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Leaning Burnout: Examining the Role of Specialty Identification in Vocational College Students Majoring in Computer Science

Wan Xiaohua, Zhang Jun

Chongqing Business Vocational College, Chongqing, China, 401331

Abstract: Vocational colleges students are more likely to suffer learning burnout due to the disadvantaged social recognition and under-equipped educational resources. The symptom of learning burnout is affected by various dimensions and specialty identification (SI) is one of the crucial factors. However, the relationship between SI and learning burnout is little explored in empirical studies. This perspective with a focus on students majoring in Computer Science is rarer despite that Computer Science is a boomingly sought-after major in China and it's necessary to investigate how do students perceive their major and what's their real study status. Specifically, to investigate to what extent does the level of SI have an impact on learning burnout and is there any gender differences in the dimensions of SI and learning burnout, we used a sample of 324 college students majoring in Computer Science and issued online questionnaires consisted of the Scale of Specialty Identity and Scale of Learning Burnout. After conducting a regression analysis, this study found that the level of specialty identity especially the dimensions of relevance and behavior are negatively correlated with learning burnout. Moreover, it was discovered that gender difference in SI existed in the aspect of relevance and emotion while barely seen in learning burnout.

Keywords: *Learning Burnout, Specialty Identification, Vocational College*

1. Introduction

Students with learning burnout are more likely to have insufficient self-confidence, doubt their abilities, and even feel that they can't graduate successfully. Plenty of research has shown that vocational college students are more likely to suffer learning burnout. That's because, in China, students applying for higher vocational colleges are generally considered as "left-behind" students whose college entrance examination scores don't meet the undergraduate admission requirements. They are often labeled as students with "poor academic performance" or "insufficient learning ability". Moreover, higher vocational colleges typically place most emphasis on students' practical and technical abilities. That's why they pay excessive attention to the employment rate while neglecting students' perspectives and experiences towards their major in the process of learning. The major of Computer Science is a sought-after one among Chinese college students given the digital age which puts forward an urgent need for more computer talents is incredibly booming. It is reported that Computer Science has occupied the front seats among the top ten popular majors in China (Hong &Wang, 2020). Given the popularity of Computer Science and disadvantaged learning environment in vocational colleges, however, rare empirical studies have been carried out on how students majoring in Computer Science perceive their major and to what extent does this perception affect their learning outcomes. To address this gap, this study would like to explore how vocational college students majoring in Computer Science recognize their major and to what extent it influences their level of learning burnout. Moreover, this study intentions to explore whether there is a gender difference in the dimensions of specialty identification and learning burnout.

2. Literature Review

The term burnout was originally introduced in the workplace situations and applied to describe work-related distress. Freudenberger (1974) firstly defined it as "to fail, to wear out, or to become exhausted by making excessive demands on energy, strength, or resources" (p.159). Then Maslach and Jackson (1981) popularized it by introducing the Maslach Burnout Inventory (MBI) which comprises three dimensions: emotional exhaustion, depersonalization, and personal accomplishment. In recent years, researchers have expanded the term burnout towards education scenarios and explored the manifestation

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and factors of student burnout, which is also interpreted as academic burnout, learning burnout (Stoliker& Lafreniere, 2015). Based on previous literature, this study defines student burnout as a state of lacking enthusiasm in learning and show demotivated and negative attitude, which consequently results in low achievability.

Schaufeli et al. (2002) developed the MBI-Student Survey (MBI-SS) based on MBI, which provides a three-factor model of academic burnout: exhaustion, cynicism, and reduced efficacy. Exhaustion refers to the feeling of being extremely tired and losing energy due to the study task. Cynicism is displayed in an attitude of indifference or distance towards study. Reduced efficacy can be seen in the decline of competency both psychologically and behaviorally. There is no doubt that MBI-SS provided a widely accepted model to measure the scale of student burnout. However, it's mostly supported and conducted in European and American populations, which arouses debates about whether it applies to other countries with different backgrounds. In addition, plenty of studies have proposed the four-factors model or different factors-based models to better fit local situations (Jennings, 2009; Marôco, & Campos, 2012; Song, 2020). Based on MBI-SS, the Chinese scholar Lian Rong (2005) developed a Chinese version of the Student Burnout Inventory, which has been adopted in much Chinese research and this study will use her version.

There are many factors that affecting college students' academic burnout including personal factors, family factors, school factors, and social factors (Rostami et al, 2013; Wang et al, 2019) Current research mostly analyzes personal and school factors especially internal personal factors, such as personality traits, emotional intelligence, and self-efficacy, etc. The school factors mainly involve teachers' teaching level, class learning atmosphere, and learning resources, etc. It is found that the factors affecting college students' academic burnout are multi-dimensional, and different dimensions influence each other. Only by clarifying the factors, can corresponding intervention strategies be used to alleviate the degree of academic burnout and improve the learning effectiveness.

Specialty identification (SI) refers to the emotional acceptance and recognition of the learner's specialty based on their cognition and understanding of the major, which is accompanied by positive behaviors (Xu& Xiao, 2013; Mo &He, 2018). The higher level of SI students holds, the more confident they will feel, the more motivated they will stay and the better learning they will achieve. There is a significant negative correlation between SI and academic burnout. If a student thinks highly of his major, he'll learn actively and produce better learning results; or else passive learning behavior and ineffective learning outcomes would be seen. Currently, there is no consensus on the measurement of SI. Most of the measurements are carried out around cognition, emotion, attitude, and behavior towards a specialty.

Accordingly, this study explores two research questions:

1) To what extent does the level of SI have an impact on learning burnout?

2) Are there any gender differences in the dimensions of SI and learning burnout?

It was hypothesized that:

1) The level of SI is negatively correlated with learning burnout.

2) There is a gender difference in SI and learning burnout.

3. Method

3.1 Participants and Procedure

The target respondents are freshmen majoring in Computer Science at the Chongqing Business Vocational College. 390 electronic anonymous questionnaires were distributed by Wechat tool after the drawing up and polishing the questionnaires on the platform of Wenjuanxing, with 384 questionnaires finished and collected.

3.2 Measure

The self-administered questionnaire consists of three parts.

The first part incorporates the demographic figure, including name, gender, grades and academic ranking, household income, educational level, and occupation of parents.

The second part is to measure the level of specialty identification. The Scale of Specialty

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Identification of College Students developed by Qin Panbo was introduced. This scale contains four dimensions: cognition, emotion, behavior, and relevance. Among the 23 questions, cognition (question 1-5) refers to the degree of basic understanding towards the major; emotion (question 6-13) refers to the degree of passion or preference towards the major; behavior (question 14-19) refers to the performance or action devoted in learning this major; relevance (question 20-23) refers to the degree of matching between the major and student himself. The questionnaire uses five levels of scoring, representing "completely inconsistent" to "completely consistent". The higher the score is, the higher degree the professional identification exhibits. This scale has good reliability in this study. Its internal consistency coefficient is 0.921 and the internal consistency coefficients of the four subscales are between 0.724 and 0.869.

The third part is proceeded by using the Learning Burnout Scale (LBS) to measure the level of learning out. LBS was firstly introduced by Lian (2015) based on the Student Burnout Inventory. It consists of three subscales: emotional exhaustion, misbehavior, and reduced personal accomplishment. Emotional exhaustion (question 1-8) refers to the emotional burnout, frustration, or lack of interest for failing to effectively deal with learning; misbehavior(question9-14) is exhibited in negative behaviors like skipping classes, being late and leaving early, and not handing in homework; reduced personal accomplishment (question 15-20) reflects the feeling of low achievement experienced by college students in the learning process where they find their learning ability insufficient when completing tasks.

The questionnaire uses five levels of scoring, representing "completely inconsistent" to "completely consistent". The higher the score is, the higher degree the of learning burnout exhibits. Among the 20 questions, question 1,3,6,8,11,13,15,18 are reverse scoring questions. This scale has good reliability in this study. Its internal consistency coefficient is 0.820 and the internal consistency coefficients of the four subscales are between 0.697 and 0.793.

4. Analysis and Discussion

4.1 The status quo and characteristics of Specialty Identification.

In this survey, the measurement of SI adopts a 1–5-point scoring questionnaire, and 3 is the median point. It can be seen from Table 1 that the grand mean of SI is 3.846, which is much higher than the median point of 3. And the figure (above the median point of 3) constitutes more than 77.4%, which demonstrates that most college students majoring in Computer Science hold a medium to high identification towards their major. Also, among the four dimensions of SI, the percentage of the cognition factor above 3 is the highest (75.8%) following by relevance (73.5%) while the emotional factor has the lowest factor (68.6%), with behavioral factor a little higher (70.9%). Therefore, it could be concluded that the level of SI derives from a more rational consideration of the understanding and prospects of Computer Science while less perceptual perspectives on enthusiasm for this major.

Table1 Specialty Identification and sore distribution of each factor (N=384)

	M	SD	Percentage of mean value over 3
Relevance	3.864	0.915	73.506
Cognition	3.903	0.885	75.844
Behavior	3.854	0.915	70.909
Emotion	3.796	0.926	68.571
Specialty Identification	3.846	0.880	77.403

4.2 Gender differences in Specialty Identification.

An independent sample T-test was performed on SI with gender as the grouping. The Table-2 results showed that males scored significantly higher on the dimension of relevance than females ($t=2.467$, $p<0.05$). It indicates that compared with female respondents, males generally consider that the major of Computer Science is suitable for them. Males also scored higher on the aspect of emotion than females ($t=2.043$, $p<0.05$), which shows that men have a deeper passion for Compute Science. However, there is no obvious difference in the scores of other factors.

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Table 2 Gender differences in Specialty Identification

	Male(n=169) M±SD	Female (n=215) M±SD	t
Relevance	3.990±0.960	3.759±0.865	2.467*
Cognition	3.957±0.982	3.856±0.798	1.118
Behavior	3.945±1.018	3.777±0.819	1.792
Emotion	3.902±1.013	3.708±0.843	2.043*
Specialty Identification	3.940±0.975	3.767±0.791	1.923

Note: *p<0.05, **p<0.01, ***p<0.001.

4.3 The status quo and characteristics of Leaning Burnout.

In this survey, the measurement of SI adopts a 1–5-point scoring questionnaire, and 3 is the median point. It can be seen from Table 2 that the average score of learning burnout and each factor is between 2.876-3.013, indicating the level of learning out is not high. In addition, the percentages of mean values over 3 are all lower than 50%, which also resonates with the previous finding. Nevertheless, it could be seen that misbehavior (44.1%) greatly affects learning burnout, demonstrating that students fail to have made systematic and organized learning plans.

Table 3 Learning burnout and the score distribution of each factor (N=385)

	M	*SD*	*Percentage of mean value over 3*
Misbehavior	*3.013*	*0.595*	*44.156*
Emotional exhaustion	*2.931*	*1.125*	*33.766*
Personal accomplishment	*2.667*	*0.860*	*24.675*
Learning Burnout	*2.876*	*0.452*	*38.442*

4.4 Gender differences in Leaning Burnout.

An independent sample T-test was performed on learning burnout with gender as the grouping. The Table 4 results showed that there basically is no obvious difference in the performance of learning burnout between male and female students.

Table 4 Gender differences in Learning Burnout

	Female(n=169) M±SD	Male (n=215) M±SD	t
Misbehavior	2.989±0.644	3.033±0.555	-0.709
Emotional exhaustion	2.964±1.248	2.903±1.024	0.526
Personal accomplishment	2.634±0.966	2.691±0.770	-0.647
Learning Burnout	2.873±0.490	2.879±0.422	-0.125

Note: *p<0.05, **p<0.01, ***p<0.001.

4.5 A Multiple Regression Analysis of Specialty Identification and its factors on Leaning Burnout.

To discuss the impact of SI on learning burnout, a multiple regression analysis was conducted, using SI and its four factors as predictive variables. The results show that SI has a significant negative predictive effect on learning burnout (B=-0.063, p<0.05), indicating that the higher degree of SI, the lower the learning burnout is. In other words, the more students are satisfied with Computer Science, the less they will be tired of study. The four factors (relevance, cognition, behavior, and emotion) explained 3.3% of the variance in learning burnout. Among them, the behavioral predictive power of learning burnout is the highest (△R2=2.1%), indicating that putting more dedication and effort will reduce the chance of learning burnout. The second highest is Relevance (△R2=1.2%), indicating that the degree of matching between the major and student himself has an impact on learning burnout.

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Table 5 A multiple regression analysis of specialty identification on learning burnout

Dependent variable	Predictive variable	R	R^2	$\triangle R^2$	F	Net F	B	Beta(β)
Learning burnout	Intercept						3.066	
	1 Relevance	0.109	0.012	0.012	4.566*	4.566*	-0.029	-0.058
	2 Cognition	0.110	0.012	0.000	2.321**	2.021**	-0.201	-0.402
	3 Behavior	0.183	0.033	0.021	4.393**	8.447**	-0.208	-0.422
	4 Emotion	0.184	0.034	0.000	3.311*	0.097	-0.027	-0.055
	Intercept						3.117	
	Specialty Identification	0.122	0.015		5.779*		-0.063*	-0.122

5. Conclusion

Aligned with previous studies and this study's hypothesis, this study found out that specialty identification is negatively correlated with learning burnout. And students majoring in Computer Science demonstrated a high level of SI especially regarding the factor relevance and behavior and therefore indicated a low level of learning burnout. Moreover, it's interesting to find that there is an obvious gender difference in two dimensions of SI: relevance and emotion. Male students hold a higher degree of recognition that they are suitable for this major and thus emotionally passionate about it. However, there is no obvious gender difference in all dimensions of learning burnout.

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