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A Causal Relationship Model of Study Engagement Behaviour of Thai Undergraduate Students

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ABSTRACT

This article proposes a theoretical model of the interactionism paradigm to investigate how psychological states, psychological traits and situational factors relate to study engagement behaviours of Thai undergraduate students. The total of 304 undergraduate students were examined. The conceptual model was tested with structural equation modeling techniques. The results showed that the model partially supported the interactionism paradigm. Psychological states fully mediated the relationships between study engagement and two latent constructs (traits and situational). Furthermore, latent psychological 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 (R2 = .322). Psychological traits and situational factors directly affected psychological states (R2 = .475). In conclusion, the findings suggested that an important factor for psychological traits, situational factors and psychological states, which affected study engagement behaviours of Thai undergraduate students, were the need for achievement in studying, social support from friends and positive attitude toward learning, respectively.

Keywords
Study engagement behaviour, structural equation model, path analysis, Thai undergraduate students, Interactionism Paradigm.

INTRODUCTION

Since jobs styles have become diverse and more specific skills are needed, having an undergraduate degree leads to more job opportunities, higher salary, and economic stability (Callan, 2000). In many Asian countries, this also set a new standard of education for children and forced them to study harder than their parents or grandparents did in their generation. However, studying at the undergraduate level requires discipline, knowledges, skills and effort more than secondary level, as the course is more specific and complicated.

In Thailand, Office of the education council (2019) reported that almost 60% of the Thai population aged between 18 -21 attended university. However, previous studies found that many Thai students failed at the undergraduate level. There were many factors caused such cases. For instance, negative study environment, burnout, pressure from parent expectation, following study trends without considering their own ability and lack of the motivation (Bualar, 2019; Jongsatityoo, 2014). As a result, many students dropped out from education system or graduated with low quality (Appleton et al., 2008). Moreover, the study of O' Farrell and Morrison (2003) found that students with low study engagement would cause risk behaviours in adolescents, such as abusing drugs, having sexual risk behaviours, and committing violent crimes. Therefore, helping students to graduate with good academic results, positive social effects and preventing them from leaving education system by promoting study engagement could be the solution (Griffiths et al., 2009).

Study engagement could be defined as a positive study-related state of mind which consists of three components: vigor, dedication, and

absorption (Salmela-Aro & Upadaya, 2012; Schaufeli et al., 2002). Previous study showed that study engagement is related to positive academic results (Ketonen et al., 2019), In Thailand, there is currently lack of evidence about study engagement, especially research conducted in undergraduate students.

The present study was a comparative correlation study based on an interactionism paradigm using four groups of factors, which could affect individual's behaviors (Endler & Magnusson, 1976). The aim was to identify the most important factors that associate with study engagement among Thai undergraduate students, in order to find the best ways of promoting and developing students to be more successful in education.

STUDY ENGAGEMENT: DEFINITIONS AND ASPECTS

In the aspect of behavioral psychology, study engagement refers to a positive outcome from the combination of intentions, successful performance, and social integration in the context of studying (Tinto, 1993). Schaufeli et al. (2002) also defined study engagement as a positive, fulfilling, study-related state of mind, characterized by Vigor, dedication, and absorption. It is believed that study engagement could help predicting various long-term positive outcomes, such as persistence in educational pathways, motivation of studying, job opportunities, self-perceptions and well-being of the student (Ketonen et al, 2019).

In the present study, study engagement behavior consists of three components; Vigor, Dedication and Absorption. These components were the same as the three aspects of work engagement but were adapted into the context of studying. Vigor (VIG) refers to a high level of energy and mental resilience in studying, the willingness to invest effort, and the persistence in educational pathway when confronting difficulties. This energy also relates to the levels of mental effort or mental strength that one could utilize when doing tasks.

Dedication (DED) refers to a sense of significance, enthusiasm, inspiration, pride and challenges to the task, and the willingness of a person to spend considerable times and effort in doing something they feel meaningful.

Absorption (ABS) is a cognitive aspect where a person is fully focus on something or experienced a high level of concentration while performing tasks. This concept includes being happily engrossed with work, so that time seemed to pass quickly and facing the difficulty in detaching themself from work (Salmela-Aro & Upadaya, 2012).

CONCEPTUAL FRAMEWORK OF THE STUDY

Based on the interactionism paradigm, there were four groups of variables that could affect individual's behaviors. The first group was "psychological traits", referred to a set of personalities and motivation embedded in the person by the process of socialization. The second group was "situational factors, which play 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. This interaction can be called as "organismic interaction" (Endler & Magnusson, 1976; Bhanthumnavin et al., 1993).

In this study, the variables in each group were used as latent constructs, 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 each latent construct groups consisted of many observed variables and could be found in other theories, 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.

In psychological traits, three factors were grouped as the latent psychological trait constructs. These factors are Need for achievement, Future orientation and self-control and Core self-evaluations.

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

Future orientation and self-control (FS) refers to an individual's ability to envision the future, forecast the future consequences and exhibit self-control. It represents an individual's ability to control themselves for achieving a better goal in the future (Bhanthumnavin,1996). Previous studies indicated that FS is associated with a desirable behavior for working and studying. For example, the responsible behaviors (Numniem, 2003), scientific learning behavior (Chairat, 2004), and students's waste minimization behavior of (Suwandee, 2000).

Core self-evaluations (CSE) refers to a stable personality trait which encompasses an individual's subconscious, 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). It involved four personality dimensions: locus of control, neuroticism, generalized self-efficacy and self-esteem. CSE was found to be associated with a desirable behavior for working, such as peer safety exchange behavior (Yaemyuen, 2014), and eating concerned behavior (Potiratchatangkoon, 2015).

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. In situational factors, three factors were grouped as latent situational factor variables. These factors are social support from advisor/favorite teacher, social support from friends and loved and reasoned child rearing practice.

Social support from advisor/favorite teacher (SST) refers to student recognition that their advisors can provide social, emotional and informational support for them when needed. The emotional support includes giving compliments or rewards when students had done well. Informational support defined as providing advice, guidance, suggestions, or useful information when students had problems. Many studies showed that SST was related to desirable behaviors in working and studying. For example, antecedents of academic and virtue-oriented behavior (Bhanthumnavin, 2007, Appropriate peer-group behavior (Sanamkate, 2007), and life satisfaction during student period of life (Yamwong, 2012).

Social support from friends (SSF) refers to a support from friends regarding to study. SSF consisted of three aspects; 1) Emotional support, such as showing care, sympathy and love 2) Informational support, such as providing warnings when making mistakes and 3) Materials support such as providing services, money or tools related to studying. Previous studies showed that SSF associated with reducing work stress in workplaces (Sorod & Wongwattanamongkol, 1996) and improving quality of life during midlife adulthood and

elderly. (Chouwanachinda, 1999 ; Saesiew, 2007).

Loved and reasoned child rearing practice (LR) refers to the perception of students on the practice of parental rearing in their daily life. How their parents showed love and accept them by giving intimacy, advice, and help when needed, as well as giving rewards when doing well, or punishments when making mistakes based on reasonableness. In previous studies, LR was associated with the responsible behaviors in relation to duties and volunteering behavior (Numniem, 2003; Yaemyuen, 2003).

RELATIONSHIP BETWEEN PSYCHOLOGICAL STATES AND THE STUDY ENGAGEMENT BEHAVIOR

With respect to psychological states, only two factors were grouped as latent psychological state variables. These factors are Favorable attitude toward learning and Belief in internal locus of control of reinforcement.

Favorable attitude toward learning (ATT) refers to the students' opinions on studying as useful–harmful or acceptable–unacceptable. Previous studies showed that attitude was associated with behaviors in working and studying. For example, self-sacrifice in work behavior (Thammathon, 2004), and moral-work behavior (Jalanukaoh, 2009).

Internal locus of control of reinforcement (ICON) refers to positive internal beliefs in a person on their abilities toward the task. These beliefs include 1) To believe that they can do the task. 2) To believe that their effort would lead to successful results. 3) To be able to precisely predict the consequences of their own actions. 4) To believe that the more efforts they put, the more positive results they will gain. 5) To believe that they could handle consequences of their own actions. Previous studies showed that ICON associated with responsible behaviors in teaching and vigorous learning behavior (Bhanthumnavin, 2007; Bualar, 2018).

RESEARCH HYPOTHESES

Based on an interactionism paradigm (Endler, & Magnusson, 1976), three hypotheses were proposed in this study (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 and situational factors.

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

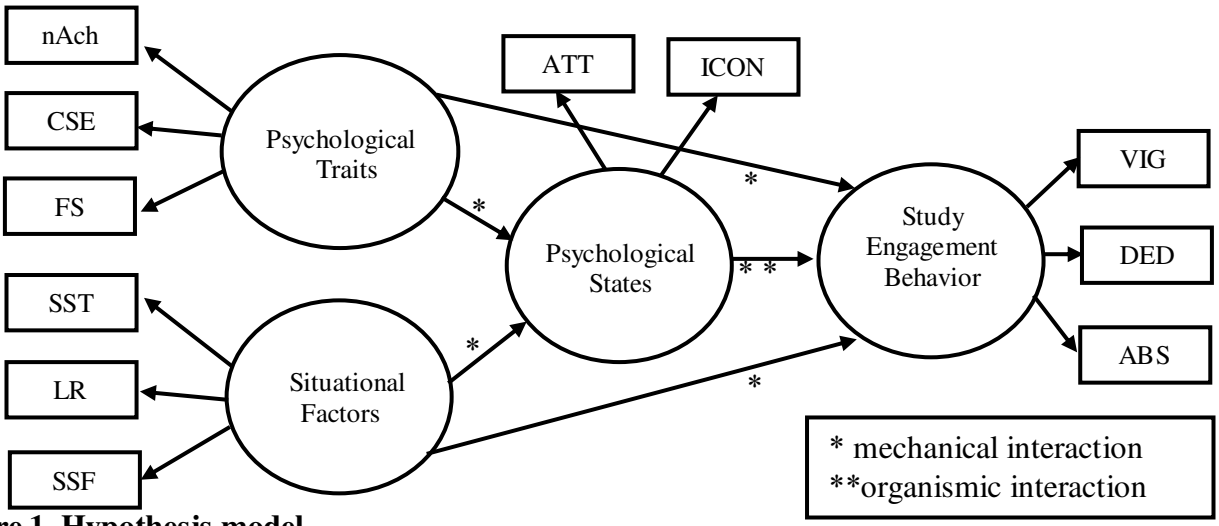


Figure.1. Hypothesis model

RESEARCH METHODS

SAMPLES

The sample groups in this research are undergraduate students from university in Bangkok and other provinces of 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 students were chosen, and 4) in each class, approximately 25 students were randomly selected.

The total of 304 undergraduate students from freshmen and sophomore level were selected. The samples 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). One hundred thirty-four participants were major in science (44.1%) and 170 were major in social science (55.9%).

Table 1. Respondents Profile n=304

Demographic characteristic		frequency	percentage
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

MEASUREMENTS

Eleven factors were measured using the summated rating scale. Each item was attached with 6-point Likert-type scale ranging from “absolutely true” to “absolutely not true”. The ranges of score reliability was between 0.67 - 0.85. All these measures were constructed and analyzed as followed in table 2.

The study engagement behavior consisted of three latent constructs: VIG, DED and ABS. The contents of the items in the three latent constructs were based on Utrecht work engagement scale for students (UWES-S) (Schaufeli, et al., 2002). The score alpha reliability for VIG, DED and ABS were 0.74, 0.67 and 0.79, respectively. The latent psychological states constructs consisted of two variables: ATT and ICON. ATT comprised of 12 items with score reliability of 0.71 while ICON comprised of 15 items with score reliability of 0.83. The latent psychological traits constructs included three variables: nAch, FS and CSE. nAch consisted of 12 items with score reliability of 0.70. FS consisted of 12 items, based on Duanginta (2006), with the score reliability of 0.79. CSE consisted of 12 items, were based on the core self-evaluations scale (CSES) (Judge et al., 2003), with the score reliability of 0.81. The latent situational construct comprised of three variables: SST, SSF and LR. SST comprised of 10 items with score reliability of 0.83. SSF comprised of 12 items with score reliability of 0.85. LR comprised of 12 items with score reliability of 0.85.

Table 2 Summary of Confirmatory Factory Analysis of all measures

Variables	(α)	Confirmatory Factory Analysis						
		x^2	Degree of freedom	P-value (p>0.05)	RMSEA (≤0.06)	CFI (≥0.95)	TLI (≥0.95)	SRMR (≤0.08)
VIG	0.74	49.682	48	0.4061	0.019	0.994	0.992	0.059
DED	0.67	28.357	27	0.3927	0.022	0.991	0.986	0.073
ABS	0.79	44.988	43	0.3886	0.022	0.994	0.991	0.080
SST	0.83	40.188	29	0.0809	0.062	0.987	0.966	0.049
SSF	0.85	58.133	47	0.1280	0.049	0.985	0.979	0.052
LR	0.85	43.942	38	0.2344	0.040	0.986	0.975	0.077
nAch	0.70	51.470	43	0.1761	0.044	0.974	0.960	0.076
FS	0.79	53.222	47	0.2471	0.036	0.982	0.975	0.080
CSE	0.81	43.985	43	0.4296	0.015	0.996	0.993	0.072
ATT	0.71	43.088	40	0.3406	0.028	0.991	0.985	0.078
ICON	0.83	89.118	75	0.1269	0.043	0.978	0.970	0.061

VIG = vigor, DED = dedication, ABS = absorption, SST = social support from advisor/favorite teacher, SSF = social support from friends, LR = loved and reasoned child rearing practice, nAch = need for achievement, FS = future orientation and self-control, CSE = core self-evaluations, ATT = favorable attitude toward learning, ICON = Internal locus of control of reinforcement

DATA ANALYSIS

First, the study processed the descriptive statistics and reliability analysis of the collected data and assessed the demographic profile of the sample. After that, the correlational matrix from each pair of variables in the study were computed to examine and compare the magnitudes of the relationships. A path analysis was performed to test the model of the psychological traits, situational factors, psychological states and study engagement behavior. The following criteria were used to identify the model fit: the chi-square (χ^2) test of model fit, which should not be significant (Jöreskog & Sörbom, 1989); a root means 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 & Ching, 2012; Bentler, 1990)

RESULTS

INTERCORRELATIONS AMONG THE VARIABLES

The inter-correlation matrix from Table 3 demonstrated mean values, standard deviations, and correlations between the model variables. Among the three dependent variables, the highest relationship was found in VIG and ABS (r=0.34, p<.01) while correlation matrix among other variables was between -0.02 and 0.23. Within the psychological traits group, the highest relationship was found in FS and CSE (r=0.52, p < .01), while the rest of the correlations in this group ranged from 0.14 (p < .05) to 0.25 (p < .01). For situational variables, SSF and SST showed the highest relationship with r = 0.20 (p<.01) while the correlation matrix among other variables was 0.12 (p <.05). With respect to psychological states, ICON and ATT showed the relationship coefficients of 0.62 (p<.01).

Table. 3 Summary of Correlation among Variables in the Total Sample (n=304)

Variables	Mean	SD.	1	2	3	4	5	6	7	8	9	10	11
1. VIG	45.30	7.84	-										
2. DED	42.16	5.55	-.02	-									
3. ABS	43.79	6.22	.34**	.23**	-								
4. SST	38.67	6.82	.43**	-.04	.21**	-							
5. LR	54.92	10.16	.15**	.05	.21**	.12**	-						
6. SSF	47.04	9.83	.08	.14**	.06	.20**	.12**	-					
7. nAch	45.91	8.09	.70**	.06	.32**	.40**	.21**	.10	-				
8. CSE	49.56	7.15	.16**	.22**	.31**	.05	.33**	.20**	.14**	-			
9. FS	51.17	6.58	.51**	.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**	.03	.41**	.30**	.36**	.22**	.52**	.35**	.56**	.62**	-

Notes $^{*}p < .05$; $^{**}p < .01$

VIG = vigor, DED = dedication, ABS = absorption, SST = social support from advisor/favorite teacher, SSF = social support from friends, LR = loved and reasoned child rearing practice, nAch = need for achievement, FS = future orientation and self-control, CSE = core self-evaluations, ATT = favorable attitude toward learning, ICON = Internal locus of control of reinforcement

The inter-correlation matrix between the independent variables and the dependent variables reveals that the correlation matrix between the independent variables and dependent variables ranges from -0.02 to 0.62.

Next, the correlation matrix between the situational variables and the dependent variables, the highest relationship was found in SST and VIG (r=0.43, p < .01). The rest showed the relationship coefficients from -0.04 to 0.21 (p < .01).

For the correlation matrix between the psychological trait variables and the dependent variables, the highest relationship was found in nAch and VIG (r = 0.70, p < .01). The rest showed the relationship coefficients from -0.06 to 0.51 (p < .01). Finally, ICON and VIG demonstrated the highest relationship (r = 0.55, p < .01) for the correlation matrix between the psychological state variables and the dependent variables, while the rest showed the relationship coefficients 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 included the latent study engagement construct, latent psychological traits, latent situational factors and latent psychological states. The analyzed results showed 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 constructs consisted of three variables: VIG, DED, and ABS. The most important factor in the latent constructs was VIG, with the loading factor of 0.366, followed by DED, with a loading factor of 0.332, and ABS, loading factor of 0.337.

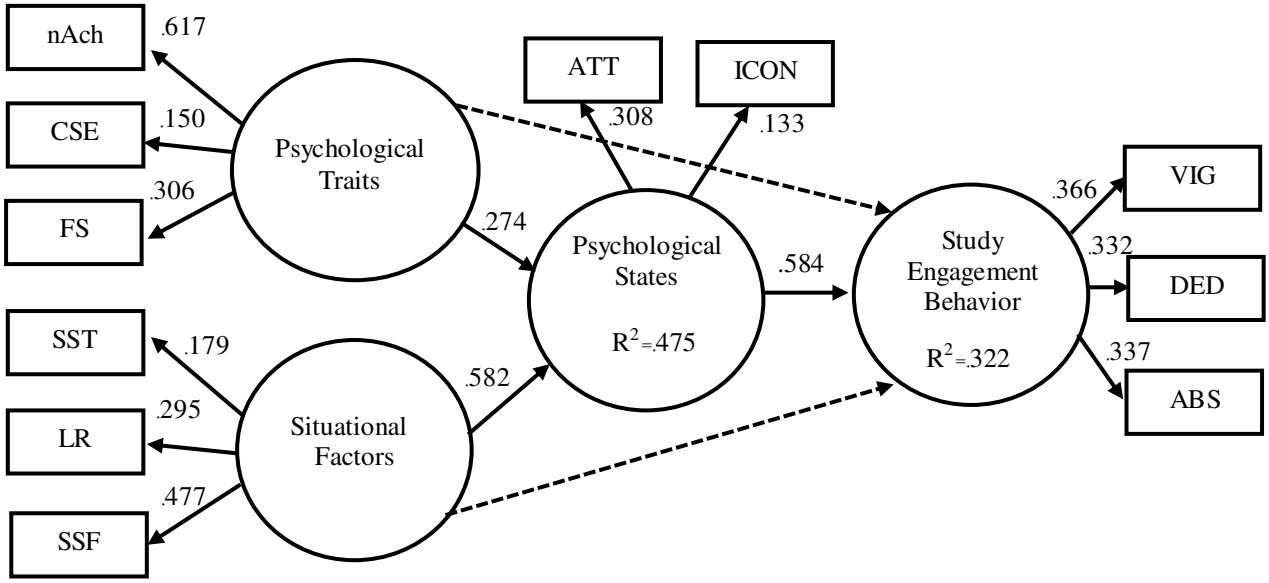
The latent psychological trait constructs was comprised of three variables: nAch, CSE, and FS. The most important factor in the latent constructs was nAch, with a loading factor of 0.617, followed by CSE, with a loading factor of 0.150, and FS, with a loading factor of 0.306.

The latent situational construct consisted of SST, RO, and SSF variables. SSF was found to be the most important, with a loading factor of 0.477, followed by SST and LR with a loading factor of 0.89 and 0.295, respectively.

The latent psychological state construct consists of two variables: ATT and ICON, with a loading factor of 0.308 for ATT, and 0.133 for ICON.

2) Path Analysis

The Path model from figure 2 illustrated that the 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.



Note. All Parameter estimates are standardized with p < .001.

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

The result showed that the latent psychological states construct was a fully mediator of study engagement behavior model (path coefficient =0.584). The mediator construct directly affected by the latent psychological traits (path coefficient = 0.274) and the latent situational factors (path coefficient = 0.582), contributing to 47.5% 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 AND CONCLUSION

The present study aimed to investigate factors that associate with study engagement among Thai undergraduate students. Using results from the Structural Equation Modeling (SEM), the findings showed that the latent psychological traits and latent situational constructs indirectly influenced the latent study engagement behaviors, through the latent psychological states. This result partially supports the interactionism model. Consequently, the relationship is fully mediated by latent psychological states.

Moreover, it was found that the latent constructs of psychological states had the highest direct influence on study engagement, especially the favorable attitude toward learning, which illustrated the higher loading factor than internal locus of control of reinforcement. Therefore, student's positive attitude affects their study performance. The similar finding was also reported by Wille and Kim (2015) that individuals with more positive attitude towards working would often associate with desirable behaviors in their work.

Next, it was found that the latent situational factors had the highest direct influence on the latent psychological state, in which the variable of social support from friends exhibited the highest factor loading. This finding indicated that friends have an influence on students' attitude toward learning, and then affect their study engagement behaviors. Similarly, other studies showed that classmates affected attitude of a person 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. Among other latent variables, need for achievement showed the highest factor loading. This finding supports evidence from previous studies that individuals who had higher need for achievement are more likely to have a favorable attitude toward learning and study engagement behaviors (Taraj, 2017; Smithikrai et al., 2018).

The results of this study showed that "the favorable attitude toward learning" "need for achievement" and "social support from friends" are important keys which enhance study engagement behaviors in Thai undergraduate students. Therefore, the person who involve with students (e.g., parents, advisors, academic staffs) or education systems (e.g., educational researchers, policymakers) should pay more attention on these factors in order to improve study engagement both in individuals and in larger scales.

However, the present study was a comparative correlational study, so it cannot provide conclusive information about causal relationships among variables. The experimental research in which the independent variable is manipulated by the experimenters is needed in order to confirm the results. Future experimental studies on the current topic are therefore recommended.

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