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A Causal Relationship Model ofStudy Engagement Behavior of Thai Undergraduate Students

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This article proposes a theoretical model of the Interactionismparadigm and investigates how psychological states, psychological traits and situational factors are related to study engagement behavior. The sample comprised of 304 undergraduate students of a public university in Bangkok province. The model was tested with structural equation modeling techniques. The main contribution of this study pertains to the results of the path model. The results showed that themodel partially supported the interactionism paradigm, in addition, psychological states fully mediated the relationships between study engagement and two latentconstructs (situational and traits).Furthermore, latentpsychological state displayed the highest path coefficient to study engagement, followed by situational latent and psychological traits which all together could explain the variance of the study engagement for 32.2%. Moreover psychological traits and situational factors directly affected psychological states, accounting for 47.5% of the variance. Finally, the findings suggested an important factorfor psychological traits was needforachievement, while an important factorfor situational factors was social support from friends, and favorable attitude toward learning was important factorfor psychological states.

Keywords: Study engagement behavior, path analysis, undergraduate students, interactionism paradigm.

Currently jobs styles have become diverse and required higher specific skills and abilities than secondary education (Callan, 2000). Undergraduate study has become the essential qualification for the careers of people in every society. Studying at the undergraduate level requires knowledge more than skill and discipline due the contents of the courses being more complicated than the upper secondary level. Moreover, Jongsatityoo(2014)foundthere were many students in Thailand who failed at the undergraduate level of education due to discouragement, eventually leading to burnout. Many factors caused such cases, for instance, parents expected their children to study what they wanted without letting their child decide by his own, or to study in accordance with social trends without considering what they were interested in the careers, pressure from family members, lack of the motivation for future success, and the environment of a university. These problems were factors that caused a small number of undergraduate students in Thailand to drop-out from the education system or graduated with low quality education (Appleton, Christensen & Furlong, 2008).

The study of O'Farrell & Morrison (2003) found that students with low study engagement would cause risk behaviors in adolescents, such as abusing drugs, having sexual risk behavior, and committing violent crimes.Study engagement which was a positive behavior could be defined as vigor, dedication, and absorption (Schaufeli, Martínez, et al., 2002; Salmela-Aro&Upadaya, 2012). Study engagement is considered as the important factor which helped promoting and developing students to have good academic results and positive social effects (Griffiths, Sharkey and Furlong, 2009).

Therefore, this research sought to identify factors that were important causes of study engagementto find the best ways of promoting and developing students to be more successful

in undergraduate education and respond to labor market needs.This was a correlation-comparative study based on an interactionism paradigm (Endler& Magnusson, 1976).

Study engagement: Definitions and Aspects

From a behavioral perspective, some researchers thought of study engagement as the outcome with the combination of intentions, successful academic and social integration within the study environment (Tinto, 1993). The present study conceptualizes study engagement as a positive psychological construct and, that engagement is characterized as a positive, fulfilling and work-related state of mind that is depicted by vigor, dedication and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002).

For this study, study engagement behavior was employed as the dependent variable. A study engagement behavior included three components, 1) vigor (VIG) which was characterized by high levels of energy and mental resilience while working or studying, the willingness to invest effort in one's work or studies, and the persistence in the confrontation with difficulties. This energy could also relate to the level of mental effort or mental strength that one could utilize when doing something;2) dedication (DED) which was characterized by a sense of the significance, enthusiasm, inspiration, pride and challenge, and the willingness of people to spend considerable time and effort in doing something meaningful; and 3) absorption (ABS) which referred to the cognitive aspect where individuals were fully focusing on something and experienced a high level of concentration while performing tasks. This concept includes being happily engrossed with one's work, so that time seemed to pass quickly, and one met the difficulty in detaching oneself from work (Coetzer&Rothmann, 2007; Marx, 2011).

Conceptual Framework of the Study Engagement Behavior of Thai Undergraduate Students

This study was based on the interactionism paradigm as its conceptual framework. The interactionism paradigm indicated that there were four groups of variables affecting individual's behaviors.First, the psychological trait group referred to a set of personality and motivation embedded in the person by the process of socialization. The second group comprised the situational factors playing the roles of push and pull on human actions. The third group was the statistical interaction between psychological traits and situational factors called mechanical interaction. The fourth group consisted of psychological states, especially, psychological characteristics that could be changed by the effects of current situations. These groups have an organismic interaction (Endler, & Magnusson, 1976; Bhanthumnavin, 1993).

In this study, the variables in each group would be conglomerated into the latent variables, which included the latent construct of psychological traits, the latent construct of situational factors, the latent construct of psychological states, and the latent construct of study engagement.The formation of the latent variables consisted of many observed variables and could be found in some important theories or constructs; such as the core self-evaluations (Judge, Locke, & Durham, 1997), the need for achievement (McClelland's, 1961), and social support theory (House, 1981; Cohen & Wills, 1985).

Relationship between Psychological Traits with Psychological States and the Study Engagement Behavior

Need for achievement (nAch) refers to an individual's desire for significant accomplishment, masterful skills, controls, or high standards. When obstacles are found, they are utilized as measurable factors that contributed to what they were doing to achieve success (McClelland's, 1961).The literature indicated that nAchis associated as a desirable behaviors. For example, mathematics learning behavior (Jhermpun, 2002), scientific leaning behavior (Chairat, 2004) and attentive behavior (Limpasute, 2012).

Future orientation and self-control (FS) refers an individual's ability to envision the future, forecast the future consequences, and

exhibit self-control. Self-control represents an individual's ability to control themselves for achieving a better goal in the future (Bhanthumnavin, 1996). The literature indicated that FS is associated with a desirable behaviors. For example, the responsible behaviors in response to duties (Numniem, 2003), scientific leaning behavior (Chairat, 2004), and waste minimization behavior of students (Suwandee, 2000).

Core self-evaluations (CSE) refers to a stable personality trait which encompasses an individual's subconscious, and fundamental evaluations about themselves, their own abilities and their own control. An individual who has high CSE would positively think of themselves and be confident in their own abilities. The concept of CSE was first examined by Judge, Locke, and Durham (1997) and involved four personality dimensions: locus of control, neuroticism, generalized self-efficacy, and self-esteem. The literature reveals that CSE is associated with a desirable behavior, for example, peer safety exchange behavior (Yaemyuen, 2014),and eating concerned behavior (Potiratchatangkoon, 2015).

According to the literature reviews, evidence exists that these psychological traits are related to student's behaviors. These two psychological traits were grouped as the latent psychological trait variables.

Relationship between Situational Factors with Psychological States and the Study Engagement Behavior

The environment around a person is an important factor to the thoughts and actions of individuals.

Social support from advisor/favorite teacher (SST) refers to student recognition that their advisors provided social support, emotional or informational. The emotional aspect includes giving compliments or rewards when students had done well Informational comprises as counseling when students had problems with studying or problems in daily life. Many studies had revealed that SST is related to desirable behaviors. For example, antecedents of academic and virtue oriented behaviors (Bhanthumnavin, 2007), Appropriate peer-group behavior (Sanamkate, 2007), and Social support affect life satisfaction among university students (Yamwong, 2012).

Social support from friends (SSF) was a social support regarding to study from friends consisted of three aspects; namely 1) Emotional support such as showing care, sympathy, and showing love 2) Information support, such as providing information relating to study, giving rewards, warnings when friends made mistakes, and 3) Materials support such as services, money, items, tools for educational needs, and etc.The literature indicated that SSF was associated with desirable behaviors. For example,reducework stress (Sorod&Wongwattanamongkol, 1996), the quality of life of the elderly (Chouwanachinda, 1999), and the quality of life in midlife adulthood (Saesiew, 2007).

Loved and reasoned child rearing practice (LR) refers to the perception of students on the practice of parental rearing in daily life. Parents showed their love and accepted themselves by giving the intimacy, counseling, and help when having problems, as well as giving the reward when doing well, or punishing when making mistakes based on reasonableness. The literature indicated that LR is associated with desirable behaviors,for example, the responsible behaviors in relation to duties (Numniem, 2003), and volunteering behavior (Yaemyuen, 2003).

According to the literature reviews, evidence suggests that situational factors directly affect certain potentials, especially university level, these three situational constructs were grouped as the latent situational factor variables.

Relationship between Psychological States and the Study Engagement Behavior

Favorable attitude toward learning(ATT) refers tothe students' opinions on studying as useful–harmful or acceptable–unacceptable. Many studies revealed that attitudes are related to study behavior. Relationships between attitude and study behavior had also been found, for example, self-sacrifice in work behavior (Thammathon, 2004), and moral-work behavior (Jalanukaoh, 2009).

Belief in internal locus of control of reinforcement (ICON) refers tothe practice of undergraduate students related to learning which consists of 1) To believe that they could do,2) To believe that efforts led to the good and successful results,3) To be able to precisely predict the consequences of actions, 4) To believe that many efforts were very important, and 5) Believe that they could control the consequences of themselves. Some studies have revealed that ICON is related responsible behavior in teaching (Bhantumnavin, 2007), andVigorous learning behavior (Bualar, 2018).

According to the reviews of the literature, certain psychological states, attitudes, and ICON, directlyaffect human potentiality. These three measurers were grouped as latent psychological state variables.

Hypotheses:

Research hypotheses based on an interactionism paradigm (Endler, & Magnusson, 1976), generated three hypotheses (Fig. 1).

Hypothesis 1. Study engagement behavior is directly affected by psychological traits, situational factors and psychological states.

Hypothesis 2. Psychological states are directly affected by psychological traits, situational factors.

Hypothesis 3. Study engagement behavior is indirectly affected by psychological traits and situational factors via psychological states.

Method:

Samples

The sample groups in this research are undergraduate students from university in Bangkok and other provincesof Thailand. Data were obtained by multi-stage sampling method. There were four stages: 1) three universities were included, 2) in each university, the science major and social-science major students were selected, 3) in each year, the first- and second-years studentswere chosen, and 4) in each class the average number of the students was approximately 25students. The total304 undergraduate students from freshmen and sophomore level, consisted of 115 males (37.8%) and 189 females (62.2%) with the average age of 19 years 6 months (SD = 8.24), and the average GPA of 3.00 (SD = 0.50). 134 of the participants were science major students (44.1%) and170 were social-science major students (55.9%).

At least fourteen measures in this study utilized the summated rating scale. Each item was attached with 6 unit Likert-type scale ranging from “absolutely true” to “absolutely not true” the range of score reliability was between 0.67 to

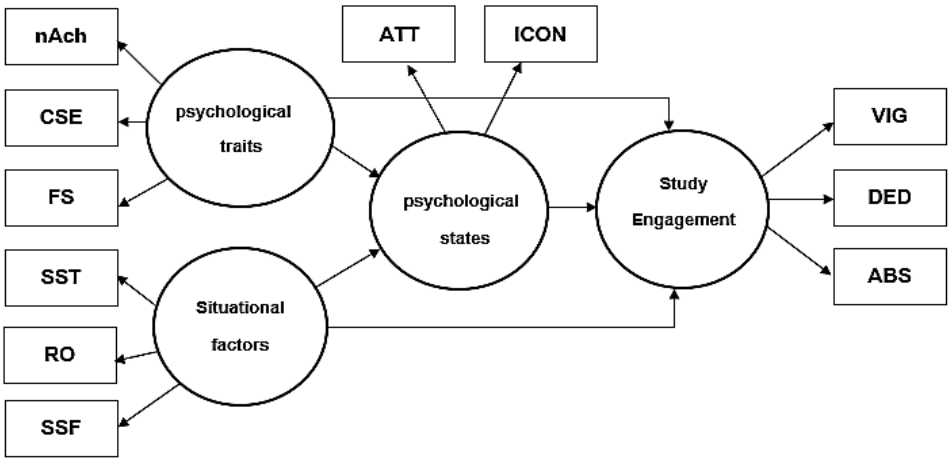

Fig.1. Hypothesis model

0.85. All of these measures were constructed and factors analyzed as follows in table 2.

Table 1. Respondents ProfileN = 304

Demographic characteristic		frequency	%
Gender	male	115	37.8
	female	189	62.2
Age	young age	176	57.9
	old age	128	42.1
Year	first year	130	42.8
	second year	174	57.2
GPA	low GPA	107	35.2
	high GPA	197	64.8
Field of study	sciences	134	44.1
	social-sciences	170	55.9

Measures

The study engagement behavior consisted of three latent variables. Firstly, VIG refers to a student's report about the high levels of energy and mental resilience while studying, the willingness to invest effort in one's work, and persistence even in the face of difficulties. The score alpha reliability was 0.74. Secondly, DED refers to being strongly involved in one's work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. The score alpha reliability was 0.67. The third variable, ABS, refers to being fully concentrated and happily engrossed in study, whereby time passes quickly. The score alpha reliability was 0.79. The contents of the items in the three measures were based on Utrecht work engagement scale for students (UWES-S) (Schaufeli, et al., 2002).

The latent psychological states construct consists of three variables. The first is ATT, defined as the perception and report of the respondent regarding their personality. A total of 12 items yielded the score reliability of 0.71.

Secondly, ICON is defined as the belief of the respondent regarding their ability to control the cause and result of their behaviors. The contents of items in this measure were based on Bhanthumnavin, et al. (1993). A total of 15 items yielded the score reliability of 0.83.

The latent psychological traits construct is composed of of three variables. An individual's desire for significant accomplishment, mastering of skills, control, or high standards identifies the first variable, nAch. A total of 12 items yielded the score reliability of 0.70.

FS referred to a student's psychological characteristics in terms of 1) future orientation, that is, an individual's ability to think about the future and forecast future consequences; and 2) self-control, that is, an individual's ability to control themselves to achieve a better goal in the future. The contents of the 12 items in this measure were based on Duanginta (2006). The score alpha reliability was 0.79.

CSE relates to students positively thinking of themselves and being confident in their abilities. The contents of the 12 items in this measure were based on the core self-evaluations scale (CSES)(Judge et al., 2003). The score alpha reliability was 0.81.

The latent situational construct is comprised of three variables. SST is a variable that pertains to the student's perception of social-support, emotional or informational, from a teacher/ advisor with informational and emotional support. This measure comprised 10 items with score reliability of 0.83. Another variable is RO, concerns a student's perception about practice(s) with their loved ones and reasons from family. This measure comprised 12 items with score reliability of 0.85. The last variable, SSF, refers to student's perception of social-support from friends with informational, materials, and emotional support. This measure comprised 12 items with score reliability of 0.85.

Data analysis

First, the study processed the descriptive statistics and reliability analysis of the collected data and assessed the demographic profile of the sample. Next, the correlational matrix from each pair of variables in this study was computed to examine and compare the magnitudes of the relationships. A path analysis was performed to test a model of the psychological traits,

Table 2 Summary of Confirmatory Factory Analysis of the all measures

Variables	(α)	Confirmatory Factory Analysis						
		x2	DF	P-value (p > 0.05)	RMSEA (≤ 0.06)	CFI (≥ 0.95)	TLI (≥0 .95)	SRMR (≤ 0.08)
VIG	.74	49.682	48	0.4061	0.019	0.994	0.992	0.059
DED	.67	28.357	27	0.3927	0.022	0.991	0.986	0.073
ABS	.79	44.988	43	0.3886	0.022	0.994	0.991	0.080
SST	.83	40.188	29	0.0809	0.062	0.987	0.966	0.049
SSF	.85	58.133	47	0.1280	0.049	0.985	0.979	0.052
RO	.85	43.942	38	0.2344	0.040	0.986	0.975	0.077
nAch	.70	51.470	43	0.1761	0.044	0.974	0.960	0.076
FS	.79	53.222	47	0.2471	0.036	0.982	0.975	0.080
CSE	.81	43.985	43	0.4296	0.015	0.996	0.993	0.072
ATT	.71	43.088	40	0.3406	0.028	0.991	0.985	0.078
ICON	.83	89.118	75	0.1269	0.043	0.978	0.970	0.061

situational factors, psychological states, and study engagement behavior. The following criteria were used to identify the model fit: the chi-square (χ2) test of model fit, whichshould not be significant (Jöreskog&Sörbom, 1989); a root mean square error of approximation (RMSEA) value of less than 0.50 (Browne &Cudeck, 1993); a comparative fit index (CFI) or Tucker–Lewis index (TLI) of at least 0.95 or better (Hair, Black, Babin& Anderson, 2010) and a standardized root mean square residual (SRMR) of less than 0.80 (Hu &Bentler, 1999).

Results

Correlations among the Variables

The inter-correlation matrix from Table 3shows the means, standard deviations, and correlations between the model variables. Among thethree dependent variables, the highest relationship was between vigor and absorption (r=0.34, p<.01). The correlation matrix among other variables is between-0.02 and0.23. Between the three psychological

Table. 3 Summary of Correlation among Variables in the Total Sample N=304

Variables	Mean	Std.	1	2	3	4	5	6	7	8	9	10	11
1. VIG	45.30	7.84	_										
2. DED	42.16	5.55	-0.02	_									
3. ABS	43.79	6.22	.34**	.23**	_								
4. SST	38.67	6.82	.43**	-0.04	.21**	_							
5. RO	54.92	10.16	.15**	0.05	.21**	.12*	_						
6. SSF	47.04	9.83	0.08	.14**	0.06	.20**	.12*	_					
7. nAch	45.91	8.09	.70**	-0.06	.32**	.40**	.21**	0.10	_				
8. CSE	49.56	7.15	.16**	.22**	.31**	0.05	.33**	.20**	.14*	_			
9. FS	51.17	6.58	.51**	0.09	.30**	.37**	.31**	.20**	.52**	.25**	_		
10. ATT	50.18	6.72	.45**	.25**	.41**	.30**	.35**	.27**	.47**	.36**	.54**	_	
11.ICON	61.58	8.40	.55**	0.03	.41**	.30**	.36**	.22**	.52**	.35**	.55**	.62**	_

traits, the highest relationship in this group was between FS and CSE (r=0.52, p < .01). The rest of the correlations in this group ranged from 0.14 (p < .05) to 0.25 (p < .01).

3)The highest relationship of the three situational variables was between social support from advisor/favorite teacher and social support from friends (r=0.20, p<.01). The correlation matrix among other variables is0.12 (p < .05).

Between the two variables in the group of psychological states, belief in internal locus of control of reinforcement and favorable attitude toward learning have the relationship coefficients.(r= 0.62, p<.01).

The inter-correlation matrix between the independent variables and the dependent variables reveal that the correlation matrix between the independent variables and dependent variables are between -0.02 and 0.62. In additionthe correlation matrix between the situational variables and the dependent variables resulted with the highest relationship between SST and VIG (r=0.43, p < .01). The rest of the magnitudes ranged from -0.04 to 0.21 (p < .01).

Additionally, the correlation matrix between the psychological trait variables and the dependent variables found the highest relationship to be nAch and VIG (r = 0.70, p < .01). The rest of the magnitudes ranged from -0.06 to 0.51 (p < .01) and Moreover the correlation matrix between the psychological states variables and the dependent variablesfound ICON and VIG (r = 0.55, p < .01), tohave the highest relationship. The rest of the magnitudes ranged from 0.03 to 0.45 (p < .01).

Structural Equation Modeling (SEM) for the Psychological Traits, Situational Factors, Psychological States, and Study Engagement Behavior

1) Measurement Model

The measurement model includes the latent study engagement construct, latent psychological traits, latent situational factors and latent psychological sates. Analysis resultsshowed that the direct effect from the latent psychological traits and latent situational factors were not significant on study engagement behavior, thus these two paths were removed. The revised model is introduced in Figure 2. The model was a good fit (the Chi-square test = 27.695, df = 26, p value = 0.373; RMSEA = 0.015; CFI = 0.993; TLI = 0.985; SRMR = 0.041).

The latent study engagement construct consists of three variables: VIG, DED, and ABS. The most important factor in the latent variable

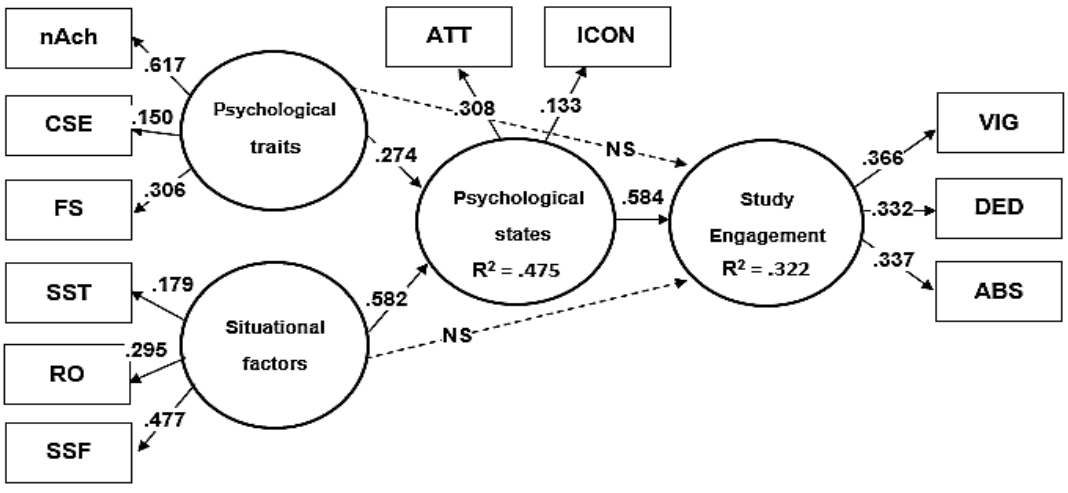

Fig.2. Model of Study Engagement Behavior of Thai undergraduate students.

was VIG, with the loading of 0.366, followed by DED, with a loading of 0.332, and ABS, with a factor loading of 0.337.

The latent psychological trait construct is comprised of three variables: nAch, CSE, and FS. The most important factor in the latent variable was nAch, with a factor loading of 0.617, followed by CSE, with a factor loading of 0.150, and FS, with a factor loading of 0.306.

The latent situational construct is composed of SST, RO, and SSF variables. SSF was observed to be the most important factor in the latent variable, with a factor loading of 0.477, followed by SST, with a factor loading of 0.89, and RO with a factor loading of 0.295.

The latent psychological state construct consists of two variables. The ATT variable was found to be the most important factor in the latent variable, with the factor loading of 0.308, and an ICON factor loading of 0.133.

2) Path Analysis

The Path model from figure 2, illustrates that latent study engagement construct was directly affected by latent psychological states constructs, which accounted for 32.2% of the variance of the latent study engagement construct.

The latent psychological sates construct was directly affected by the latent psychological traits (path coefficient = 0.274) and the latent situational factors (path coefficient = 0.582), contributingto47.5% of the variance.On the other hand, the latent psychologic traits construct and the latent situational factors showed no relationship with the latent study engagement construct. Thus, hypothesis 2 was supported and hypotheses 1 was partially supported.

Furthermore, the latent study engagement construct was also indirectly affected by latent psychological trait construct and latent situational construct via psychological state and supports hypothesis3. The indirect path from situational factor (path coefficient = 0.332) and psychological trait (path coefficient +0.156) affected study engagement via psychological state.

Discussion

This study aimed to investigate the model of study engagement behavior of Thai undergraduates utilizing results from the SEM. The findings of this study concluded that the latent psychological traits and situational factors indirectly influenced the latent study engagement behaviors through the latent psychological state. This result partially supports the format of interactionism paradigm incorporated with data analyzed by path analysis. Furthermore, this result presented that latent psychological traits and latent situational factors only indirectly influence the latent variable of behaviors. Consequently, the findings showed that this relationship is fully mediated by latent psychological states.

Moreover, it was found that the latent variables of psychological states had the highest direct influence on study engagement in which the favorable attitude toward learning contained the most factor loading among this latent variables. The past studies also presented the individuals who had much positive attitude towards working would have often desirable behaviors (Wille & Kim, 2015).

Furthermore, it was found that the latent situational factors had the highest direct influence to the latent psychological state in which the variable of social support from friends contained the most factor loading among these latent variables.It indicated friends influenced the attitudes hence able to affect behaviors. The past research results showed classmates related to the attitude towards learning behavior (Hoff &Lopus, 2014; DeVito, 2016).

Finally, the latent psychological trait directly influenced the latent psychological states less than the latent situational factors, having the variable of need for achievement contained the most factor loading among this latent variables. Previous research concluded that the individuals who had higher need for achievement are more inclined to have a favorable attitude toward learning and study engagement behavior (Taraj,2017;Smithikrai, Homklin, Pusapanich, Kreasukon, (2018).

Conclusion

According to analysis results, this research presents that need for achievement was the most factor loading among the latent psychological traits, and the variable of social support from friends contained the most factor load among the latent of situational factors; these were the important factors to improve students who had less study engagement behavior. In addition, favorable attitude toward learning was the important variable of the latent psychological states which affecting the study engagement. Hence, students who had less favorable attitude toward learning would be the risk group needing to empower their better study engagement behavior.

Limitation of this study is not being able to identify a causal factor for study engagement due to the key finding being a correlation finding not manipulated factor.

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