Development of A Causal Relationship Model Among Self-Management, Psychological Resilience and Future Orientation of Chinese Overseas Students

Lihua Wang[a*]
Velankanni Alex[b]

[a*] *Doctor of Education Program in Educational Administration, Graduate School, Stamford International University of Thailand, E-mail: 82094612@qq.com*
[b] *Lecturer, Graduate school, Stamford International University of Thailand.*

Article Info
Received 11 September 2024
Revised 16 December 2024
Accepted 19 December 2024
Available online 29 December 2024

Abstract

The study builds on the Theory of Planned Behavior (TPB) to develop a self-management model for enhancing Chinese overseas students' self-management competencies. Both quantitative and qualitative methods have been used in this study according to the research objectives: 1) to make comparisons of the differences in levels of behavioral attitude, behavioral intention, self-management, psychological resilience, and future orientation among Chinese overseas students' demographic factors, 2) to explore the relationship between self-management and psychological resilience among Chinese overseas students, in addition to the relationship between self-management and future orientation, 3) to develop a self-management model for Chinese overseas students based on the theory of planned behavior. Using the purposive sampling method, the questionnaires were collected from 457 Chinese overseas students across 9 countries on 4 continents, including Asia, Europe, America, and Oceania. The study administered 5 questionnaires assessing behavioral attitude, behavioral intention, self-management, psychological resilience, and future orientation.

The collected data were analyzed by Mean, Standard Deviation, Frequency, Percentage, *t*-test, ANOVA, Pearson correlation, CFA, and path coefficient, based on research objectives.

Research results included: Chinese overseas students had obvious problems in self-management in life and study, psychological resilience and behavioral intention positively influenced self-management, psychological resilience positively influenced future orientation and behavioral intention; future orientation positively influenced behavioral intention; and behavioral attitude positively influenced behavioral intention by constructing a structural equation model and data analysis using Smart-PLS3.0.

In conclusion, this study's result can help Chinese overseas students to confront their overseas study and life positively, this can contribute to the inheritance and development of theoretical models.

Keywords: Chinese Overseas Students, Self-Management, Psychological Resilience, Future Orientation, Behavioral Attitude, Behavioral Intention.

Introduction

In 2023, China remained the top source country for international students from 4 continents, namely Asia, Europe, America, and Oceania, specifically South Korea, Thailand, Malaysia, Japan, the United Kingdom, Germany, the United States, Australia, and New Zealand (CCG, 2024).

In the relevant examples concerning Chinese students, it was shown that their self-management level needs to be improved urgently (CBSN, 2023). It revealed some obvious problems mainly in the aspects of life and study (INSIGHT, 2023).

Previous research on overseas students from East and Southeast Asian countries, with a focus on China, had mainly focused on their learning situation and the problems they encountered in their studies, as well as the attitudes and strategies adopted by schools and teachers to support and assist them (Brown, 2007; Maxwell, 2008). Research on self-management, psychological resilience, future orientation, and the theory of planned behavior had mostly been conducted independently or focused on two aspects among research subjects other than Chinese overseas students (Lorig & Holman, 2003; Su, 2012; Gao et al., 2021; Maggio et al., 2016; Cabras & Mondo, 2018; Lee et al., 2017). In order to improve the representativeness of the sample, this study needs to add Chinese overseas students from continents other than Asia as the sample.

Therefore, this study aimed to bridge this research gap by investigating how these factors affect the self-management of Chinese overseas students to create an effective model to enhance their self-management competencies. Specifically, comparing differences in levels of behavioral attitude, behavioral intention, self-management, psychological resilience, and future orientation among Chinese overseas students' demographic factors, and exploring the relationship between self-management and psychological resilience, in addition to the relationship between self-management and future orientation. The endeavor seeks to help Chinese overseas students to confront their overseas study and life positively, to provide a new perspective on Chinese overseas students' affairs management and enriching cross-cultural research.

Objective

1. To make comparisons of the differences in levels of behavioral attitude, behavioral intention, self-management, psychological resilience, and future orientation among Chinese overseas students' demographic factors.
2. To explore the relationship between self-management and psychological resilience among Chinese overseas students, in addition to the relationship between self-management and future orientation.
3. To develop a self-management model for Chinese overseas students based on the theory of planned behavior.

Literature Review

The sector will first review relevant literature to lay the theoretical foundation for the research. Based on the Theory of Planned Behavior, the article will analyze the influencing factors and mechanisms of self-management in existing studies. Subsequently, combining the actual situation of self-management of Chinese overseas students, the article will propose a

series of research hypotheses to develop a model that can effectively enhance their self-management competencies.

1. Theory of Planned Behavior

The Theory of Planned Behavior (TPB) was developed based on the Rational Behavior Theory, which assumed that people's behavior is rational. The TPB suggested that an individual's behavior is determined by behavioral attitude, subjective norms, and perceived behavioral control, which in turn influence behavioral intention (Ajzen, 1991). According to TPB, an individual's behavioral intention was influenced by three main factors: behavioral attitude, subjective norms, and perceived behavioral control (Ajzen, 2005).

TPB explained and predicted human behavior decisions through psychological constructs such as beliefs, attitudes, and intentions, and has become an important theory in human behavior research, providing theoretical basis for research on behavioral intentions and actions in multiple domains (Sommer, 2011; Lim & Dubinsky, 2005).

Consistent with Ajzen's (2002) perspective, in this study, interpersonal relationships including support or opposition from family and school influence, that is developing psychological resilience (Connell et al., 1994), an individual's psychological resilience can be used to represent an individual's subjective norm. Furthermore, future orientation is a multi-stage psychological procedure which includes motivation, planning, and evaluation (Nurmi, 2005), the planning process in particular demonstrates perceived behavioral control, as the ways or strategies used to achieve a goal are the individual's sense of control over future planning. Therefore, perceived behavioral control can be represented through future orientation.

2. Self-management

Self-management was conceptualized using Mezo (2009) that it is considered to be an individual's active management of themselves to achieve good adaptation and seek development (Steiner, 2010). Self-management has been found to improve academic performance (Dembo et al., 2004). King's (2004) research suggested that career self-management helps enhance cognitive control over career, thus increasing job satisfaction. Gortner and Zulauf (2000) believed that time self-management plays an important role in improving students' academic performance, reducing psychological stress and anxiety, and enhancing students' subjective well-being, especially in college students' study and life activities.

Essentially, individuals who practice effective self-management in their daily lives are aware of and reflect on how they use their personal time, energy, and attention resources (Goldsby et al., 2021). Mezo (2009) developed the Self-management Scale, which contained 3 parts of self-monitoring, self-evaluating and self-reinforcing.

Research on the relationship between psychological resilience and self-management has found that psychological resilience positively affects self-management among third and fourth-year university students who were home-isolated during the COVID-19 pandemic in Hebei and Guangxi provinces, China (Gao et al., 2021). For Chinese overseas students, support from family, classmates, advisors, and community has increased their level of psychological resilience, and they are more inclined to focus on themselves, engage in self-monitoring, self-evaluating, and self-reinforcing, and showed a higher level of self-management.

University students' psychological resilience had a predictive effect on employment anxiety (Gao et al., 2021), which was related to future careers and was a part of future orientation, so the research reflected the predictive effect of psychological resilience on future

orientation. Similarly, for Chinese overseas students, supported from family, classmates, advisors, and community increased their psychological resilience level, and they were more inclined to explore and invest more in their future education, future career, and future family, and showed a higher level of future orientation.

Based on related studies, the study proposed the following research hypotheses of this study:

H1: Psychological resilience of Chinese overseas students positively affects self-management.

H2: Psychological resilience of Chinese overseas students positively affects future orientation.

3. Psychological Resilience

The term "psychological resilience" was first used in psychology by Block in 1950, although the original term was "ego-resiliency" (Herrman et al., 2011; Walker, 2020). In the 1970s, American psychologist Rutter and others conducted a systematic study of psychological resilience, and it had since entered a phase of systematic research (Wright et al., 2013). There were three main viewpoints, which contained result-oriented definition, process-oriented definition, and quality-oriented definition (Masten, 2001; Luthar et al., 2000; Lepore et al., 2014).

In 2003, the Framework of Psychological Resilience in Action was proposed that individuals' psychological needs depend on external protective factors and psychological resilience traits (Liebenberg & Ungar, 2008).

Khampirat (2020) concluded that the psychological resilience of Thai undergraduate students had a significant and direct impact on their career aspirations at the end of their studies, which reflected the possibility of applying self-management in students' study and life, which is defined as the operability definition of behavioral intention. That is, research has shown that psychological resilience has a positive effect on behavioral intention. For Chinese overseas students, support from family, classmates, advisors, and the community increases their level of psychological resilience, and they are more oriented to show the degree and likelihood of self-management in their study and life and show higher levels of behavioral intention. Based on the related studies, we proposed research hypothesis 3 for this study:

H3: Psychological resilience of Chinese overseas students positively affects behavioral intention.

4. Future Orientation

Future orientation is an individual's thoughts and plans about the future. It is the ability to anticipate, plan, and evaluate future life and assign personal meaning to it (McCabe & Barnett, 2000; Trommsdorff, 1983; Nurmi, 1991). Future orientation included three processes of motivation, planning, and evaluation. The development of students in the three fields, involving future education, future career, and future family (Nurmi, 2005).

Most students not only showed a lot of interest in the future, but they also had a positive attitude towards personal control beliefs. Research on the characteristics and mechanisms of future orientation development focused more on students' development in the education and career domains (Kracke & Schmitt-Rodermund, 2001).

In terms of relevant studies on future orientation and self-management, the Future Orientation Scale developed by Maggio et al. (2016) to measure the level of future orientation, it was found that future orientation, the level of parental education had a significant and direct effect on students' focus on self-career expectation, and self-management. That is, future

orientation has a positive effect on self-management. For Chinese overseas students, doing more exploring and investing in future education, future career, and future family raises their level of future orientation, and they are more inclined to show a higher level of self-management by doing more self-monitoring, self-evaluating, and self-reinforcement in their life and study.

University students should have clear goals manage their time reasonably in life, and have a clear future career direction in their studies, which can encourage them to develop practical strategies (Gao et al., 2021), in this way, they will be more likely to practice self-management in their studies and life. Therefore, future orientation has a positive effect on behavioral intention. For Chinese overseas students, doing more exploring and investing in future education, future career, and future family raises their level of future orientation, and they are more inclined to increase the likelihood of self-management in life and study and show a higher level of behavioral intention. Therefore, we proposed hypothesis 4 and 5:

H4: Future orientation of Chinese overseas students positively affects self-management.

H5: Future orientation of Chinese overseas students positively affects behavioral intention.

5. Behavioral Attitude

Behavioral Attitude reflects feelings of favorableness or unfavorableness towards performing a behavior (Taylor & Todd, 1995).

In terms of relevant studies about behavioral attitude and future orientation, Cabras and Mondo (2018) found that Italian and Spanish university students' satisfaction with study and life has a positive impact on their future orientation, and their positive evaluation of their future careers contributes to the adaptability of their future careers. Thus, behavioral attitude positively affects future orientation. For Chinese overseas students, positive self-management psychological tendency increases the level of their behavioral attitudes, and they are more inclined to do more exploration and involvement in their future education, future career, and future family, and show a higher level of future orientation.

Whether university graduated evaluate their future career plans positively or negatively affected the possibility of applying self-management at the end of their academic career, specifically, university graduates who evaluate positively will tend to pay active attention to employment information and carefully prepare all the materials for job application. Therefore, in other words, the career attitude of the graduates is critical to the employment intention (Chua et al., 2015; Nurmi, 1991). Thus, behavioral attitude positively affects behavioral intention. For Chinese overseas students, the positive psychological tendency towards self-management increases the level of their behavioral attitudes, and they are more inclined to increase the likelihood of self-management in their lives and studies, showing higher levels of behavioral intention.

Therefore, we proposed research hypothesis 6 and 7 of this study:

H6: Behavioral attitude of Chinese overseas students positively affects future orientation.

H7: Behavioral attitude of Chinese overseas students positively affects behavioral intention.

6. Behavioral Intention

Ajzen (1991) concluded that behavioral intention is formed by one's attitude.

University students actively engaged in self-cognition from the perspective of internal attribution, at the same time, in school education and management, in-depth career guidance courses are carried out to help university students know themselves correctly and to increase the possibility of students practicing self-management in their study and life as much as possible, which helps students to pay attention to themselves and practice self-management (Gao et al., 2021). That is, behavioral intention positively affects self-management. For Chinese overseas students, increasing the possibility of self-management in life and study raises the level of behavioral intention, and they are more inclined to perform more self-monitoring, self-evaluating and self-reinforcing in life and study, and show a higher level of self-management. Therefore, we formed research hypothesis 8 of this study:

H8: Behavioral intention of Chinese overseas students positively affects self-management.

Specific information was shown in Figure 1.

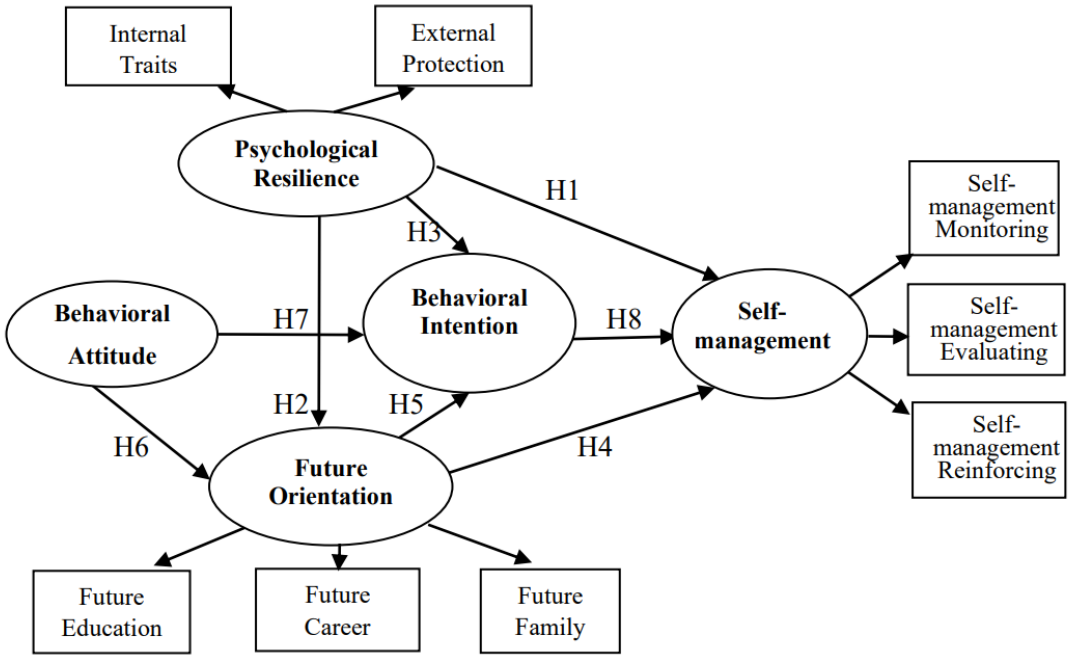

Figure 1: Research Relationship Diagram

Research Methodology

1. Sample and Data Collection

This study applied both quantitative and qualitative methods. The quantitative method was specifically reflected in the questionnaire survey method. The qualitative method was reflected in the interview survey method.

In 2023, China remained the top source country for international students from 4 continents, namely Asia, Europe, America, and Oceania, specifically South Korea, Thailand, Malaysia, Japan, the United Kingdom, Germany, the United States, Australia, and New Zealand (CCG, 2024). Therefore, the main participants of the questionnaire survey were

Chinese overseas students studying in the 4 continents of Asia, Europe, America, and Oceania, specifically 9 countries such as South Korea, Thailand, Malaysia, Japan, the United Kingdom, Germany, the United States, Australia, and New Zealand. Meanwhile, the sampling method used in this study is purposive sampling, it is a type of nonrandom sampling method, and it may also be used with both qualitative and quantitative research. It contributes to its efficiency, and the method stays robust even when tested against random probability sampling (Tongco, 2007).

There were 1,021 million overseas students studying at overseas (CCG, 2024), according to the requirements of the sample (Krejcie & Morgan, 1970), if the maximum value of the sample size can be slightly greater than 380 cases, the sample volume of this study is very suitable. A total of 772 questionnaires were issued, and 459 questionnaires were collected, Following the exclusion of ineligible questionnaires using SPSS21.0 and Smart-PLS3.0, 457 valid responses were obtained.

The questionnaires were collected online using Questionnaire Star. Specifically, there were two approaches, one was through the researcher's one-on-one or face-to-face communication with the participants to explain the questionnaires. In particular, during the period of the researcher's doctoral studies in Bangkok, Thailand, the researcher did the questionnaires one-on-one and face-to-face. The other was collecting the questionnaires through the researcher's friends and relatives and some of the respondents' commitment to help sincerely in communicating and explaining one-on-one or face-to-face.

There were 56.7% of females and 43.3% of males. Most of the Chinese overseas students (88.4%) were all younger than 40 years old. Regarding educational background, 82.5% were social science students, and 17.5% were natural science students. There were 114 undergraduates, 165 master's degree students, and 178 doctoral students, the proportion of 24.9%, 36.2% and 38.9%, respectively.

The interview was conducted with 9 Chinese overseas students. The representatives are Chinese Overseas Students who are from different grades, gender, age, majors, continent of study, age, gender, working status, and marriage situation, and promise to answer the interviewer's questions seriously. The researcher conducted both telephone and face-to-face interviews with the interviewees.

2. Measurements

Building upon prior research and adhering to the structural equation modeling guideline of a minimum of three items per construct (Shiau et al., 2019), this study incorporated three or more measurement items for each construct. Additionally, a 5 -point Likert scale was employed for all scales, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The main research method of this research was a questionnaire. The Questionnaire consisted of demographic variables and five measurement instruments (scales). Behavioral Attitude, Behavioral Intention, Self-management, Psychological Resilience, and Future Orientation scale. There were 64 items. All five scales had been extensively validated and their reliability and validity are relatively stable and mature. To support the research objective of identifying the self-management model for Chinese overseas students, this study conducted structured interview survey with 9 Chinese overseas students. The interview included 7 questions, which were validated by experts before distributing to the respondents, and it showed the high content validity.

3. Ethical Considerations

This study project was approved by Stamford International University -Human Research Ethics on 24th November 2023 (Approval Code: STIU-HREC 038/2023).

Research Finding

Research Results

1. For objective 1

Using an independent sample *t*-test analysis, on the level of self-management, there are no significant differences among demographic variables, which contain gender, major, and employee ($p > .05$). ANOVA was used to derive the differences among demographic variables, on the level of self-management, there are no significant differences among demographic variables, which contain age, grade, continent, yearly disposable income, and marriage ($p > .05$).

2. For objective 2

To explore the relationship between self-management and psychological resilience, in addition to the relationship between self-management and future orientation, it was necessary to analyze the correlations among them. It was found that, there are significant positive correlations between self-management and psychological resilience, in addition to the relationship between self-management and future orientation.

Specifically, it was found that, except for self-management evaluating, there are significant positive correlations between Behavioral Attitudes of Chinese overseas students and eight variables including Behavioral Intentions, psychological resilience internal traits, psychological resilience external protection, self-management evaluating, self-management reinforcing, future education, future career, and future family ($r = .70$, $r = .46$, $r = .45$, $r = .56$, $r = .39$, $r = .38$, $r = .32$, $r = .36$, $p < .001$). Except for self-management evaluating, there are significant positive correlations between Behavioral Intentions and seven variables including psychological resilience internal traits, psychological resilience external protection, self-management evaluating, self-management reinforcing, future education, future career, and future family ($r = .49$, $r = .42$, $r = .57$, $r = .37$, $r = .43$, $r = .35$, $r = .38$, $p < .001$). Except for self-management evaluating, there are significant positive correlations between psychological resilience internal traits and six variables including psychological resilience external protection, self-management evaluating, self-management reinforcing, future education, future career, and future family ($r = .75$, $r = .55$, $r = .56$, $r = .70$, $r = .66$, r = .62, $p < .001$) .There are significant positive correlations between psychological resilience external protection and six variables including self-management evaluating, self-management evaluating, self-management reinforcing, future education, future career, and future family ($r = .49$, $r = .13$, $r = .58$, $r = .62$, $r = .55$, $r = .55$, $p<.001$). Except for self-management evaluating, there are significant positive correlations between self-management evaluating and four variables including self-management reinforcing, future education, future career, and future family ($r =.48$, $r = .41$, $r =.42$, $r = .42$, $p <.001$).

3. For objective 3

Analytical Method

The Partial Least Squares Structural Equation Modeling (PLS-SEM) method was used to analyze the data. PLS-SEM is a method for estimating complex path models with latent variables and their relationships. It is a method of causal modeling, at the same time, it is an

iterative estimation that combines principal component analysis with multiple regression. Compared with other methods, PLS-SEM is a better tool for exploring causal relationships between structural variables, and it is also can deal with the model structure and measurement items (Hair et al., 2019; Petter et al., 2007). In addition, this method is suitable for processing the relationship between variables in the distribution of abnormal data, because of its less stringent requirements of variable normality and randomness. Furthermore, it can analyze complex prediction models (Gefen & Straub, 2011; Hair et al., 2019; Chin et al., 1999; Petter et al., 2007; Khan et al., 2019). These are also the reasons for choosing PLS-SEM as the basic data analysis tool in the study.

Measurement model and scale validation

The PLS-SEM analysis and estimation were performed in two stages. The reliability and validity of the questionnaire were analyzed in the first stage, which was named the measurement model testing, and in the second stage, the path coefficients and explanatory power of the structural model were calculated and verified, and the internal model test was named. So, these two stages were designed to assess structural relationships. (Anderson & Gerbing, 1988; Hulland, 1999). Smart-PLS3.0, developed by Shiau et al. (2019), was the tool of choice for this purpose. This study explored the causal relationships among psychological resilience, behavioral attitude, future orientation, behavioral intention, and self-management. Table 1 outlines the values for Cronbach's alpha, composite reliability, and average variance extracted (*AVE*), which contain the reliability and validity. In order to assess the internal consistency reliability of each latent variable, Cronbach's alpha and composite reliability (*CR*) were used, Fornell and Larcker (1981) suggested that values greater than 0.70 were considered satisfactory. According to the results of Table 1, Cronbach's alpha values ranged between 0.82 and 0.94, which exceeded the recommended threshold value of 0.70. In addition, the *CR* values range between 0.87 and 0.95, which are greater than the threshold value of 0.70, displaying internally consistent constructs (Chin, 1998), indicating that the study has good internal consistency reliability.

As Hair et al. (2016) define, convergent validity reflects the correlation extent between measurements of theoretically related constructs. According to Fornell and Larcker (1981), if AVE is greater than 0.50, the construct indicates an excellent convergent validity. In Table 1, the AVE values of the latent variables range from 0.53 to 0.86, which exceeds the suggested threshold value of 0.50, indicating that the study has good convergent validity.

Table 1: Reliability and AVE of the Measurement Model

Questionnaire	**Cronbach's alpha**	**Composite Reliability**	***AVE***
Behavioral Attitude	0.87	0.91	0.72
Behavioral Intention	0.92	0.95	0.86
Self-management	0.89	0.92	0.69
Psychological Resilience	0.94	0.95	0.69
Future Orientation	0.83	0.88	0.56

Discriminant validity and convergent validity are two important aspects of evaluating the structural validity of a scale in a measurement instrument or questionnaire. They both belong to the construct validity. The discriminant validity refers to the extent to which a set of items can distinguish one variable from others. To evaluate the discriminant validity, the Fornell-Larcker criterion and the heterogeneity-to-monomers ratio (*HTMT*)

are employed (Hair et al., 2016; Gold & Segars, 2001). The Fornell-Larcker criterion, specifically, indicates that the study has good discriminant validity if the *AVE* square root of each construct is greater than its correlation coefficient with the other constructs. As shown in Table 2, values on the diagonal represent the square root of the *AVE* for each construct, while values on the nondiagonal represent the correlation coefficient between the latent variables. Depending on this criterion, Table 2 shows that the square root of the *AVE* for each construct is greater than its correlation coefficient with the other constructs, which suggests that the study has good discriminant validity. Meanwhile, Gold and Segars (2001) concluded that the discriminant validity does not face serious problems when the *HTMT* values are below the suggested value of 0.90, in Table 3, all the values listed indicate that the *HTMT* values between the constructs are lower than the recommended threshold value of 0.90. Therefore, the results of the study indicate that the discriminant validity is valid.

Table 2: Fornell-Larcker Criterion of the Measurement Model

	PRIT	**PREP**	**FF**	**FE**	**FC**	**SMR**	**SMM**	**SME**	**BA**	**BI**
PRIT	0.81									
PREP	0.77	0.74								
FF	0.66	0.62	0.81							
FE	0.70	0.63	0.79	0.83						
FC	0.72	0.63	0.72	0.77	0.76					
SMR	0.56	0.58	0.46	0.45	0.47	0.80				
SMM	0.55	0.49	0.46	0.42	0.46	0.48	0.93			
SME	0.04	0.12	0.15	0.11	0.07	0.24	-0.01	0.83		
BA	0.47	0.45	0.40	0.38	0.39	0.39	0.55	0.02	0.85	
BI	0.49	0.43	0.43	0.44	0.41	0.38	0.57	0.07	0.70	0.93

Note: PRIT= psychological resilience internal traits; PREP= psychological resilience external protection; FF= future family; FE= future education; FC= future career; SMR= self-management reinforcing; SMM= self-management monitoring; SME=self-management evaluating; BA= behavioral attitude; BI= behavioral intention; PR, FO and SM are second-order reflective constructs, so no estimation is given here.

Table 3: Heterotrait–monotrait Ratio (*HTMT*) of the Measurement Model

	PRIT	PREP	FF	FE	FC	SMR	SMM	SME	BA	BI
PRIT										
PREP	0.83									
FF	0.77	0.71								
FE	0.80	0.70	0.73							
FC	0.83	0.70	0.76	0.77						
SMR	0.64	0.65	0.55	0.53	0.55					
SMM	0.61	0.53	0.53	0.47	0.53	0.53				
SME	0.10	0.14	0.19	0.15	0.13	0.27	0.06			
BA	0.52	0.50	0.48	0.44	0.45	0.45	0.62	0.07		
BI	0.54	0.46	0.49	0.50	0.46	0.42	0.61	0.08	0.78	

Note: PRIT= psychological resilience internal traits; PREP= psychological resilience external protection; FF= future family; FE= future education; FC= future career; SMR= self-management reinforcing; SMM= self-management monitoring; SME=self-management evaluating; BA= behavioral attitude; BI= behavioral intention; PR, FO and SM are second-order reflective constructs, so no estimation is given here.

In summary, it is clear that the results in Table 2 and Table 3 indicated that construct validity is considerable.

Structural model and hypothesis testing

To test the research hypotheses, this study used PLS analysis in the structural model. The researchers used an internal model to evaluate the path coefficients and R^2 values. Path Coefficient represents the strength and direction of the correlation between different variables in the model, indicating the causal relationship. Path analysis was performed to test the hypothesized model, if the *p* value of the path coefficient is less than 0.05, it represents that some other latent variables significantly affect the latent variable (Park et al., 2023). R^2 is often used as a measure of latent variables in the structural model, specifically, other latent variables pointing to the latent variable can explain the variation in the latent variable. Therefore, R^2 indicates the percentage of the dependent variable explained, it shows the predictive power of the structural model. The standard deviation (β), *t* values, *p* values, and coefficient of determination (R^2) (Kline, 2016) are shown in Table 4 and Figure 2. The results of the research hypotheses are shown in Table 4 and Figure 2. All hypotheses are supported except for hypotheses 4 and 6, which are rejected.

Table 4 shows that psychological resilience has a significant positive effect on self-management, future orientation, and behavioral intention. Hence, the proposed hypothesis in H1, H2, and H3 are supported (psychological resilience->self-management, β= 0.06, t = 8.21; psychological resilience->future orientation, β= 0.03, t = 26.20; psychological resilience->behavioral intention, β= 0.05, t = 2.46). However, as opposed to the proposed hypothesis in

H4, the results show that the effect of future orientation (β = 0.05, t = 1.66) on self-management is not significant. Therefore, H4 is rejected. As suggested, future orientation is found to have a positive effect on behavioral intention (β =0.04, t=2.49). Thus, the proposed hypothesis in H5 is accepted. But, as opposed to the proposed hypothesis in H6, the result indicates

Table 4: Path Coefficients of Structural Model Results

Hypothesis	Relationship	Original Sample (*O*)	Sample Mean (*M*)	Standard Deviation (β)	t Values	p Values	Decision
H1	PR - > SM	0.48	0.48	0.06 ***	8.21	0.000	Supported
H2	PR -> FO	0.72	0.72	0.03 ***	26.20	0.000	Supported
H3	PR -> BI	0.12	0.12	0.05 *	2.46	0.014	Supported
H4	FO -> SM	0.08	0.09	0.05	1.66	0.097	Rejected
H5	FO -> BI	0.11	0.11	0.04 *	2.490	0.013	Supported
H6	BA -> FO	0.05	0.05	0.03	1.431	0.15	Rejected
H7	BA -> BI	0.60	0.60	0.04 ***	15.24	0.000	Supported
H8	BI -> SM	0.25	0.25	0.05 ***	5.39	0.000	Supported

Note: PR = psychological resilience; SM = self-management; FO = future orientation; BI = behavioral intention; BA =behavioral attitude; *** $p < .001$; ** $p < .01$; * $p < .05$.

that behavioral attitude has an insignificant relationship with future orientation (β =0.03, t =1.43). Hence, H6 is rejected. Consistent with H7 and H8, behavioral attitude is found to have a positive effect on behavioral intention (β = 0.04, t =15.24), and behavioral intention has a positive effect on self-management (β = 0.05, t = 5.39). Therefore, H7 and H8 were also accepted.

Figure 2 shows that, the R^2 of future orientation is 56%, which implied that psychological resilience and behavioral attitude together explain 56% of the variance in future orientation. Regarding the R^2 results in Figure 2, it can be noticed that psychological resilience, behavioral attitude, and future orientation together explain 53% of the variance in behavioral intention. Furthermore, psychological resilience, behavioral intention, and future orientation together explain 49% of the variance in self-management. According to the recommended values of R^2 (Chin et al., 2003), the values of R^2 observed in this study are acceptable.

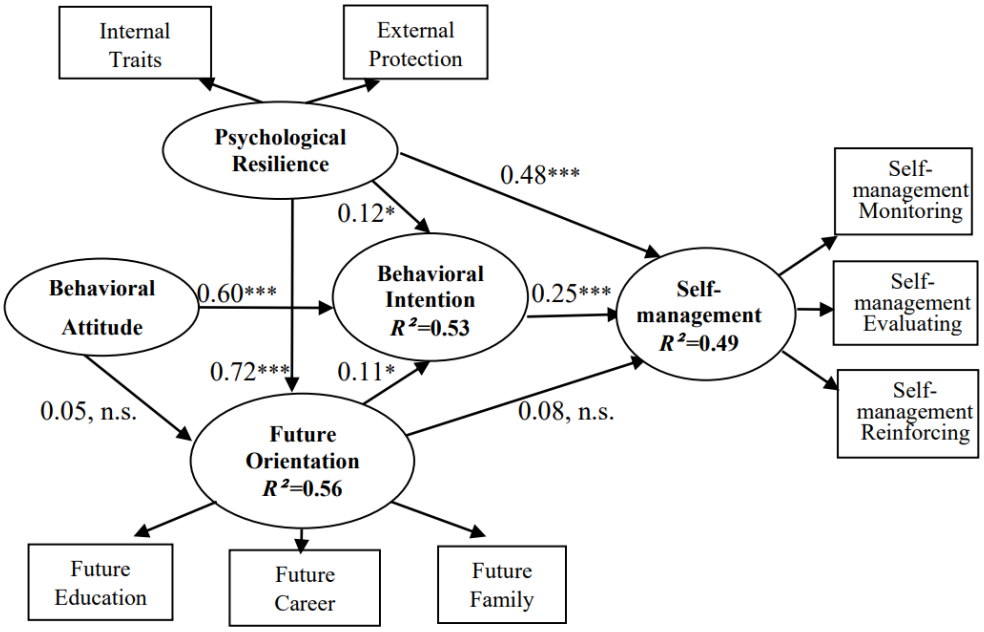

Figure 2: Structural Equation Modelling Results
Note 1: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$
Note 2: n.s.=not supported

Interview result

The interview on the challenging aspects of Chinese Overseas Students' life and studies during their time studying abroad shows that 100% have obvious problems in self-management, which shows mainly in the aspects of life and study, such an irregular schedule, no intensive exercise, not adapting to the local culture, unstable emotion, not having a clear study plan, basically not achieving the goals of graduation as soon as possible, having self-doubt because of lack of support from their families, being lack of initiative to ask for Advisor's help in thesis writing, etc.

Discussion

The structural equation model of Chinese overseas students' self-management, psychological resilience, and future orientation indicated that Chinese overseas students' psychological resilience had a significant positive effect on self-management, thereby substantiating Hypotheses H1, which was consistent with the existing research (Gao et al., 2021).Psychological resilience had a positive predictive effect on future orientation, thereby substantiating Hypotheses H2, which was consistent with the study of Gao et al. (2021) that if Chinese overseas students present a higher level of psychological resilience, then they present a higher level of future orientation. Psychological resilience had a positive effect on behavioral intention, thereby substantiating Hypotheses H3, which is consistent with Khampirat's (2020) study. This study found that the future orientation of Chinese overseas students had no significant effect on their self-management, leading to the non-confirmation of Hypotheses H4. This was inconsistent with the study of Maggio et al. (2016). The future orientation of Chinese overseas students had a significant effect on their behavioral intention, and the behavioral intention of Chinese overseas students had a significant effect on their self-management,

thereby substantiating Hypotheses H5 and H8, which were consistent with existing research (Gao et al., 2021). The behavioral attitude of Chinese overseas students had no significant effect on future orientation, leading to the non-confirmation of Hypotheses H6, which is inconsistent with Cabras and Mondo's (2018) study. The behavioral attitude of Chinese overseas students had a significant effect on the behavioral intention, thereby substantiating Hypotheses H7, which is consistent with existing studies (Chua et al., 2015; Nurmi, 1991).

At the same time, it was found that behavioral attitude had a significant positive effect on behavioral intention, and behavioral intention had a significant positive effect on self-management, thus, behavioral intention had a mediating effect on behavioral attitude and self-management. The result of this study is different from the results of previous studies. Therefore, we can improve the self-management level of Chinese overseas students by improving their behavioral attitude level.

Implications for Behavioral Science

For Chinese overseas students, this study helps them to go through their overseas study and life smoothly, and then make a positive contribution to the maintenance of world peace and stability.

For international university affairs management administrators, the study of significance lay in providing new work perspectives for them to improve the service quality for students.

For international universities, the contribution of the model is to suggest that international universities can revise the training program and course syllabus, offer courses related to self-management, and add teaching objectives, thus improving self-management skills and teaching quality.

For future researchers, the sample of this study can be used as an object for further in-depth research on the self-management of Chinese overseas students. Meanwhile, the method of sample selection can provide certain research ideas for other researchers. It extended the existing research area of establishing patient self-management models (Strating et al., 2006; Lee et al., 2017). At the same time, it promoted other researchers to further expand the research field of the Theory of Planned Behavior and conduct related studies. The research also provided empirical references for self-management research on international students from other countries and fill the gap of cross-cultural research on international students from different countries in international universities.

Suggestion

1. Participants

The research participants of this study obtained through purposive sampling are from 4 continents, Asia, Europe, America, and Oceania, and 9 countries. Future research can increase the study of Chinese overseas students in Africa, and at the same time, for further research, selecting Chinese overseas students from more countries as participants for the study, and if possible, through the help of embassies in overseas countries, try to apply for the training program uniformly to Chinese overseas students from different countries.

2. Longitudinal study

The representation and expandability of the study required a combination of cross-sectional and longitudinal studies. Therefore, for further research, exploring the internal mechanism of Chinese overseas students' self-management, increasing the longitudinal study, which is to make longitudinal comparisons of self-management among the same group of Chinese overseas students, to explore practical and effective ways to improve the level of Chinese overseas students' self-management.

3. Training program

Individual self-management was an enduring process, so there is a general trend to provide career planning counseling for Chinese overseas students approaching graduation. For further research, we need to add training programs for Chinese overseas students in future research, which contains recognizing the severe career situation after returning home from studying abroad and treating the phenomenon of appraisal, reward, and punishment in the workplace with peace of mind.

4. Significant others

The strong support of Chinese overseas students mainly came from family members, classmates, advisors, and other significant persons. Therefore, for further research, it also includes regular counseling and training with significant others including family members, which is not only carried out during the period of their study abroad, but also before studying abroad and after their graduation.

Acknowledgement

This study was supported by funds Key Project of Shandong Province Vocational Education Teaching Reform Research Project 2022 (2022081); Shandong Province Vocational Education Research Project 2023 (KYKT2023G057).

Data Sharing Statement

The data used to support the findings of this study are available from the corresponding author upon request.

Declaration of competing interest

The author declared that there was no competing financial interests or personal relationships that could have appeared to influence the work reported in the study.

Conclusion

For Research Objective One: this study revealed a systematic understanding of the current level of self-management and differences in levels of behavioral attitude, behavioral intention, self-management, psychological resilience, and future orientation among Chinese overseas students' demographic factors. Chinese overseas students have a low level of self-management in life and study. This study’s result can help them to confront their overseas study and life positively.

For Research Objective Two: there was a significant positive correlation between self-management and psychological resilience of Chinese overseas students, as well as a significant positive correlation between self-management and future orientation. Through empirical analysis, the effectiveness of the developed model in improving their self-management competencies is verified.

For Research Objective Three: the model developed in this study provides a new theoretical perspective and practical guidance for enhancing Chinese overseas students' self-management competencies. It is possible to improve the level of psychological resilience, behavioral intention, and behavioral attitude of them to achieve the purpose of improving the level of self-management.

In conclusion, this study's contribution is reflected in not only theoretical innovation and development but also practical application and guidance.

References

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411–423.

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational behavior and human decision processes, 50*(2), 179 -211.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control and the theory of planned behavior. *Journal of Applied Social Psychology, 32*(4), 665-683.

Ajzen, I. (2005). *Attitudes, personality, and behavior*. McGraw-Hill Education.

Brown, L. A. (2007). A consideration of the challenges involved in supervising international master's students. *Journal of Further and Higher Education,31* (3), 239-248.

Cabras, C., & Mondo, M. (2018). Future orientation as a mediator between career adaptability and life satisfaction in university students. *Journal of Career Development, 45*(6), 597-609.

CBSN (2023, November 23). *A Chinese overseas student was deported for graffiti related to the cultural-conflict? Response from the Embassy of the People's Republic of China in France*. https://www.sohu.com/a/738557980_119659?scm=1102.xchannel:325:100002.0.6.0#google_vignette

CCG (2024, February 26). *Development of Chinese Students Studying Abroad (2023-2024)*. https://www.163.com/dy/article/IRTIOV3H0519PJJ6.html?spss=dy_author

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research, 295*(2), 295–336.

Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: results from a monte carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research, 14*(2), 189-217.

Chin, W. W., Newsted, P. R., & Hoyle, R. (1999). *Structural equation modeling analysis with samples using partial least squares. Statistical strategies for small sample research* (pp. 307−341). Thousand Oaks, CA: Sage.

Chua, L. W., Milfont, T. L., & Jose, P. E. (2015). Coping skills help explain how future-oriented adolescents accrue greater well-being over time. *Journal of Youth and Adolescence*, 44, 2028–2041.

Connell, J. P., Spencer, M. B., & Aber, J. L. (1994). Educational risk and resilience in African-American youth: Context, self, action, and outcomes in school. *Child Development, 65*(2), 493-506.

Dembo, M. H., Nicklin, J., & Griffiths, C. (2004). *Motivation and learning strategies for college success: A self-management approach (3rd ed.)*. Routledge.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: algebra and statistics. *Journal of Marketing Research, 18*(3), 382-388.

Gefen, D. R. E. E., & Straub, D. (2011). An update and extension to SEM guidelines for administrative and social science research. *MIS Quarterly, 35*(2), 1–7.

Goldsby, M., Bishop, J., Goldsby, E., Neck, C. B., & Neck, C. P. (2021). The impact of self-management practices on entrepreneurial psychological states. *Administrative Sciences, 11*(1), 12-24.

Gao, H., Wang, Z.X., Lu, Y.Q., & Su, Y. (2021). Relationships among College Students' Psychological Resilience, Self-management and Employment Anxiety. *Psychologies,16*(1), 30-32.

Gold, A. H., & Segars, M. A. H. (2001). Knowledge management: an organizational capabilities perspective. *Journal of Management Information Systems, 18*(1), 185-214.

Gortner, L. A., & Zulauf, C. R. (2000). Factors associated with academic time use and academic performance of college students: A recursive approach. *Journal of College Student Development, 41*(5), 544–556.

Hair, J.F., Hult, G.T., Ringle, C.M., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM) (2nd ed)*. Sage Publications.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2–24.

Herrman, H., Stewart, D. E., Diaz-Granados, N., Berger, E. L., Jackson, B., & Yuen, T. (2011). What is resilience? *The Canadian Journal of Psychiatry, 56*(5), 258–265.

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *The Strategic Management Journal, 20*(2), 195–204.

INSIGHT. (2023, November 23). *A Chinese overseas student at Cornell University was arrested.* https://www.163.com/dy/article/IIGCAJRS0516FC9F.html

Khampirat, B. (2020). The relationship between paternal education, self-esteem, resilience, future orientation, and career aspirations. *Plos One, 15*(12), 1-17.

Khan, G. F., Sarstedt, M., Shiau, W. L., Hair, J. F., Ringle, C. M., & Fritze, M. P. (2019). Methodological research on partial least squares structural equation modeling (PLS-SEM): An analysis based on social network approaches. *Internet Research, 29*(3), 407–429.

King, Z. (2004). Career self-management: Its nature, causes and consequences. *Journal of vocational behavior, 65*(1), 112-133.

Kline, R.B. (2016). *Principles and practice of structural equation modeling, 4th ed*. Guilford Publications: New York, NY, USA.

Kracke, B., & Schmitt-Rodermund, E. (2001). Adolescents' career exploration in the context of educational and occupational transitions. In: J. E. Nurmi (Ed.), *Navigating through adolescence* (pp. 141-166). Routledge.

Krejcie, R.V., & Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607–610.

Lee, L. T., Bowen, P. G., Mosley, M. K., & Turner, C. C. (2017). Theory of planned behavior: Social support and diabetes self-management. *The Journal for Nurse Practitioners, 13*(4), 265-270.

Lepore, S. J., & Revenson, T. A. (2014). Resilience and posttraumatic growth: Recovery, resistance, and reconfiguration. *In Handbook of posttraumatic growth* (pp. 24-46). Routledge.

Liebenberg, L., & Ungar, M. (2008). *Resilience in action: Working with youth across cultures and contexts*. University of Toronto Press.

Lim, H., & Dubinsky J. (2005). The theory of planned behavior in ecommerce: Making a case for interdependencies between salient beliefs. *Psychology &Marketing, 22*(10), 833-855.

Lorig, K. R., & Holman, H. R. (2003). Self-management education: history, definition, outcomes, and mechanisms. *Annual of Behavioral Medicine, 26*(1), 1-7.

Luthar, S.S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: a critical evaluation and guidelines for future work. *Child Development, 71*(3), 543–562.

Maggio, I.D., Ginevra, M.C., Nota, L., & Soresi, S. (2016). Development and validation of an instrument to assess future orientation and resilience in adolescence. *Journal of Adolescence, 51*(6),114-122.

Masten, A.S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56*(3), 227-238.

Maxwell, A. (2008). Does culture influence understanding and perceived seriousness of plagiarism, *International Journal for Educational Integrity,* (2), 25-40.

McCabe, K. M., & Barnett, D. (2000). The relation between familial factors and the future orientation of urban, African American sixth graders. *Journal of Child and Family Studies*, *9*(4), 491-508.

Mezo, P. G. (2009). The self-control and self-management scale (SCMS): Development of an adaptive self-regulatory coping skills instrument. *Journal of Psychopathology and Behavioral Assessment, 31*(2), 83-93.

Nurmi, J. E. (1991). How do adolescents see their future? A review of the development of future orientation and planning. *Developmental Review, 11*(1), 1-59.

Nurmi, J. E. (2005). Thinking about and acting upon the future: Development of future orientation across the life-span. In A. Stratman & J. Joireman (Eds.), *Understanding behavior in the context of time: theory, research and applications*. Lawrence Erlbaum.

Park, S. H., Shin, H., & Kyoung-Woo, K. (2023). Relationship between indoor noise perception and remote work during the COVID-19 pandemic. *PLOS One, 18*(6), 1-17.

Petter, S., Straub, D., & Rai, A. (2007). Specifying formative constructs in information systems research. *MIS Quarterly, 31*(4), 623–656.

Shiau, W. L., Sarstedt, M., & Hair, J. F. (2019). Internet research using partial least squares structural equation modeling (PLS-SEM). *Internet Research, 29*(3), 398–406.

Sommer, L. (2011). The theory of planned behavior and the impact of past behavior. *International Journal of Economics & Business Research, 10*(1), 91-110.

Steiner, G. A. (2010). *Strategic planning*. Simon and Schuster.

Strating, M.M., Van Schuur, W. H., & Suurmeijer, T. P. (2006). Contribution of partner support in self-management of rheumatoid arthritis patients. An application of the theory of planned behavior. *Journal of Behavioral Medicine, 29*(1), 51-60.

Su, Y.X. (2012). A Study on Learning Strategies of Chinese Overseas Students-A Case Study of Chinese Students Majoring in TESOL in a British University. *Journal of Beijing International Studies University*,*34*(4), 74-82.

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, *6*(2), 144-176.

Tongco, M. D. C. (2007). Purposive Sampling as a Tool for Informant Selection. *Ethnobotany Research & Applications*, *5*, 147-158.

Trommsdorff, G. (1983). Future orientation and socialization. *International Journal of Psychology*, *18*(1-4), 381-406.

Walker, B. (2020). Resilience: what it is and is not. *Ecology and Society*, *25*(2), 10-12.

Wright, M. O. D., Masten, A. S., & Narayan, A. J. (2013). Resilience processes in development: Four waves of research on positive adaptation in the context of adversity. *In Handbook of resilience in children* (pp. 15-37). Springer, Boston, MA.