The Research of Study-Related Flow (WOLF-S) in China Private Undergraduate: An Evaluation of PLS-SEM

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Abstract. A student is totally engaged and concentrated on study-related flow (WOLF-S), define as a positive state of mind for study activities, encompassing absorption, study delight, and intrinsic desire for study activities, an inner sense of pleasure would be experienced. Moreover, generate other benefits, such as greater learning efficiency, increased happiness, accelerated success. This study examines the relationship of WOLF-S and 3 factors, namely study absorption (SA), study enjoyment (SE), and intrinsic study motivation (ISM), with a PLS-SEM. The distribution of self-reported questionnaires to 202 China private undergraduate students from Guizhou, was conducted using a simple random selection technique. Statistical analysis was conducted on SmartPLS 4.0. This finding mentioned that the positive influence on WOLF-S from SA, SE, and ISM, and ISM has the greatest influence on WOLF-S, followed by SE, and SA. The results indicate that the three components account for 71.9% of the variance in the dependent construct WOLF-S ($R^2 = 0.719$). This work contributes to the practical improvement of WOLF-S by deriving significant conclusions from empirical data collected from China's private undergraduates.

Keywords: self-report questionnaire · study activities · study-related flow (WOLF-S) · PLS-SEM

1   Introduction

An individual is totally engaged and concentrated on something that piques attention, experience an inner sense of pleasure would be experienced, which some scholars refer to as flow [1–6], fluid experience [7], or euphoria [8]. This sensation of pleasure is frequently referred to as an altered state of consciousness, which is characterized by a loss of self-awareness, a sense of infinity, and an increased sense of awareness. In other words, while in the flow state, humans are completely focused on the present moment.

The experience of flow is intrinsically linked to the situation. And more specifically to the interaction between personal characteristics and the characteristics of the contextual environment, provided that a balance and match between high individual abilities and high contextual challenges is achieved. While some describe flow as a happy state of

mind, others describe as an extreme pleasure experience. Others regard flow as a synthesis of the two.

Abuhamdeh (2021) analyses numerous relevant empirical research and concludes that flow theory [9, 10] is a superior framework than cognitive evaluation theory [11] for establishing intrinsic motivation for an activity. Discovered through a study of the existing literature, most of the post research of flow has mainly focused on Work-related Flow (WOLF) [1, 6]. The pioneer researchers provided a set of scales with excellent reliability and validity for WOLF study, which has been widely utilized in WOLF research by many scholars and translated into several languages [6, 12].

The research of Bakker et al.confirms that WOLF is appropriate for use in an academic setting, namely a questionnaire of study-related flow (WOLF-S). As with WOLF, Bakker et al. (2017) define WOLF-S as a positive state of mind for study activities, encompassing absorption, study delight, and intrinsic desire for study activities. From the result of Bakker et al., an empirical was used to support this self-report questionnaire of WOLF-S, from a sample of 394 students at the University of Zagreb in Croatian [13].

The aim of this research is the evaluation of a self-report questionnaire of WOLF-S in Chinese undergraduate. This document is separated into five sections. The Sect. 2 analyzes the synthesis of previous studies on the WOLF and WOLF-S. In Sect. 3, the study methodology and data collection methodologies are discussed. The Sect. 4 interprets the results and conclusions. Section 5 then delivers the conclusion.

2   Literature Review

The topic "WOLF" or "WOLF-S" was employed throughout the whole process of literature review. The Web of Science database was searched for English-language psychological publications published between 2004 and 2022, yielding 35 results. As shown in Fig. 1, the Web of Science database has published a number of research articles with the subject "WOLF" or "WOLF-S."

In the overlay visualization by VOSviewer 1.6.18(0) of the keywords with 35 papers, the top 5 keywords are WOLF, performance, validation, personality, and model as shown in Fig. 2.
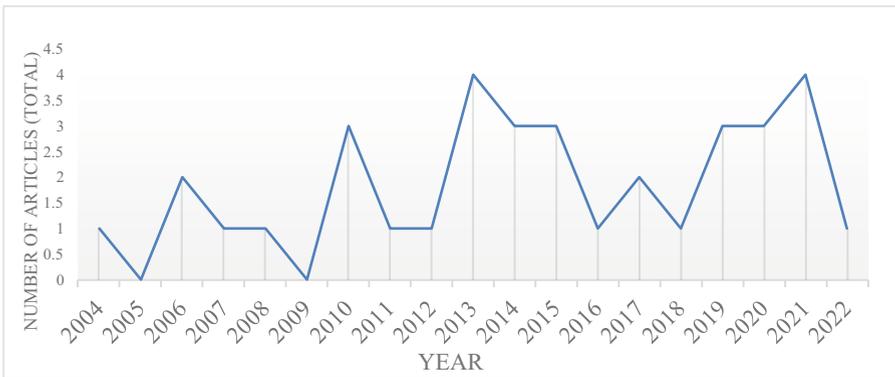

Fig. 1. Total Number of Web of Science Indexed Articles

Fig. 2. The Overlay Visualization of Keywords

2.1 Factors of WOLF

When recognized absorption, pleasure, and intrinsic motivation as WOLF elements after reviewing several prior studies. Salanova et al. formulate a hypothesis [12], based on Hobfoll's conservation of resources theory [14], Bandura's social cognitive theory [15], and Fredrickson's "broaden-and-build" theory of positive emotions [16], personal resources (i.e., self-efficacy beliefs) and resources (e.g., social support atmosphere and defined goals) promote the flow of work-related activities (work absorption, work enjoyment, and intrinsic work motivation). In the research by Demerouti, the importance of positive work-related experiences in occupational health psychology by examining the link between flow at work and job performance [17]. The study of [1] evaluated the WOLF's validity among several of the samples in greater depth. Peters et al. study the correlations between human resource management strategies linked with new ways to work (employee empowerment, home-based teleworking, and developing trust relationships) and employees' work-related flow (absorption, work enjoyment, and intrinsic work motivation) [18]. Using the Job Demands-Resources Model, Colombo & Zito study the influence of some personal and job resources and some job demands on the three dimensions (absorption, work enjoyment, and intrinsic work motivation) of flow at work [19]. The intention of Habe & ement was to study the relationship between job resources and demands and workflow [20]. Considering flow as a non-ergodic (i.e., non-homogeneous across persons and non-stationary over time) intra-individual activity, Bricteux et al. work using Bakker's model that proposes flow is composed of three components: intrinsic motivation, enjoyment, and absorption [21]. According to Bakker et al., workers can also build their own optimum experiences [13].

2.2 Research Hypothesis

Through the study of other related research about WOLF, three factors study absorption, study enjoyment, and intrinsic study motivation are proposed to influence WOLF-S. The purpose of this study is to investigate the effect of three variables, namely study absorption (SA), study enjoyment (SE), and intrinsic study motivation (ISM), on WOLF-S. Table 1 is the research hypothesis of the study.

Table 1. Research Hypothesis

	Research Hypothesis
H1	A positive influence on WOLF-S from SA.
H2	A positive influence on WOLF-S from SE.
H3	A positive influence on WOLF-S from ISM.

Table 2. Demographics

Gender	Male	39.6% (80)
	Female	60.4% (122)
Age	Below 18	1.0% (2)
	18–25	97.0% (196)
	26–30	1.5% (5)
	31–40	0.5% (1)

3   Methodology

In the research, a quantitative technique was employed. The subject of the study was Business College of Guizhou University of Finance and Economics, a private university in China. The questionnaire draws from the work of various other scholars. The research employed a 7-point Likert scale. 202 students enroll in the study. This study utilized a straightforward random sampling method. The distribution of the questionnaires occurred on 15 and 16 April 2022. The acquired data was analyzed using Smart-PLS4's structural equation modeling (SEM). Below are the demographic details of the respondent (see Table 2).

4   Data Analysis and Results

This study's findings are based on the PLS-SEM methodology. The study of the modified structural model was used to assess the measurement models' outcomes.

4.1   Convergent Validity

To examine the convergent dependability of scale. Table 3 displays the convergent validity of the study's constructs. The fact that the Cronbach's alpha and composite reliability (CR) in the table below are better than 0.70 and that the average variance extracted (AVE) is larger than 0.50 indicates that the constructs are strongly associated.

Table 3. Convergent Validity

Construct	Items	Factor Loading	AVE	CR	R2	Cronbach's Alpha
SA	SA 1	.872	.835	.907	-	.901
	SA 2	.938				
	SA 3	.929				
ISM	ISM 1	.942	.868	.926	-	.924
	ISM 2	.928				
	ISM 3	.924				
SE	SE 1	1.000	-	-	-	-
WOLF-S	WOLF-S	1.000	-	-	.719	-

Note: AVE = Average Variance Extracted, CR = Composite Reliability, R2 = R Square

Table 4. Cross loading

	SA	SE	ISM	WOLF-S
SA 1	.872			
SA 2	.938			
SA 3	.929			
SE 1		1.000		
ISM 1			.942	
ISM 2			.928	
ISM 3			.924	
WOLF-S				1.000

4.2 Discriminate Validity

The cross loading, fornell-larcker, and HTMT of the construct are the suitable for evaluating discriminate validity. In Table 4, each item loads more heavily on its own constructions inside the study model. The AVE value of the constructs is greater than the correlation value of each subconcept-measuring variable in Table 5. Table 6 contains all HTMT ratio values less than 0.90. Consequently, statistical discrimination suggests a valid test.

4.3 Result

As shown in Table 7 and Fig. 3, the survey test results and the model's goodness of fit, hypothesis testing was conducted using PLS-SEM.

The acceptance of Hypothesis 1 as a favorable influence on WOLF-S from SA. The acceptance of Hypothesis 2 as a favorable influence on WOLF-S from SE. The third hypothesis was acknowledged as A favorable influence of ISM on WOLF-S.

Table 5. Fornell-Larcker Criterion

	SA	SE	ISM	WOLF-S
SA	.914			
SE	.846	1.000		
ISM	.815	.840	.931	
WOLF-S	.784	.798	.813	1.000

Table 6. Discriminant Validation using HTMT Method

	SA	SE	ISM	WOLF-S
SA				
SE	**.888**			
SIM	.888	**.873**		
WOLF-S	.824	.798	**.844**	

Table 7. Hypotheses Tests of WOLF-S

Hypothesis	Hypotheses	T Statistics	P Values	Result
H1	SA -> WOLF-S	3.407	.000	Supported
H2	SE -> WOLF-S	3.468	.000	Supported
H3	ISM -> WOLF-S	5.319	.000	Supported
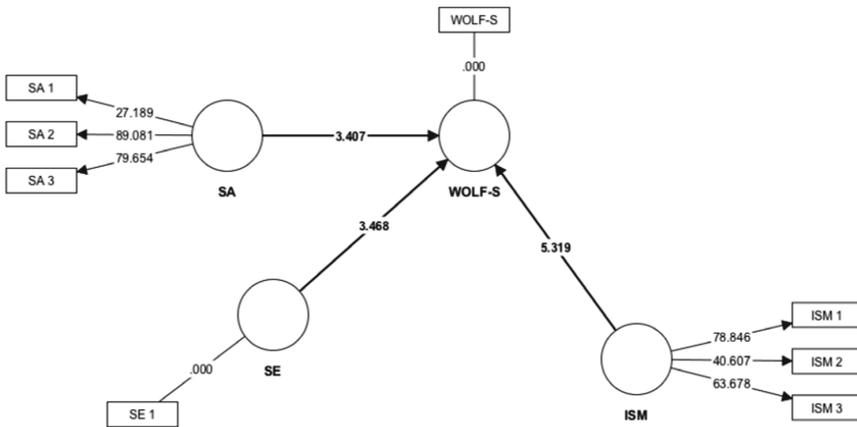
Fig. 3. Hypotheses Tests of WOLF-S

5   Conclusion

The WOLF-S instrument is robust and capable of measuring WOLF-S from SA, SE, and ISM, as shown by the testing and validation of the model for WOLF-S as utilized by 202 students enrolled at the Business College of Guizhou University of Finance and Economics. The study reveals that three factors of WOLF-S show adequate reliability and validity supporting. This finding mentioned that the positive influence on WOLF-S from SA, SE, and ISM, and ISM has the greatest influence on WOLF-S, followed by SE, and SA. This work contributes to the practical improvement of WOLF-S by deriving significant conclusions from empirical data collected from China's private undergraduates.

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