THE INFLUENCE OF EDUCATIONAL STRESS IN RELATION TO SMARTPHONE DEPENDENCY OF THAI STUDENTS

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Abstract

Although a plethora of research on Smartphone addiction and academic stress is rampant, there is a lack of research studies regarding the relationship of educational stress and Smartphone dependency. Smartphone dependency occurs when a person has a constant and continuous need to use their phone irrespective of the negative outcomes on one's wellbeing and daily functioning. The focus of the present quantitative study is to investigate whether Thai students are prone to academic stress because of overutilization of their Smartphone. The random sampling technique was used to collect data from 284 Thai male, female and LGBT (lesbian, gay, bisexual and transgender) students from one international university in Thailand. Pearson's Correlation Coefficient was utilized to find out the relationship between the five dimensions of educational stress and Smartphone dependency of Thai students. One-way ANOVA was used to test the differences between the five dimensions of educational stress and Smartphone dependency of Thai male, female, and LGBT students. Results revealed that, in general, when Thai students experience the dimensions of academic stress, their dependency on Smartphone increases, except for the pressure from study dimension which shows an insignificant association. Furthermore, when Thai students, experience dimensions of academic stress, their dependency on Smartphone increases. However, Thai LGBT students indicate a positive insignificant association between the dimensions of educational stress and Smartphone Dependency. There are no significant differences among male, female and LGBT students regarding the dimensions of worry about grades, self-

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expectation and despondency.

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Introduction

In Thailand which has a population of approximately 60 to 70 million, there are 90 million cell phone subscribers (Office of the National Broadcasting and Telecommunications Commission, 2015). Thais spend an average of 160 minutes a day on Smartphones, the second-highest in Southeast Asia after Malaysia which is an average of 60% higher than other Asean countries. Moreover, four out of five persons using Smartphones in Thai context view music and videos, spending an average of thirteen minutes a day which is the highest in the Asean region and this demand will continue to grow because of the fourth generation (4G) broadband services available, according to an Indian based marketing company Vserv (Bangkok post, 2016). Is it possible that Thai students could be prone to academic stress because of overutilization of their Smartphone?

"Stress is not what happens to us. It's our response to what happens. And response is something we can choose." Maureen Killoran (n.d).

Academic stress or educational stress is defined as, *"a student's perception of the pressure they face, time constraints to complete assignments, academic workload, and their academic self-perception"* (Bedewy & Gabriel, 2015).

University students could be bombarded with multifactorial stressors like work-life balance, academic work and pressures related to finances (Ryan, Shochet, & Stallman, 2010). Other factors that could contribute to stress could be psychological attributes and socio-cultural and environmental (Brand & Schoonheim-Klein, 2009). Results from previous research indicate that poor academic performance is related to high levels of stress (Sohail, 2013). In short, academic reasons were the prominent cause of stress for a majority of students while other variables such as physical, social and emotional stress were secondary causes (Bedewy & Gabriel, 2015).

Research revealed that 10 to 35% of students suffered from test anxiety that can impair their performance (Chapell *et al*., 2005; Naveh-Benjamin *et al*., 1997). A social survey of the student union in Germany found that only 15to 20% of students functioning can become impaired with exams (Neuderth *et al*., 2009). It is necessary to distinguish stress that can increase student's performance from stress that can lead to physiological and cognitive

health problems or attrition from university.

Majority of the students who experience academic stress also manifested high scores on a scale for poor self-esteem as well as high scores on a scale for depression (Baste & Gadkari, 2014). Other consequences of academic stress are reduction in satisfaction, self-efficacy and self-worth (Lee & Jang, 2015; Liao & Wei, 2014; Sarma, Payakkakom, & Kurpius, 2012).

Most previous studies indicate a relationship between Smartphone/cell phone addiction and academic stress or academic performance. A recent study conducted by Busari (2016) showed that academic stress was a potent cause of internet addiction. Smartphone dependency occurs when a person has a constant and continuous need to use their phone irrespective of the negative outcomes on one's wellbeing and daily functioning. Over usage of a Smartphone can have an impact on physical and psychological factors like moodiness, craving tolerance levels, loss of control, and salience (adapted from, Lee, Ahn, Choi & Choi, 2014). Even though, the Smartphone has gained popularity in recent years there could be many problems associated with dependency like physical, psychological and interpersonal and too much dependency can be compared to substance dependency (Kwon, Kim, Cho &Yang, 2013; Lin *et al*., 2014).

As people use more Smartphones, Smartphone dependency increases (Shin, 2014). It could be that for students who experience excessive amounts of academic stress, usage of a Smartphone could be source of addiction. Therefore, a lack of studies in this area initiated the question, "*do academic demands relate to a tendency for overutilization of the Smartphone for Thai students"?*

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Review of Related Literature

In order to assess educational/academic stress a number of instruments have been constructed but most of them have been validated in Western rather than Asian settings with the exception of the Academic Expectation Stress Inventory (AESI; Ang & Huan, 2006a) that was developed in Singapore and reviewed for cross-cultural validity in Chinese and Hispanic cultures (Ang & Huan, 2006a, 2006b). The authors of the Academic Expectation Stress Inventory (Ang & Huan, 2006a, 2006b), agreed that their inventory lacked a range of holistic factors and that their instrument stressed excessively on academic expectations. The instrument

developed by Sun, Dunne, Hou, & Xu, (2011), the Educational Stress Scale for Adolescents (ESSA), covers a range of factors that can be attributed to educational stress and includes more dimensions of academic stress compared to the Academic Expectation Stress Inventory (AESI; Ang & Huan, 2006a). The Educational Stress Scale for Adolescents (ESSA) was tested in a Chinese context and the Cronbach's Alpha = 0.82 for the total scale, indicates adequate internal consistency. The ESSA includes five dimensions (Sun, Dunne, Hou, & Xu, 2011), which are as follows:

1. Pressure from study: refers to strain experienced from studying each day in the classroom, from competition among peers, from parents and from anxiety about the future.

2. Workload: refers to pressure experienced from homework, school work and examinations.

3. Worry about grades: refers to attitudes towards studying and dissatisfaction with grades.

4. Self-expectation: refers to failure to attain one's own standards.

5. Despondency: refers to lack of concentration and confidence with academic study and work

Only one recent study on cell phone addiction and academic stress was conducted on university students in Thai culture by Thomas (2016). The study revealed a positive and moderate correlation in cell phone addiction and academic stress but no significant differences in gender and the class studied although, there were significant differences on the basis of major selected.

The teacher-student relationship quality can lead to a reduction in educational stress (Banks & Smyth, 2014). The type of grading system like Grade Point Average leads to increase in stress compared to a pass or fail system (Ali *et al*., 2015). Some factors like gender and class can act as moderators of educational stress (Elias *et al*., 2011; Backović *et al*., 2012). Educational stress can impact students psychologically by decreasing their intrinsic motivation (Liu, 2015) as well as perceptions of self-worth, self-efficacy and satisfaction (Sarma, Payakkakom, & Kurpius, 2012; Liao & Wei, 2014; Lee & Jang, 2015). Mahmoud, Staten, and Hall (2016), revealed that students' inability to cope with educational stress were prone to stress related behaviors like recreational drug consumption, depression and anxiety. Schraml, Perski, Grossi and Makower(2012) and Pozos-Radillo, Preciado-Serrano, Acosta-Fernandez, Aguilera-Velasco and Delgado-Garcia

(2014), agreed that when educational stress levels increase academic performance decreases. Factors like loneliness, satisfaction and personal innovativeness that are responsible for the constant use of Smartphone's (Park & Lee, 2011). Generic symptoms of academic stress include problems with eating and sleeping, depression, anxiety and decrease in exercise (Backović, Živojinović, Maksimović, & Maksimović, 2012; Schraml, Perski, Grossi, & Simonsson-Sarnecki, 2011). Elevated levels of stress can result in increased psychological distress prevalent in university students (Eisenberg, Gollust, Golberstein, & Hefner, 2007; Stallman, 2008a, 2010; Stallman & Shochet, 2009a).

In light of the above information, it is likely that students with academic stress will seek some outlet to vent their stress, like dependency, not only on substances but also to cell phones and Smartphones. *Nomophobia* refers to the anxiety experienced when a person does not have access to the Smartphone and the addicts are getting younger in Asian countries according to psychologist (Chen, BBC News Singapore, 2015). Smartphone dependence is defined as a person's constant usage of a Smartphone that disrupts the daily life of persons by having an impact on psychological and physical factors like loss of control, mood fluctuations, withdrawal symptoms, craving, tolerance and salience (adapted from, Lee, Ahn, Choi & Choi, 2014). The Smartphone dependence scale consists of five dimensions (Ezoe, Iida, Inoue, & Toda, 2016) which are:

1. Craving and Withdrawal: includes feelings of pain, tension and anxiety and impatience when there is no access to use a Smartphone.

2. Overuse and Tolerance: refers to trying to control usage of the Smartphone but a failure to do so results in compensating by spending the time lost to use the Smartphone.

3. Virtual Life Orientation: refers to usage of the Smartphone being a top priority compared to communication and interaction with other friends, family or acquaintances.

4. Disturbance of Concentration in Class: refers to lack of concentration in class and inability to pay attention to classroom work and projects.

5. Physical Symptoms: refers to physical symptoms like headaches, back pain, wrist pain and shoulder pain.

The scale used for the present research is the Japanese version of the Smartphone Dependence Scale. The Cronbach's Alpha = 0.92 for the total scale, indicates adequate internal consistency.

Methodology

To measure educational stress, the Chinese version of the Educational Stress Scale for Adolescents (ESSA) constructed by Sun, Dunne, Hou, & Xu, (2011), was used, consisting of 16 items on a five point Likert scale from 5, strongly agree to 1, strongly disagree and contains five dimensions namely, pressure from study, workload, worry about grades, self-expectation and despondency. The Cronbach Alpha is, α = 0.875 for the total scale, which confirms the reliability of this scale.

To measure Smartphone dependency, the Japanese version of the Smartphone dependency scale (J- SDS) constructed by Ezoe, Iida, Inoue &Toda (2016), was used consisting of 29 items on a four point Likert scale from 4, strongly agree to 1, strongly disagree and contains five dimensions namely, craving and withdrawal, overuse and tolerance, virtual life orientation, disturbance of concentration in class and physical symptoms. The Cronbach Alpha is, α = 0.920 the total scale, which confirms the reliability of this scale. Simple random sampling technique was used to collect data from Thai male, female and students at an international university which yielded 284 samples. Pearson's Correlation Coefficient was utilized to find out the relationship between the relationship between the five dimensions of educational stress namely, pressure from study, worry about grades, despondency, self-expectancy, workload and Smartphone dependency of Thai students. One-way ANOVA was used to test the differences between the five dimensions of educational stress namely, pressure from study, worry about grades, despondency, self-expectation, workload and Smartphone dependency of Thai male, female, and LGBT students. Pairwise comparisons of the dimensions of educational stress classified by gender via the least significant difference method was used to find out significant differences in perceptions on all dimensions of educational stress and Smartphone dependency of Thai male, female, and LGBT students

Data Analysis, Findings and Conclusions

Overall, the findings in Table 1 indicate that most dimensions of educational stress namely: worry about grades, despondency, self-expectation and workload are positively and moderately correlated with Smartphone Dependency ($r = 0.287, 0.416, 0.305$ and 0.349 respectively, $p < 0.01$) for all students, with the exception of pressure from study ($r = 0.024$, $p > 0.05$). Therefore,

Table 1: The Relationships between the Dimensions of Educational Stress and Smartphone Dependency of Thai Students

Educational Stress	Males (100)	Females (99)	LGBT (84)	Total (284)	Sig. (p)
Pressure from Study	0.387**	0.336**	.173	0.024	.693
Worry about Grades	0.439**	0.407**	.091	0.287**	.000
Despondency	0.504**	0.542**	.163	0.416**	.000
Self-expectation	0.440**	0.389**	.065	0.305**	.000
Workload	0.447**	0.461**	.210	0.349**	.000

Remarks: ** Correlation is significant at the 0.01 level (2-tailed).

Hypothesis 1 was supported and shows that, in general, when Thai students experience the dimensions of educational stress, their dependency on Smartphone increases except for the pressure from study dimension which shows an insignificant association between educational stress and Smartphone dependency.

The findings indicate that all dimensions of educational stress namely, pressure from study, worry about grades, despondency, self-expectation and workload, are positively and moderately associated with Smartphone dependency for male ($r= 0.387, 0.439, 0.504, 0.440$ and 0.447 respectively, $p < 0.01$) and female students ($r= 0.336, 0.407, 0.542, 0.389$ and 0.461 respectively, $p < 0.01$) with the exception of LGBT students ($p > 0.05$). Therefore, Hypothesis 2 was partially supported. When, Thai males and female students, experience dimensions of educational stress, their dependency on Smartphone increases. However, Thai LGBT students show a positive insignificant association between the dimensions of educational stress and Smartphone Dependency.

Asian students generally experience more academic stress in relation to their counterparts from English speaking countries (Ang & Huan, 2006a; Ang, Huan, & Braman, 2007). A plausible explanation for the moderate correlation between academic stress and Smartphone dependency could be the homogenous student sample that are more or less, all Thai students belonging to urban families from one international university, for whom academic learning may not be perceived in the same way as students from rural backgrounds. Ang and Huan (2006a), Lin and Chen (1995) and Lu (2008), discovered

that system level and cultural factors can determine perceptions of academic learning in that, people from rural areas are prone to believe that academic learning leads to social success and hence may experience higher levels of academic stress in comparison to urban students.

Students in a Thai culture may perceive homework, grades, self-expectations and lack of confidence and concentration as an academic burden since these aspects of education are related more to the internal achievement of a Grade Point Average. Saipanish (2003), study indicated that there were several factors in the academic context that could be the leading causes of academic stress.

On the other hand, pressure from study is an external factor more restricted to the classroom atmosphere of peer competition, concern from parents and worry about the future. Asian students often prefer to depend on parents and authority persons for higher education until their adulthood (Jersabek, 2010).

In a Thai culture, pressure from study dimension shows an insignificant association since Thai students prefer to study in a relaxed and fun atmosphere (Kitjaroonchai & Kitjaroonchai, 2012) which reflects less worry and stress. The Thais consider work less important as a measure of success compared the amount of **"Sanook"** (fun) that can be achieved in everyday life. (Kislenko, 2004). Preference is given to studying in social groups and discussing unclear topics with their peers in the classroom, according to Penporn and Pagram (2006). Thai students are inhibited to share their knowledge with others (Thongprasert, 2009) and do not dare to think differently (Bangkok Post, 2007).

Thomas, 2016), investigation on Thai students revealed that on the whole students are able to cope with their study load, reserve time for studying and make decisions about studying. A moderate correlation between academic stress and Smartphone addiction means that factors that affect academic stress also affect Smartphone addiction. As such the opposite could be confirmed, in that as addiction increases stress can also increase (Thomas, 2016; Chiu, 2014; Sinha & Jastreboff, 2013).

At least one-third of LGBT students according to the Plan International study (UNESCO and Mahidol University, 2014) have experienced some sort of physical abuse. Out of 2000 students, 25% admitted to have been harassed sexually because of their gender identity and sexual orientation. Besides many of the LGBT students were bullied and suffered from

poor self-esteem, anxiety and were socially isolated. Discrimination in schools and universities is challenging for the LGBT.

A possible explanation for LGBT students' insignificant association between the dimensions of educational stress and Smartphone dependency is that there exist many external factors that can escalate stress of LGBT students, rather than just educational stress. It could be that factors other than educational stress, like being socially isolated could also lead to Smartphone dependency.

Table 2 indicates significant differences among male, female and LGBT students regarding the overall educational stress on the dimensions of pressure from study, workload and Smartphone dependency ($F = 9.988$, $p < .01$, $F = 70.803$, $p < .01$ and $F = 3.970$, $p < .05$ respectively). There are no significant differences among male, female and LGBT students regarding the dimensions of educational stress like worry about grades, self-expectation, despondency and Smartphone dependency ($p > .05$). Therefore, Hypothesis 3 was partially supported.

Female students obtained a higher score than male students on the dimensions of educational stress, like pressure from study and workload since females in general are more worried about competition among peers and worry about their future, in contrast to their male counterparts who less exposed to the "glass ceiling" and have chance to reach higher positions in management because of gender based prejudices (Wirth, 2001; Jugulu & Wood, 2006). Career progression for woman can be an arduous because of

Table 2: Comparison of Educational Stress and Smartphone Dependency among Males, Females and LGBT Students using One-Way ANOVA

Dimensions of Educational Stress	Mean (SD)			F	Sig.
	Males	Females	LGBT		
Pressure from Study	2.4992	2.5303	3.4762	70.803**	.000
Workload	3.0167	3.0505	3.3333	3.970*	.020
Worry about Grades	3.2067	3.2424	3.3135	0.440	.645
Self-expectancy	3.2100	3.2694	3.3968	1.304	.273
Despondency	3.2000	3.2828	3.3730	1.017	.363
Overall Educational Stress	3.0265	3.0751	3.3786	9.988**	.000

Remarks: F-values are significant at ** $p < .01$ and * $p < .05$

Table 3: Pairwise Comparisons of the Dimensions of Educational Stress Classified by Gender via Lease Significant Difference Method (only pairs with significance difference are shown)

Dimensions	Gender	Gender	Mean Difference	Sig.
Pressure from Study	LGBT	Males	.97702**	.000
		Females	.94589**	.000
Workload	LGBT	Males	.31667**	.010
		Females	.28283*	.021
Overall Educational Stress	LGBT	Males	.35207**	.000
		Females	.30349**	.000

Remarks: * The mean difference is significant at the 0.05 level

Remarks: ** The mean difference is significant at the .01 level

men's dominance in higher managerial position (White, 2000).Thai culture is can be described as a society which is progressive but simultaneously traditional regarding gender roles (Nam, 2016).

LBGT students obtained the highest scores on the dimensions of educational stress, like pressure from study and workload. Although, Thailand is tolerant about homosexuality, many of the LBGT students felt socially isolated owing to the bullying experienced by others which resulted in poor self-esteem and anxiety, according to the Plan International study (UNESCO and Mahidol University, 2014). Most LGBT students were reluctant to manifest gay behaviors openly with fear of the older generation of Thais, who perceive homosexuality as abnormal (Nam, 2016). As mentioned earlier, it could be the above external factors that result in high levels of stress rather than dimensions of educational stress.

Table 3 reveals that LGBT students have different perceptions from both male and female students regarding the overall educational stress and Smartphone dependency (mean perceived differences = .35207 and .30349 respectively, $p < .01$). LGBT perceive the dimension of pressure from study significantly different from male and female students (mean perceived differences = .97702 and .94589 respectively, $p < .01$). LGBT perceive the dimension of workload significantly different from male and female (mean differences = .31667 and .28283 respectively, $p < .05$). Male and female

students do not have significant differences in perceptions on all dimensions of educational stress and Smartphone dependency.

The overall perception of educational stress and Smartphone dependency for LGBT is higher than that of males and female students. In general, the LGBT communities could experience inequity because of exclusions from health care and education. Besides LGBT are exposed to biases in the job market and housing which results in discrimination (Zachau & Cortez, 2017).

In comparison to male and female students, LGBT students, in addition perceive the dimension of pressure from study and workload differently. 53% of the LGBT community suffer from emotional problems like depression, frustration and anxiety. 45% of the LGBT community profess that they are not successful in jobs applications and several of them cannot express their real capabilities in the workplace (Zachau & Cortez, 2017).

Limitations, Significance and Implications for Future Research

A review of related literature reveals that Smartphone usage leads to academic stress but the vice versa could also be true, since educational stress could result in many disorders. The aetiology of the increasing Smartphone usage could also stem from educational stress which can be regarded as an antecedent. Although, the sample is sufficient and inclusive of genders from one particular university it does not examine different educational and cultural contexts nor does it include qualitative data. Many exploratory variables that included all facets of educational stress, which is a multidimensional concept, were not examined and the study emphasized correlation rather than causation, using the Educational Stress Scale for Adolescents which was developed and used in a Chinese context.

This study is useful for educators to be aware of when to use and when to restrict students in the classroom from overuse of Smartphones or using it for academic purposes only. The library and other places for concentration should refrain from permitting the use of Smartphones. Some prophylactic methods to detect students who are more prone to dependency on Smartphones because of educational stress as well as other antecedents can be identified and some sort of stress management programs can be which are problem-focused or emotional focused can be implemented.

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