



**SUBJECTIVE WELL - BEING AND SPORT PARTICIPATION  
AMONG THAI UNIVERSITY STUDENTS**

**BY**

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## ABSTRACT

Happiness or Subjective Well-Being (SWB) has been recognized as the main goal of individual's life in all age groups, naturally including young people. However, in Thailand, still lack valid and culturally-specific instruments that could be used to assess SWB in the Thai young people in general and university student in particular. Therefore, the present thesis was designed with two main purposes: 1).To translate and adapt valid and reliable international SWB measures to Thai culture and to evaluate its psychometric properties when used with Thai university students and 2). To analyze the existent relationships between some demographic variables, sport participation (SP) and university students' SWB.

According to the first purpose, the Satisfaction with Life Scale (SWLS) and the Positive and Negative Affect Schedule (PANAS) were translated and adapted to the Thai culture and its psychometric properties were evaluated through the analysis of the internal consistency that was measured by Cronbach's alpha, and Confirmatory Factor Analysis. In general, the results showed both the Thai versions can be considered as valid and reliable measures for evaluating the SWB of Thai university students.

In relation to the second main purpose, a large sample of Thai university students (n=1802) filled out a questionnaire package that included the Thai versions of SWLS and PANAS, an Inventory of Health-Related Behaviors (IHRB) as well other questions about their sport practice.

Overall, the results showed that a high percent of students (72.8%) didn't participate in sport regularly. Students' SP was associated with age, sex, academic year of study. Inactivity increased with age and level of academic year of study. Males were more likely to be physically active than females. Students reported "lack of time" and "too much workload" as the main reasons for not exercising.

Regarding to the SWB, it was found there're differences between the SWB of students from different academic years of study. The results also showed there wasn't association between sex and age to SWB in this sample. Moreover, it was evident that students who have a high frequency of sport practice seemed to have a high level of SWB, particularly increasing level of life satisfaction and positive feelings.

Therefore, it will be possible to draw some implication from the results of this thesis, especially about the potential role of the sport in the students' global health and subjective well-being, stressing the importance of promoting the increase of sport participation of Thai students.

**KEYWORDS:** Subjective Well-Being, Evaluation Instruments, Psychometric Properties, Sport Participation, Thai University Students.



## RESUMO

A Felicidade, ou Bem-Estar Subjectivo (BES), tem sido reconhecida como o principal objectivo de vida dos indivíduos em todas as faixas etárias, incluindo naturalmente os jovens. No entanto, na Tailândia, não existiam ainda instrumentos válidos e culturalmente adaptados para avaliar o BES dos jovens em geral e dos estudantes universitários em particular. Portanto, a presente tese foi desenvolvida com dois objectivos principais: 1) traduzir e adaptar para a cultura tailandesa instrumentos internacionalmente reconhecidos e avaliar as suas propriedades psicométricas quando utilizados com estudantes universitários tailandeses; e 2) analisar as relações entre variáveis demográficas, prática desportiva e o BES dos estudantes universitários.

De acordo com o primeiro objectivo, a Satisfaction with Life Scale (SWLS) e a Positive and Negative Affect Schedule (PANAS) foram traduzidas e adaptadas para a cultura tailandesa e as suas propriedades psicométricas foram avaliadas através da análise da consistência interna, medida através do alfa de Cronbach, e da Análise Factorial Confirmatória. Em geral, os resultados mostraram que ambas as versões tailandesas podem ser consideradas como medidas válidas e fiáveis para avaliar o BES dos estudantes universitários tailandeses.

Em relação ao segundo grande objectivo, uma amostra elevada de estudantes universitários tailandeses (n=1802) preencheu um conjunto de questionários que incluía as versões tailandesas da SWLS e da PANAS e um inventário de comportamentos relacionados com a saúde, bem como outras questões sobre a sua prática desportiva.

Em geral, os resultados evidenciaram uma elevada percentagem (72,8%) de estudantes que não realizavam desporto regularmente. A prática desportiva dos estudantes estava associada com a sua idade, sexo e ano de estudos. Quanto à inactividade, ela aumentava com a idade e com os anos curriculares. Os estudantes masculinos eram mais activos fisicamente do que as estudantes. Os estudantes indicaram a "falta de tempo" e o "muito trabalho" como as principais razões para não realizarem desporto mais frequentemente. Quanto ao BES, verificou-se que existiam diferenças entre o BES de estudantes de diferentes anos curriculares. Os resultados também mostraram que não havia associação entre sexo e idade e o BES nesta amostra. Além disso, foi evidente que os estudantes que realizavam desporto mais frequentemente também tinham um mais alto nível de BES, nomeadamente mais elevados níveis de satisfação com a vida e de sentimentos positivos.

Assim, é possível extrair algumas implicações dos resultados desta tese, especialmente sobre o papel potencial do desporto na saúde global e bem-estar subjectivo dos estudantes, ressaltando a importância de se promover o aumento da prática desportiva dos estudantes tailandeses.

**PALAVRAS-CHAVE:** Bem-estar subjectivo, instrumentos de avaliação, propriedades psicométricas, prática desportiva, estudantes universitários tailandeses.



## RÉSUMÉ

La félicité, ou le bien-être subjectif (BES), a été reconnue comme l'objectif principal de la vie pour les individus de tous les groupes d'âge, naturellement comprenant la jeunesse. Cependant, en Thaïlande, il n'y avait toujours instruments valables et adaptés à la culture pour évaluer le BES des personnes jeunes en général et des étudiants universitaires en particulier. Par conséquence, cette thèse a été développée avec deux objectifs principaux: 1) traduire et adapter à la culture thaïlandaise instruments internationalement reconnus et d'évaluer leurs propriétés psychométriques lorsqu'ils sont utilisés avec les étudiants universitaires thaïlandais ; et 2) analyser les relations entre variables démographiques, la pratique sportive et le BES des étudiants universitaires.

Selon le premier objectif, la Satisfaction with Life Scale (SWLS) y la Positive and Negative Affect Schedule (PANAS) ont été traduites et adaptées à la culture thaïlandaise, et ses propriétés psychométriques ont été évaluées par l'analyse de consistance interne, mesurée par les alpha de Cronbach, et l'Analyse Factorielle Confirmatoire. En général, les résultats ont montré que les deux versions thaïlandaises peuvent être considérés comme mesures valides et fiables pour évaluer le BES des étudiants thaïlandais.

En ce qui concerne le deuxième grand objectif, un échantillon d'étudiants universités thaïlandaises (n=1802) a accompli un jeu de questionnaires qui inclut les versions thaïlandais de la SWLS et de la PANAS, un inventaire des comportements liés à la santé ainsi que d'autres questions sur leur pratique sportive.

En général, les résultats ont montré un pourcentage élevé (72,8%) des étudiants qui ne pratiquent du sport régulièrement. La pratique sportive des étudiants a été associée à leur âge, sexe et année d'études. Quant à l'inactivité, elle augmente avec l'âge et les années du programme. Les étudiants masculins étaient plus actifs physiquement que les étudiants féminins. Les étudiants ont indiqué la «manque de temps» et l'«excès de travail» comme les principales raisons pour ne pratiquer pas le sport plus souvent.

Quant au BES, il a été constaté qu'il existait des différences entre les étudiants de différentes années scolaires. Les résultats ont également montré qu'il n'y avait aucune association entre le sexe et l'âge et le BES dans cet échantillon. En outre, il était évident que les étudiants qui pratiquant le plus souvent le sport avaient également un niveau de bien-être subjectif plus élevé, à savoir des niveaux élevés de satisfaction de la vie et des sentiments positifs.

Ainsi, il est possible de tirer quelques implications des résultats de cette thèse, en particulier sur le rôle potentiel du sport dans la santé globale et le bien-être subjectif des étudiants, soulignant ainsi l'importance de promouvoir une pratique sportive accrue des étudiants thaïlandais.

**MOTS CLÉS:** bien-être subjective, outils d'évaluation, propriétés psychométriques, pratique sportive, étudiants universitaires thaïlandais.



## **CHAPTER 1: INTRODUCTION**



The importance of happiness or Subjective Well-Being (SWB) is being seen as the main goal of people's life or to be a fundamental goal in life. It is important to note that even though SWB is an umbrella term or has a larger concept than happiness (Diener & Ryan, 2009; Eddington & Shuman, 2005). But both terms are somehow used interchangeably, and can be used as a substitute for each other (Eddington & Shuman, 2005; Hoorn, 2007). The SWB is defined as how individual views his or her own life (Diener, Lucas, & Oishi, 2002). On the one hand, it is an indicator which aims to measure what makes people feel well in relation to their own cultural values and standards (Diener, Oishi, & Lucas, 2003). Diener, Suh, Lucas, and Smith (1999) stated that SWB, as a construct, has both an affective (i.e., emotional) and a cognitive (i.e., judgmental) dimensions.

There is increasing interest to measure SWB of people which can be seen in a number of scientific works in the realm of happiness or SWB. Many researchers have attempted to find ways to measure SWB, and there have been over 3,000 published comprehensive papers on this field since the early 1960s (Veenhoven, in press). Recent empirical evidence shows that there have been several factors that influence SWB of people. Studies highlight the personality factors are strongly correlated with SWB, and also significantly linked to the individual's happiness (Cha, 2003; DeNeve & Cooper, 1998; Diener, et al., 1999; Maganus & Diener, 1991). The demographics factors have also been found to play an important role in determining SWB. Even though the research results have shown a weak correlation between these variables with SWB when compare to personality factor (Eddington & Shuman, 2005). The group of demographic factors is still concentrated on the SWB's research, and this trend of research is still being discussed (Diener & Ryan, 2009). Recently, SWB can be measured using subjective indicators that are normally collected in questionnaires and surveys. A number of measures of SWB with good reliability and validity have been developed and established which have allowed the study of well-being to establish itself as a serious and recognized discipline.

Similar to the worldwide trends, individual's SWB assessment has become more attention in Thailand. However, when we try to investigate further

in this domain and want to do comparisons with data from other studies carried in other nations, we found that there still exist in Thailand a need to validate and create valuable instruments which can be used in cross-cultural research. Thus, in the present study, for measuring individual's life satisfaction which is considered to be the cognitive dimension of the SWB construct, it was selected the international instrument that has been widely used as more reliable and valid self-report "The Satisfaction with Life Scale (SWLS)" that was developed by Diener, Emmons, Larsen, and Griffin (1985). For measuring the affective dimension of SWB that refers to how frequently an individual reports experiencing positive and negative emotional states, the Positive and Negative Affect Schedule (PANAS) by Watson, Clark, and Tellegen (1988) was chosen in this study.

With regard to the young people, the importance of them can be seen in the recent campaign of the United Nation (UN) that providing the period of time from August 2010 to August 2011 is the International Year for young people (UN, 2010). Young people are considered as our future. However, by focusing on this subgroup of population around the world, the previous studies globally have revealed that they still have been increasing and causing serious problems both of physical and mental health problems nowadays (CDC, 2003; Kay, Li, Xiao, Nokkaew, & Park., 2009; Martindale, 2005; Sidman, Abundo, & Hritz, 2009; Steptoe, Tsuda, Tanaka, & Wardle, 2007; WHO, 2003). Even in Thailand, the data showed that Thai young people (15-24 years) are also the highest risk population regarding inactive and mental health problems as well (DMH, 2009; NSO, 2007).

Regarding to the lack of exercise in young people, and assuming the 18-24 year old age group is the one most represented by the university students. A number of studies have shown the highest rate of decline in exercise being found in this age group (Bray & Born, 2004; Caspersen, Pereira, & Curran, 2000; Grubbs & Carter, 2002; Nigg, 1999; US Department of Health and Human Services, 2000). Therefore, with the extensive research links physical exercise involvement to better health, and better health to psychological well-being and SWB.(Fox, 1999; Penedo & Dahn, 2005; Schnohr, Kristensen, Prescott, &

Scharling, 2005). To address these issues, in Thailand, not only still lack an effective, culturally-specific instruments that could be used to assess SWB in the Thai population but there is still lacking consensus in the issues of measurement of SWB with physical exercise context also. Since both problems of inactivity and mental health of university students have been increasing and causing serious problems. Thus, the target populations of the present study, it appears interesting to investigate the SWB and sport participation in the group of Thai university students setting.

The study was undertaken with the aim to answer the following research questions

- 1). Do the validated instruments of both SWLS and PANAS can be used as assessment measures for evaluating SWB among Thai university students?,
- 2). Do Thai university students get enough exercise?,
- 3). How do Thai university students feel and evaluate about their life?,  
and
- 4). What are the determinants influencing Thai university students' level of SWB?

In order to gain more knowledge for understanding the most fortunate generation, and since we know little about the factors which are important for Thai university students' happiness. This study is focusing on factors that influence SWB in both of the demographic variables and sport participation variable. Using a large population-based survey of Thai university students, the specific purposes of the present study were: 1). To evaluate the psychometric properties of two measures of SWB in a large sample of Thai university students, 2). To exam the relationship between factors such as demographic variables and sport participation to SWB.

This dissertation is divided into seven chapters as below:

**Chapter I** : Introduction

**Chapter II** : Conceptual Background

- Chapter III** : First research paper  
Title: "Testing the Psychometric Properties of the Satisfaction with Life Scale (SWLS) with Thai University Students"
- Chapter IV** : Second research paper  
Title: "Confirmatory Factor Analysis the Positive and Negative Affect Schedule (PANAS) Thai version with Thai University Students"
- Chapter V** : Third research paper  
Title: "Sport Participation of Thai University Students : Do they get enough exercise?"
- Chapter VI** : Fourth research paper  
Title: "Happiness of Thai University Students: Is there a relationship with demographic variables, and sport involvement?"
- Chapter VII** : General Conclusions

## **CHAPTER 2: CONCEPTUAL BACKGROUND**



The purpose of this chapter is to provide the conceptual background to the research in this dissertation. The first part provides an introduction of happiness and SWB, its components, and how to measure it. Also, SWB's research related to lists of factors correlates that influencing people's SWB is reviewed. The second part presents the current issues in physical and psychological health of young people particularly in Thai young people. The final part summarizes and identifies the relationship between physical exercise and subjective well-being.

## **Part 1: An Overview of Happiness & Subjective Well-Being**

### **Happiness and Subjective Well-Being**

Seligman (2002), who published a book on happiness, states that the central objective field of study in positive psychology is to understand and facilitate a description of the state of people's life circumstances or to understand happiness and well-being of people (McGillivray & Matthew, 2006). The happiness or well-being has captured all aspects of individual life, and the term "happiness" is more commonly known among psychologist including economists as "Subjective Well-Being" (SWB) (Conceição & Bandura, nd; Diener & Ryan, 2009). Although, some scholars use the term of SWB as the same name as happiness but the meaning of both terms has not exactly the same (Hoorn, 2007). By the fact that SWB is an umbrella term or has a larger concept than happiness (Diener & Ryan, 2009; Eddington & Shuman, 2005). Another explanation is from the many connotations of happiness's term that Diener and Ryan (2009) also provide some clarification on the differences between SWB and happiness. They point out that when people's evaluations of their lives as a whole in both of cognitive judgment and affective evaluation, the term of SWB is preferred and be more accurate communication than the term of happiness. However, from several reviews, the terms of happiness and SWB are still often used interchangeably or synonymously (Eddington & Shuman, 2005; Hoorn, 2007).

Recently, SWB is accepted as a multidimensional evaluation of people's well-being, and it is a key component or a subjective indicator of quality of life. SWB is a broad term used to describe people's experiences as the people makes judgments in terms of satisfaction about his/her life as a whole in important domains such as marriage, income, work, family, finance, self, leisure, health, as well as what happens to them when reflecting about their affects such as: happiness, joy, ecstasy, sadness, depression (Conceição & Bandura, nd; Diener, 1994; Diener, Suh, Lucas, & Smith, 1999; Diener & Ryan, 2009).

By reviewing of SWB's construct literature, it is composed of two distinctive components: cognitive and affective components. The SWB typically assesses people in terms of both cognitive judgment of their life satisfaction, as well as measurements of two affective states (both positive and negative) by using their own personal or culture criterion and standard (Diener, Oishi, & Lucas, 2003; Diener, Emmons, Larsen, & Griffin, 1985). Even though, the correlation of measures of cognitive and affective components of SWB have been found, these two components can diverge, performing differently over time and comprising varying relations with other variables (Diener,1994; Lucas, Diener & Suh, 1996).

### **Measuring of Subjective Well-Being**

Generally, to measure people's well-being can be classified into two categories: 1) Objective measures, which assessing people's well-being indirectly by using the certain observable facts of statistics such as economic, health, education, social, and environment etc., and 2) Subjective measures, which assessing people's well-being by asking individual directly to their happiness, life satisfaction and affective evaluations of their feelings on real experience (McGillivray & Matthew, 2006; Hoorn, 2007). On the other hand, the subjective measures can be measured objectively by using psychological approach such as verbal & non-verbal behavior, actions, biology, attention and memory (Diener & Ryan, 2009).

As far as the validation in well-being research, there is increasing interest to measures of well-being through self-reports and has been capture for the national and international survey. The high-frequency use of self-reported SWB is well-accepted and can be useful, because not its measurability but it provides a more convenient and cost-effective way to assess SWB (Davern, Cummins, & Stoker, 2007). Within the available resources, there are several of the existing international SWB's surveys that have been analyzed in terms of their psychometric properties and have proven their validity or shown high convergence with one another. The example of some SWB measures that have been most used are Self-Anchoring by Cantril (1965), the Sixty-second happiness measure by Fordyce (1977), the Satisfaction With life Scale (SWLS) by Diener et al., (1985), the Positive and Negative Schedule (PANAS) by Watson, Clark, and Tellegen (1988). Nevertheless, with some of the SWB measures are somehow defective that Diener (2005) has suggested that when using the self-report for measuring SWB, the researcher should pay more attention to the biases, artifacts and also the limitations of those measures, and whenever possible, the researcher should take steps to correct or develop them as well.

### **Factors associated with Subjective Well-Being**

As happiness and satisfaction of life are the main goals for most people, SWB's researchers are attempting to find ways to understand the processes that underlie people's happiness. Many researches are mainly interested in the factors that have caused people to be unhappy including factors that might influence and can lead people to becoming happier. The factors that influence SWB have been classified in six broad groups such as: 1) personality factors, 2) contextual and situational factors, 3) demographic factors, 4) institutional factors, 5) environmental factors, and 6) economic factors (Hoorn, 2007). The group of personality factors is significantly linked to the individual's happiness and shows an important role other than specific events of life in determining SWB (Cha, 2003; DeNeve & Cooper, 1998; Diener et al., 1999; Maganus & Diener, 1991).

The influence of demographic factors also tends to be concentrated on in the SWB's research, and has been studied extensively (Diener & Ryan, 2009). Some published correlations, for instance, focusing on the age effect of SWB, several studies revealed that life satisfaction often increased with age or at least does not decline with age but does a small decline in mood (Butt & Beiser, 1987; Horley & Lavery, 1995; Inglehart, 1990; Okma & Veenhoven, 1996). The effect of age on well-being is still found to be inconsistent, however, by controlling for health and other factors, it is concluded that the young people and the elderly seem to be happier than the middle age group (Frey & Stutzer, 2002). Regarding sex differences on SWB, from the World Value Survey on 170,000 participants of 16 Western nations (Inglehart, 1990), and the study of Michalos (1991) surveyed in 18,000 college students on life satisfaction and happiness, the data showed small differences of sex on SWB, and women seem to be happier than men (Frey & Stutzer, 2002). Also, marital status and SWB appeared to be related, and married people, typically seem to be happier than unmarried people (Coombs 1991; Diener et al., 1999).

Furthermore, increasing of individual's income is not an important factor leading to a higher level of happiness or SWB (Janakarajan & Seabright, 1999; Moller, 2005). Some variables such as education have also shown a weak correlation on SWB or appear to be unrelated (Frey & Stutzer, 2002). However, Michalos (2007) argued that the influence of education on happiness depends on the operational definition of education. Meaning that education will have a small impact on SWB if education is defined and operated as only formal education, on the other hand, education will have an enormous impact on SWB if education is defined, and operated as the whole lifespan of individual's lifelong learning.

Although, there have been extensive prior studies currently addressing the impact of demographic variables on SWB, the results have provided a varying level of the correlation. Some evidence showed the demographic variables combined (i.e. age, sex, income, race, and education) are responsible for only fifteen percent of the difference in happiness levels between individuals (Argyle, 1999). Additionally, the results have shown a weak correlation between

the demographic factors with SWB when compare to personality variable (Eddington & Shuman, 2005). This trend of research is still being discussed. However, for the further SWB's research, Diener and Ryan (2009) suggested for the next research should investigate a casual factors rather than correlation factors and more longitudinal study is required.

### **The measurement of Subjective Well-Being in Thailand**

In Thailand, in order to measure the quality of life, mental health and also happiness, on the website of the Department of Mental Health (DMH) in Thailand has existed a list of several instruments. Those instruments have officially approved by DMH and are available such as: The mental Health Indicators, WHO Quality of Life – BREF (THAI) Assessment, General Health Questionnaire, The Norm Profile for the Thai Mental Health Questionnaire, The Thai Happiness Indicator (THI) (DMH, 2010). Recently, the most common used instrument for SWB or happiness assessment is the “The Thai Happiness Indicators (THI)”. There are two versions. One is the THI complete - version with 55 items (THI-55) and another one is the THI short - version with 15 items (THI-15). By a review of published studies of people's SWB in Thailand, the research in this field has very limited resources. As state earlier, in Thailand, to measure happiness or SWB of Thai people, the THI-55 and THI-15 are often used. However, as we move towards implementing the notion of cultural diversity, in SWB's correlational studies in particular with other nations, there is still a need for Thailand to create valuable instruments that can be used in cross-cultural research.

## **Part 2: Physical Health & Psychological Health of Young People**

### **Inactive & Psychological Health Problem**

Young people are the hope of our future, but the evidence demonstrates a great number of them are still inactive. For instance, in the 50 states of U.S., the descriptive data showed that the total of 54.6% of population aged  $\geq 18$  years did not meet the recommendations for a minimum of 30 minutes of

moderate-intensity activity on most days of the week (Centers for Disease Control and Prevention (CDC), 2003). Also, Varo, Martinez-Gonzalez, De Irala-Estevez, Kearney, Gibney, and Martinez (2003) conducted research in 15 European Union (EU) countries. The findings reported 43.3% to 87.8% of 15239 participants (aged >15 years) were physically inactive. These data are consistent with the data sources from World Health Organization (WHO), which revealed that in global health young people are a high risk population regarding global trends in physical inactivity (WHO, 2003).

From the international perspectives of young people and physical exercise research, there is documentation of the period with the most dramatic drop of exercise of young people ranging from late adolescence to young adulthood, and the highest rate of decline being found in the 18 - 24 year age group (Nigg, 1999; Caspersen, Pereira, & Curran, 2000; Grubbs & Carter, 2002; U.S. Department of Health and Human Services, 2000). Assuming the age range 18-24 years, is the one most represented by university students, Bray and Born (2004) pointed out that a dramatic drop in exercise by young people was occurring during the transition from high school to the first year of university, and around 50% of university students are physical inactivity (Keating, Guan, Piñero, & Bridges, 2005 ).

Relevant evidence suggests the trend of sedentary behaviors is troubling, not only because inactive university students are at increased risk of physical health problems such as obesity, cardiovascular disease, Type-2 diabetes, and osteoporosis (Berlin & Colditz, 1990; Prentice & Jepp, 1995; U.S. Public Health Service, 2007), but students also may experience psychological problems around the world as they have to cope with cross-cultural issues as well, such as: family dysfunction, low frustration tolerance, experimentation with drugs & alcohol, weak interpersonal attachment, sexual assaults/abuse, depression symptoms, low self-esteem, and suicide ideation (Benton & Newton, 2003; Kay, Li, Xiao, Nokkaew, & Park, 2009; Sidman, Abundo, & Hangeritz, 2009; Steptoe, Tsuda, Tanaka, & Wardle, 2007; Young, 2004).

The previous studies globally have demonstrated that the psychological problems of university students have been increasing and causing serious

problems nowadays. For instance, the data of the Suicide Organization, USA (2005) revealed that the second leading cause of death among American college students is suicide (Martindale, 2005). Likewise, a cross-cultural comparison research in East countries using Thai, Korean and Chinese populations also found that in the sample of 1400 college students have had suicidal behavior in the past 12 months and 4-17% of them reported suicidal ideation (Kay et al., 2009).

University can be a stressful time for young people. To cope with these issues, students may possibly face certain challenges and experiences during the time spent in the university. With a crucial, exciting, and an anxious time, there will be plenty of challenges for them with increased responsibility. Students might be influenced by lifestyle and reflected in marked behavioral changes. They are a group particularly prone to stress with many factors that can cause stress and influence to their life such as heavier workloads, financial pressures, the problem of time management, etc. (Misra, 2000). Recently, the released data confirm by WHO regarding health of young people indicate that a much greater number of young people (about 1.8 million people in the age range of 15 to 24) die each year, and about 20% of them will experience a mental health problems, most commonly depression or anxiety (WHO, 2010).

Health risk behaviors among university students such as being physically inactive and psychiatric problem have significant implications for long term health outcome that can also increase the risk factors for the morbidity and mortality disease in adulthood. Thus, the question of how to help and improve them both of physically and mentally healthy is a big issue and challenge for the policy makers and the health professionals (Leslie, Sparling, & Owen, 2001; Wibukpolprasert, 2002). To address these serious issues, in the United States, for example, the Department of Health and Human Services (DHHS) released a national campaign "Healthy People 2010" (CDC, 2000) for all people who living in United States. The American College Health Association (ACHA) has also formally been setting the college health agenda along with that nation campaign. A project name "Healthy Campus 2010: Making It Happen", is a campus health promotion and disease prevention for the students. Most

university campuses in the USA have placed a great emphasis on this project with the main tasks are to help and improve nation's college student health. Particularly, to improve physical and mental health are also mainly 2 of 10 the leading health indicator of this project (ACHA, 2002).

### **Inactive & Psychological Health Problem of Thai Young People**

By focusing on the importance of young people that represent 18% of population around the world, and most of them (80%) live in developing countries. The United Nation (UN) has announced that the 12 August 2010 to 11 August 2011 is the international year for young people by giving the name of this campaign as "The International Year of Youth: Dialogue and Mutual Understanding" (UN, 2010). The main aim of this campaign is to make young people more visible in the international development agenda with 15 priority areas of the world program of action (i.e. education, employment, healthcare, environment, etc) (UN, 2010). One of the countries where this program will be enacted in is Thailand.

Thailand is the South East Asian nation which is classified as a developing country. It covers a tropical land area about the size of France (514 thousand square kilometers) with a population of 67.4 million as of 2010 (almost 95 percent of Thais are Buddhists and a little less than 5 percent Muslims), approximately 42 million people belong to the age range category of 15-59 years, and more than 10 million belong to the young people age range of 15- 24 years (National Statistic Office (NSO), 2009; World Bank, 2009). To focus on health policy of this nation, currently the Thai government has been putting effort in the country's Tenth National Economic and Social Development Plan, for 2007-2011, which aims to develop human potential in all the dimensions such as: physical, mental and intellectual. By promoting health, both physical and mental in a livable environment, is 1 in 3 strategies for the development of human quality towards a knowledge-based and learning society (Office of the National Economic and Social Development Board (ONESDB), 2010). The Ministry of Tourism and Sport (MTS) also has released the country's Fourth National Sport Development Master Plan, for 2008-2011. One main objective in

the plan is to promote all Thai people to participate in physical exercise. To meet this objective, development targets for the Fourth Plan have been set at a target of 60 % in all age groups, and 80 % in young people have to be engaged in physical exercise regularly within year 2011 (Ministry of Tourism and Sport (MTS), 2007). Another agency with strong influence in health policy is the Thai Health Promotion Foundation which is an intervention that received 2% of excise tax from alcohol and tobacco to spend on health promotion activities though the numbers of innovative projects and activities. Their mission's is to spark, stimulate, support and develop health prompting process leading to increased health of Thai people and society (Thai Health Promotion Foundation, 2009).

Regarding the recent physical and mental health of Thai young people. The descriptive statistics related to their exercise behavior indicated that only 31-45 % of Thai young people (15-24 years) exercise regularly and these ages were the group that had the lowest rate engaged in physical exercise. (NSO, 2004; NSO, 2007). In addition, with the World Health Organization (WHO, 2010) has estimated that before 2020 the rate of children with mental problems will increase to 50 percent and mental health problem such as depression will become a major factor or highest ranking causing diseases in the young worldwide. This issue is confirmed by the data in Thailand that shows 17.8% among Thai population in the age range of 15 years old and over have the mental health condition lower than average, and Thai young people (15-24 years) are the highest risk population regarding mental health problems (NSO,2009; DMH, 2009). Moreover, Sukonthasab ((2002) conducted the qualitative research to assess the health behaviors of Thai university students by using informal interview with students from 17 faculties(2 students/faculty). The results indicated that 98.53 % of students had experience with the behavioral stress management, and the high level of stress (83.58%) related to their study and academic's examinations.

In conclusion, young people are the most fortunate generation and are our future. It is necessary to develop their potential in all dimensions of physical,

mental and morality as the context of the Thai nation's 10<sup>th</sup> plan for 2007-2011 is to propose the following passages as.

“To begin with, the **“well-being”** of people must be enhanced so that they are healthy and able to look after themselves and contribute to society. At the same time, **“mental immunity”** must also be enhanced by promoting the family institution (home), religion (temple), and educational institutions (schools) so as to instill faith” and “basic moral standards” into people. These include respect for human dignity, values, rights, duties and equality, awareness of integrity, ethics and honest interaction with others, selflessness, mercy, knowledge, unity, patriotism and contribution to society. In addition, “perseverance”, or patience, diligence, awareness, intelligence, and carefulness must be fostered so that everyone can live a happy life on foundations of moderation, reasonableness and carefulness.” (ONESDB, 2010, p. 23).

### **Part 3: Summary: Subjective Well-Being and Physical Exercise**

#### **Subjective Well-Being research**

A number of scientific works in the realm of happiness or SWB is increasing exponentially. There have been over 3,000 published comprehensive papers on this field since the early 1960s (Veenhoven, in press). The importance of happiness or SWB is being seen as the main goal of people's life or to be a fundamental goal in life. In United States, for example, the Americans consider happiness more important to them than money, moral goodness, and even going to heaven (King & Napa, 1998). Even in England, the people have rated happiness as their most important component of quality of life, and more important to them than money, health, and sex (Skevington, MacArthur, & Somerset, 1997). Lately, a term generally considered synonymous with happiness is the “Subjective Well-Being (SWB)” which referred to individual's evaluations of their life for both components (cognitive and affective components), and SWB have been shown to be correlated with a variety of variables.

Concerning the studies of evaluating the young people or university student's well-being by using SWB's self- report measures has had greater attention by a number of scholars (see Abdel-Khalek, 2004; Ayyash-Abdo & Alamuddin, 2007; Balatsky & Diener, 1993; Cha, 2003; Diener, Diener, &

Diener, 1995; Selim, 2008). One example is the large – scale survey of SWB' college students by Michalos (1991), assessing the level of SWB with 18032 students from 40 nations by asking them to report how happy and how life satisfied they were with their life. Another example is the SWB's research from Asian country; Cha (2003) conducted the research to measure SWB in 350 Korean university students. The results indicated that Korean students had higher scores of life satisfaction than Soviet students but lower than American students. For the mean of PA and NA, Korean student had lower PA but higher NA than Chinese and American Students.

In Thailand, the number of studies in SWB has very limited attention to young people in general, and to university students in particular, and also still lack an effective, culturally-specific instrument that could be used to assess happiness and life satisfaction. Regarding to the SWB's measures that have been widely used which their good psychometric properties, most of them were developed in Western countries. Thus, before using the international SWB's surveys across country or population in particular in Eastern countries, the psychometric properties and validation of instruments is still considered more important. As Warnecke et al. (1997) suggests that when a questionnaire is used in a different population or culture, the meaning of items may not be the same. It is important to investigate and exam those instruments for assuring that the translated instrument measures the same constructs as the original instrument we use, and can be applied to use across diverse populations.

### **The link between physical exercise and Subjective Well-being**

As the role of physical exercise for its effectiveness in the treatment or improvement of mental health research, still has had increased interest by many researchers (Fox, 1999). The effectiveness of physical exercise is accepted, and many scientific works confirm that participating in physical activity and sport have the potential in the prevention of mental well-being such as anxiety, depression, stress, life dissatisfaction, low self-esteem, also increase physical self- perception and self- confidence, and improvement of subjective well-being or quality of life (Fox, 1999; Penedo & Dahn, 2005; Schnohr, Kristensen,

Prescott, & Scharling, 2005; Donaldson & Ronan, 2006; Eyler, Brownson, Bacak, & Hoseman, 2003; Steptoe & Bulter, 1996; Sonstroem, 1984).

Also, a review of existing literature provides support of the positive relationship between physical exercise, mental health, and happiness (Blumenthal & Gullette, 2002; Biddle & Mutrie, 1991; Fox, 1999; Hengudomsub, Koedbangkham, & Kangchai, 2007; Ku, McKenna, & Fox, 2007; Martin, Jetha, Mack, & Hetz, 2010). There have been a number of studies showing results of the strong links between the impact of health or exercise to SWB. But the scientific research in field of well-being study is still lacking consensus in the issues of measurement of well-being with physical activity, exercise and sport context (Biddle, Fox, & Boutcher, 2000).

As state earlier, happiness or SWB is the most important thing in people's life, and the important role of physical exercise on the development and prevention of psychological health are well recognized and supported with strong evidence. With the fact that inactive and psychological problems are prevalent among young people not only in Western countries but in Eastern countries like Thailand as well. Thus, for increasing our understanding in order to help and make our future to live a healthy life and more happiness, the further research of these issues are still needed in Thailand.

## **CHAPTER 3: FIRST RESEARCH PAPER**

Title: "Testing the Psychometric Properties of the Satisfaction With Life Scale (SWLS) with Thai University Students"



## **Abstract**

The 5-item Satisfaction With Life Scale (SWLS), considered to be the cognitive dimension of the Subjective Well-Being (SWB) construct, was developed to assess overall life satisfaction. The SWLS is a well-known instrument with good psychometric properties, and has often been adapted or translated for use in different countries. However, some questions concerning the construct validity of the original SWLS remain unresolved. This study uses Confirmatory Factor Analysis (CFA) to test the psychometric properties of the Thai version of the Satisfaction With Life Scale (SWLS). A convenience sample yielded 1802 Thai university students across 13 faculties. There were 1064 females and 738 males, with an average age of 20.8 years. Results indicate that the Thai version of SWLS has high internal reliability. The CFA results suggest that allowing the error terms to be correlated for items 1 and 2 would improve model fit. The modified one-factor model fits this data very well. These results and prior SWLS research support the one-dimensional model and validity of this instrument across countries. We argue that the modified 5-item, one-factor model of the SWLS (Thai version) is a valid and reliable measure of life satisfaction among Thai university students.

**Keywords:** Subjective Well-Being, Satisfaction With Life Scale, Confirmatory Factor Analysis, Validation, University Students



## **Introduction**

Life style changes resulting from globalization are numerous and widely discussed. Among other things, globalization expands the arena of economic and other types of competition. Consequently, every stage and aspect of life becomes more complex; such complexity may add pressure and tension to daily life. This is especially salient for young adults who, in their education and career preparation, are forced to become more multifaceted. Many research articles note that young adults frequently have more complex problems today than their age peers did over a decade ago. Including both their typical and expected problems, difficulties occur in issues related to relationships and development. These difficulties are often manifested as more severe problems such as depression, fear of violence (or sexual assaults) and thoughts of suicide (Benton & Newton, 2003).

Young adult students worldwide deal with cross-cultural issues, family dysfunction, low frustration tolerance, experimentation with drugs and alcohol, and weak interpersonal attachments (Kitzrow, 2003). The results of a study by Young (2004) indicated that mental health issues interfere with student success more than ever before. In Thailand specifically, studies have found that mental and behavioral problems such as anxiety, depression, and substance and alcohol abuse disorders are prevalent among young people (Jirapramukpitak & Wongsarnsri, 2000). These are among the leading causes of morbidity and mortality in this age group (Wibukpolprasert, 2002). Mental health is clearly linked to less memory retention and poorer academic performance of students (Backels & Wheeler, 2001). Thus it is not surprising that, although an international study of college students by Diener, Napa-Scollon, Oishi, Dzokoto, and Suh (2000) revealed that life satisfaction and happiness were rated as extremely important in their lives, these goals remain problematic for today's young adults.

Indeed, if happiness and life satisfaction are more difficult for young adults to attain, they may be seen as more important in these people's lives. Therefore many researchers have attempted to find ways to measure

happiness and life satisfaction. Hoorn (2007), in an introduction to ways of measuring happiness and life satisfaction, stated that Subjective Well-Being (SWB) should be considered. SWB is an indicator which aims to measure what makes people feel well in relation to their own cultural values and standards (Diener, Oishi, & Lucas, 2003). Diener, Suh, Lucas, and Smith (1999) stated that SWB, as a construct, has both affective (i.e., emotional) and a cognitive (i.e., judgmental) dimensions. The affective dimension refers to how frequently an individual reports experiencing positive and negative emotional states. One of the instruments that have been widely used to measure this dimension is the Positive and Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegen, 1988). Life satisfaction is considered to be the cognitive dimension of the SWB construct. The instrument that has been widely used to measure this dimension is the Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985). Pavot and Diener (1993) note that this instrument was developed to assess life satisfaction as a whole. Thus respondents may use whatever sources they choose for evaluating their overall satisfaction with their lives.

Pavot and Diener (1993) suggest that the affective and cognitive components of SWB are not completely independent. However, the two components are somewhat distinctive and can provide complementary information when assessed separately. Thus the present study focuses on the cognitive component of SWB, utilizing the SWLS that Diener and colleagues constructed without reference to PANAS. The SWLS is a short 5-item instrument, each item designed in a five-point Likert response format (1 = strongly disagree to 5 = strongly agree). The language used for the scale items is relatively broad and nonspecific, allowing respondents to evaluate their overall life satisfaction subjectively (The five items are shown in Table 1).

The SWLS, as developed in the USA, has emerged as a single factor model. Several studies have demonstrated its reliability and construct validity, and many studies support a unidimensional model of the SWLS (Lewis, Shevlin, Bunting, & Joseph, 1995; Shvlin, Brubsden, & Miles, 1998; Pons, Atienza, Balaguer, & Garcia-Merita, 2000; Wu & Yao, 2006; Sachs, 2004; Gouveia, Milfont, Fonseca, & Coelho, 2008). However, Warnecke et al. (1997) suggested

that when a questionnaire is used in a different population or culture, the meaning of items may not be the same. A SWLS study by Pavot and Diener (1993) included item correlations and found the last item to be the weakest in terms of inter-item convergence. They suggested this may be because most of the items refer primarily to the present, whereas the fifth item refers primarily to the past. Thus some questions concerning the construct validity of the original SWLS remain unresolved. Interestingly, Sachs (2004), testing the Hong Kong version of the SWLS, found a larger correlation ( $r = 0.72$ ) between the “present” (items 1-3) and “past” (items 4-5) factors in a two factor model, while the first two items were correlated in the one factor model. However, he supported the one-factor model of the SWLS, and suggested that the two-factor model with “present” and “past” items was not the best framework for interpreting the SWLS. Sachs based his conclusion on the testing of fit index for the two factor model, which suggested over fitting the data and found a high correlation between factors.

To date, SWLS has been extensively used and is thought to have good psychometric properties, including convergent validity and moderate temporal stability (Pavot & Diener, 1993). The SWLS has been assessed in many ways by different investigators and was often adapted or translated for use in different countries, such as Canada and France (Blais, Vallerand, Pelletier, & Briere, 1989), the Czech Republic (Lewis, Shevlin, & Dorahy, 1999), Spain (Atienza, Balaguer, & García-Merita, 2003), Portugal (Neto, 1993), Nepal and Australia (Simson, Schumaker, Dorahy, & Shrestha, 1996), the Netherlands (Arrindell, Meeuwesen, & Huyse, 1991), Russia (Tucker, Ozer, Lyubomirsky, & Boehm, 2006), and Sweden (Hultell & Gustavsson, 2008). However, most of empirical works in this field were conducted in Western countries. Only a few similar studies have come from Asian countries, such as China (Shao & Diener, 1992), Taiwan (Cheng, 2005), Hong Kong (Sachs, 2004), Japan (Schumaker & Shea, 1993), Korea (Suh, 1999), and India (Yim & Mahalingam, 2006).

As stated earlier, mental and behavioral problems are prevalent among young people in Thailand, and Thai researchers still lack an effective, culturally-specific instrument that could be used to assess life satisfaction in the Thai

population. The extant Thai SWLS studies were conducted on specific groups such as psychiatric patients (Tuicomepee & Romano, 2005). Thus, the goal of the present study was to test the internal consistency and to establish the construct validity of the SWLS (Thai version) by using Confirmatory Factor Analysis (CFA) with a large sample of Thai university students. The results should inform the practicality and effectiveness of using the SWLS for the assessment of life satisfaction in Thai people, especially Thai younger generations.

## **Material and Methods**

### **Instrumentation and Back-Translation**

The Satisfaction With Life Scale (SWLS) is a 5-item instrument designed to measure global cognitive judgments of satisfaction with one's life (Diener et al., 1985). For the present study, the back-translation method (Brislin, 1970) was used. This began with a translation of the original English version of the SWLS into the Thai language by two bilingual people. Then the SWLS Thai version was reviewed by a mono-lingual reviewer. The next step was backward translation of the SWLS – from Thai into English - by two more bilingual people. The researchers then examined and compared the original English and back-translated English versions. Once equivalence was established, the final step was to present the Thai version to two Thai individuals, eliciting their comments regarding the wording and clarity of directions, and adjusting the instrument accordingly.

### **Sampling and Data Collection**

The data collection process began with the distribution of letters seeking permission from the president of a Thai university to survey students. Once permission was obtained, a non-probability sample of participants was recruited from the university's undergraduate students who volunteered to participate in the study. The participants consisted of undergraduate students from 13 different faculties. The nature, aims and importance of the study were explained

to the participants. The researchers also explained the guarantees of ethical research, including protection of human rights, confidentiality regarding individual responses, overall anonymity of respondents, voluntary participation, and the right to withdraw from the study. After signing an informed consent form, participants completed and returned the questionnaire. To ensure anonymity, codes were assigned for each questionnaire. No participants' names or identifiers were used, and results are reported in the aggregate. The questionnaire took approximately 2-5 minutes to complete.

### **Participants**

The sample consisted of 1802 students, of whom 1064 (59%) were female and 738 (41%) male. The sample included first-year students (30.3%), second-year students (22.6%), third-year students (22.2%), and fourth-year students (24.9%) in 13 faculties. Ages ranged from 17 to 25 years (mean = 20.8 years, SD = 1.34). The respondents' religious affiliation was predominantly Buddhist (94.6%); there were also Christians (3.1%), Muslims (1.9%), and others (0.4%).

### **Data Analysis**

Using the Satisfaction With Life Scale (Thai version), the students rated the extent to which they felt satisfied with their life experiences. The data were initially analyzed with SPSS version 15 statistical software (SPSS Inc., 2006) to establish internal consistency.

Burns and Grove (1993) suggest that internal consistency be measured by Cronbach's alpha (with reliability of .70 or greater considered acceptable). In this study, Cronbach's alpha for the SWLS equaled .80, above the predetermined internal consistency reliability threshold.

The construct validity of SWLS (Thai version) was evaluated using the confirmatory factor analysis (CFA) program of LISREL 8.5 (Jöreskog & Sörbom, 2006). The purpose was to obtain an estimate of the parameters of the model, i.e., the factor loading, the variance and covariance of the factor and the

residual error variances of the observed variables, and to assess the fit of the model to the data.

Several goodness of fit measures were applied to estimate how well the tested model fits the data. These were: 1) the Chi-square ( $\chi^2$ ) fit index (Bollen, 1989), which tests the hypothesis that an unconstrained model fits the covariance/correlation matrix as well as the given model - the Chi-square value should not be significant if the data fit the model well; 2) the Goodness of Fit Index (GFI), which provides values from 0 to 1 (but theoretically can yield meaningless negative values) - the GFI should be equal to or greater than .90 to establish an acceptable fit between the data and the model; 3) an Adjusted Goodness of Fit Index (AGFI), calculated based on the degrees of freedom in a specified model - values can vary from 0-1, and values of .90 or greater were considered to indicate acceptable fit (Tanaka & Huba, 1985); 4) a Comparative Fit Index (CFI), which yields values ranging from 0 to 1 - values above .90 typically are considered an acceptable fit (Bentler, 1990); 5) the Normed Fit Index (NFI) and; 6) the Non-Normed Fit Index (NNFI), both of which yield values ranging from 0 to 1 - by convention, NFI and NNFI values equal to or greater than .90 indicate acceptable fit; 7) the Root Mean Square Error of Approximation (RMSEA), which is an absolute-fit measure introduced by Steiger and Lind (1980) - Browne and Cudeck (1993) suggested that RMSEA values larger than 0.1 are indicative of poor-fitting models, values between 0.05 to 0.08 are indicative of fair fit, and values less than 0.05 are indicative of close fit.

## Results

Table 1 presents the mean and standard deviation of the SWLS score in each item. On a standard Likert-type scale, a score of 3 indicates a middle or neutral position. Participants' mean responses indicate little spread from the mean and only a slight skew toward the higher (more positive) values. Taking all items together, the mean SWLS score was 3.39 (SD = .661).

**Table1. Means and Standard Deviations of SWLS Items**

| <i>Item</i>                                                     | <i>Mean</i> | <i>SD.</i> |
|-----------------------------------------------------------------|-------------|------------|
| 1. In most ways my life is close to ideal.                      | 3.09        | .775       |
| 2. The conditions of my life are excellent.                     | 3.24        | .791       |
| 3. I am satisfied with my life.                                 | 3.74        | .892       |
| 4. So far I have gotten the important things I want in my life. | 3.74        | .865       |
| 5. If I could live my life over, I would change almost nothing. | 3.16        | 1.108      |
| Overall                                                         | 3.39        | .661       |

Data analysis yielded a one-factor model. The inter-correlations of primary items ranged from 0.335 to 0.583 (see Table 2). Generally, the higher the factor loading the better, and by using the rules of thumb, loading above 0.71 are excellent, 0.63 very good, 0.55 good, 0.45 fair, and 0.32 poor (Tabachnick & Fidell, 2007). In this study, the factor loadings of 5 items had loading greater than 0.30 by ranging from 0.49 to 0.68, which were acceptable and significant.

**Table 2. SWLS Inter-item correlation matrix (Thai version)**

| <i>Item</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|-------------|----------|----------|----------|----------|----------|
| 1           | 1.000    |          |          |          |          |
| 2           | .569     | 1.000    |          |          |          |
| 3           | .434     | .522     | 1.000    |          |          |
| 4           | .335     | .408     | .583     | 1.000    |          |
| 5           | .371     | .403     | .413     | .433     | 1.000    |

The fit indices of the specified model are shown in Table 3. In testing the original one-factor model, the Chi-square ( $\chi^2$ ) fit index showed a significant difference between the observed and the estimated covariance matrix ( $\chi^2 = 216.60$ ,  $df = 5$ ,  $p < 0.01$ ). The GFI, CFI, and NFI were slightly greater than 0.90, the value typically considered to indicate acceptable model fit. The AGFI and NNFI values, however, were lower than conventional criteria. Further, the

RMSEA value (0.16) was greater than 0.08; thus this indicator fails to meet the acceptable criterion.

These findings indicate the results are mixed. By some measures the data suggest a fair fit; by other measures, no fit. The recommended by the LISREL output for the analysis suggested that allowing the error terms to be correlated for item 1 and item 2 would improve model fit. Therefore, we decided to modify this model by allowing a correlation between item 1 and item 2 to see if the model could be improved in a meaningful way.

Regarding the results of the modified model, the factor loadings ranged from 0.42 to 0.71, which were acceptable, and all factor loadings were significant (see Figure 1). As shown in table 3, the fit of the data to the modified factor model using the Chi-square ( $\chi^2$ ) fit index again emerged as significant ( $\chi^2 = 59.26$ ,  $df = 4$ ,  $p < 0.01$ ). Further, the additional goodness of fit indices (CFI, GFI, AGFI, NFI and NNFI) were greater than 0.90 indicating a good fit of the model to the data. Additionally, the RMSEA indicated the average of the standardized residuals derived from the fitting of the variance-covariance matrix for the hypothesized factor structure to the variance-covariance matrix of the sample data is acceptable (.08).

**Figure 1.** *Confirmatory factor analysis of modified one-factor model of the SWLS (Thai version).*

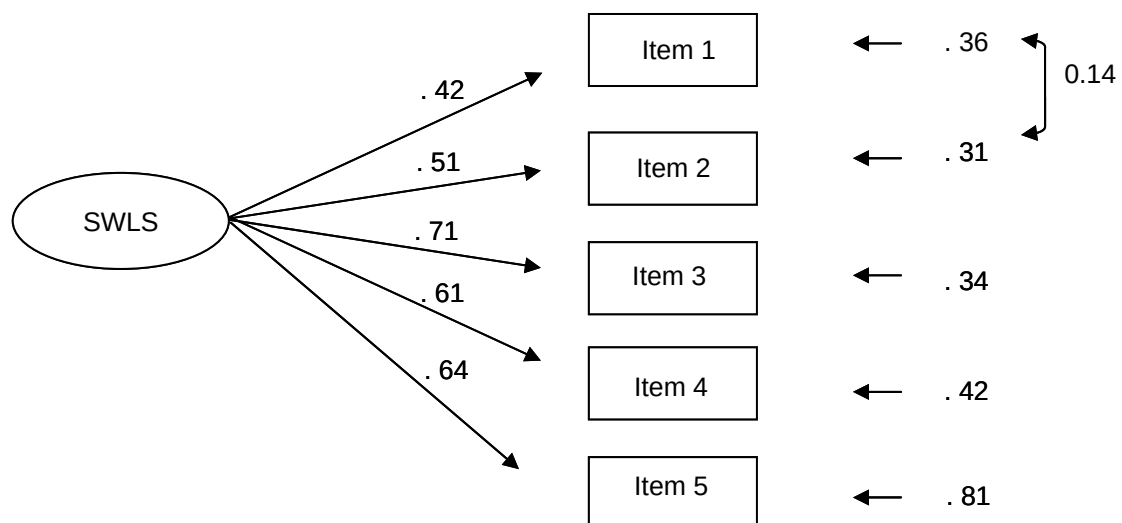


**Table 3.** *Comparison Fit Indices between the original one-factor model and the modified one-factor model of the SWLS (Thai version)*

|                       | <b>Chi-Square<br/>(<math>\chi^2</math>)</b> | <b>RMSEA</b> | <b>CFI</b> | <b>GFI</b> | <b>AGFI</b> | <b>NFI</b> | <b>NNFI</b> |
|-----------------------|---------------------------------------------|--------------|------------|------------|-------------|------------|-------------|
| <b>Original Model</b> | 216.60,<br>df = 5,<br>p<0.01)               | 0.16         | 0.92       | 0.95       | 0.85        | 0.92       | 0.85        |
| <b>Modified Model</b> | 59.26,<br>df = 4 ,<br>p<0.01)               | 0.08         | 0.98       | 0.99       | 0.95        | 0.98       | 0.95        |

To summarize the analysis, we performed the CFA to evaluate the construct validity of SWLS and found that the initial results showed that the Chi-square ( $\chi^2$ ) fit index values ( $\chi^2 = 216.60$ ,  $df = 5$ ,  $p < 0.01$ ) and the modified one-factor model ( $\chi^2 = 59.26$ ,  $df = 4$ ,  $p < 0.01$ ) were significant. These results might show that the model does not fit the data. This result may be because this index is influenced by the size of the sample. Hu and Bentler (1998) indicate that most goodness of fit indices are sensitive to sample size and distribution, but such sensitivity is much less than standard chi-square tests. The sensitivity of the chi-square statistic to sample size for model fit is related to its power, which varies with the sample size. With a very large sample, chi-square will almost certainly be significant.

Many studies support this. For instance, Hultell and Gustavasson (2008) tested psychometric properties of SWLS using CFA on a large sample ( $n=2900$ ) of Swedish student teachers, and found a significant  $\chi^2$  value, indicating that the observed data did not fit the latent structure of the SWLS. The researchers stated that this was not unexpected, considering the size of the sample and chi-square's sensitivity to sample size.

## Discussion

Interestingly, the results showed that the problem with the SWLS (Thai version) one-factor model was associated with the assessment of the degree of perceived similarity between the first two items. This finding is consistent with Sachs (2004), who found, with a one-factor model of SWLS (Hong-Kong version), that the five items were influenced by a single latent factor and the first two items were correlated. Sachs argued that this finding may result from the redundant content of the two items, and he proposed that the first item (*In most ways my life is close to ideal*) and the second item (*The conditions of my life are excellent*) may not have distinct meanings for Hong Kong students. We found a similar result for the SWLS (Thai version) - the first two items were correlated. Subjects from Western and Eastern countries may have different, culturally-influenced perceptions, may interpret words/phrases differently, may assess their lives according to different criteria, or may rank-order life-assessment criteria differently. For instance, one often finds different cultural values and, in particular, religious beliefs between Western and Asian countries. For example, Buddhism is the national and dominant religion in Thailand, and it has great influence on the attitudes and beliefs of Thai people. Buddhism is a tradition that focuses on personal spiritual development, and Buddhists strive for deep insights into the true nature of life. Buddhists believe that actions have consequences, and that their lives are conditioned by their past actions. Some unique aspects of Buddhist beliefs may cause Thai students to interpret and respond to both items in the same or a similar way.

Based on the CFA results, the modified one-factor model, allowing the error variances of item 1 and item 2 to correlate, fit this data relatively well and, as noted earlier, many SWLS studies support the modified unidimensional model and the effectiveness of the SWLS across countries (Lewis et al., 1995; Shevlin et al., 1998; Lewis et al., 1999; Pons et al., 2000; Wu & Yao, 2006; Sachs, 2004; Swami & Chamorro-Premuzic, 2009; Hultell & Gustavsson, 2008; Gouveia et al., 2008). Therefore, the modified one-factor model of the SWLS

(Thai version) was an acceptable description of the data for the Thai university students.

### **Summary and Recommendations**

The goal of this study was to test internal consistency and construct validity of the SWLS (Thai version). The good reliability coefficient obtained supports that of many other studies (e.g., Arrindell et al., 1991; Tuicomepee & Romano, 2005; Wu & Yao, 2006; Hultell & Gustavsson, 2008). The CFA results, testing the model fit with various fit indices, indicated that the modified one-factor model fits the data relatively well (with, as noted, the exception of the  $\chi^2$  fit test) ( $\chi^2 = 59.26$ ,  $df = 4$ ,  $p < 0.01$ ). The other indicators (CFI = .98, GFI = .99, AGFI = .95, NFI = .98, NNFI = .95, RMSEA = .08) fit the criteria for goodness of fit. In summary, the results empirically support the modified one-factor model of SWLS (Thai version) as a valid and reliable measure of life satisfaction among Thai university students. Hence, the Satisfaction With Life Scale (Thai version) can be used among Thai university students for the overall assessment of life satisfaction as the cognitive component of SWB.

We recommend that, when future researchers translate or adapt the SWLS instrument for use in different (particularly non-Western) countries, they should carefully consider the impact of culture on the meaning of each item. Researchers also should ensure that the translated instrument measures the same constructs as the original instrument. This will require empirical examination of such factors as equivalence of meanings between items, item bias, and the effects of language and culture on perception, meaning, and life satisfaction evaluation. For example, Yu, Lee, and Woo (2003), using an unrelated sample, described their translation of the Chronic Heart Failure Questionnaire (CHQ) from English to Chinese, and indicated that translation remains the most crucial step in adapting a well-developed instrument to another culture.

For future empirical work, we note that it may be useful to assess the construct validity of the SWLS (Thai version) across different Thai sub-

populations (e.g., children or elderly), and to examine measurement variance of the SWLS across such variables as sex and age in the Thai population. Finally, we suggest probability-based, representative samples from each study area so that more generalizable and comparable findings could be obtained from, say, rural and urban regions of Thailand.

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## **CHAPTER 4: SECOND RESEARCH PAPER**

**Title:** “Reliability and Construct Validity of Positive and Negative Affect Schedule Thai version (PANAS-T)”



## Abstract

This study tested the internal consistency reliability and construct validity of the Positive and Negative Affect Schedule –Thai version (PANAS-T). Confirmatory Factor Analysis (CFA) performed on the responses of 1788 Thai undergraduate students. The internal consistency reliability estimate were calculated separately showed good acceptable values, with the Cronbach's alpha of the 10-item positive subscale was 0.86, and the 10-item negative subscale was 0.84.

In summary, the results of the data analysis conclude that the CFA support the construct validity of the two factors originally measure. The construct validity of measure was good with all significant factors loading (ranging from 0.34 to 0.68). For testing model fit, the initial CFA, however, did not fit the Thai data well. After several modifications were conducted, including allowing for correlated errors for five pairs of items with similar content, then the ultimate model achieved adequate fit ( $\chi^2 = 1410.91$ ,  $df = 164$ ,  $p < 0.001$ ), GFI = 0.93, CFI = 0.90, AGFI = 0.91, RMSEA = 0.65). These and other findings and their implication are discussed.

**Keywords:** Positive and Negative Affect Scale, Reliability, Construct Validity,  
Thai Sample



## Introduction

The Subjective Well-Being (SWB) is an indicator which aims to measure what makes people feel well in relation to their own cultural values and standards. The SWB has both cognitive (i.e. judgmental) and affective (i.e. emotional) components that individual's evaluation of their life, such as life satisfaction, happiness and pleasant emotions as well as unpleasant moods and emotions (Diener, Oishi, & Lucas, 2003; Diener, Suh, Lucas, & Smith, 1999).

According to the affective dimensions that have been increasingly recognized as one component of SWB. It consists of how frequently an individual reports experiencing positive and negative affections, meaning that they report the pleasant and unpleasant experiences of their emotions or feelings (Diener, Suh, Lucas, & Smith, 1999). For measuring this trait in cross-cultural research, one must acknowledge the frequency of use of the instruments which is well-known, the Positive and Negative Affect Schedule (PANAS) that was developed by Watson, Clark, and Tellegen (1988). PANAS is a self-administered questionnaire that categorized into two subscales; Positive Affection (PA) and Negative Affection (NA). This instrument assesses a trait affect that most credibly as useful English in cross-cultural metric scales (Thomson, 2007).

The PANAS consists of 20 items of mood scales (10 items for PA and 10 items for NA) suggested by Watson, Clark, and Tellegen (1988). Individuals are asked to indicate to the level of intensity they generally feel on average with reference to a 5-point Likert scale ranging from 1 (very slightly or not at all) to 5 (very much). For the 10 items of the PA subscale, words or short phrases are used to describe a wide range of positive emotional states such as interested, excited, strong, and enthusiastic, etc. - higher scores of PA indicate higher levels of positive mood. For 10 items of NA (e.g. distressed, upset, guilty, scared, etc.) - higher scores of NA indicate higher levels of depression. The PANAS is increasingly being used for measuring affective dimension of SWB, and many of the prior studies approached PANAS as a two-factor construct

with a number of different facets ,and also has wide application in several countries including Australia (Melvin & Molloy, 2000), Turkey (Deniz, Kesici, & Sumer, 2008), Spain (Terracciano, McCrae, & Costa, 2003), United Kingdom (Crawford & Henry, 2004), Germany (Backenstrass & Pfeiffer, 2008), Japan (Yamasaki, Sakai, & Uchida, 2006), Hong-Kong (Moneta & Wong, 2001), and French-Canada (Gaudreau, Sanchez, & Blondin, 2006).

With regard to the quantitative cross-cultural research, a growing body of evidence supports the benefits of using self appraisal report to assess SWB; in point of fact these kinds of instruments can provide so convenient and cost-effective measure (Davern, Cummins, & Stokes, 2007). However, some concerns must be mentioned: for example, the construct of the instrument and the translation of the words must be accurate as the same as original one when applying the instruments to different countries or cultures (Warnecke et al., 1997). Like PANAS, before using this instrument across country or population, several studies still seek to address these concerns by examining the psychometric properties of PANAS ( see Roesch ,1998; Sandin, Chorot, Lostao, Joiner, Santed, & Valiente, 1999; Sato & Yasuda, 2001; Terracciano, McCrae, & Costa, 2003; Crawford & Henry, 2004; Robles & Pavez, 2003; Gaudreau, Sanchez, & Blondin, 2006; Thompson, 2007).

Yet, the finding of the research's quoted above, however, still have some questions (e.g. the questions of the correlation between two- factor and items, the redundancy and ambiguity of meanings of some items, and also the construct validity of the original PANAS) remain unresolved. For instance, the study of Crawford and Henry (2004) used Confirmatory Factor Analysis (CFA) to test models of the latent structure of the PANAS in a sample of 1003 English-Adults. Their study supported two-factor model of PANAS, but specified correlated NA and PA factors ( $r = .30$ ) and permitted correlated items error. The findings of Crawford and Henry (2004) also showed that 10 items of PA can be divided into four groups: three items for two groups (group 1 = interested, alert and attentive; group 2 = excited, enthusiastic and inspired), two items for two groups (group 1 = proud and determined, and group 2 = strong and active). 10

items of NA contained five item pairs: distressed and upset, guilty and ashamed, afraid and scared, jittery and nervous, and irritable and hostile.

Another study that raised up the question of PANAS was the study of Gaudreau, Sanchez and Blondin (2006). They examined the factorial structure of PANAS across two –group samples of French-Canadian athletes using CFA. The results revealed that a modified the new three-factor model with PA and former two factors model of NA(Upset Factor and Afraid Factor) presented a better fit than the modified two factor-model for this data. It is interesting that in this sample of athletes, the results found that the positive affective terms like “active” and “alert” cross-loaded on Afraid Factor of NA and negative affect term like “hostile” also cross-loaded on PA.

Concerning the qualitative research on PANAS, the study of Thompson (2007) used an in-depth focus group, which interviewed 9 male and 9 female university students who came from 12 countries. The results showed that the seven items (“excited”, “proud”, “strong”, “interested”, “guilty”, “scared”, and “jittery”) were identified as poorly performing items. For example, the item “excited” was considered to incorporate both positive and negative implication, the item “proud” can be connoted as a negative form between arrogance and disdain, the item “strong” tends to be related to physical rather than feelings or emotions. Thompson also pointed out that PANAS has two hindrances. One is relating to items analyzed, because this instrument was developed in USA that might use some colloquial words or not clearly understand by native English speakers and also nonnative speakers from other countries and some words can be understood in more than one way. Another obstacle is to the length of PANAS with numerous variables. It might be an inappropriate instrument for use on the time- constrained sample (Thompson, 2007).

Summing up, in order to address these unsolved issues from our discussion above, the study PANAS still needs more empirical research. Thus, in the present study, we focus on the assessment the affective appraisal of SWB. The overall purpose was to translate and validate the PANAS using Eastern sample like Thailand. This research was designed to employ CFA to assess the generalizability of the two- factor structure of PANAS Thai version

(PANAS-T). We questioned if PANAS with 20 - item that actually formed two separate factors (one that measured positive emotion, and another that measured negative emotion) still maintain similar factor structures and items as the original PANAS after its translation into Thai, and if it can be applied to use across diverse populations including the current study.

## **Method and Material**

### **Participants and Data Collection Procedure**

The process of data collection had begun after receiving the permission from the key personal of a large public university in Bangkok, Thailand, and the administrators of the thirteen faculties.

A non-probability sample of students participated in this study. The researchers explained to the participants, the nature, aims and importance of the study, the guaranteed protection of human rights, including advising the participants of the confidentiality of their responses. The participants completed and returned the questionnaire voluntarily including their informed written consent to participate. To ensure anonymity, codes were assigned to each questionnaire. No participants' names or identifiers were used, and results were reported in the total. The entire set of questionnaire took approximately 10-15 minutes to complete.

The participants consisted of 1802 Thai undergraduates - of whom 1064 (59%) were female and 738 (41%) male. The mean age for the group as a whole was 20.8 years ( $SD = 1.34$ , ranged from 17 to 25 years), the mean age for women was 20.36 ( $SD = 1.31$ ), and the mean age for men was 20.65 ( $SD = 1.37$ ). The majority were in their first (30.3%), second (22.6%), third (22.2%), and fourth (24.9%) years of university education. The respondents' religious affiliation was predominantly Buddhist (94.6%); there were also Christians (3.1%), Muslims (1.9%), and others (0.4%).

## **Instrument and Translation Method**

We used the PANAS scale that was developed by Watson and Tellegen (1988). The PANAS is a self-report questionnaire with the aim to assess an individual's affective state. The scale has 20 items and is composed of two subscales: Positive Affect (PA) and Negative Affect (NA). Half phrases in the questionnaire were positive (interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active), and half negative (distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid). Respondents were instructed to indicate the extent to which they experienced each particular mood at the present times as they completed the question. Responses on the PANAS were measured on a five-point Likert - type scale assessing the frequency of occurrence. The scales point were: 1 = very slightly or not at all, 2 = a little, 3 = moderately, 4 = quite a bit and 5 = very much.

The translation process of PANAS-T followed a guideline for the back - translation method by Brislin (1970), which most accepted as good practice for survey research (Hilton & Skrutkowski, 2002). The process began with translating the original English version into Thai by two bilingual people, and then PANAS-T was reviewed by a mono-lingual reviewer. The next step was backward translation into English by two a different bilingual people. The researchers then examined and compared the original English and the back-translated English versions. As this equivalence was assured, the final step of back-the translated version was to adjust the Thai version presented to two Thai individuals to elicit their comments regarding the wordings and clarity of directions.

## **Data analysis**

The data were analyzed for the internal consistency reliability using SPSS version 15 (SPSS Inc., 2006). In the current study, internal consistency reliability was evaluated at scale level and Cronbach's coefficient alpha ( $\alpha$ ) was taken into consideration. Burns and Grove (1993) suggested that Cronbach's alpha with reliability of .70 or greater would be considered acceptable.

The evaluation of construct validity of PANAS-T was done on the target sample. We began by testing the two factors of PANAS-T as defined by Watson, Clark, and Tellegen (1988). In these circumstances, CFA was used to examine the model fit of the PANAS-T by using LISREL 8.5 (Jöreskog & Sörbom, 2006). The purpose was to obtain an estimate of the parameters of the model, i.e., the factor loading, the variance and covariance of the factor and the residual error variances of the observed variables, and to assess the fit of the model to this data. The observed variables for the model were the 20 items that participants responded to, and the latent variables were the two factors (PA and NA). The factor loading values of each item were used for predicting the indicators from the latent factor, the higher the factor loading the better. Tabachnick and Fidell (2007) stated that factor loading above 0.71 were excellent, 0.63 very good, 0.55 good, 0.45 fair and 0.32 are poor.

For testing the model fit, there are several different goodness of fit indices, and each type of fit index provides different information about how well the tested model fits the data. In the current study we used: a) the Chi-square ( $\chi^2$ ) fit index (Bollen, 1989), which tests the hypothesis that an unconstrained model fits the covariance/correlation matrix as well as the given model - the Chi-square value should not be significant if the data fit the model well; b) the Goodness of Fit Index (GFI), which provides values from 0 to 1 (but theoretically can yield meaningless negative values) - the GFI should be equal to or greater than 0.90 to establish an acceptable fit between the data and the model; c) a Comparative Fit Index (CFI), which yields values ranging from 0 to 1 - values above .90 typically are considered an acceptable fit (Bentler, 1990); d) an Adjusted Goodness of Fit Index (AGFI), calculated based on the degrees of freedom in a specified model - values can vary from 0-1, and values of 0.90 or greater are considered to indicate acceptable fit (Tanaka & Huba, 1985); and e) the Root Mean Square Error of Approximation (RMSEA) was introduced by Steiger and Lind (1980). RMSEA tests the extent to which the model fits reasonably well in the sample. RMSEA values larger than 0.1 are indicative of poor-fitting models, values between 0.05 to 0.08 are indicative of reasonable fit, and values less than 0.05 are indicative of close fit (Browne & Cudeck, 1993).

## Results

Among 1802 university students, only those who did not skip items on the PANAS were included in CFA and the response rate for the survey was 98.67 %.

For reliability analysis of this multidimensional measure, we analyzed for internal consistency indices separately for each scale. The data analysis shows the Cronbach's alpha 0.79 for the 20- item full scale, 0.86 for the 10-item positive subscale, and 0.84 for the 10-item negative subscale. The results indicate that these are acceptable level of the internal consistency reliability for the full, positive and negative scales (Burns & Grove, 1993)

The initial two factor solution model of PANAS-T was tested and produced a good result for this sample. From the Table 1, it can be seen that all indicator variables significantly load on the expected latent variables. The results show the estimated negatively correlation between PA and NA latent variables that produced by LISREL was  $\phi = - 0.06$ . The correlation between PA and NA are very low, indicating the independent construct between PA and NA.

The means(M), standard deviation (SD), factor loading, standard errors(SE) and squared multiple correlation ( $R^2$ ) of the initial PANAS-T are presented in Table 1. The mean scores range 3.11-3.50 for PA subscale and 2.17-2.99 for NA subscale. The factor loadings for the 10 items of PA range from 0.34 to 0.63 and the loadings for the 10 items on NA range from 0.50 to 0.68. Only two items (interested and excited) have poor factor loadings of .42 and .34 respectively and one item (strong) has fair factor loading of .45. In summary, all loadings and association among latent variables are significant ( $p < .05$ ), with factor loadings 0.34 or greater consider poor to very good (Tabachnick & Fidell, 2007). With regard to the square multiple correlations illustrate the variance explained in the items by the factors are range from 0.16 – 0.52. As we can see from Table 1, 6 of 20 values are below 0.30, 3 values in PA and another 3 values in NA.

**Table 1.** Mean, SD, Factor Loading, Standard Errors and Squared Multiple Correlation for PANAS-T items (N = 1778)

| Variable     | (item) | M    | SD    | Factor Loading |          | SE   | R <sup>2</sup> |
|--------------|--------|------|-------|----------------|----------|------|----------------|
|              |        |      |       | Positive       | Negative |      |                |
| Interested   | (1)    | 3.33 | 0.792 | 0.42           | 0.00     | 0.02 | 0.29           |
| Excited      | (3)    | 3.39 | 0.843 | 0.34           | 0.00     | 0.02 | 0.16           |
| Strong       | (5)    | 3.36 | 0.837 | 0.45           | 0.00     | 0.02 | 0.29           |
| Enthusiastic | (9)    | 3.20 | 0.861 | 0.62           | 0.00     | 0.02 | 0.51           |
| Proud        | (10)   | 3.50 | 0.886 | 0.60           | 0.00     | 0.02 | 0.46           |
| Alert        | (12)   | 3.11 | 0.826 | 0.53           | 0.00     | 0.02 | 0.42           |
| Inspired     | (14)   | 3.48 | 0.922 | 0.58           | 0.00     | 0.02 | 0.39           |
| Determined   | (16)   | 3.43 | 0.873 | 0.63           | 0.00     | 0.02 | 0.52           |
| Attentive    | (17)   | 3.16 | 0.866 | 0.54           | 0.00     | 0.02 | 0.39           |
| Active       | (19)   | 3.20 | 0.849 | 0.50           | 0.00     | 0.02 | 0.35           |
| Distressed   | (2)    | 2.63 | 0.933 | 0.00           | 0.50     | 0.02 | 0.28           |
| Upset        | (4)    | 2.58 | 0.919 | 0.00           | 0.55     | 0.02 | 0.35           |
| Guilty       | (6)    | 2.99 | 1.046 | 0.00           | 0.54     | 0.03 | 0.26           |
| Scared       | (7)    | 2.40 | 0.965 | 0.00           | 0.68     | 0.02 | 0.49           |
| Hostile      | (8)    | 2.17 | 0.994 | 0.00           | 0.55     | 0.02 | 0.31           |
| Irritable    | (11)   | 2.56 | 1.084 | 0.00           | 0.65     | 0.03 | 0.36           |
| Ashamed      | (13)   | 2.95 | 1.094 | 0.00           | 0.53     | 0.03 | 0.24           |
| Nervous      | (15)   | 2.41 | 1.040 | 0.00           | 0.59     | 0.02 | 0.32           |
| Jittery      | (18)   | 2.53 | 0.953 | 0.00           | 0.59     | 0.02 | 0.39           |
| Afraid       | (20)   | 2.33 | 0.965 | 0.00           | 0.64     | 0.02 | 0.45           |

Even though, the data analysis revealed that all the observed variables are loaded significantly related to the latent variables, the initial CFA indicated the original two - factor model did not fit well to this data. The Chi-square ( $\chi^2$ ) fit index was significant ( $\chi^2=2748.14$ , df = 169,  $p < 0.001$ ). This absolute index of fit was interpreted as a model did not fit the observed data well. At this point, it should be noted that a known limitation the chi-square value is quite sensitive to sample size and assumes perfect model fit, with a very large sample, chi-square will almost certainly be significant or frequently resulting in rejected models (Hu & Bentler, 1998; Byrne, 2001). Yet, further fit indices, the GFI

(0.87), CFI (0.81), and AGFI (0.83) were lower than conventional criteria. The values were typically considered to indicate a poor fit or unacceptable model fit. Also, the RMSEA value (0.093) was greater than 0.06; thus this indicator fails to meet the acceptable criteria (See original model in Table 2.). Thus, the results of CFA suggested that the model needs to be modified.

Examining the Modification Indices (MI), the largest MI suggested adding a covariance between errors for item 11 (irritable) and item 2 (distressed) should be an improved model fit. Then, we started modifying the model to create a better fitting one. We permitted the error of item 11 and item 12 to be correlated. The results reported the first modified model with the Chi-square ( $\chi^2$ ) = 2235.10,  $df = 168$ ,  $p < .001$ . This fit index still showed a significant difference between the observed and the estimated covariance matrix. Other fit indices can be seen with a small improvement in the model fit (GFI = 0.89, CFI = 0.84, AGFI = 0.86, and RMSEA = 0.83 (see model 1 in Table 2.); however, the overall test of the model fit indicated that this was not a plausible base on the observed data.

Next, examining the MI for the second modified model, the MI suggested that additional error covariance between item 13 (ashamed) and item 6 (guilty) to be correlated. The second modification results provided the following fit indices:  $\chi^2 = 1900.20$ ,  $df = 167$ ,  $p < 0.001$ , GFI = 0.90, CFI = 0.86, AGFI = 0.88, and RMSEA = 0.76 (see model 2 in Table 2.). As the results show and based on the requirements of fit indices, this model still did not reach the guidelines for model fit at all.

Though CFA provides MI as a source of information to make decisions regarding the specification of the model, for improving model fit (as could be seen in the model 3- 4 from Table 2.). The results of analysis suggested to adjust accordingly of modified model 3 by adding error covariance between item 11 and item 8 (see model 3 in Table 2), and adding error covariance between item 8 and item 2 for modified model 4 (see model 4 in Table 2). It appeared that the items irritable, hostile, and distressed were involved and all of these items are from the NA scale. As the fourth modification model of PANAS-T that still retained a two-dimensional construct but have added four pairs of error

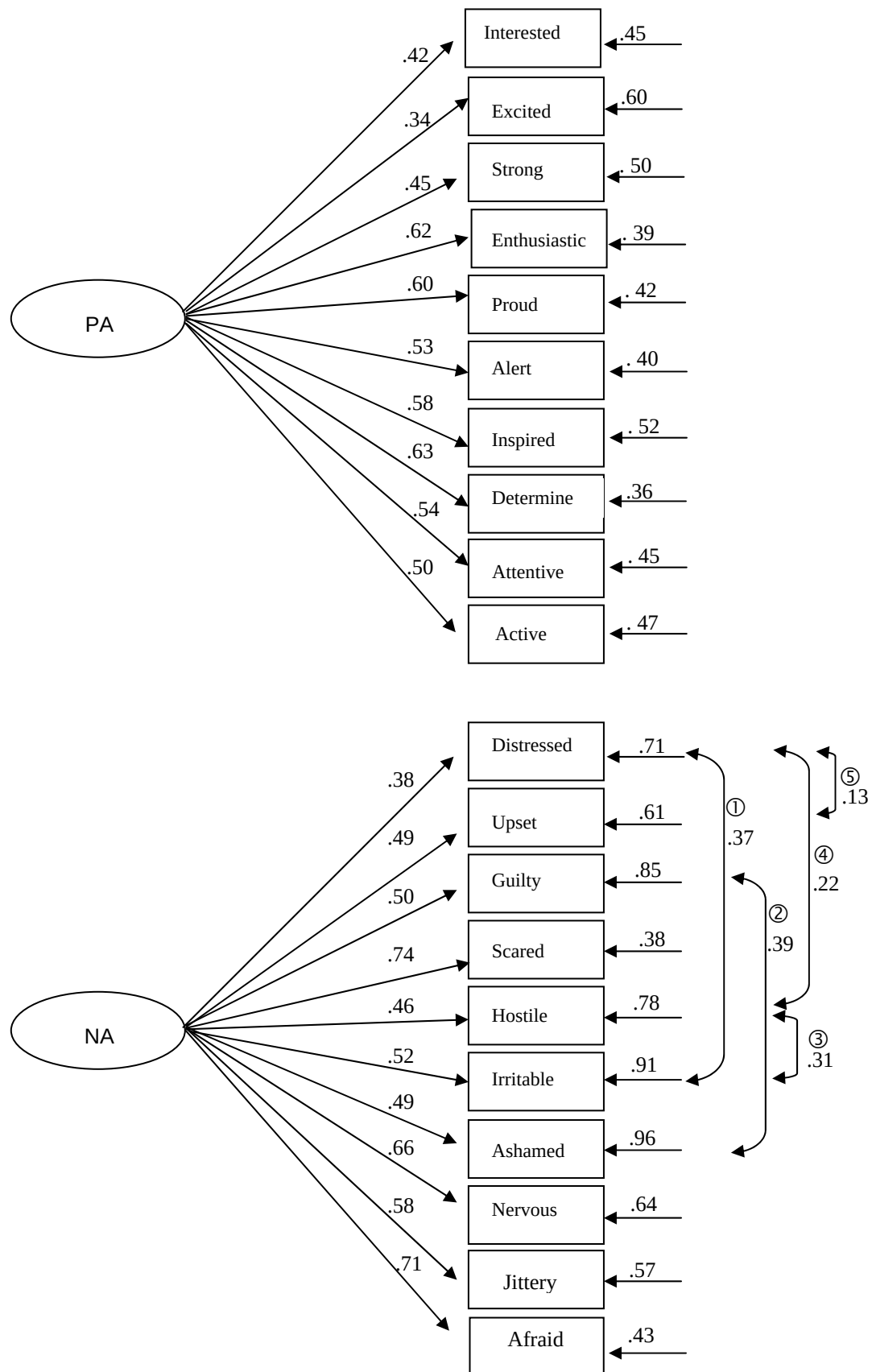
covariance, the CFA reported the results in a well fitting model or acceptable model fit in the following fit indices: GFI = 0.92, AGFI = 0.90 and RMSEA = 0.65. Nevertheless CFI = 0.89 fails to meet the acceptable criterion and there was still the possibility for improvement.

Following the suggestion of MI for clues to further model improvement demonstrated the error correlation between item 4 (upset) and item 2 (distressed). Finally, the ultimate or last model (see model 5 in Table 2.) achieved acceptable fit indices. As summarized in Figure 1, the results of CFA analysis revealed a 20-item with two - factor Thai version of PANAS but including five pairs of items to be correlated fit well with the present data. The significant difference in chi-square index was still visible in this sample ( $\chi^2 = 1410.91$ ,  $df = 164$ ,  $p < 0.001$ ) but other fit indices indicated that this model approached an acceptable level (GFI = 0.93, CFI = 0.90, AGFI = 0.91, RMSEA = 0.65).

**Table 2.** *Summary the results of testing fit statistics for differences between original and modified CFA models of the PANAS-T*

| MODELS                                                                | $\chi^2$                                  | GFI  | CFI  | AGFI | RMSEA |
|-----------------------------------------------------------------------|-------------------------------------------|------|------|------|-------|
| <b>Original</b>                                                       | $\chi^2_{=2748.14, df = 169, p < 0.001}$  | 0.87 | 0.81 | 0.83 | 0.093 |
| <b>Model 1</b> : with TD(11- 2)                                       | $\chi^2_{=2235.10, df = 168, p < 0.001}$  | 0.89 | 0.84 | 0.86 | 0.083 |
| <b>Model 2</b> : with TD(11- 2); TD(13,6)                             | $\chi^2_{=1900.20, df = 167, p < 0.001}$  | 0.90 | 0.86 | 0.88 | 0.076 |
| <b>Model3</b> :with TD(11- 2); TD(13,6); TD(11,8)                     | $\chi^2_{= 1764.48, df = 166, p < 0.001}$ | 0.91 | 0.87 | 0.89 | 0.074 |
| <b>Model 4</b> : with TD(11- 2); TD(13,6); TD(11,8); TD(8,2)          | $\chi^2_{=1539.00, df = 165, p < 0.001}$  | 0.92 | 0.89 | 0.90 | 0.068 |
| <b>Model 5</b> : with TD(11- 2); TD(13,6); TD(11,8); TD(8,2); TD(4,2) | $\chi^2_{=1410.91, df = 164, p < 0.001}$  | 0.93 | 0.90 | 0.91 | 0.065 |

**Figure 1.** *Confirmatory Factor Analysis for the Final Modified Model of PANAS-T*



## Discussion and Conclusion

The current study aimed to test the internal consistency reliability and construct validity of PANAS-T in a large sample of Thai university students. Of the 1802 participants who returned the survey, 98.67% provided complete data.

The results showed that the PANAS-T measure demonstrated a good internal consistency estimation of reliability. Cronbach's alpha = 0.86 for PA subscale, 0.84 for NA subscale. This result compares favorably with Watson, Clark and Tellegen (1988) that have reported the internal consistency reliability for the PANAS scales ranges from .86 to .90 for PA and .84 to .87 for NA. These reliability estimates in the present study are also consistent with those reported by Crocker, (1997), DePaoli & Sweeney, (2000), Huebner & Dew (1995), Melvin & Molloy, (2000), Munz & Munz, (1997), and Terracciano & McCrae & Costa, (2003).

The CFA analysis for the construct-related validity illustrated that the correlations between the two subscales was = - 0.06 which supporting the independence of PA and NA construct. Additionally, factor analysis yielded the same two-factor with providing more support that all observe variables significantly load on the expected latent variables. These confirmed the constructs of PANAS-T were consistency with the same as the two factors as the original English version by Watson, Clark, & Tellegen (1988), and was similar to those found in many empirical studies (see Huebner & Dew, 1995; Kercher, 1992; Munz & Munz, 1997; Terracciano, McCrae, & Costa, 2003).

Conversely, for testing model fit to the data, the results revealed that the original two-factor of PANAS-T scale failed confirmatory analysis (RMSEA = 0.93, CFI = 0.81, AGFI = 0.83, GFI = 0.87). Followed by MI's suggestions, the models were adjusted accordingly, and after several modifications including allowing the errors for five pairs of items with similar content to be correlated or adding five error covariance between the error terms such as items 11 and 2 (MI = 321.67), 13 and 6 (MI = 312.57), 11 and 8 (MI = 115.07), 8 and 2 (MI = 153.89), and 4 and 2 (MI = 103.78), then adequately fitting model was

acceptable in the following fit indices:  $\chi^2=1410.91$ ,  $df = 164$ ,  $RMSEA = 0.65$ ,  $CFI = 0.90$ ,  $AGFI = 0.93$ , and  $GFI = 0.91$ .

Although, as the results, it could be seen that this current validation demonstrates support for the internal consistency reliability and the construct validity of two original constructs of PANAS in a Thai sample, however, there were three findings concerning the items of PANAS-T should be notable.

First, considering the five-pair error terms, there have six items were involved (distressed, irritable, guilty, ashamed, hostile, and upset), and it is visibly apparent that all of those were represented relative to negative emotions. Possible explanation may relevant to the cultural differences that have responded differently to identical words. Hall (1976) also identified the communicative culture context that can divide into two forms. One is the high-context culture like collectivism. For example, Thailand as considered a collectivistic society which interpretation of messages requires dose attention to the physical, social relationship, perceptual environment but have little information contained in the explicit message. On the contrary, low-context cultures like individualism; most of the information is contained in the explicit message. From the collectivist's perspective, an individual may involve their cautious attitude toward words, moderates expression and an avoidance of confrontational or negative messages (Knutson, n.d.). Thus, to assess the inner psychological states, Thais might attempt to prevent themselves from expressing a real feeling particularly the negative emotions.

Second, it can be seen in Table 1, the interesting item is the item 3 (exited). This item is not only have the lowest factor loadings (0.34) but lowest in squared multiple correlations ( $R^2 = 0.16$ ) also. Although the factor loading of this item did not fall, but it was considered important that the value of squared multiple correlations of this item which indicates only 16% of the variance in this item is accounted for by PA. It is estimate of the lower bound on the reliability (Arbuckle, 2006). The preliminary problematic of this item can be found in the quantitative study by Mackinnon et al. (1999) and the qualitative study by Thomson (2007) that found the item "exited" seems to have dual meaning and to incorporate for both PA and NA.

Third, based on the findings, the example of the interesting pair of similar error term is the pair of items “guilty” and “ashamed” that had the highest error covariance values (0.39) in the present analysis. One reason for this high value may be due to the translation inequivalencies different between English and Thai translation. The possible explanation might be the Thai-translation of these two negative words seems to be difficult since there have similar means, meaning that for Thai’s perspective, this pair comprised items measuring quite same feeling of mood trait. These findings were similar to the study of Crawford and Henry (2004) which revealed that “guilty” and “ashamed” is the one pair of five pairs composing of the NA subscale. Therefore, if PANAS-T, there have the correlation between items with similar statements to indicate, would expect it to influence to response may raise a question about the suitability for selecting items to indicate or developing the PANAS-T with a short-form version (Kercher, 1992).

### **Limitation and Recommendation**

The PANAS-T instrument reported good internal consistency reliability and confirmed the construct validity as the original one. Anyhow, it should be note that the generalizations of the present study may be limited. As this study was conducted on university students sample and would not be representative. So, the findings could not be generalized to all of the general population in Thailand.

Since the original PANAS was developed in USA. When applying this measure to Thai sample, for the culture differences in the survey research, the translation process is more importance. Even though, the method of the back-translation is the most accepted as good as for instrument design (Hilton & Skrutkowski, 2002). However, Behling & Law, (2000) pointed out that the back – translation’s procedure may closely match the original one, this does not guarantee that the questions or statements will be understandable to respondents. To address these concerns, translating PANAS into Thai

language, getting information from the population of interest and experts in research and clinical practice in Thailand are required. (Jacopson, 1997).

Furthermore, as the results of the current study made a number of modifications to this model. These findings should be considered preliminary with further work otherwise the resulting revised model needs to explore the similarity and difference between the sample of the present study and other Thai population (i.e., youth and elderly). Moreover, further research should build upon this work, developing the Thai version of PANAS structure stability and considering the appropriate words of the 20 - item that should retain or remove for using in the Thai measure.



## **CHAPTER 5: THIRD RESEARCH PAPER**

**Title:** "Sport Participation of Thai University  
Students: Do they get enough exercise?"



## Abstract

Although the health benefits of exercise have been clearly established by scientific evidence, in practice young people generally still do not meet minimum physical exercise recommendations. In particular, traditional-aged university students have shown a high prevalence of sedentary habits and a high rate of decline in exercise. To promote their healthier lifestyles, the patterns and level of exercise and the perceived barriers to exercise should be explored. The current study focused on sport participation (SP) that is common perception of physical exercise among students. Accordingly, this study investigated the determinants of SP and perceived barriers to SP among Thai university students. The Inventory Health-Related Behaviors (IHRB) was used to collect the data. The sample was comprised of 738 male and 1064 female students between the ages of 17 and 25 ( $\bar{x} = 20.8 \pm 1.34$ ). Data analysis focused on SP of Thai university students in relation to intrapersonal variables (e.g., sex, age, years of formal education, and perceived barriers).

Three major findings emerged from the data analysis: 1) younger students engaged in sport more than did older students. There are significant differences by age and years of formal education, and males were significantly more active than females, 2) the most preferred sports were badminton, running, and soccer, followed by swimming, basketball and table tennis; students - particularly older and male students - who practice sport regularly are more likely to do so within rather than outside the university, and 3) “lack of time” and “too much workload” were the most frequently reported barriers to SP.

Given the established health benefits of exercise and sport, the results suggest the need for interventions to promote SP for university students. It is also important to match the sports offered to the students' preferences in terms of both the sports themselves and locations where these sports are available.

**Keywords:** University Students, Sport Participation, Location,  
Perceived Barriers



## Introduction

Although the health benefits of physical exercise have been clearly established by scientific evidence, in practice people generally still do not meet the minimum requirements needed to promote, achieve and maintain good health. The World Health Organization (WHO) estimated that nearly two-thirds of children are insufficiently active, adding that young people are a high risk population regarding global trends in physical inactivity (WHO, 2003a; WHO, 2003b; WHO, 2007).

To promote exercise tends to be an important public health mission for all countries. In Thailand, for example, given the past report from the Human and Social Research Institute (1998) indicated that Thai young people spent their free time for exercise less than 15 %, and the particular concerned was that less than 5% of female tended to participate in exercise. So, for promoting Thai people to participate in exercise, the Thai government put on this important mission through the National Economic and Social Development Plan, Number 9, and the National Sport Development Master Plan, Number 3, B.E. 2445-2549 (2002-2006). In order to encourage people to take exercise and sport at all age, gender and special groups with target 60% of them to participate in exercise and sport regularly. Specially, 80% of children and youths have to do exercise at least 3 days/week and 30 minutes/day. They also mentioned that there have to be improvement and development on Physical Education ranging from primary to university education (Sport Authority of Thailand, 2001). In addition, there have the state agency in Thailand which outside the formal structure of government like Thai Health Promotion Foundation, (2009) funded by “sin taxes” collected from producers and importers of alcohol of Thailand. This agency has also recently made effort to promote physical exercise and sport though the numbers of innovative projects and activities such as; encourage provincial government and educational institutions to promote and conduct research on sports and exercise, funding sports events, organization, promote suitable sports and support community initiatives, and etc.

Nevertheless, there are still a large number of Thai young people who do not participate in regular exercise. The Thai national data sources have revealed that only 31% of Thai people (ages 15-24) exercise regularly, and this age group were the group that had the lowest rate engaged in physical exercise (The National Statistics Office (NSO), 2004).

Even now, the lack of exercise of young people continues to increase as a serious health problem. Many studies have also shown the period of most dramatic drop of exercise is from late adolescence to young adulthood, the highest rate of decline being found in the 18 - 24 year age group (Nigg, 1999; Caspersen, Pereira, & Curran, 2000; US Department of Health and Human Services, 2000; Grubbs & Carter, 2002).

In Thailand, assuming the 18-24 year old age group is the one most represented by university students, the evidence is that they do not get adequate exercise (Haberman & Lifefey, 1998; Suminski, Petosa, Utter, & Zhang, 2002; Irwin, 2004; Musharrafieh & et al, 2008). Regarding of young people's transition from adolescent to young adult or, as students, from high school to university, the study of Bray and Born (2004) showed a dramatic drop in exercise by young people during the transition from high school to the first year of university. Attending university can be a crucial, exciting, anxious time, involves a period of adjustment, and students are often prone to stress (because of workloads), financial pressures and the problem of time management (Misra, 2000). These adjustment challenges might be influenced by lifestyle and reflected in marked behavioral changes in students.

For participating in exercise, however, there have many barriers that influenced to participate on physical exercise regularly. Many studies (Grubbs & Carter, 2002; Gyurcsik, Bray & Brittain, 2004; Daskapan, Tuzun & Eker, 2006) were examined the perceived barriers that can be considered important for participating in physical exercise by university students. The results revealed that "lack of time" is the most important barrier to engaging in exercise. Therefore, the descriptive data of barriers for exercise should be investigated. We believe that it is important to find out which barriers are the influences for

participating in exercise and the results may be useful to design or improve health promotion program of university students population.

In summary, the present study was focused on sport participation (SP) of Thai university students. With the fact that, SP is common perception of physical exercise among students. In Thailand, since primary school to university level, physical education (PE) is compulsory study-course to all students in every level of education. PE is usually viewed as sport education because the courses of PE are based on practicing sport, for instance; soccer, basketball, volleyball, badminton, etc.

As discuss earlier, the purposes of the current study were to: 1) examine the relationships of age, gender and year of education to SP among Thai university students, 2) investigated the preferred sports and the preferred places to practice sport, and 3) analyze perceived barriers to SP. We hope that these results can help accurately identify and rank SP as a first step toward developing interventions to help Thai university students begin, increase and/or maintain regular exercise as one dimension of overall health promotion.

## **Method**

### **Sample**

Using a convenience sample yielded 1802 Thai undergraduate students from 13 faculties. There were 1064 female students and 738 male students who were on a full time program of study, ages ranged from 17 to 25 years (mean = 20.8 years, SD = 1.34). The sample included freshman students (30.3%), sophomore students (22.6%), junior students (22.2%), and senior students (24.9%).

### **Instrument**

This research is part of a larger study called “Cross-Cultural Comparison Study: Subjective Well-Being, Sport participation among Thai and Portuguese University Students”. “The Inventory Health-Related Behaviors” (IHRB) was developed by Corte-Real, Balaguer, and Fonseca (2004) was used to collect

the data for the current study and in both countries, the larger study. The Thai version of the instrument was created using Brislin's (1970) translation and back-translation method. Unclear, incorrect, or discrepant translations were discussed and amended as necessary by the researchers, then administered to five Thai university students to verify its cultural appropriateness and readability. Due to the purpose of this study, only the demographic data and data regarding SP and perceived barriers identified by the Thai sample are presented here. Below is brief operationalization for each.

*Measurement of Demographic:* students provide 5 descriptive information of their demographic data such as: age, gender, year of formal study, nationality and religion.

*Measurement of sport participation:* due to the construct of this questionnaire, we used the definition of "sport" the same as the original instrument which have defined "sport" is all forms of physical activity which, through casual or organized participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all (Council of Europe, 2001). The students were asked to indicate the frequency (1 - 3 times/month, 1 time/week, 2 - 3 times/week, 4 - 5 times/week, and 6 -7 times/week) and duration of each practice session (less than 20 minutes, between 20 - 45 minutes, and more than 45 minutes) of their participation in SP. Base on the basis of their answers have been constituted into three groups with distinct level of SP as follows;

*Group 1 = None participation*

*Group 2 = Sometimes* (respondents who do rate the frequency and duration of their SP in the maximum of 2-3 times/week, less than 20 minutes/session), and

*Group 3 = Regularly* (respondents who do rate the frequency and duration of their SP at least 2-3 times/week, more than 20 minutes/session).

Another questions, students were ask to indicate the favorite sports and place to practice sport that they often use (inside or outside university).

*Measurement of perceived barrier:* Students were asked to identify barriers that influenced them to participate in sport. The question was “If you don't participate in sport as much as you wish, what stops your participation more during the week?” The response were 1) “lack of time”, 2) “Nobody to go with”, 3) “Too tired”, 4) “Too much works”, 5) “Lack of motivation”, and 6) “I exercise as much as I wish”, and students can choose the responds more than one.

### **Data Collection**

The current study was conducted at a university in a major metropolitan area of Thailand. The instrument was submitted to and approved by university administrators. For collecting the data, the nature, aims and importance of the study were explained to the students, including voluntary participation and the anonymity of their responses. We used the survey methods to collect data. The questionnaire took approximately 10-15 minutes to complete. To ensure anonymity, codes were assigned for each questionnaire, and no students' names or identifiers were used. Students gave written informed consent to participate, then filled out and returned the questionnaire.

### **Statistical Analysis**

Data analysis was performed using SPSS version 15 statistical software (SPSS Inc., 2006). The data were first examined descriptively; using raw frequency and percentage distributions, and, means and standard deviations to describe the sample with regard to demographic variables, the levels and patterns of participation in SP and perceived barriers to SP. Chi-square test was carried out to explore the significant differences by gender, age-group, years of formal education.

## **Results**

Among the 1802 students, were divided into two groups: younger (17–20 years old) and older (21-25 years old), the total of 490 (27.2%) of the students

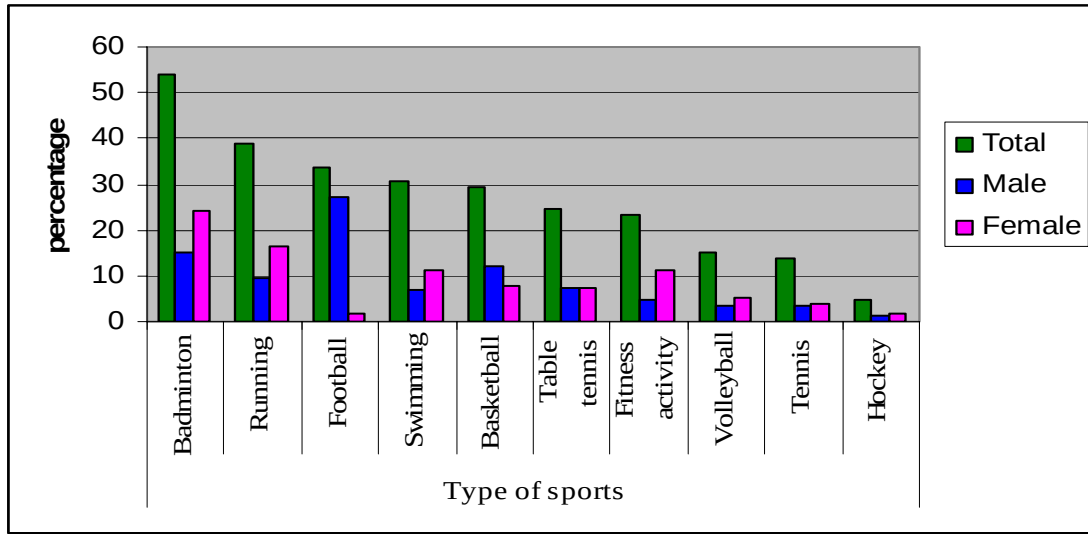
reported that they participated in sport regularly, and this finding is a lower percent than that Thai national data (NSO, 2004). Table 1, displays the percentage of students who reported the frequency of participating in sport by gender, age group and years of formal education separately. The chi-square test was conducted to investigate the significant differences between intrapersonal and SP. Findings reveal that SP decreases significantly with age and years of education ( $p < .001$ ), and males are significantly more active than females ( $p < .001$ ). Only 36.6% for male, 20.7% for female are regularly in SP. Inactivity increases with age and is more common among female than male.

**Table 1.** *The level of SP classified by gender, age-group and years of formal Education*

| The level of<br>SP                                                                                          | Gender        |               | Age-group     |               | Years of Formal Education |               |               |               |
|-------------------------------------------------------------------------------------------------------------|---------------|---------------|---------------|---------------|---------------------------|---------------|---------------|---------------|
|                                                                                                             | Male          | Female        | Younger       | Older         | Freshman                  | Sophomore     | Junior        | Senior        |
|                                                                                                             | % (n)         | % (n)         | % (n)         | % (n)         | % (n)                     | % (n)         | % (n)         | % (n)         |
| Never                                                                                                       | 20.6<br>(152) | 34.4<br>(366) | 24.8<br>(229) | 33.2<br>(274) | 21.1<br>(115)             | 29.7<br>(121) | 30.9<br>(124) | 35.3<br>(158) |
| Sometimes                                                                                                   | 42.8<br>(316) | 44.9<br>(478) | 45.9<br>(425) | 41.8<br>(345) | 47.4<br>(259)             | 43.2<br>(176) | 41.4<br>(166) | 43.1<br>(193) |
| Regularly                                                                                                   | 36.6<br>(270) | 20.7<br>(220) | 29.3<br>(271) | 25.1<br>(207) | 31.5<br>(172)             | 27.0<br>(110) | 27.7<br>(111) | 21.7<br>(97)  |
| Total                                                                                                       | 100<br>(728)  | 100<br>(1048) | 100<br>(925)  | 100<br>(826)  | 100<br>(546)              | 100<br>(407)  | 100<br>(401)  | 100<br>(448)  |
| $\chi^2 = 69.874, df = 2, p < .001$ $\chi^2 = 15.358, df = 2, p < .001$ $\chi^2 = 29.684, df = 6, p < .001$ |               |               |               |               |                           |               |               |               |

In over all, the most preference sports were verified that badminton (53.9%) is the most favorite sport, followed by running (39%), soccer (33.8%), swimming (30.7%), basketball (29.2%) and table -tennis (24.8%). Specifically, for males, the choicest sports were football (27.3%), badminton (15%) and basketball (11.9%), respectively. Females were more likely to practice badminton (24.3%), running (16.4%) and swimming (11.3%), respectively (see figure 1).

**Figure 1.** *Distribution of the most popular sports classified by gender*



We also analyzed the relationship between the places to practice sport with the level of SP. The results reveal that there are significant differences in response according to the students who practice sport regularly are more likely to practice sport inside university (see Table 2).

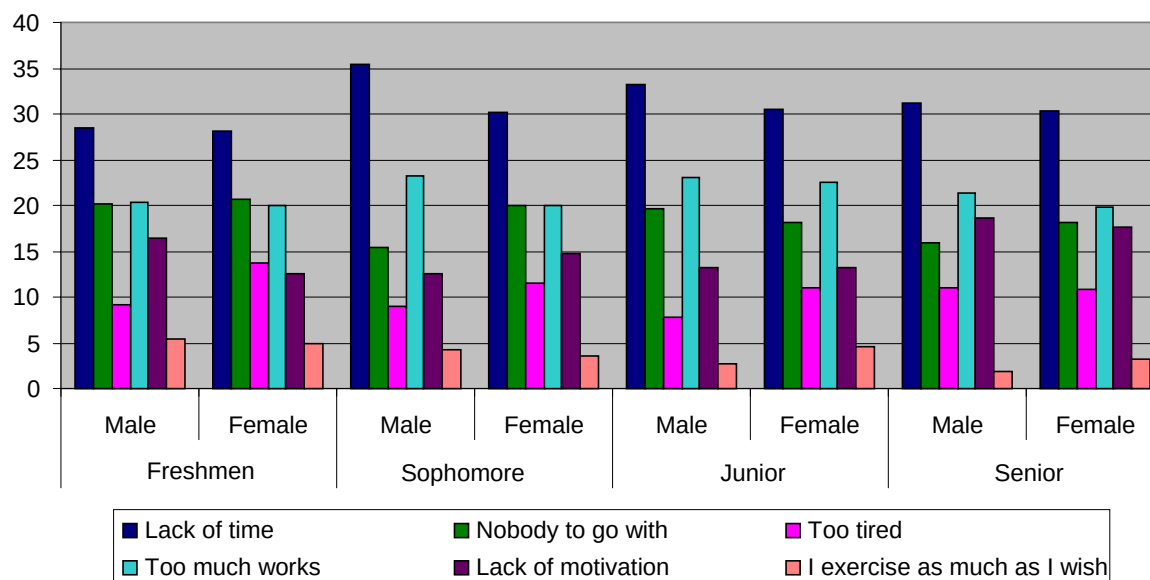
**Table 2.** *Association with the level of SP and place to practice*

| Place to practice sport          | The level of SP |                    |                    |
|----------------------------------|-----------------|--------------------|--------------------|
|                                  | Never<br>% (n)  | Sometimes<br>% (n) | Regularly<br>% (n) |
| Inside university                | 33.3 (2)        | 47.4 (361)         | 60.4 (282)         |
| Outside university               | 66.7 (4)        | 52.6 (400)         | 39.6 (185)         |
| $\chi^2=20.314, df =2, p < .001$ |                 |                    |                    |

Regarding to the barriers to SP, the results show that the leading cause of barrier to participate in sport among both male and female are “lack of time” (male = 53.4%, female = 56.6%), followed by “too much work” (male = 36.7%, female = 39.3%) and “nobody to go with” (male = 29.9%, female = 39.6%). In Figure 2 displays the percentage of perceived barriers divided by gender in

each of years of education. However, “lack of time” has still seen as the major barrier.

**Figure 2.** *Distribution of percentage of perceived barriers to participate in sport*



## Discussion and Conclusion

We surveyed regarding the Thai university students' participation in sport. The data analyzes indicated that SP decreases significantly with age and year of education, and males are significantly more participation in sport than females. Thus these data confirm what other researchers have already identified and showed a decline in SP (Telama & Yang, 2000; Sallis, 2000; Buckworth & Nigg, 2004; Haskell, et al., 2007).

Consequently, gender is associated with engagement in sport. The descriptive data show that females participated less frequency in sport compared with males. Similarly, the study of Jermsuravong, (2006), reported that the exercise behavior of Thai young people, aged between 18-22, males like to engage in sport 48.4% while female engaged in this activity only 17.8%. This may be due to the fact that such a sex difference may be grounded in social and culture norms, and male are closely associated to being physically

active than female. Furthermore, male are given more permission than female to seek their physical environment, which might explain greater amount of sport practice in males than females (Weinberg & Gould, 1995).

Moreover, as the result indicated that the level of SP associated with the location to practice sport, students who tend to perform exercise more often are the students who participating those activities inside university. Due to the students in this university, the number of undergraduate students enrolled for academic year 2007-2008 was 39,530 (Female = 56.80%) (The office of registrar, 2008). Base on the number of students, the sport equipments and facilities might be inadequate condition with overcrowded conditions. Besides, almost all equipments and facilities are shared between academic programs (i.e. physical education classes) and athletics practice. Thus, limiting access, lack of opportunity for students to access all of those equipments and facilities could perhaps be a reflection of several reasons that make the low percentage of university students who practicing sport regularly. Therefore, adequate sport facilities and equipments are necessary or need to be provided, and much more could be done on university to promote student engagement in exercise, and the importance of matching the sports offered to the students' preferences should be considered as well.

In addition, as the results show SP decreases significantly with age and years of education, meaning that the older or the higher level of years of education students who exercise infrequently should be one of the target groups since they had the lowest level of SP. Moreover, as the findings indicate that in this sample, in particular older or senior students (63.4%) they were significantly more likely to practice sports inside university. So, for helping them to maintain exercise regularly as well as to encourage them to continue their exercise regularly, this subgroup should have been paid more attention.

When viewed the sample's responds related to perceived barriers to participate in sport, the results indicate that "lack of time" is the major reason in perceived barriers for students who do not have regularly exercise. These still have the same result as the National statistic office (2004) have surveyed Thai people ranged 15 years and over for the reasons not exercising and found that

“do not have time” was the most important barrier (76.7%). This finding also was similar to many studies that have been existed “Lack of time” is the most cited by the college students about why they would not participate in physical exercise. (Grubbs & Carter, 2002; Gyurcsik, Bray, & Brittain, 2004; Daskapan, Tuzun, & Eker, 2006)

As lack of time is the most important barrier to SP. These may be students devoted much of their time to their responsibilities as students. Therefore, “time-skill management” may hinder university student from exercise. As the importance of perceive barriers has reported from the study of Diane, Ebeert, Ngamvitroj, Park, and Kang (2004) that in college students, perceived barriers had a significant and negative impact on the health behaviors and the higher the lever of perceive barriers, the more likely students were to participate in less exercise. Hence, the reduction perceived barrier to exercise was the most influential factor total exercise in university students (Grubbs & Carter, 2002).

### **Recommendations**

Based on our data and given the established health benefits of SP, the current findings suggest the need for strategies and interventions to promote SP for university students and the importance of matching the sports offered to the students’ preferences in terms of both activities and locations. A coordinated effort is need among related institutes, academic units and institutional factors that promote exercise activity and to eliminate barriers to participate to those activities. However, factor underlying the age and gender differences including the perceived barriers to SP in university students still need further study.

### **Acknowledgment**

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## **CHAPTER 6: FOURTH RESEARCH PAPER**

**Title:** "Happiness of Thai University Students:  
Is there a relationship with demographic variables,  
and sport participation?"



## **Abstract**

There is a strong relationship between Subjective Well-Being (SWB) and the lived experience of university students, important investigations in the past merit continued research on the factors related to young adults SWB. Extensive research links physical exercise involvement to better health, and better health to SWB. This study compares frequency of sport participation as well as the demographic variables to SWB in a self-administered survey of 1802 university students in Thailand. Data came from two questionnaires of SWB, which were the Satisfaction With Life Scale (SWLS), the Positive and Negative Affect Schedule (PANAS), including the Inventory Health-Related Behaviors (IHRB). Findings of the current study show that there are significant differences between SWB and the academic-year of study. The 2<sup>nd</sup> year and 3<sup>rd</sup> year students tend to have more negative feelings than those from 1<sup>st</sup> year and 4<sup>th</sup> year students. Our findings do not show any significant differences between age-group and any other dimension of SWB. However, Negative Affect (NA) is different among gender. Specifically, men have higher level of NA than women students. This study supports previous research because it demonstrated that increased sport participation, and a more active individual, will gain more happiness in their lives. Implications drawn from this study show the importance of the role of sport in overall health promotion for university students, provide recommendations for promoting sport participation, and demonstrate the potential effects of sport frequency on university students' SWB.

**Key words:** Subjective Well-Being, Life satisfaction, Positive and Negative Affect, University Student, Sport participation



## Introduction

The impact of the globalization process seems to be extremely influenced by individual life, and this influences the way of people live, which is different from the past. Technological advances make things easier, people have increased opportunities to achieve things, but at the same time, it can make people have increased competition and more stress. Like university students – who are in their education and career preparation, are forced to become more multifaceted and have many other pressures in the life of a student. Prior studies have revealed that 60% of university students rated the level of stress as high or very high, and 80% of them reported their feelings of stress as moderate level (Abousiere, 1994; Makrides, Veinot, Richard, McKee, & Gallivan, 1998).

For the university students, not only the problem of their stress management, but they also deal with cross-cultural issues, family dysfunction, low frustration tolerance, experimentation with drugs and alcohol, weak interpersonal attachment, depression, fear of violence (or sexual assaults), and thoughts of suicide (Benton & Newton, 2003; Young, 2004; Sidman, Abundo, & Hangeritz, 2009). Adjusting to the university life could be a crucial time for students. For example, university students are trying to draw on their attempt to balance academic and personal schedules, and those efforts may add tension and pressure to their daily life. Recently, these psychological-health problems of university students are still increasing and the prevalence of the problems listed above are a major concern. This increase becomes a more complex and serious public health issue, and is now a global challenge faced by nations in all regions of the world. A study of Steptoe, Tsuda, Tanaka, and Wardle (2007), measured the depression symptoms on 17348 university students from 23 high-, middle-, and low income countries from different parts of the world. The results of the data showed a prevalence of the depression symptoms in Pacific Asian countries (38% of the students from Japan, Korea, Taiwan and Thailand) at a higher level when compared with Western students (13.9% for men and 17.1% for women of the students from North Western Europe and USA). Additionally,

the results revealed that from 23 countries, the highest levels of depression symptoms were in Taiwan, Korea, Japan, South Africa, and Thailand respectively, while the lowest levels were in Belgium, the Netherlands, and Venezuela respectively. Also, Kay, Li, Xiao, Nokkaew, and Park (2009) conducted a cross-cultural comparison study - aimed to assess the depression and suicide ideation of 1400 university students in three collectivistic Asian countries (Thailand, Korea and China). The results revealed that 4-17% of students reported suicide ideation, and the students also have suicidal behavior in the past 12 months (3.7% in Thailand, 10% in China, and 13.32% in Korea). However, in individualistic countries such as U.S., in 2005, the results of data analysis also showed that suicide is become the second leading cause of death among American university students (Martindale, 2005; Suicide Organization US, 2005).

A very important question then becomes *“How do university students feel about their lives, and Are they happy as they would like?”* These questions have had great attention and many scholars have investigated the happiness or well-being of university students (see Abdel-Khalek, 2004; Ayyash-Abdo & Alamuddin, 2007; Cha, 2003; Selim, 2008). For example, a large scale study investigated the well-being of university students using a large sample of university students (N = 7167) from 41 countries (Diener, Napa-Scollon, Oishi, Dzokoto, & Suh, 2000). The data analysis revealed that the university students rated life satisfaction and happiness as extremely important in their lives. Life satisfaction and happiness continue to be an obstacle for today's young adults. Other studies have showed similar results; such as Khramtsova, Saario, Gordeeva, and William (2007) have also demonstrated that happiness and life satisfaction have an impact on students' behavior & attitude which related to student achievement in university.

Happiness has been shown to be very important, however, when referring to happiness that can mean several different things. It can refer to Subjective Well-Being (SWB), which is the study of how people evaluate their lives by using their own personal or culture criterion and standard (Diener, Oishi, & Lucas, 2003). The SWB typically assesses individual in terms of both

cognitive judgment of life satisfaction, as well as measurements of two affective states (both positive and negative) of the individual (Diener, Emmons, Larsen, & Griffin, 1985). The evidence from several reviews of well-being research indicates that SWB is associated with various variables that influence an individual's SWB, and seems likely to vary across cultures (Diener & Diener, 1995; Suh, Diener, Oishi, & Triandis, 1998). Various research has shown that there is a correlations between SWB and exercise self-efficacy, self-esteem, optimal and positive affect (Ayyash-Abdo & Alamuddin, 2007); social, economic and cultural characteristics (Diener, Diener, & Diener, 1995); personality, leisure involvement and leisure satisfaction (Lu & Hu, 2005). Trends in empirical research in this field are still being discussed, and there is still need for more empirical research to explore the various variables that might influence an individual's SWB, especially, on the university students' SWB. Not only is the SWB of students a major issued for mental health, but also it is important to develop time management skills for the maintenance of health.

In addition to the university students, they are not only constantly facing the psychological well-being problems, but also the problems of time management skills for maintaining their healthy lifestyle. Cause of life style changes resulting from the globalization, and the impact of technology-driven society distracts from physical exercise, and instead people spend more time on sedentary behaviors. These trends have influences on young people or university students as well. They are a demographic group studied since the World Health Organization(WHO) revealed that they are a high risk population regarding global trends in physical inactivity especially, the late adolescence and early adulthood in 18 – 24 years age group was the highest rate of decline in physical activity (WHO, 2003a; WHO, 2003b; WHO, 2007; Sumnisk, Petosa, Utter, & Zhang, 2002). Additionally, the meta-analysis conducted by Keating, Guan, Piñero, and Bridges (2005) explored the sedentary behaviors in university students, the results also showed that around 50% of university students are physically inactivity.

The links between physical exercise and psychological well-being are not innovative. These links have been discussed since 1987 by the US National

Institute of Mental Health (Fox, 1999). Since then, physical activity, exercise and sport have captured the interest of scientists (Biddle, Fox, & Boutcher, 2000). These interests give insight to the potential to contribute to gains in psychological well-being and prevention of the mental health problems such as anxiety, depression, stress, life dissatisfaction, improve mood, physical self-perception, including self-esteem (Fox, 1999; Penedo & Dahn, 2005; Schnohr, Kristensen, Prescott, & Scharling, 2005). Biddle, Fox, and Boutcher (2000), however, stated that the scientific research in field of psychological well-being study is still lacking consensus in the issues of measurement of psychological well-being with physical activity, exercise and sport context.

Since both of the physical inactivity and well-being problems have been reported, it is very important to increase the level of those aspects on university students. From the SWB research reviewed in this article, most of the researchers conducted their studies in the West (see Mcteer & Curtis, 1993; Edward, 2003). The significant relationship between involvement in physical exercise and the dimension of SWB have been extended in Eastern studies, particularly on Asian samples, to gain more of a global perspective, not only in the West. At this point, only a few studies have been conducted with an Asian sample, however, only with elderly participants. For instance, the study of Ku, McKenna and Fox (2007) that conducted the qualitative research on the 23 Taiwanese older adults sample, aimed to assess the effect of physical activity on the dimension of SWB. Another example is the study of Hengudomsub, Koedbangkham, and Kangchai (2007) that examined physical health, social and psychological well-being of 700 Thai elderly sample.

To sum it up, the current study focuses on the university student sample with the specific aim to examine the influences of sport participation to SWB among them. We expected that greater participation in sport would be related to a higher level of satisfaction with life, positive mood, and lower level of negative emotion. So, the objectives of this research were: 1) to assess the level of SWB of university students, 2) to investigate the relative factors such as demographic variables (i.e. age, gender, academic-year of study) that might influence the life satisfaction and positive/negative experiences, and 3) to focus on the particular

role of Sport participation (SP) influencing SWB by using Asian sample such as Thai university students.

## **Method**

### **Participants**

In order to obtain a representative of the Thai university students, the procedure began with the submitting the instruments to the Thai university administrators for approval. The survey method was used to collect the data, and 31-items were included. The questionnaire took approximately 20-25 minutes to complete, including voluntary participation and the anonymity of their responses. To ensure anonymity, codes were assigned for each questionnaire, and no students' names or identifiers were used. Students gave written informed consent to participate, then filled out and returned the questionnaire.

A convenience sample of 1802 students was used in this study (1064 were female and 738 male). The participants came from a large public university in Thailand. The mean age of the participant was 20.8 years ( $S.D. \pm 1.34$ ) and ranged of 17 to 25 years. To examine age effect, two age groupings were divided from the sample, and more than half of the females (55.6%) belonged to the younger age-group (17-20 years old) and more than half of males (51.3%) belong to the older age-group (more than 20 years old). They ranged in academic status from first –year student to fourth-year student, with 30.3% being first-year students, 22.6% second-year students, 22.2% third-year students, and 24.9% fourth-year students.

### **Instruments**

Data came from three questionnaires described as below:

#### **1. The Satisfaction With Life Scale (SWLS),**

The cognitive dimension of SWB was measure by the Satisfaction With Life Scale (SWLS) that developed by Diener, Emmons, Larsen and Griffin (1985). The SWLS has been extensively used and is applicable across cultures.

The SWLS is thought to have internal consistency, reliability, construct validity and has been used and translated to various languages (See Arrindell, Meeuwesen, & Huyse, 1991; Atienza, Balaguer, & García-Merita, 2003; Blais, Vallerand, Pelletier, & Briere, 1989; Gouveia, Milfont, Fonseca, & Coelho, 2008; Hultell & Gustavsson, 2008; Lewis, Shevlin, & Dorahy, 1999; Neto, 1993; Pons, Atienza, Balaguer, & Garcia-Merita, 2000; Simpson, Schumaker, Dorahy, & Shrestha, 1996; Tucker, Ozer, Lyubomirsky, & Boehm, 2006; Sachs, 2004).

A total of 5-items of the SWLS were used to assess the overall life satisfaction of the individual. For this study, the SWLS questionnaire was translated into Thai by following a guideline for the back - translation method by Brislin (1970). Each item was designed in a five-point Likert response format (1 = strongly disagree to 5 = strongly agree), yielding a possible total score range of from 1 to 5. The neutral point on the scale is a score of 3 which the respondent is about equally satisfied and unsatisfied. The unidimensional scale of the SWLS Thai version has a high level of internal consistency of .80. Using the Confirmatory Factor Analysis (CFA) to test the construct validity or model fit of SWLS Thai version with various fit indices. The results indicated that the modified one-factor model fits the data relatively well by achieving acceptable fit indices (CFI = .98, GFI = .99, AGFI = .95, NFI = .98, NNFI = .95, RMSEA = .08).

## **2. The Positive and Negative Schedule (PANAS)**

For measuring the affective dimension of SWB, the Positive and Negative Schedule (PANAS) full version 20 item scales was used. PANAS was developed by Watson, Clark and Tellegen (1988) which has a two - factor construct with a number of different facets. PANAS was used to assess the level of intensity the participants generally feel on average. This instrument has been used in several countries such as Australia (Melvin & Molloy, 2000), Turkey (Deniz, Kesici, & Sumer, 2008), Spain (Terracciano, McCrae, & Costa, 2003), United Kingdom (Crawford & Henry, 2004), Germany (Backenstrass, Pfeiffer, Schwarz, Catanzaro, & Mearns, 2008), Japan (Yamasaki, Sakai, & Uchida, 2006), and French-Canada (Gaudreau, Sanchez, & Blondin, 2006).

For measuring the affective dimension of SWB, the students were asked to indicate to the level of intensity they generally feel on average of particular mood in the present times. On two subscales of PANAS -10-item positive feelings (e.g. interested, excited, enthusiastic), and 10-item negative feeling (e.g. distressed, guilty, upset), with reference to a five-point Likert response format (1 = very slightly or not at all to 5 = very much). The 20-item mood scale was translated into Thai by using the back - translation method of Brislin (1970). The internal consistency reliability estimate were calculated separately, and showed acceptable values. The Cronbach's alpha of the 10-item positive subscale was 0.86, the 10-item negative subscale was 0.84, and the Cronbach's alpha of the 20- item full scale was 0.79. The results of the CFA have been reported as acceptable, and the construct validity of the two factors originally measure with the modified two- factors model (GFI = 0.93, CFI = 0.90, AGFI = 0.91, RMSEA = 0.65).

### **3. The Inventory Health-Related Behaviors (IHRB)**

The Inventory Health-Related Behaviors (IHRB) was developed by Corte-Real, Balaguer, and Fonseca (2004). Regarding to the construct of this questionnaire, the term of "sport" in this study refers to the same definition as the original instrument used - which has defined "sport" as... "*all forms of physical activity which, through casual or organized participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all* "... (Council of Europe, 2001).

The students completed a survey IHRB that included 5 demographics, such as data on age, gender, academic-year of study, nationality, and religion. For measuring the level of sport participation (SP) the students were asked to indicate the frequency and of their participation in SP, and that was divided into five groups (group 1 = none, group 2 = 1-3 times/month, group 3 = 1 time/week, group 4 = 2-3 times/week, and group 5 = more than 3 times/week).

## **Data Analysis**

The psychometric properties of the SWLS and PANAS Thai version – were analyzed through the CFA program of LISREL 8.5 (Jöreskog & Sörbom, 2006) to evaluate the construct validity and the internal consistency reliability of the SWLS and PANAS. As described in the instruments section, the measures that we used in this study demonstrated high levels of internal consistency reliability, construct validity, and stability in their factor structure.

The SPSS for MS Windows version 15 (SPSS Inc., 2006) was used to synthesize the descriptive data of sample. The simple bivariate relationships between all of research variables were detected by calculating correlation coefficients. Regarding age-group, the students were categorized into the younger and the older based on their age; a) younger students, who aged between 17 to 20 years; and older students, who aged over 20 years. To examine significant differences by demographic variables and SWB dimensions, the chi-square test was used. For the significant differences by academic-year, the frequency of sport practice variables and SWB dimension, Analysis of Variance (ANOVA) were used in examination.

## **Results**

The total sample was 1802 university students and the percent of respondents not completely answering the survey question was typically quite small, in the range of 25 students or 1.39%. The total sample used had slightly more females (58.92%) than males (41.08%).

The results of the Pearson correlation analysis among all research variables and subscales of SWB are conducted and summarized in Table 1. In terms of the dimensions of SWB, as we can see SWLS shows a moderate relation with the PA dimension ( $r = 0.413$ ) and a weak negative correlation with the NA scale ( $r = -0.239$ ). On the other hand, the results show no significant correlations between PA and NA ( $r = -.031$ ). When we examined the relationship of demographic variables on SWLS, PA and NA. The results demonstrated that gender is negatively related to NA ( $r = -0.109$ ) but no such

relationship for SWLS ( $r = 0.027$ ) and PA ( $r = -0.019$ ). Other variables, such as academic-year of study including age-group variables were not associated with all of components of SWB at all (see Table 1). With the SWB component, the frequency of SP shows the strongest relation ( $r = 0.213$ ) with PA and shows the weakest relation with NA ( $r = -0.075$ ), and both are significant differences. The frequency of SP, however, shows a weak negative correlation with gender ( $r = -0.197$ ), academic-year( $r = -0.131$ ) and age-group( $r = -0.099$ ) (see Table 1.).

**Table 1.** *Pearson correlation matrix of research variables*

| Scales                         | 1       | 2       | 3       | 4       | 5      | 6       | 7 | 8 |
|--------------------------------|---------|---------|---------|---------|--------|---------|---|---|
| 1. Gender                      | 1       |         |         |         |        |         |   |   |
| 2. Academic- year              | -.054*  | 1       |         |         |        |         |   |   |
| 3. Age-group                   | -.068** | .794**  | 1       |         |        |         |   |   |
| 4. SWLS                        | .027    | .031    | .004    | 1       |        |         |   |   |
| 5. Positive Affect             | -.019   | .009    | .021    | .413**  | 1      |         |   |   |
| 6. Negative Affect             | -.109** | .040    | .024    | -.239** | -.031  | 1       |   |   |
| 7. Frequency of Sport practice | -.197** | -.131** | -.099** | .120**  | .213** | -.075** | 1 |   |

\*  $p < 0.05$ , \*\*  $p < 0.01$

In order to determine the differences in the variables more closely, the SWB were used to examine in each dimensions of SWB measure (SWLS, PA and NA). The values within each component are summarized in Table 2.

To examine age effect, two age groupings were created from 17-20 to 21+ years. As the results, in Table 2 displays that no significant differences existed between age-group and SWLS, PA, and NA. There was, however, for gender variable, findings which revealed that gender was associated with NA, meaning that for Thai sample, NA differed significantly across gender, and male seems to have higher level of negative emotion than female.

Regarding the significant differences in each dimension of SWB across the academic- year of study, in Table 2 presents the means and standard deviations of SWLS, PA and NA in each group of academic-years. A one-way analysis of variance (one-way ANOVA) was conducted to investigate if the

dimensions of SWB were significant to a different degree across academic-year groups. Findings demonstrate that the 1<sup>st</sup> year and 4<sup>th</sup> year students have significantly higher levels in SWLS, PA, and lower levels of NA than the 2<sup>nd</sup> year and 3<sup>rd</sup> year students. It should be noted that in this study, the 2<sup>nd</sup> year and 3<sup>rd</sup> year students (in particular the 3<sup>rd</sup> year students) seemed to be less happy and also had higher levels of negative emotion than the 1<sup>st</sup> year and 4<sup>th</sup> year students.

In order to demonstrate the associations between SP and all the dimensions of SWB, Table 2 presents the means and standard deviations of SWLS, PA and NA in each group of SP. The ANOVA test results demonstrate that the mean of the SWLS, PA and NA were significantly different across the frequency of SP. In comparisons amongst the five groups of SP, the results imply that the more time participating in SP, had generally higher scores on SWLS and PA. It is interesting that even though, SWLS, PA and NA are significantly correlated across frequency of SP, it is not true for the NA dimension. The results indicate that the students who participate in moderate SP (2-3 times/week) have the lowest level in negative emotion.

**Table 2.** Means and standard deviations for SWLS, Positive and Negative Affect by age-group, gender, academic year of study, and frequency of sport participation

| Variables                          | SWLS                                  |      | Positive Affect                       |      | Negative Affect                       |      |
|------------------------------------|---------------------------------------|------|---------------------------------------|------|---------------------------------------|------|
|                                    | M                                     | SD   | M                                     | SD   | M                                     | SD   |
| <b>Gender</b>                      |                                       |      |                                       |      |                                       |      |
| -Male                              | 3.37                                  | 0.70 | 3.33                                  | 0.58 | 2.64                                  | 0.65 |
| - Female                           | 3.41                                  | 0.63 | 3.30                                  | 0.55 | 2.50                                  | 0.63 |
|                                    | <i>t</i> -value = -1.124, Sig. = .261 |      | <i>t</i> -value = .800, Sig.= .424    |      | <i>t</i> -value = 4.612**, Sig.=.000  |      |
| <b>Age-group</b>                   |                                       |      |                                       |      |                                       |      |
| - Younger                          | 3.39                                  | 0.66 | 3.31                                  | 0.53 | 2.54                                  | 0.66 |
| - Older                            | 3.40                                  | 0.66 | 3.34                                  | 0.59 | 2.57                                  | 0.61 |
|                                    | <i>t</i> -value= -0.163, Sig. = .870  |      | <i>t</i> -value = -0.881, Sig. = .379 |      | <i>t</i> -value = -0.993, Sig. = .321 |      |
| <b>Academic year of study</b>      |                                       |      |                                       |      |                                       |      |
| - 1 <sup>st</sup> students         | 3.40                                  | 0.69 | 3.35                                  | 0.53 | 2.49                                  | 0.67 |
| - 2 <sup>nd</sup> students         | 3.36                                  | 0.63 | 3.27                                  | 0.52 | 2.59                                  | 0.64 |
| - 3 <sup>rd</sup> students         | 3.31                                  | 0.62 | 3.27                                  | 0.52 | 2.62                                  | 0.59 |
| - 4 <sup>th</sup> students         | 3.48                                  | 0.69 | 3.37                                  | 0.66 | 2.55                                  | 0.64 |
|                                    | <i>F</i> = 5.124**, Sig. = .002       |      | <i>F</i> = 4.110**, Sig. = .006       |      | <i>F</i> = 3.351*, Sig. = .018        |      |
| <b>Frequency of Sport practice</b> |                                       |      |                                       |      |                                       |      |
| = None participation               | 3.30                                  | 0.63 | 3.16                                  | 0.57 | 2.59                                  | 0.65 |
| = 1-3times/month                   | 3.35                                  | 0.63 | 3.30                                  | 0.50 | 2.62                                  | 0.62 |
| = 1 time/week                      | 3.48                                  | 0.70 | 3.40                                  | 0.60 | 2.53                                  | 0.63 |
| = 2-3times/week                    | 3.50                                  | 0.66 | 3.48                                  | 0.57 | 2.39                                  | 0.65 |
| =more than 3times/week             | 3.49                                  | 0.77 | 3.48                                  | 0.52 | 2.57                                  | 0.62 |
|                                    | <i>F</i> = 7.469**, Sig.= .000        |      | <i>F</i> = 22.575** , Sig = .000      |      | <i>F</i> = 6.750**, Sig =.000         |      |

\*  $p < .05$ , \*\*  $p < .01$

In order to take a closer look of Thai university students' SWB, the SWB level of students were evaluated based on their scores on the SWLS, and the PA/NA. Following the prior research, the SWB index was generated by first standardizing the SWLS, PA and NA scores into the z-scores for each respondent. Then, the SWLS and PA z-scores were combined and subtracted by the NA z-score (Brunstein, 1993; Emmons & Colby, 1995). Table 3 demonstrates that the demographic variables such as gender, age group are not significant differences on SWB level. In contrast, the academic year of study variable still differs significantly on the SWB level, and the 3<sup>rd</sup> year students

reported the lowest SWB, which was a significant finding (see Figure 1). Additionally, in order to test whether or not the frequency of sport participation is related to a different level of SWB, a one-way analysis of variance (one-way ANOVA) was performed. Findings indicate that the more practice in sport the more higher scores on SWB, also a significant finding (see Table 3 and also figure 2).

**Table 3.** Means and standard deviations for SWB and summarize the ANOVA by gender, academic-year of study and frequency of sport participation

| Variables                              | Mean  | SD   | t-test          | Sig   | F-test          | Sig     |
|----------------------------------------|-------|------|-----------------|-------|-----------------|---------|
| <b>Gender</b>                          |       |      | t-value = -1.12 | 0.263 |                 |         |
| Male                                   | -0.02 | 1.03 |                 |       |                 |         |
| Female                                 | 0.02  | 0.98 |                 |       |                 |         |
| <b>Age-group</b>                       |       |      | t-value = -0.86 | 0.389 |                 |         |
| Younger                                | 0.03  | 1.01 |                 |       |                 |         |
| Older                                  | -0.01 | 1.00 |                 |       |                 |         |
| <b>Academic-year</b>                   |       |      |                 |       | F-value= 4.030  | 0.007*  |
| 1 <sup>st</sup> year                   | 0.08  | 1.06 |                 |       |                 |         |
| 2 <sup>nd</sup> year                   | -0.05 | 0.94 |                 |       |                 |         |
| 3 <sup>rd</sup> year                   | -0.13 | 0.92 |                 |       |                 |         |
| 4 <sup>th</sup> year                   | 0.06  | 1.03 |                 |       |                 |         |
| <b>The frequency of Sport Practice</b> |       |      |                 |       | F-value= 11.701 | 0.000** |
| =None                                  | -0.19 | 0.97 |                 |       |                 |         |
| =1-times/month                         | -0.06 | 0.97 |                 |       |                 |         |
| =1 time/week                           | 0.13  | 1.04 |                 |       |                 |         |
| =2-3 times/week                        | 0.21  | 0.98 |                 |       |                 |         |
| =More than 3 times/week                | 0.22  | 1.05 |                 |       |                 |         |

**Figure 1.** The z-scores of Subjective Well-Being by Academic-year of study

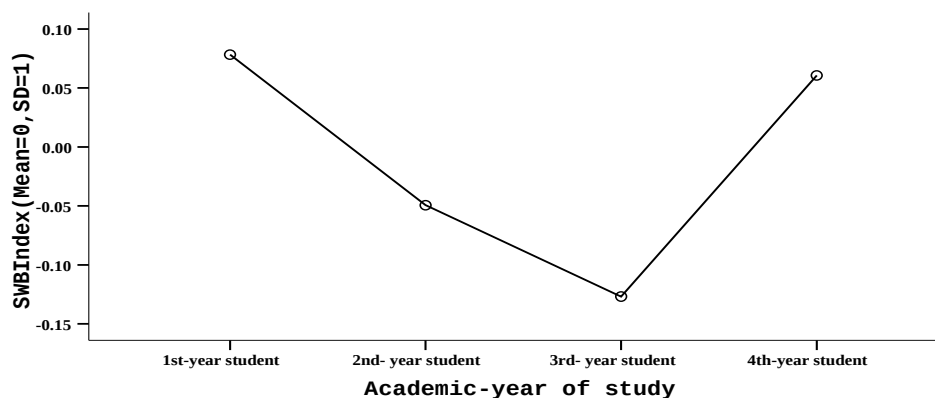
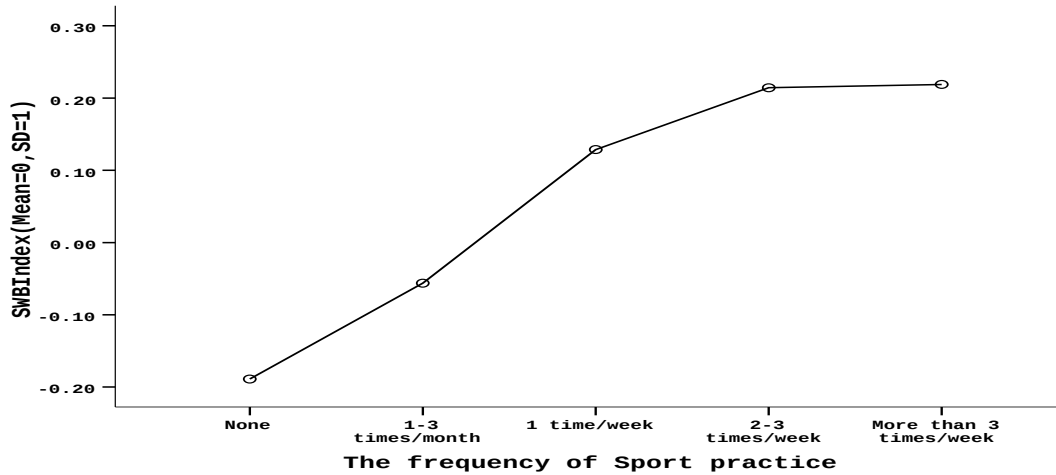


**Figure 2.** *The z-scores of Subjective Well-Being by the frequency of sport practice*



Data analyses substantiate the significant differences of academic year and the frequency of SP on SWB level, then the two-way analyses of variance (two-way ANOVA) were conducted. We wanted to test whether or not there is the interaction between SP and academic-year of study to the SWB level. As seen in Table 4, the two-way ANOVA indicated that there are main effect of SP ( $F = 11.486$ ,  $P = .000$ ) and academic-year of study ( $F = 5.030$ ,  $P = .002$ ). The interaction effects between these two factors are also significant ( $F = 3.930$ ,  $P = .000$ ).

**Table 4.** *Two-way ANOVA of Thai university students' SWB*

| Source                         | Type III       |    | Mean Square | F      | Sig.   |
|--------------------------------|----------------|----|-------------|--------|--------|
|                                | Sum of Squares | df |             |        |        |
| Corrected Model                | 99.913(a)      | 19 | 5.259       | 5.506  | .000** |
| Intercept                      | 4.508          | 1  | 4.508       | 4.720  | .030*  |
| Sport Practice                 | 43.877         | 4  | 10.969      | 11.486 | .000** |
| Academic-year                  | 14.412         | 3  | 4.804       | 5.030  | .002** |
| Sport Practice * Academic-year | 45.043         | 12 | 3.754       | 3.930  | .000** |

Note: \*  $p < .05$ , \*\*  $p < .01$

## Discussion & Conclusion

The current study was conducted with self-report questionnaire, with the purpose of inquiring about 1802 Thai university student's SWB, as well as examining how SP involvement, age, gender and academic-year of study related to SWB. Findings regarding the current study are discussed as below.

### The correlation of the components of SWB

Based on the three basic factors of SWB, using the Thai sample, the results show that SWLS is more directly related to PA ( $r = 0.431$ ), and significantly correlated with NA ( $r = -.239$ ). Yet, for this study, PA is not correlated with NA ( $r = -0.031$ ). This finding is the same result as the study of Libran (2006) that examined the association of SWLS/PA/NA (Spanish version) measures. The results showed that SWLS was correlated with PA ( $r = 0.42$ ), and NA ( $r = -.35$ ), but PA was not correlated with NA ( $r = -0.01$ ). These findings are a little bit different from the study of Cha (2003) that conducted the research on a representative sample of college students from an Asian country, the results reported that in the Korean sample, the three factors were related with one another - SWLS and PA ( $r = 0.40$ ), SWLS and NA ( $r = -0.23$ ), and PA and NA ( $r = -0.18$ ).

In addition, the study of Suh et al. (1998) examined the link between positive and negative moods and life satisfaction across 40 nations college students. They found that PA was more strongly associated with life satisfaction ( $r = 0.44$ ) when compared with negative emotion ( $r = -0.26$ ). However, the positive correlation between PA and SWLS in this study is still consistent with the study of Kappens, Realo, and Diener (2008), which examined the association of positive/negative moods to SWLS from 46 of Western and non-Western countries sample. They pointed out that for both types of countries; the experience of positive emotions is powerfully related to life satisfaction. From the various correlations between factors of SWB, Diener, Suh, Lucas, and Smith (1999) stated that the two basic components of SWB were: life satisfaction and affective experience, and each has its relative independence

from one another. Forms of high-level variables of SWB are composed of various concrete elements that are connected, integrated and interactions are happen in a different way (Dianzhi & Ronghua, 2006).

### **Gender difference on Negative Affect**

In order to assess the level of SWB of Thai university students, we examined each dimension of SWB measure. The research results demonstrate that the level of SWLS and PA of Thai university students are generally moderate and there are no differences in age-group (younger and older students) and gender. Male and female seems to experience equal amount life satisfaction and positive feelings. Unlike SWLS and PA measures, there are differences in gender for NA, and male students appeared to have more negative feelings than female. Male unhappiness tends to be higher than the past. These findings also correspond to the data of the Department of Mental Health (DMH), Ministry of Public Health, Thailand, which specifically were analyzed during the past three years (2007-2009), Thai people increasingly had to get counseling mental health problems (e.g. depression, distress, etc) through the Hotline service of DMH. The data collection also demonstrated that men have to use those services with a higher rate than women (DMH, 2009).

### **Academic year of study difference on SWB**

The results present the differences between academic-year of study and the dimensions of SWB. Findings revealed that the 1<sup>st</sup> year and 4<sup>th</sup> year students have higher pleasure of life and positive emotion than those from the 2<sup>nd</sup> year and 3<sup>rd</sup> year students. The 3<sup>rd</sup> year students tend to have the lowest scores of SWLS and PA; on the other hand they have the highest scores of NA. This result indicates that one of the major transition periods for gathering more negative of emotions is the period from the 2<sup>nd</sup> year to 3<sup>rd</sup> year of study. Thus, there are possible explanations for these results, and the 2<sup>nd</sup> year and 3<sup>rd</sup> year periods may be the actual years of importance years of academic year of study for Thai university students' lives. Along with these periods, students might have additional challenges to balance their academic and their personal lives. The

extra efforts may lead to students having more negative emotions and feelings, and that can add pressure and stress to their lives. The transition from 1<sup>st</sup> year to 2<sup>nd</sup> year, and also from the 2<sup>nd</sup> year to 3<sup>rd</sup> year might also be the important times to promote mental health and reduce their psychological problems. Because the efforts to promote mental health in universities must respond to the needs of its student population. Hence, in order to prevent the students from mental-health problems, somehow the health care systems within this university should be pay more attention on these transition periods.

### **The relationship between sport participation and SWB**

One of the specific findings of the current study is that students engaging in regular SP perceived themselves to be more satisfied with life, had more positive emotions and less negative emotions than non-participating students. In other words, participating in sport can increase the level of SWB. This findings support the previous studies, which have established the benefits of regularly participating in physical exercise on mental health and well-being (Fox, 1999; McTeer&Curtis, 1993, Edward, 2003). A commonly accepted benefit of SP is its potential to gain well-being of the individual, however, we should note that even happiness of individuals is affected by many factors; however, the results of this paper provide evidence that shows support for improving people's ability to participate in sport. To be able to maximize the usefulness of the sport participation will be very helpful in assisting university students to be more active individuals and gain more happiness of their lives.

### **Limitations and Further Research**

This research has both practical and research implications, but the limitations of the current study are noteworthy to be reported as well. First, as with most survey research, the study used the self-report questionnaire for investigating both trends of sport participation, and the level of SWB on Thai university's students sample. The data only came from the self-report measures. We have no additional data sources for using in order to corroborate

the results. Thus, some errors may have occurred in the present study. Second, another important issue refers to the lack of random sampling in university students. Even though the current study had a large sample size, the findings of this research stemmed from a convenient sample or volunteer-students which limit the generalizability of the results and findings to other university student populations.

In addition, the majority of this sample lived in urban areas not in the rural regions. Therefore, it should be noted that the findings of the future empirical works may be more generalizable and comparable findings if we can assess the effect of all those variables to SWB level across different areas of Thai universities (both rural and urban regions of Thailand) or sub-populations.

The result of this study shows that NA is relatively increasing among the 2<sup>nd</sup> year and 3<sup>rd</sup> year students. Therefore future research could be conducted through the qualitative research paradigm, in order to investigate whether there have any other factors influencing negative affect of the 2<sup>nd</sup> year and 3<sup>rd</sup> year students. Also, future longitudinal research should be undertaken in order to look at the university students relating to the SWB level changes in these perspectives over time and the other issues correlated with their SWB are recommended.



## **CHAPTER 7: GENERAL CONCLUSIONS**



Happiness or Subjective Well-Being (SWB) has been recognized as main goal of individual's life in all age groups, including young people. Understanding the implication of happiness or SWB is an important topic in psychology research. Concurrent with the increasing interest to define, investigate, promote and maintain individual's SWB can be seen in a number of scientific works in the realm of SWB in most countries. However, in Thailand, there is a lack of studies for exploring SWB of young people in general and university students in particular, also factors that have caused them to be unhappy, as well as factors that might influence and can lead them to becoming happier.

Needless to say, many research studies note that university students frequently have more complex problems today than their age peers did over a decade ago. The problems of university students' physical and mental health have been increasing and causing serious problems nowadays. The available data resources also indicate that at this age group, they are the highest risk population regarding inactivity and psychological problems (DMH, 2009; NSO, 2007). As they are the most fortunate generation and also the hope of our future, along with the extensive research links physical exercise participation to better health, and better health to SWB. In Thailand, not only there is a dearth of empirical literature examine Thai university students' SWB but there is a limited studies on the contents of measurement of SWB with physical activity, exercise and sport context also. Hence, the present study was undertaken in an effort to gain more knowledge related to all of these issues.

In order to address the issues raised above, in this dissertation, all of studies were conducted with the main purpose to investigate the relationships of sport participation (SP) as well as demographic variables to SWB. This dissertation was produced results which corroborate the findings of four research studies (see Chapter III-VI), and based on the research questions indicated in Chapter I.

## **The measurement of Subjective Well-Being in Thai university students**

In fact, over the last decade, Thailand have a variety of instruments for measuring Thais' happiness or SWB which have been developed and officially approved. However, in terms of both nationally and internationally SWB's assessment, Thailand still need for the instruments' practicality and effectiveness measures. Therefore, for assessing Thai university's students' SWB, the instruments include the Satisfaction With life Scale (SWLS) developed by Diener, Emmons, Larsen, and Griffin (1985) and the Positive and Negative Schedule (PANAS) developed by Watson, Clark, and Tellegen (1988) were chosen by this study. These both instruments are initially recognized and have been reported as being extensively used in worldwide, but only limited studies have applied and validated these instruments in Thailand.

Therefore, the first step, the first-two studies (see chapter III and IV) were conducted to adapt and validate the effectiveness instruments both SWLS and PANAS Thai versions. Based on the findings, it appears that the psychometric properties of the Thai versions of SWLS and PANAS are indeed successful in terms of having good reliability and construct validity among Thai university students sample. Results of studies provide strong support for a unidimensional factor for the Thai version of SWLS (SWLS-T). Also, acceptable psychometric properties were found for the two factors for the Thai version of PANAS (PANAS-T). The meaning of the findings is addressed that SWLS-T and PANAS-T are considered as a valid and reliable measures which are able to be used as outcome measures for evaluating SWB among Thai university students.

It is important to note that the results show some correlations with the error terms in PANAS-T, particularly in negative feelings terms. With the wording effect of emotions meanings in this study. These may be explained by the culture differences of languages between Western and Eastern countries since these instruments were originally developed in the West. Another perspective of culture, Thais may be unwilling to identified negative aspects of feelings in themselves. However, with the fact that PANAS has still been widely applied to assess the affective dimension of SWB across countries (see

Backenstrass & Pfeiffer, 2008; Crawford & Henry, 2004; Deniz, Kesici, & Sumer, 2008; Gaudreau, Sanchez, & Blondin, 2006; Melvin & Molloy, 2000; Moneta & Wong, 2001; Terracciano, McCrae & Costa, 2003; and Yamasaki, Sakai, & Uchida, 2006). Along with its successful in terms of its reliability and construct validity results from the present study, which are in line with previous research. Thus, the Thai version of PANAS can be useful for assessing a trait affect among Thai university students. Yet, the additional studies are still needed on the Thai version of PANAS. The further examining about the error covariances between the error terms is needed to be replicate.

### **Sport participation behaviors of Thai university students**

Next, before assessing the relationship between SWB and SP, gaining insight into university students' SP behaviors is needed to be considered. In the third study (see Chapter V) was to investigated the determinants of students' SP behaviors as well as the perceived barriers to SP among Thai university students. The results of the study show a high percent of students (72.8%) do not participate in sport regularly. In addition, sport participation is associated with age, sex, academic-year of education. Inactivity increases with age and level of academic-year of education. Males are more likely to be physically active than females. In term of the location to practice sport, students who practice sport regularly are more likely to do so within rather than outside university. Students report "lack of time" and "too much workload" as the main reasons for not exercising.

The findings of the study provide support for the need to promote sport practices to university students. Students should do sport practice more frequently in order to get its benefit. The programs of health promotion should be integrated those activities into students' daily life. As results, for encouraging student to do more sport practice, it is important to match the sport offered to the students preferences in regard to both the sports themselves and locations where those sports are available. Equal and opportunities to practice sport should be provided for both males and females. In addition, as they age, university students need to raise awareness of the perceived barriers to

participate in sport and the health-related challenges facing students as they work and toward their academic degrees and pursuit of happiness while at university as well.

### **The relationship of demographic and sport participation variables to Subjective Well-Being**

Finally, as the various studies have shown strong link of the role of SP for its effectiveness to individual's SWB still has had increased interest by many researchers (Fox, 1999). Thus, the fourth study (see Chapter VI) was conducted to examine the links of SP including demographic variables to SWB in Thai students. In summary, the results of the study show no such association for sex and age group to SWB in this sample. In contrast, there are differences in SWB to academic year of study, particularly the 3<sup>rd</sup> year and the 2<sup>nd</sup> year students tend to be the most unhappy subgroup of population respectively. Also, the frequency of sport participation is related to a different level of SWB. The evidence that students who have a high frequency of sport practice seem to have a high level of SWB, particularly increasing level of life satisfaction and positive feelings. Results of this study provide partial support for the previous research that has examined relationships between sport participation and SWB.

### **Summary**

Summing up, with the positive links of sport participation to SWB, increasing frequency to practice sport might be very helpful in assisting university students to be more active individuals and gain more happiness of their lives. With the results above, in order to help and make our future to be more happier and healthier, the health educationists and exercise professionals should put more effort through the development of health promotion strategies and practical implementations of healthy. The health promotion activities such as sport practice can enhance both of students' physical health and well-being. Furthermore, since the results showed the differences between academic year of study and the dimensions of SWB. Thus, this additional important issue is

needed to be considered in the factors that influence SWB's students. The important of the transition periods of study should be paid more attention by future studies. The present study has no additional data sources for using in order to corroborate the findings. To acquire a deep understand of how this factor influence SWB among Thai university students, future research should be conducted through the qualitative research paradigm, and examined whether this factor influencing SWB's students is consistent.

### **Recommendation and future research**

First, the current study used only university students sample in urban areas, the limits generalization of findings to other populations such as university students who live in rural areas. Further study should test psychometric properties of the SWLS and PANAS more diverse Thai samples. Because different group sample from different regions or areas may have different life experiences which might influence their evaluations of their SWB. It would be necessary to administer these measures to a large representative sample in order to interpret the findings and establish the reliability and validity of these instruments for a larger population.

Second, the data for the present study were collected at one point in time and based on the quantitative research method by using only questionnaires. All of studies in this dissertation are not able to detect change over time. Hence, future longitudinal research should be undertaken in order to look at the university students relating to the SWB level changes in these perspectives over time. Also, the other issues correlated with their SWB are recommended. In addition, for generating a rich understanding of the university students' SWB that may not be gained by using SWB's self-report. The future study may consider conducting the qualitative research or getting students' responses by other data collection methods such as focus group, interview, etc.



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