Tolerance for Uncertainty as a Mediation Role in the Relationship Between Professional Identity and Career Choice Among Early Childhood Student Teachers in China

Jie Pan, University of Malaya, Malaysia
Mohammad Ismath Ramzy Mohammad Ismail, University of Malaya, Malaysia

The Asian Conference on Education 2024
Official Conference Proceedings

Abstract
In recent years, Education policies have focused on developing early childhood education (ECE) by establishing a stable, high-quality teacher workforce in China. The career choices of pre-service teachers (ECE PSTs) directly impact their career paths, well-being, and the future of early childhood education in China. However, many ECE PSTs face significant obstacles in career decision-making due to labor market uncertainties, leading to low commitment and early resignation. Understanding the factors influencing their decisions is crucial to reducing future regret. While professional identity (PI) is critical in career decisions, its impact may be weakened by external and personal reasons. There is still relatively little research on the outcomes of tolerance of uncertainty (TU) and the career choice aspects of its PSTs. This study examines whether TU mediates the relationship between PI and career choice. Using a causal relationship analysis, this study surveyed 385 ECE students. A convenience sampling method was employed, and statistical techniques, including mediation analysis and structural equation modeling (SEM) using Smart-PLS 4.0, were applied to validate the model and assess the relationships. The findings show that PI dimensions (Professional Values, Efficiency, Willingness, Volition) significantly influence career choice through the mediation of TU (Preference, Tolerance, Aversion). Specifically, higher PI enhances TU, increasing the likelihood of choosing a teaching career. These results expand the theoretical understanding of career development and provide practical guidance for higher education institutions. Emphasizing the cultivation of PI and coping with career uncertainties can improve decision-making confidence and increase career commitment among ECE pre-service teachers.

Keywords: Professional Identity, Career Choice, Ambiguity Tolerance

Introduction

For most student teachers, the goal is clear: to become impactful educators and find fulfillment in their work. However, the path to a teaching career is fraught with uncertainties, including evolving educational policies, school resources, and job market fluctuations (Scherer et al., 2020). Despite academic success and internship experience, many student teachers face challenges securing stable teaching positions (Huu Nghia & Tai, 2019).

In China, early childhood education (ECE) career development faces notable challenges. Higher education institutions have expanded ECE enrollment to meet demand (Hong et al., 2023), but many pre-service teachers are reluctant to work in kindergartens, leading to a gap between career expectations and choices (Liu & Boyd, 2020). Yu and colleagues (2023) found 63% of 1,018 surveyed pre-service teachers uncertain about pursuing teaching, reflecting ambivalence toward ECE careers. Additionally, the Free Teacher Education (FTE) program struggles to ensure long-term teaching commitments, with 19% of participants planning to leave teaching after fulfilling obligations and 35% uncertain about continuing (Li qiong et al., 2022).

Uncertainty in the labor market exacerbates these challenges. Demographic shifts, including a population decline since 2022, have decreased the preschool-age population, creating a projected 33% surplus in educational resources (Zuo & Yao, 2024). Simultaneously, policies expanding childcare for children under three years old (Wang et al., 2024), add further unpredictability to the employment outlook.

Despite these challenges, some individuals pursue teaching out of passion and a sense of purpose. However, the high turnover rate among preschool teachers in China, driven by low salaries, high workloads, and limited recognition, often leads to regret in career choices (Liu & Xie, 2021). These career decisions not only affect individual teachers but also the broader stability of the education sector (Williams III et al., 2022). Understanding the factors influencing these choices is crucial.

Professional identity plays a significant role in outcomes such as academic achievement and career development across fields (McCall et al., 2020; Tomlinson & Jackson, 2021; Zou et al., 2024). While research on ECE pre-service teachers has examined professional identity, mental health, and career development, the link between professional identity and career outcomes remains underexplored. There is a need for model-based research on the interplay among professional identity, tolerance for ambiguity, and career choice.

This study empirically evaluates a framework linking professional identity, tolerance for career ambiguity, and career intention, with a focus on the mediating role of ambiguity tolerance in navigating uncertainties. It aims to uncover the mechanisms connecting professional identity and career choice, contributing to the theoretical understanding of student teachers' career decisions.

By examining uncertainty tolerance as a mediating variable, this study provides valuable insights for teacher education programs. The theoretical foundations of professional identity, career uncertainty tolerance, and career choice are reviewed, followed by the research design, findings, and conclusions.

Literature Review

Professional Identity

Professional identity is an individual's sense of identification and belonging to a particular profession, which is unstable and dynamic. It is an integrative process in which an individual attempts to find a balance between personal traits and professional demands (the professional demands, values, and standards set by Initial Teacher Education [ITE] institutions and school) (Pillen et al., 2013).

The positive impact of professional identity on students' academic and career success is widely recognized. Developing a strong professional identity serves as a critical link between higher education and future employment, shaping students' sense of confidence and familiarity with their chosen career paths (Tomlinson & Jackson, 2021). Wolniak and Engberg (2019) emphasize that high-quality college experiences, including the cultivation of professional identity, significantly affect students' early career outcomes, particularly in selecting jobs related to their fields of study. Weiß and colleagues (2023) found that teachers' identification with their professional identity throughout different career stages is closely tied to their career decisions. A strong sense of professional identity equips teachers to better navigate career challenges, such as adapting to diverse student needs, employing effective teaching strategies, and committing to lifelong learning (Hammerness, 2005). In contrast, teachers with weaker professional identities, especially pre-service teachers, are more susceptible to emotional exhaustion, depersonalization, and a reduced sense of professional efficacy, which are key indicators of burnout (Lu et al., 2019; Sun et al., 2022). This heightened burnout risk, in turn, increases the likelihood of teacher turnover (Hong, 2010). Additionally, Sun and colleagues (2022) found a significant positive correlation between professional identity and job satisfaction. Professional identity fosters job satisfaction through psychological empowerment and deeper engagement, ultimately reinforcing teachers' commitment to their career choices. Therefore, understanding students' professional identity is crucial for comprehending their career-related behaviors and psychology and for developing intervention measures.

Research on professional identity has established a comprehensive theoretical framework, emphasizing factors influencing student teachers' professional identity, including personal characteristics (e.g., values, beliefs, skills), emotions (e.g., anxiety, frustration, achievement), internships, and social support (e.g., teacher training, mentorship, teacher-student interactions) (Castillo Nuñez et al., 2019; Timoštšuk & Ugaste, 2010). Using Lave and Wenger's communities of practice framework, studies highlight how novices evolve into core members through legitimate peripheral participation, shaping their professional identity (Pennington & Richards, 2016; Williams & Ritter, 2010). Zembylas (2018), applying Butler's concept of self-identity, offers an ethical and political lens to understand how teachers construct professional identities within social and cultural norms.

Some studies have investigated the impact of professional identity on teachers, such as workplace well-being, job burnout, and job satisfaction, academic performance, career decisions, planning, work engagement, and turnover intentions (Lin et al., 2022; Lu et al., 2022; Wu et al., 2024). Professional identity significantly influences academic performance, career preparedness, planning, self-efficacy, engagement, and job satisfaction while reducing turnover intentions across various fields, including nursing, higher education, civil engineering, and the hotel industry (McCall et al., 2020; Tomlinson & Jackson, 2021; Wang

et al., 2020; Zou et al., 2024). It shapes career decisions through socio-cultural and personal factors and fosters alignment between personal and professional identities. However, its impact on early childhood teacher candidates remains underexplored, requiring further research.

Tolerance of Uncertainty

Tolerance of uncertainty, or ambiguity tolerance, refers to the ability to navigate ambiguous situations, including those that are unfamiliar, complex, or conflicting (Epishin & Bogacheva, 2020). It is considered crucial for addressing novel, complex problems without straightforward solutions. Psychological responses to uncertainty vary, ranging from acceptance (e.g., seeking information, embracing ambiguity) to avoidance (e.g., distraction, helplessness) (McLain et al., 2015).

Cross-disciplinary research highlights factors influencing ambiguity tolerance, such as personality traits (e.g., extroversion, preference for structure), training, and support systems. Studies suggest it predicts career decision-making processes and outcomes. For example, Endres and colleagues (2009) linked ambiguity tolerance to enhanced self-efficacy in complex tasks, while Xu and Tracey (2014) found it significantly impacts career indecision among college students. Storme and colleagues (2019) reported that preference for ambiguous information reduces decision-making difficulties, whereas aversion exacerbates them. Similarly, Xu (2020) noted that ambiguity aversion negatively affects career decisions, particularly among individuals prone to anxiety. Borracci and colleagues (2021) identified a connection between tolerance for ambiguity and university major selection in medical students.

Despite these insights, empirical studies on ambiguity tolerance in career decision-making are limited (Arbona et al., 2021). Notably, research on ECE PSTs and related career variables remains a gap in the literature.

TU as a Mediator

In VUCA era (Volatility, Uncertainty, Complexity, Ambiguity), career development has become increasingly unpredictable, rendering traditional static career matching methods outdated. The Chaos Theory of Careers (CTC) highlights that career development is inherently uncertain and complex, with unpredictable factors significantly influencing decision-making (Pryor & Bright, 2014). CTC emphasizes embracing uncertainty and fostering adaptability to better handle career changes and complexities. It suggests that individuals should develop self-awareness while accepting external uncertainties, remaining flexible and open to new opportunities. Studies also demonstrate the effectiveness of short-term CTC-based interventions in boosting career confidence and reducing irrational career-related thoughts (Davey et al., 2005; Schlesinger & Daley, 2016). This study explores the relationship between professional identity (PI) and career choice, focusing on the mediating role of tolerance for ambiguity (TU).

Kwok (2018) notes that self-uncertainty can weaken perceptions of academic and professional identity, while self-certainty alone does not significantly influence decision-making. Research indicates that combining self-certainty with world certainty motivates goal-directed actions, such as dedicating more time to study or engaging in career planning (Smith et al., 2014).

Connections between PI and TU have been identified in previous research. Reischl and Hirsch (1988) that a clear professional identity reduces stress during transitions by enhancing ambiguity tolerance. A strong sense of identity improves coping effectiveness in ambiguous situations. Garrison and colleagues (2017) found that career identity indirectly enhances life satisfaction among Korean college students by increasing tolerance for uncertainty, mediated by emotional factors.

Despite these findings, empirical research on the mechanisms linking PI and career choice, particularly among pre-service teachers, remains limited. This study hypothesizes that tolerance for career uncertainty mediates the relationship between professional identity and the willingness to pursue teaching careers among ECE pre-service teachers in China.

The Present Study

The present study focusing on student early childhood education teachers at Chinese Universities about their prior decision process of becoming a teacher. We propose hypotheses and a research model based on career chaos theory and previous empirical studies. Based on the above elaboration, a research model of the relationship between professional identity and career decision of becoming a preschool teacher through career decision-making tolerance ambiguity was developed.

We expected the following hypothesis: H1 H2 H3 H4, as shown in Fig.1 Conceptual model.

- H1: Professional identity positively influences the decision to become a preschool teacher.
- H2: Professional identity positively influences the career decision-making ambiguity tolerance
- H3: Tolerance for uncertainty positively influences the decision to become a preschool teacher.
- H4: Professional identity indirectly influences the decision to become a preschool teacher through tolerance for uncertainty.

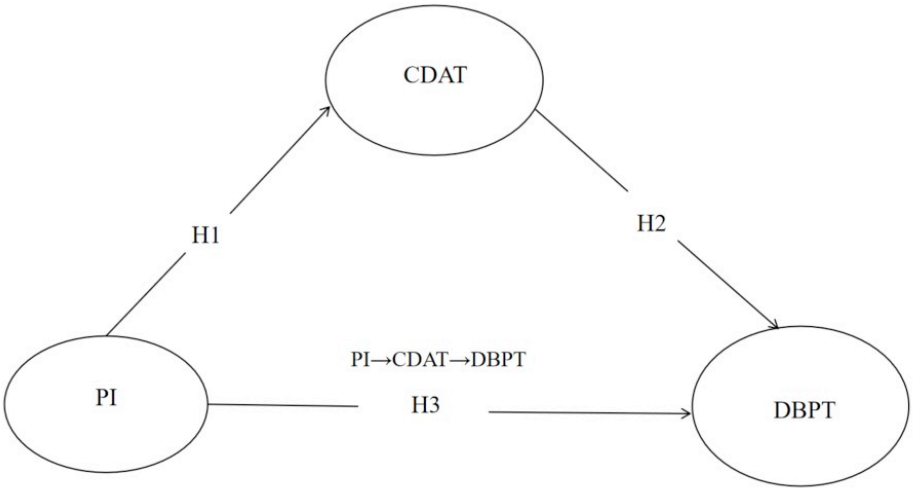


Figure 1: Conceptual Model

Method

Participants and Procedures

To ensure a statistically representative sample, we used *Calculator.net* to calculate the required sample size based on population size, confidence level, and margin of error. The final calculated sample size was 385. Due to limited funding and time constraints, a convenience sampling method was employed.

In the fall of 2024, a four-week survey was conducted using the Wenjuanxing platform (https://www.wjx.cn/). A total of 552 university students from 25 normal universities offering a four-year Bachelor of Education in Early Childhood Education (BEd ECE) program participated voluntarily and anonymously. Participants included first- to fourth-year students, as well as graduate students. The survey collected demographic information (gender, grade level, major, family economic status) and data on professional identity (PI), career decision-making ambiguity tolerance (CDAT), and career choice (DBPT).

To encourage participation, each respondent who completed the survey received a 3 RMB reward. Of the 552 distributed questionnaires, 446 were returned. After excluding 61 questionnaires due to incomplete responses or failed validity checks, 385 valid responses were retained, resulting in an 86.3% valid response rate. Anonymity and confidentiality were strictly ensured throughout the process.

Table 1: Demographic Profile of Sample

Demographic Profile	***Description***	***N***	***%***
Gender	Female	357	92%
	Male	28	8%
Age	18-20	144	37%
	21-23	188	49%
	24-26	53	14%
Study stage	First Year	73	19%
	Second Year	89	23%
	Third Year	124	32%
	Fourth Year	99	26%
Type of Teacher Candidates	Service-bound Teacher Candidates	55	14%
	Self-funded Teacher Candidates	330	86%
Parents' Economic Social status	Low-income Households	39	10%
	Middle-income Households	290	75%
	High-income Households	9	2%

Research Instruments

The following scales were used in this study. We assessed the comprehensibility of the items through discussions with five student teachers, resolving any discrepancies until consensus

was reached. Some wording was slightly adjusted and modified to ensure clarity. All the measurement constructs were measured on a 5-point-likert-type scale, from “does not describe me at all” to “describes me well”.

Professional Identification Scale for pre-service teachers (Wang et al., 2010) was adopted to assess pre-service teachers' professional identity. The Cronbach's alpha for the entire scale was 0.783. Previous studies have demonstrated that this scale has strong reliability and validity, making it a widely accepted tool for evaluating professional identity among pre-service teachers (Chen et al., 2016; Zhang et al., 2021). The scale consists of 12 items divided into four dimensions: professional values, professional efficacy, professional commitment, and professional volition. Participants rated each item on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). In the present study, higher scores on the scale indicated stronger professional identity among pre-service teachers.

Career Decision Ambiguity Tolerance (CDAT) scale consists of 18 items designed to assess individuals' evaluations and responses to the career decision-making process (Xu & Tracey, 2015). The Cronbach's alpha for the entire scale is 0.83. The CDAT scale is divided into three dimensions: preference (e.g., "I am open to careers I have never heard of or thought of before"), tolerance (e.g., "I do not mind changing my career in the future if necessary"), and aversion (e.g., "People's different or sometimes contradictory perspectives about a career make me uncomfortable"). Each construct contains six items. The CDAT uses a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total score ranges from 18 to 126, with higher scores indicating a greater tolerance for ambiguity in career decision-making.

Decision to Become a Teacher Scale consists of six items (e.g., "How carefully have you thought about becoming a preschool teacher?") (Watt & Richardson, 2007). Cronbach's alpha for the entire scale is 0.88. It uses a five-point rating scale, with higher scores indicating a stronger intention to pursue a teaching career.

Data Analyses and Results

Structural Equation Modelling Techniques

This study includes two second-order constructs: professional identity and career decision ambiguity tolerance. Professional identity consists of four first-order constructs: (1) Career Intention and Expectation, (2) Work Volition, (3) Career Value, and (4) Career Self-Efficacy. Similarly, career decision ambiguity tolerance comprises three first-order constructs: (1) Preference, (2) Tolerance, and (3) Avoidance. The path model is relatively complex as evidenced in many constructs per model and indicators per construct, moreover, the goal is to predict and explain a key target construct and/or to identify its relevant antecedent constructs. Therefore, this study employs structural equation modeling (SEM) techniques for quantitative analysis. Moreover, the researcher used SPSS.29 to analyze the data, according to the histogram of the three variables we found that none of the variables followed a normal distribution. PLS-SEM does not require data to be normally distributed, making it a suitable analysis tool for small samples and non-normally distributed data (Hair et al., 2017). The Partial Least Squares (PLS) method is used to examine theoretical relationships based on the outer model (measurement model) and the inner model (structural model), focusing on maximizing the explained variance of latent variables and interpreting the causal relationships between them. PLS-SEM is particularly suitable for developing new models or

for theories that are still in the developmental stage (Hair et al., 2019). We used Smart-PLS 4 to test the research hypotheses in this study. Smart PLS is a popular software that implements the Partial Least Squares Structural Equation Modeling (PLS-SEM) method, allowing researchers to perform functions such as the "PLS-SEM Algorithm," "Bootstrapping," and "PLS predict."

Collinearity Test

During the data cleaning and preprocessing process, we handled outliers (including missing data) by removing the outliers. We deleted the records of participants who did not provide informed consent, as well as those who did not respond carefully (including participants who gave the same answer to all items or had missing values in some sections). After removing invalid responses, to further avoid the risk of high collinearity in the results, we also calculated the variance inflation factor (VIF). The results show that all VIF < 3 (Professional Identity=1.642, Career Decision Ambiguity Tolerance=1.664), indicating low correlations between the independent variables. There is no serious collinearity in the model, and the model is relatively robust (O'brien, 2007).

Table 2: Collinearity Diagnostics

	Tolerance	VIF
PI	.611	1.642
CDAT	.619	1.664

a. Dependent variable：Decision to be a Preschool Teacher

Measurement Model Analysis

We conducted confirmatory factor analysis (CFA) on the existing scales to evaluate their psychometric properties, including reliability, validity, and the appropriateness of the hypothesized structure. The measurement model evaluation includes calculating factor loadings, Cronbach's α, composite reliability (CR), and average variance extracted (AVE) (Hair Jr et al., 2017). Table 2 shows that all factor loadings meet the recommended standard range, with values above 0.7. The AVE values also meet the recommended threshold, all exceeding 0.5. The lowest composite reliability value is 0.843, thus all CR values are within the recommended levels (Fornell & Larcker, 1981; Hair Jr et al., 2017). Table 3 presents the general reliability and validity statistics for all measurement constructs, as well as the average score of the latent variables (mean=3.670). All latent variables are measured with more than three items.

Table 3: Measurement Model

Scale item	*Mean Score*	*Factor Loading*	*Cronbach α*	*AVE*	*CR*
Professional Identity	3.435		.767	.590	.852
PI-1	3.38	0.852			
PI-2	4.35	0.871			
PI-3	3.41	0.862			
PI-4	3.35	0.840			
PI-5	3.38	0.845			
PI-6	3.46	0.855			
PI-7	3.33	0.846			
PI-8	3.37	0.836			
PI-9	3.42	0.852			
PI-10	3.53	0.839			
PI-11	3.59	0.852			
PI-12	3.64	0.837			
Career Decision-making Ambiguity Tolerance	3.482		.724	.642	.843
CDAT-1	3.52	0.773			
CDAT-2	3.54	0.826			
CDAT-3	3.57	0.826			
CDAT-4	3.56	0.834			
CDAT-5	3.57	0.807			
CDAT-6	3.64	0.824			
CDAT-7	3.34	0.825			
CDAT-8	4.42	0.841			
CDAT-9	3.41	0.818			
CDAT-10	3.44	0.818			
CDAT-11	3.45	0.815			
CDAT-12	4.25	0.798			
CDAT-13	3.50	0.792			
CDAT-14	3.43	0.813			
CDAT-15	3.39	0.794			
CDAT-16	3.52	0.813			
CDAT-17	3.49	0.808			
CDAT-18	3.49	0.800			
Decision to Become a Preschool Teacher	3.559		.856	.582	.893
DBPT-1	3.57	0.729			
DBPT-2	3.52	0.765			
DBPT-3	3.56	0.745			
DBPT-4	3.20	0.774			
DBPT-5	4.12	0.783			
DBPT-6	3.03	0.781			

Heterotrait-Monotrait Ratio (HTMT) value was used to assess discriminate validity, HTMT is a more modern and widely accepted method for assessing discriminant validity. HTMT values below 0.90 (and in some cases, below 0.85) indicate that the constructs have good discriminant validity (Franke & Sarstedt, 2019). The calculation results show that all HTMT

values for the constructs were below 0.90, as shown in Table 4, satisfying the threshold value.

Table 4: Discriminate Validity

	CDAT	DBPT	PI
Career Decision Ambiguity Tolerance (CDAT)			
Decision to be a preschool teacher (DBPT)	0.705		
Professional identity (PI)	0.693	0.808	

Demographic Analysis and Correlational Analysis

We adopted SPSS 29.0 to analysis the spearman coefficient, the correlational coefficient of latent variables and dimensions between each other is shown as following Table 5.

Table 5: Correlations of the Study Variables (N=385)

	1	2	3	4	5	6	7	8	9	10
PI-1	1.000									
CIE-2	.665**	1.000								
CVo-3	.755**	.356**	1.000							
CVa-4	.674**	.316**	.412**	1.000						
CSE-5	.749**	.472**	.471**	.446**	1.000					
CDAT-6	.519**	.418**	.455**	.365**	.452**	1.000				
Preference-7	.509**	.495**	.386**	.407**	.486**	.716**	1.000			
Tolerance-8	.440**	.325**	.399**	.267**	.381**	.782**	.424**	1.000		
Aversion-9	-.409**	-.256**	-.378**	-.351**	-.372**	-.724**	-.334**	-.394**	1.000	
DBPT-10	.609**	.481**	.526**	.531**	.592**	.516**	.641**	.453**	-.311**	1.000

Notes. *p < 0.005, **p < 0.01.

Structural Model Analysis

After evaluating the reliability and validity of the measurement model, we tested the research hypotheses proposed in this study. To test the hypotheses, we used the PLS-SEM algorithm to obtain path coefficients (β), f-squared values, and their statistical significance. In addition to the paths tested in the structural model, the explanatory power of the proposed model is also a key indicator, which can be assessed using the R^2 value. As shown in Table 4, all hypotheses are supported. According to the critical values of explanatory power measured by R^2 as proposed by Ozili (2023), all R^2 values indicate acceptable levels ($0.100 \leqslant R^2 \leqslant 0.500$). In addition, we adopted the blindfolding method to calculate the Q^2 values of the latent variables. As seen in Fig 2, the results show that the Q^2 values of the latent variables are all greater than 0, indicating that the model has a certain predictive ability for these latent variables (Chin et al., 2020).

Table 6: Hypothesis Testing

Hypotheses	***β***	***t- Statistics***	***Decision***	***f2***
H1: PI→CDAT	.629	18.20**	Supported	0.653
H2: PI→DBPT	.498	9.54**	Supported	0.338
H3: CDAT→DBPT	.326	6.04**	Supported	0.145

Notes. *p < 0.005, **p < 0.01.

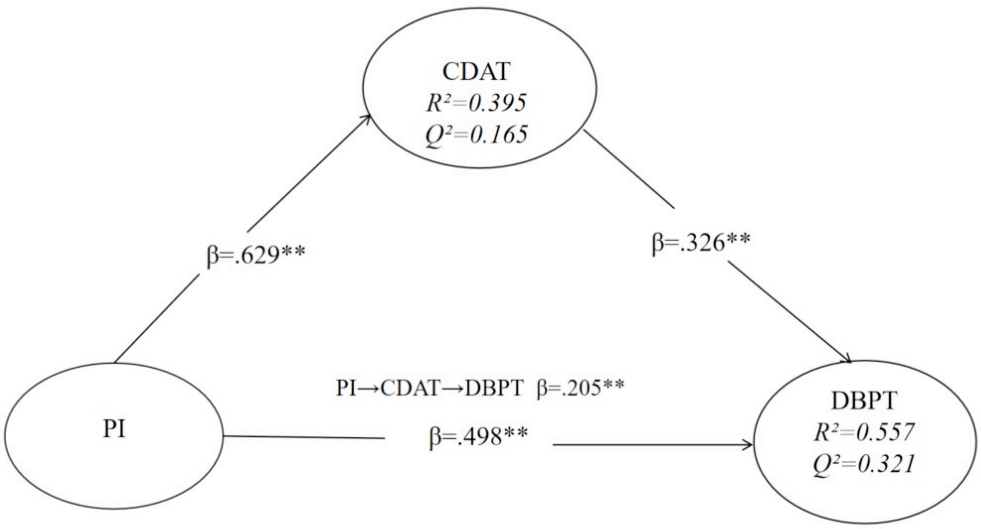
In addition, the indirect effects of career decision-making ambiguity tolerance were calculated by running Bootstrapping with 5000 iterations. The results are shown in Table 5. According to the Bootstrap method proposed by Preacher and Hayes (2004), mediation effects can be determined by calculating the confidence interval of the indirect effect: if the confidence interval does not include zero, the indirect effect is significant, indicating the presence of mediation.

Our results indicate that career decision-making tolerance of ambiguity partially mediated the relationship between professional identity and career choice of becoming preschool teacher (β=0.205, p< 0.01, BCa CI: [0.141–0.270]).

Table 7: Mediating Effects of Career Decision-Making Ambiguity Tolerance

Hypothesis	***β***	***Standard Deviation***	***t-Statistics***	***Decision***
PI→CDAT→DBPT	.205	0.033	6.17**	Supported

Notes. *p < 0.005, **p < 0.01.



Notes. *p < 0.05, **p < 0.01.

Figure 2: Structural Model

Discussion

The Impact of Professional Identity on Career Decision Ambiguity Tolerance (Hypothesis 1)

The results confirm that professional identity predicts tolerance for career decision ambiguity, aligning with prior research (Li et al., 2022). A strong professional identity reduces uncertainties about oneself and future career paths, fostering acceptance of ambiguity and adaptability to complex environments. This acceptance minimizes anxiety and stress, enhancing emotional stability, life satisfaction, and a positive outlook (Garrison et al., 2017). In contrast, underdeveloped professional identity can lead to self-doubt and anxiety, hindering career growth and reducing openness to ambiguity (Chavez Rojas et al., 2023). Internalized self-doubt may be perceived as failure, limiting innovation and adaptability (Pavlova, 2018). Conversely, individuals with a strong professional identity view uncertainty as an opportunity for growth, addressing challenges proactively.

In summary, professional identity enhances pre-service teachers' tolerance for career uncertainties, fostering adaptability and resilience. As a core element of self-agency, it helps individuals maintain inner harmony while navigating uncertain career paths, encouraging growth and development.

The Impact of Professional Identity on Career Decision (Hypothesis 2)

The findings confirm that professional identity (PI) significantly predicts the desire to pursue teaching (DBPT) among ECE PSTs in China. A strong professional identity enhances pre-service teachers' sense of belonging and commitment to the teaching profession, motivating them to pursue this path with greater resolve.

This aligns with previous research showing that work volition predicts career adaptability and mediates the relationship between perceived social status and adaptability (Autin et al., 2017; Su et al., 2023; Zhao et al., 2022). For pre-service teachers, a strong professional identity fosters autonomy, community, and purpose, strengthening their commitment and adaptability to handle the challenges and uncertainties of the education field.

The Impact of Tolerance Ambiguity on Career Decision (Hypothesis 3)

Tolerance for ambiguity was found to positively predict ECE PSTs' decision to pursue a career as kindergarten teachers. This supports the role of ambiguity tolerance in shaping career choices, as it influences how individuals process uncertainty and make decisions (Hirsh et al., 2012). Intolerance of ambiguity is linked to anxiety and excessive future worry (Carleton, 2012)，while fostering ambiguity tolerance can reduce anxiety and improve decision-making efficacy, confidence, and adaptability (Lee & Jung, 2021).

This finding aligns with research showing that higher ambiguity tolerance enhances adaptability through organizational support and proactive career management (Zhou, 2023). Viewing uncertainty as an opportunity for growth promotes adaptability, and traits like openness and agreeableness may underlie this tolerance. Individuals high in openness often embrace challenges and exhibit curiosity, making them well-suited for complex fields like early childhood education (Fayn et al., 2019). This study integrates themes of personality

traits, career adaptability, and the interplay between organizational and personal career strategies in career decision-making.

The Indirect Effects of Career Decision-Making Ambiguity Tolerance on Career Choice (Hypothesis 4)

The results confirm that career decision-making ambiguity tolerance (CDAT) partially mediates the relationship between professional identity and career choice. As noted by Smith and colleagues (2014), even with a strong professional identity, students must tolerate external uncertainties to remain adaptable in the face of change. This tolerance enables them to balance self-determination with unpredictability, increasing their ability to navigate complex career paths and achieve their goals.

Career paths are often probabilistic and unpredictable, and individuals with higher ambiguity tolerance are better equipped to process uncertain information and take proactive actions. Tolerance for ambiguity buffers negative reactions to uncertainty, reducing avoidance behaviors and fostering adaptability, contrasting with a rigid focus on control (Porfeli & Savickas, 2012).

Implications and Recommendations

Professional identity acts as a self-regulatory mechanism, enhancing tolerance for uncertainty and promoting positive emotional experiences. While unpredictability in professional environments challenges these mechanisms, student-teachers adapt by creating career plans, refining teaching skills, and gaining internship experience, fostering proactive agency (Cai et al., 2022). This study addresses a gap by examining how professional identity supports pre-service teachers in managing career uncertainty through self-regulation.

The findings align with the Chaos Theory of Career (CTC) indicated by Pryor and Bright (2003), which emphasizes that adaptability is more critical than fixed career choices in navigating complexity, change, and chance. Professional identity not only guides career development but also fosters flexibility and proactivity in uncertain environments, enhancing adaptability and satisfaction. This underscores the need for career services in teacher education programs to prioritize adaptability over traditional person-job fit models (Xu, 2021).

Since tolerance for ambiguity is a flexible psychological trait influenced by environmental factors (Furnham & Marks, 2013), integrating cognitive behavioral therapy (CBT) into teacher education can help address uncertainty-related anxiety and improve ambiguity tolerance (Reis-Dennis et al., 2021). CBT not only reduces stress but also supports professional development and retention in teaching (Lazarus et al., 2020).

Additionally, career guidance should address the dual nature of ambiguity tolerance, helping students balance courage and curiosity with effective decision-making to avoid overconfidence or indecision (Reis-Dennis et al., 2021). Practical strategies include: incorporating group discussions and case-sharing in career training, encouraging reflective and critical thinking through problem-based learning (PBL) using incomplete or ambiguous data, introducing “gray cases” and multi-option exam questions to train decision-making under uncertainty (Borracci et al., 2021; Lazarus et al., 2024). These approaches cultivate

adaptability, confidence, and composure, equipping students to tackle future professional challenges effectively.

Limitations and Future Directions

This study employed a cross-sectional design, limiting the ability to explore causal relationships between variables. Professional identity, a dynamic and evolving process, develops gradually over time, particularly in early childhood education (Keary et al., 2020). Longitudinal studies within Initial Teacher Education (ITE) are needed to examine the mechanisms underlying the development of professional identity and its impact on teaching commitment.

Additionally, this study focused on pre-service early childhood teachers, which may limit the generalizability of findings to other groups. Different professions attract individuals with varying levels of ambiguity tolerance, and the structured nature of early childhood education may influence how these results apply to less stable professional environments.

Finally, pre-service teachers who choose early childhood education may prefer a stable, structured work environment, seeking to avoid the stress associated with high uncertainty (Borracci et al., 2021). While the findings highlight the positive impact of tolerance for ambiguity on career decisions, the potential bidirectional relationship remains unexplored. Future research could investigate whether career choices or decision maturity also shape individuals' tolerance for ambiguity, offering further insights into this dynamic relationship.

Conclusions

To conclude, this study supports the existing literature by showcasing professional identity as a predictor to facilitate student teachers choose to pursue a teaching position in early childhood education field via career decision-making tolerance ambiguity (Huang et al., 2022). The findings of this study highlight the significance of professional identity in the career development of pre-service teachers (Pérez de Albéniz-Garrote & Medina Gómez, 2020). While the concept of professional identity spans multiple social sciences—including education, philosophy, and psychology—its importance in the formative stages of teacher development is undeniable. During Initial Teacher Education (ITE), various approaches can support identity formation, and shifting these approaches can enhance ITE's impact on identity construction. Therefore, teacher education programs can strengthen pre-service teachers' confidence in managing uncertain professional situations by developing coping strategies and adaptability (Thorpe et al., 2020). On a broader level, these efforts may also contribute significantly to teacher retention in the field.

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Contact email: ismathramzy@um.edu.my