtful examination of one's career experiences and values during career exploration, ultimately aimed at constructing and realizing deeper meanings in professional roles (Sturges et al. 2019). First, the core of career exploration lies in providing diverse experiences, such as internships and part-time jobs, which allow individuals to personally engage with the work content and environment of different professions, helping them discover their genuine interests and suitability for specific career roles (Lent et al. 2016; Jiang et al. 2019). For example, during internships, college students can participate in the daily tasks of a career role, experiencing the challenges and sense of accomplishment that work brings. Second, self-reflection on career experiences is a crucial factor in career exploration (Ran et al. 2023), which promotes self-awareness, identifies career tendencies, improves decision-making skills, enhances adaptability, and establishes appropriate goals (Jiang et al. 2019; Ran et al. 2023). In other words, through exploratory practice, individuals not only gain an understanding of the actual content and specific requirements of their work but also reflect on the impact of occupational roles in their personal lives. Based on this reflection, individuals gradually clarify which occupational roles better align with their career goals and life values, thereby forming a deep identification with specific occupational roles (Duffy et al. 2018; Sturges et al. 2019). Therefore, an individual's career exploration behavior may facilitate the perception of external forces driving their sense of purpose and confirm that a specific career role helps achieve this purpose, fulfilling both personal aspirations and social contributions. Consequently, the first hypothesis of this study is proposed:

Hypothesis 1 (H1). *Career exploration positively influences on career calling.*

2.2. The Mediating Role of Career Decision-Making Self-Efficacy

Career decision-making self-efficacy (CDMSE) refers to an individual's confidence in their ability to effectively execute activities during the career decision-making process (Lent and Brown 2013; Jiang et al. 2019). This concept is rooted in self-efficacy theory, which asserts that individuals have beliefs about their capability to successfully complete tasks in specific contexts (Ran et al. 2023).

On the one hand, career exploration plays a vital role in facilitating individual career development, as it not only enhances an individual's proactivity and coping skills when facing career challenges but also improves adaptability within their career paths (Klehe et al. 2021; Kleine et al. 2021).

First, the process of career exploration provides individuals with detailed occupational information, such as job responsibilities, required skills, and work environments, which facilitates a clearer understanding of different career options, enhances individuals' sense of control over the decision-making process, and reduces confusion and anxiety stemming from insufficient information (Betz and Luzzo 1996). When individuals have a sufficient understanding of career options, they can better recognize the challenges and setbacks of career exploration and develop realistic career expectations, which in turn enables them to create actionable plans and enhances the effectiveness of their career decisions and actions (Kleine et al. 2021).

Second, career exploration practices provide individuals with opportunities to directly engage in work environments, helping them connect theory to practice and allowing them to gain authentic insights and accumulate experiences, which in turn provides a practical foundation for establishing more concrete career goals (Betz and Luzzo 1996). It is evident that individuals can directly observe and assess their performance through hands-on participation, thereby establishing a sense of certainty and agency over their career development, which provides them with clear career direction (Paixão and Gamboa 2022). In other words, through career exploration practices, individuals gain insights that combine personal realities with the professional world, helping to reduce the randomness of career choices and enabling them to be more confident in their decisions (Jiang et al. 2019).

Third, self-reflection in career exploration plays a pivotal role in improving an individual's decision-making (Ran et al. 2023). Through self-reflection, individuals gain an understanding of their interests, values, skills, and career goals, enabling them to identify their strengths and weaknesses (Kleine et al. 2021). Such insights foster a clearer awareness of their competencies and areas for improvement, allowing them to adopt a more proactive attitude in their career decision-making and effectively respond to challenges and opportunities (Brass et al. 2023). In other words, proactive self-exploration behaviors enable individuals to engage in a thorough investigation of P-E fit, which not only enhances the efficiency of their career decision-making but also improves their job satisfaction and sense of achievement (Zhang et al. 2023).

In summary, career exploration provides individuals with a systematic decision-making framework through the establishment of beneficial goals and planning behaviors, helping them clarify the pathways and steps for career development (Hirschi and Koen 2021). Individuals enhance their intrinsic motivation and increase their sense of control and confidence regarding future career prospects through this process, thereby preventing aimlessness in decision-making. Thus, individuals are more likely to demonstrate greater effort and persistence while continuously adjusting and optimizing their action strategies (Jiang et al. 2019; Kleine et al. 2021). Therefore, it can be concluded that career exploration may have a strong predictive influence on career decision-making self-efficacy. The second hypothesis of this study is as follows:

Hypothesis 2 (H2). *Career exploration positively influences career decision-making self-efficacy.*

On the other hand, proactive career exploration behaviors serve as a basis for informed career decision-making (Lent et al. 2016). By developing a comprehensive understanding of themselves and professional environments, individuals can make more rational career choices aligned with their values (Sturges et al. 2019).

First, career decision-making self-efficacy makes it easier to develop a self-concept and form a clear understanding of career roles (Savickas 2002). Bandura emphasized that an individual's perceived ability and confidence in performing specific tasks directly influence their behavior and outcomes (Bandura 1997). Therefore, the knowledge individuals acquire in a particular domain can shape their confidence and sense of capability, which in turn directly impacts the development of their career interests, goals, and actions (Zhang et al. 2023). In other words, individuals with a high sense of self-efficacy are better able to understand their career goals and values, thereby reinforcing their professional identity. Conversely, those with a low sense of self-efficacy are more likely to doubt their abilities and choices when making career decisions, and this uncertainty hinders their career development (Li et al. 2019; Kvasková et al. 2023).

Second, the enhancement of career decision-making self-efficacy significantly promotes individuals' intrinsic motivation and proactivity (Lent et al. 1994; Ran et al. 2023). Individuals with higher self-efficacy typically possess greater confidence in their abilities, which leads them to approach challenges positively and persistently engage in their efforts (Komarraju et al. 2014). Meanwhile, individuals with high self-efficacy demonstrate strong intrinsic motivation during their career exploration and decision-making processes,

where their enthusiasm for exploring career options and achieving goals stems from personal interests and aspirations rather than external rewards or pressures (Ran et al. 2023). Grounded in their commitment to ideals and beliefs, they actively seek and create work opportunities that reflect their personal values and convictions (Zhang and Zhang 2022), maintaining a positive attitude and proactive approach when facing challenges in the workplace (Wang and Yang 2021). Therefore, individuals with high self-efficacy experience a greater sense of purpose and meaning in their work, leading to higher job satisfaction and a stronger commitment to their career development (Ran et al. 2023; Kvasková et al. 2023).

Third, career decision-making self-efficacy enhances individuals' ability to employ effective strategies in their career decisions (Lent et al. 2016). Individuals with high career decision-making self-efficacy typically develop detailed career plans that include setting both short-term and long-term goals, along with outlining specific steps to achieve these objectives (Jiang et al. 2019; Kleine et al. 2021). By adopting a systematic and clear goal-oriented decision-making approach, individuals are better able to integrate their personal values and life objectives into their professional roles, thereby finding greater purpose and meaning in their work (Hirschi and Koen 2021; Zhang et al. 2023).

In summary, career exploration is a process that encompasses both intrinsic motivation, such as belief in exploration and emphasis on work preferences, and extrinsic behaviors, such as information gathering and exploratory activities (Stumpf and Lockhart 1987). Under the influence of these multiple factors, individuals develop a clear sense of judgment and confidence in their decision-making abilities regarding career choices (Lent et al. 2016). Furthermore, career decision-making self-efficacy plays a crucial role in career decision-making by providing a psychological and behavioral mechanism that motivates individuals to exert effort and persistence in pursuing their goals, thereby enabling them to achieve their career aspirations (Kvasková et al. 2023). In this process, the perceptions individuals acquire during career exploration that empower them with confidence and competence in their decision-making are essential for clarifying occupational identity, stimulating intrinsic motivation, engaging in proactive behaviors, and developing effective coping strategies, all of which are central to the pursuit and practice of a sense of purpose (Duffy and Sedlacek 2007; Duffy et al. 2018). Therefore, we propose the following third and fourth hypotheses for this study:

Hypothesis 3 (H3). *Career decision-making self-efficacy positively influences career calling.*

Hypothesis 4 (H4). *Career exploration positively influences career calling through career decision-making self-efficacy.*

2.3. The Moderating Effect of Openness to Experience

Personality traits significantly influence individuals' career choices, their responses to professional challenges, and their career achievements (Brown and Hirschi 2013). The Big Five personality traits provide a classic framework in personality research, with openness to experience being a crucial dimension (hereafter referred to as openness). This trait reflects an individual's openness to new experiences, acceptance of diverse ideas and perspectives, and an interest in aesthetics, emotions, and adventure (Zhang et al. 2019). People with high levels of openness tend to show a stronger interest in innovation, change, and creative work, traits that enhance their adaptability and creativity when faced with career challenges (Goldberg 1993).

First, individuals with high openness often display greater initiative and adaptability (Goldberg 1993; Zhang et al. 2019). In their career exploration, they tend to show a strong desire for new experiences, which enables them to actively explore various career options and gain diverse insights to better understand industry dynamics and market demands (Reed et al. 2004). Moreover, individuals with high openness are actively bold in their exploration, making it easier to connect with others and obtain feedback and support (Yang et al. 2024). This social interaction during their career exploration also enhances their

enthusiasm and helps them find career directions that align more closely with their personal values through ongoing experimentation. Additionally, individuals with high openness also possess strong psychological resilience, allowing them to adjust their strategies when facing setbacks and to more effectively identify their more profound pursuits related to career values (Jiang et al. 2019).

Second, individuals with high openness typically possess strong creative thinking skills (Goldberg 1993; Zhang et al. 2019). This ability enables them to effectively integrate and utilize the information they acquire during career exploration, prompting them to actively pursue diverse career options (Wang et al. 2019). Specifically, creative thinking encourages them to break free from traditional career frameworks and to experiment with different industries and roles while effectively overcoming challenges in the exploration process, which leads to a wealth of career experiences and greater personal growth (Reed et al. 2004). Thus, individuals are able to integrate their practical experiences more deeply with their interests, abilities, and values, leading to a clearer understanding of the meaning and direction they pursue in their careers (Sturges et al. 2019; Wang et al. 2019). This further fosters a sense of identity with specific professions, stimulates their intrinsic motivation, and enhances their passion and drive in pursuing their career ideals (Zhang and Zhang 2022).

Third, individuals with high openness typically exhibit strong independence and high self-esteem (Goldberg 1993; Zhang et al. 2019). Independence encourages them to make bold choices during career exploration, making it less likely for them to be influenced by external pressures or others' opinions and enabling them to make decisions based more firmly on their own interests and values (Reed et al. 2004). Additionally, high self-esteem instills greater confidence in their abilities and potential, driving them to steadfastly pursue their personal goals (Wang et al. 2019). It is evident that individuals with high openness can effectively maintain their self-worth, focus on their true inner thoughts, and exhibit stronger resilience, enabling them to actively cope with setbacks and challenges, thereby achieving greater fulfillment in their careers (Sturges et al. 2019; Zhang and Zhang 2022).

In conclusion, the personality trait of openness to experience may positively facilitate individuals in identifying and pursuing the meaning and purpose of their career lives during exploration. Therefore, the fifth hypothesis of this study is proposed:

Hypothesis 5 (H5). *Openness to experience positively moderates the relationship between career exploration and career calling, such that higher levels of openness lead to a more significant impact of career exploration on career calling.*

The research framework of this research is presented in Figure 1.

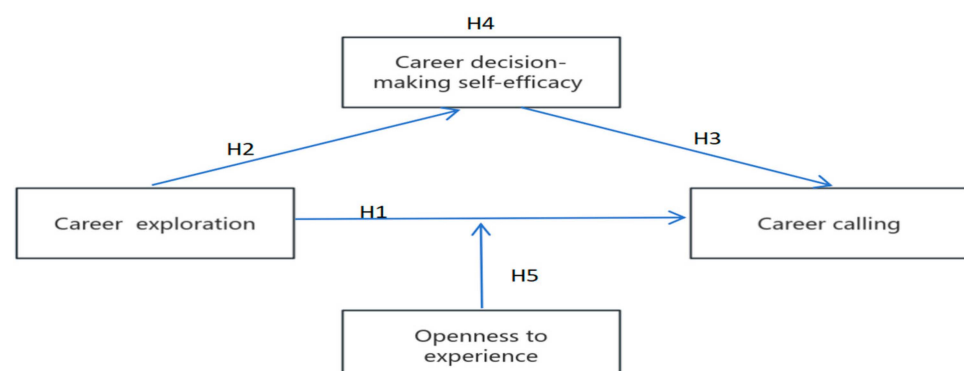


Figure 1. Conceptual framework.

3. Materials and Methods

3.1. Participants and Procedure

Participants in this study were recruited from two universities in Guangdong Province, China: one key university and one ordinary university. We chose these institutions to en-

compass a diverse range of educational backgrounds and resource allocations, thereby providing a more comprehensive reflection of the variations in educational and career environments.

To ensure the representativeness of the sample, we employed a random sampling method that included students from various disciplines and academic years. Data were collected through the online survey platform “Wenjuanxing”, with the questionnaire distributed between July and August 2024. At the beginning of the questionnaire, we clearly stated the purpose of the study, outlined the requirements for participation, and informed participants of their rights, including the right to withdraw from the survey at any time without facing any negative consequences.

During the data processing phase, we eliminated responses that were completed too quickly (in less than 180 s) or took excessively long (more than 1200 s) to ensure the validity and reliability of the data. After this screening process, 421 valid questionnaires were retained for analysis. In the final sample, there were 163 male participants and 258 female participants.

3.2. Measures

This study used validated measurement tools to assess the variables. A forward-backward translation method was employed for scale translation, with review by three experts in education and psychology to minimize semantic biases. Before data collection, a pilot test ($n = 50$) was conducted to evaluate the scales' comprehensibility and cultural relevance. Based on pilot feedback, some items were revised for clarity and cultural alignment. Finally, the design of each scale was validated to ensure it accurately measured the intended variables.

3.2.1. Career Exploration

Career exploration was assessed using the scale developed by Kracke ([Kracke 1997](#)), which measures the extent of an individual's engagement in career exploration activities, including both self-exploration and environmental exploration. The scale consists of six items that cover both self-exploration and environmental exploration. For example, “When I seek information about an occupation, I also try to find out about its negative aspects”. Each item was rated using a five-point Likert scale, with responses ranging from “strongly disagree” to “strongly agree”. Cronbach's alpha was computed to assess the reliability of the scale, indicating strong internal consistency ($\alpha = 0.911$).

3.2.2. Career Calling

Career calling was measured using the Chinese Career Calling Scale developed by Zhang Chunyu and colleagues ([Zhang et al. 2015](#)), which assesses the degree to which individuals perceive their career as a calling, reflecting a deep sense of purpose and fulfillment derived from their work. The original scale had 11 items, but for this study, two items were excluded, leaving a final set of 9 items. An example item is: “My career is one of the means reflecting my life value”. Items were rated on a five-point Likert scale, with a range from “strongly disagree” to “strongly agree”. To evaluate the scale's reliability, Cronbach's alpha was calculated, showing a high coefficient of internal consistency ($\alpha = 0.931$).

3.2.3. Career Decision-Making Self-Efficacy

Career decision-making self-efficacy was assessed using the scale developed by Lent and colleagues ([Lent et al. 2016](#)), which evaluates an individual's self-efficacy in responding to specific challenges and pressures encountered during the career decision-making process. The scale contains three items, such as “Create a good back-up plan if you discover that you don't have enough financial support to pursue your preferred career option”. Each item was rated on a five-point Likert scale, ranging from “strongly disagree” to “strongly agree”. Reliability was assessed using Cronbach's alpha, which confirmed the scale's high reliability ($\alpha = 0.865$).

3.2.4. Openness to Experience

The measure of openness to experience utilized the subscale from the Big Five Personality Inventory to assess individuals' openness to new experiences, imagination, and curiosity (Zhang et al. 2019). The scale consists of three items, for example, "I enjoy taking risks". Each item was rated on a five-point Likert scale, with responses ranging from "strongly disagree" to "strongly agree". Reliability analysis was performed using Cronbach's alpha, demonstrating strong internal consistency ($\alpha = 0.925$).

4. Results

4.1. Descriptive Statistics and Correlations

This study conducted demographic analysis on 421 samples using SPSS 25.0, including participants' gender, major, place of residence, and living expenses. The gender distribution was nearly balanced, with a ratio of approximately 4:6. The specific results are presented in Table 1.

Table 1. Sample basic analysis (N = 421).

Variable	Type	Frequency	%
Gender	Male	163	38.7
	Female	258	61.3
Residence	Rural	1	0.2
	Township	103	24.5
	County Seat	264	62.7
	Urban	53	12.6
Major	Humanities	169	40.1
	Sciences	91	21.6
	Engineering	57	13.5
	Business	104	24.7
Expense	Below 1000 RMB	38	9.0
	1000 to 1499 RMB	222	52.7
	1500 to 1999 RMB	109	25.9
	2000 to 2499 RMB	38	9.0
	Above 2500 RMB	14	3.3
Total		421	100

To better report the subsequent research findings, this study conducted correlation analysis on six variables: gender, living expenses, career exploration, career decision-making self-efficacy, openness to experience, and career calling. The detailed results are shown in Table 2.

Table 2. Correlation analysis of variables.

Variable	Mean	SD	Gender	Living Cost	CE	CDMSE	ON	CC
Gender	1.613	0.488	1					
Living cost	2.449	0.900	−0.048	1				
CE	3.879	0.628	−0.058	0.066	1			
CDMSE	3.467	0.791	−0.028	0.127 **	0.507 **	1		
ON	3.304	0.919	−0.181 **	0.143 **	0.461 **	0.444 **	1	
CC	3.857	0.678	−0.054	0.040	0.576 **	0.489 **	0.346 **	1

Note: ** < 0.01; CE—career exploration; CDMSE—career decision-making self-efficacy; ON—openness; CC—career calling.

The findings in Table 2 reveal that gender has a significant negative relationship with openness to experience ($B = -0.181, p < 0.01$). Living expenses have a significant positive effect on career decision-making self-efficacy ($B = 0.127, p < 0.01$) and openness to experience ($B = 0.143, p < 0.01$). Career decision-making self-efficacy ($B = 0.507, p < 0.01$), openness to experience ($B = 0.461, p < 0.01$), career calling ($B = 0.576, p < 0.01$), and career exploration are all significantly positively related. Openness to experience ($B = 0.444, p < 0.01$), career calling ($B = 0.489, p < 0.01$), and career decision-making self-efficacy all show significant positive effects. There is also a significant positive relationship between openness to experience ($B = 0.346, p < 0.01$) and career decision-making self-efficacy. All research variables were significantly correlated, providing support for the next step of structural equation modeling analysis in the study.

4.2. Confirmatory Factor Analysis

This study conducted a confirmatory factor analysis using AMOS 24.00 on the four latent variables: career exploration, career decision-making self-efficacy, openness to experience, and career calling. Additionally, reliability analysis was performed on all variables using SPSS 25.00. The specific results are presented in Table 3.

Table 3. Factor loadings, AVE, CR, and α Analysis.

Variable	Item	Estimate	AVE	CR	α
Career exploration	CE1	0.762	0.633	0.912	0.911
	CE2	0.837			
	CE3	0.841			
	CE4	0.813			
	CE5	0.709			
	CE6	0.804			
Career decision-making self-efficacy	CDMSE1	0.819	0.690	0.869	0.865
	CDMSE2	0.904			
	CDMSE3	0.763			
Openness	ON1	0.937	0.807	0.926	0.925
	ON2	0.912			
	ON3	0.844			
Career calling	CC1	0.881	0.832	0.908	0.931
	CC2	0.919			
	CC3	0.905			

As shown in Table 3, the factor loadings for career exploration, career decision-making self-efficacy, openness to experience, and career calling are all greater than 0.7, with AVE values ranging from 0.633 to 0.832, all exceeding the minimum required threshold of 0.5. The CR values range from 0.869 to 0.926, all surpassing the minimum requirement of 0.7. Additionally, the α values for each variable range from 0.865 to 0.931, all exceeding the minimum threshold of 0.7. These results indicate that the reliability and validity of the research variables meet the required standards. To prevent data multicollinearity, a CFA with both single-factor and four-factor models was conducted and compared, and the results are presented in Table 4.

Table 4. Confirmatory factor analysis.

Factor	χ^2	χ^2/df	CFI	NFI	IFI	RMSEA	SRMR
Four Factors	435.268	2.418	0.962	0.936	0.962	0.058	0.049
Single Factor	2888.149	15.281	0.594	0.579	0.595	0.184	0.125

As presented in Table 4, the indicators for the single-factor model are all higher than those for the four-factor model. Therefore, there is no multicollinearity among the data for all variables in this study. Additionally, the data for the four-factor model meet the required standards ($\chi^2 = 435.268$, $\chi^2/df = 2.418$, CFI = 0.962, NFI = 0.936, IFI = 0.962, RMSEA = 0.058, SRMR = 0.049), indicating that the data in this study provide further support for the research findings.

4.3. Direct and Mediated Effects Analysis

After conducting the confirmatory factor analysis for each variable, path tests were performed for hypotheses H1, H2, H3, and H4. The results are presented in Tables 5 and 6.

Table 5. Direct path analysis results.

Path	Estimate	S.E.	C.R.	P
Career exploration → Career calling	0.412	0.053	7.754	***
Career exploration → Career decision-making self-efficacy	0.513	0.072	7.159	***
Career decision-making self-efficacy → Career calling	0.163	0.039	4.151	***

Note: *** < 0.001.

Table 6. Mediated path analysis of career decision-making self-efficacy.

Path	Parameter	Estimate	Se	Bias-Corrected		Percentile	
				Lower	Upper	Lower	Upper
Career exploration → Career decision-making self-efficacy → Career calling	total	0.529	0.062	0.412	0.660	0.406	0.65
	direct	0.411	0.061	0.298	0.538	0.292	0.529
	indirect	0.117	0.034	0.064	0.199	0.061	0.193

According to the data in Table 5, H1: career exploration (B = 0.412, SE = 0.053) has a significant positive effect on career calling. H2: career exploration (B = 0.513, SE = 0.072) significantly positively affects career decision-making self-efficacy. H3: career decision-making self-efficacy (B = 0.163, SE = 0.039) significantly positively influences career calling. Therefore, hypotheses H1, H2, and H3 are supported by the data in this study. Additionally, the mediating effect of career decision-making self-efficacy was tested using 5000 bootstrap samples, with the results presented in Table 6.

Table 6 shows that the total effect of the mediation model is 0.529 (Bias-corrected: 0.412, 0.660; Percentile: 0.406, 0.650), with a direct effect of 0.411 (Bias-corrected: 0.298, 0.538; Percentile: 0.292, 0.529) and an indirect effect of 0.117 (Bias-corrected: 0.064, 0.199; Percentile: 0.061, 0.193) through career decision-making self-efficacy. The mediation effect of career decision-making self-efficacy (B = 0.117, SE = 0.034) accounts for 22.12% of the total effect. Therefore, H4: career exploration significantly positively affects career calling through career decision-making self-efficacy, and this hypothesis is supported by the data in this study.

4.4. Moderating Effects Analysis

This study employed SPSS 25.00 to perform hierarchical regression analysis to test the moderating effect of openness to experience (H5), with all variables adjusted for centering. The detailed results are presented in Table 7.

As shown in Table 7, the interaction term of career exploration × openness in model 2 (B = 0.110, SE = 0.036) significantly and positively predicts career calling. This provides preliminary support for 5. To further explore the moderating effect of openness, a graphical analysis was conducted, and the results are presented in Figure 2.

Table 7. Moderating effect of openness to experience.

Variable	Career Decision-Making Self-Efficacy M1		Career Calling M2	
	B	SE	B	SE
Constant	3.249	0.149	3.117	0.173
Gender	0.009	0.068	−0.016	0.054
Living cost	0.083 *	0.037	−0.022	0.029
CE	0.631 ***	0.053	0.478 ***	0.050
CDMSE			0.228 ***	0.040
ON			0.017	0.034
CE × ON			0.110 **	0.036
ΔR ²		0.266		0.399
F		50.39		45.861

Note: * < 0.05, ** < 0.01, *** < 0.001; CE—career exploration; CDMSE—career decision-making self-efficacy; ON—openness.

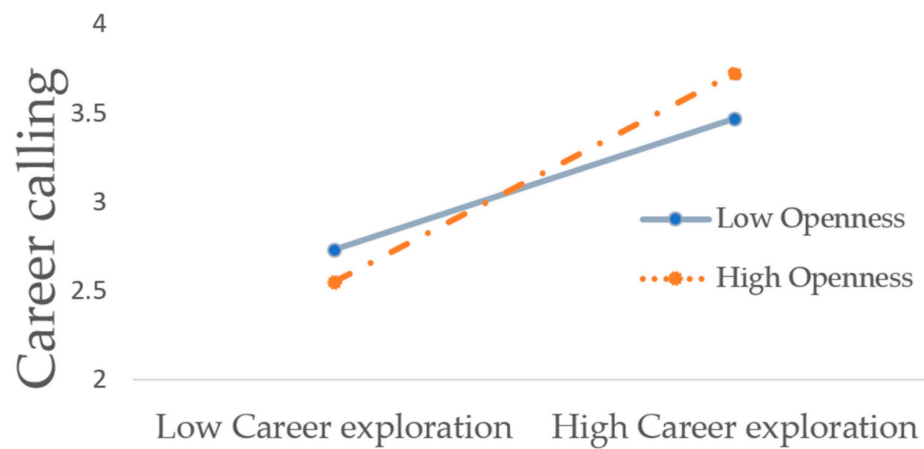


Figure 2. Moderating effect of openness.

Figure 2 shows that openness to experience positively moderates the relationship between career exploration and career calling. This suggests that individuals with higher levels of openness to experience are more engaged in career exploration, which in turn strengthens the relationship between career exploration and career calling. Therefore, Hypothesis 5, which posits that openness to experience positively moderates the relationship between career exploration and career calling, is supported by the data in this study.

In summary, all hypotheses in this study are supported, with the specific results presented in Figure 3.

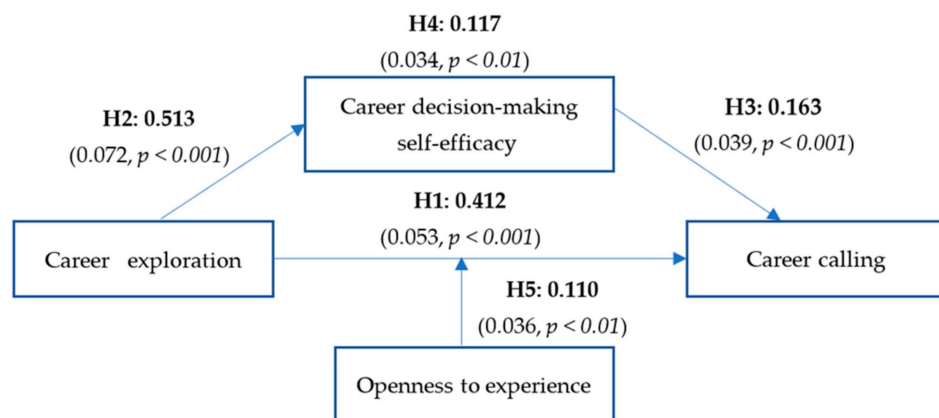


Figure 3. Path coefficient results.

5. Discussion

College students are at a critical stage of **career** exploration. During this phase, they face the transition from academia to the workforce, requiring a deeper understanding of the professional landscape, the development of self-awareness, and the establishment of clear career goals. This study aims to examine the influence of career exploration on career calling and its underlying mechanisms, while also analyzing the moderating role of openness to experience in this process.

First, the results of this study indicate a significant correlation between career exploration and the sense of career calling, thereby validating Hypothesis 1 and confirming the central role of career exploration in individuals' professional development. Through career exploration, individuals gain profound insights into themselves and their professional environment, enabling them to better understand the meaning of their careers and to establish clear career goals (Hirschi and Koen 2021). This finding also supports the perspective of Duffy et al., who argue that individuals actively explore and experience different career options, identify and clarify their career interests, abilities, and values, and engage in person–job fit (Duffy et al. 2018). Through this process, they find greater meaning and purpose in their career development, which enhances their commitment and engagement with career goals, thus promoting the development of a career calling (Duffy et al. 2014; Duffy et al. 2018). Moreover, this study extends the research on career calling from traditional work contexts to the educational sector, addressing a gap in understanding the formation and development of career calling among future employees (Sturges et al. 2019; Xu et al. 2023). This suggests that providing effective career exploration guidance during the educational process can help students clarify their career goals and enhance their sense of career calling, leading to a clearer direction in their career planning.

Second, the findings confirmed Hypothesis 2, highlighting the critical role of career exploration in enhancing individuals' career decision-making self-efficacy. This aligns with Hirschi's theory (Kleine et al. 2021), which posits that systematic career exploration allows individuals to gain detailed information about careers and a deeper understanding of their fit, thereby boosting their decision-making confidence. Moreover, career decision-making self-efficacy significantly influences individuals' decision-making processes and behaviors (Ran et al. 2023). The validation of Hypothesis 3 supports this notion, indicating that when individuals are confident in their career decision-making abilities, they are more likely to set ambitious career goals, actively seek opportunities that align with their values and calling, and confidently confront challenges. This, in turn, fosters a deeper sense of identity and fulfillment in their career roles, thereby enhancing their career calling (Sturges et al. 2019; Jiang et al. 2019). On this basis, the study confirmed the mediating role of career decision-making self-efficacy between career exploration and career calling, supporting Hypothesis 4. This finding reveals how career exploration indirectly influences career calling by enhancing career decision self-efficacy. Specifically, proactive career exploration behaviors increase individuals' confidence in career decisions and their hope for future career development, thereby fostering intrinsic motivation for career growth and encouraging a stronger commitment to pursuing their career calling. The validation of the mediating mechanism presents a process through which individuals explore and affirm their career calling, offering a new perspective on the development of career calling.

Third, this study confirmed Hypothesis 5, revealing that openness to experience positively moderates the relationship between career exploration and career calling. This finding indicates that individuals with higher levels of openness significantly enhance the influence of career exploration on their career calling. Specifically, individuals with high openness typically exhibit stronger curiosity, innovative thinking, and adaptability (DeYoung et al. 2014), which enables them to actively seek new experiences and opportunities during their career exploration, allowing for a better understanding of themselves and the professional world, and facilitating the pursuit of deeper meanings in their careers (Reed et al. 2004; Azpilicueta et al. 2024). In contrast, individuals with low openness may adopt a more conservative approach to career exploration, lacking sufficient motivation

and resilience to confront challenges. Therefore, educators and career counselors should consider individual personality traits when providing targeted support to enhance students' career exploration and foster their career calling. For those with high openness, this could involve offering exploratory opportunities and innovative tasks to satisfy their curiosity, foster creativity, and enhance their sense of achievement, thereby boosting their career calling. For individuals with low openness, educators can encourage participation in career exploration by setting gradual goals and providing consistent feedback to help them discover and pursue their career calling.

6. Limitations and Future Research

First, the sample in this study was primarily drawn from two universities in Guangdong Province, China, which somewhat limits the external validity and generalizability of the findings. Additionally, although university students are an important group for studying career exploration and career calling, they are at the early stages of career development, which implies that their experiences and needs may differ significantly from those of individuals at later career stages. For instance, newcomers to the workforce often have some work experience and face more practical career challenges, while mid- to senior-level managers tend to focus more on career achievements, leadership, and strategic career decisions. Therefore, future research should consider expanding the sample to include individuals from different age groups, professional backgrounds, and geographical regions to more comprehensively assess the generalizability and variability of the impact of career exploration on career calling.

Second, a limitation of the data collection methods is the reliance on cross-sectional data. The study primarily used self-reported questionnaire data, which may introduce subjective biases, such as social desirability effects, potentially impacting the accuracy and reliability of the results. Additionally, cross-sectional data were collected at a single point in time. Although this approach provides a snapshot of the relationships among variables, it fails to capture the long-term developmental processes of career exploration and career calling. Consequently, the findings may not fully reflect the long-term effects of career exploration on career calling. Future research should integrate both quantitative and qualitative methods, such as in-depth interviews or behavioral observations, to gain a more comprehensive understanding. Furthermore, a longitudinal design should be employed to track individuals' changes during the career exploration process and its long-term effects on career calling, while also identifying key influencing factors and developmental characteristics at different stages.

Third, there are limitations in the selection of variables. Although this study explored factors such as career exploration, career decision-making self-efficacy, and openness to experience, it may have neglected other important factors, such as social support, family background, and cultural differences. Future research should include these variables to provide a more comprehensive understanding of career calling, offering stronger support for educational practice and career development.

7. Conclusions

In conclusion, this study makes a significant contribution to the theoretical model of career calling, extending the framework of its development, while offering valuable insights for educational practice. The findings suggest that educators should design more diverse career exploration activities, focus on enhancing students' career decision-making self-efficacy, and provide personalized career development guidance to help young university students more confidently pursue their career ideals. Therefore, educational institutions could implement customized career planning courses to help students identify the deeper meanings behind their career goals and encourage alignment between these goals and their intrinsic values during the career exploration process. Furthermore, future educational practices should adopt systematic and multi-dimensional intervention strategies, establishing a more comprehensive social support system to help students form a clear

sense of career calling in the early stages of their career development. This will promote a deeper understanding and internal alignment with their career goals, thereby laying a solid foundation for their long-term career planning.

Author Contributions: Conceptualization, X.S. and A.A.; methodology, X.S. and A.A.; software, X.S.; validation, X.S., A.A. and J.A.; formal analysis, X.S. and A.A.; investigation, X.S.; resources, X.S.; data curation, X.S.; writing—original draft preparation, X.S.; writing—review and editing, X.S., A.A. and J.A.; visualization, X.S. and A.A.; supervision, A.A. and J.A.; project administration, X.S.; funding acquisition, X.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The studies involving human participants were approved by the Institutional Review Board of Lingnan Normal University. The research was conducted in compliance with local laws, regulations, and institutional guidelines.

Informed Consent Statement: In accordance with national legislation and institutional policies, written informed consent for participation was not required from the participants or their legal guardians.

Data Availability Statement: The data will be available upon request to the corresponding authors, as it is not publicly available due to privacy or ethical restrictions.

Conflicts of Interest: The authors declare no conflicts of interest.

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