THE FRAMEWORK OF SUBJECTIVE WELL-BEING BASED ON

SUBJECTIVE EXPERIENCES AND OTHER FACTORS:

AN ANALYSIS OF STRUCTURAL EQUATION MODEL

A Thesis

by

WENG TONG CHIN

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Chair of Committee,   Oi-Man Kwok
Co-Chair of Committee,   Wen Luo
CommitteeMember,   Lei-Shih Chen
Head of Department,   Shanna Hagan-Burke

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ABSTRACT

The present paper discussed the importance of various types of subjective experiences, especially under the educational setting. The concept of subjective well-being (SWB) and related fields have been studied for decades. Despite the emergence of various definitions of SWB, a universal and concrete framework of the SWB has not yet been developed. The purpose of this study is to develop an operational framework of SWB with the use of a dataset collected from Macau containing 2,327 high school students. The students filled out a questionnaire with SWB related items and other variables. An 8-factor SWB model was proposed and the eight factors included pleasant and unpleasant affect, and general life satisfaction with 4 particular domains of satisfaction relating to the educational setting. These 4 domains of satisfaction were self, health, family, and school.

The result in general supported the proposed SWB framework. The comparisons of the SWB factor models were made between different demographic groups to examine the potential group differences. There were non-significant correlation estimations between pleasant and unpleasant affect in the groups of male and senior students. This finding contradicted to previous studies and suggested that the cultural values might take place in the effects of gender and other relevant demographic variables on SWB. The implications of the findings and the limitations of this study were discussed in the content.

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Contributors

Part 1, faculty committee recognition

This work was supervised by a thesis committee consisting of Dr. Kwok, Oi-Man and Dr. Luo, Wen of the Department of Educational Psychology and Dr. Chen, Lei-Shih of the Department of Health and Kinesiology.

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All work for the thesis (or) dissertation was completed by the student entirely, under the advisement of Dr. Kwok, Oi-Man of the Department of Educational Psychology.

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NOMENCLATURE

CFI	Comparative Fit Index
OAA	Objective Academic Achievement
RMSEA	Root Mean Square Error of Approximation
SAA	Subjective Academic Achievement
SEM	Structural Equation Model
SRMR	Standardised Root Mean Square Residual
SWB	Subjective Well-being

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

School life occupies the majority part of every student in life span. On average, each student spends 15 to 19 years in his or her life in school and college. A healthy and supporting atmosphere is essential for youth to develop their knowledge and identity, and to formulate a set of positive values. However, recently, there was a 4-year longitudinal study of adolescents in Hong Kong (Shek & Li, 2016). The researchers found that the perceived school performance and life satisfaction decreased and the sense of hopelessness increased in the period of their study. It may be an alarm signal for the Chinese and other Asian societies that the environment and atmosphere for the adolescents become worse. At the same time, Shek and Li's (2016) findings implied that the perception of the adolescents about their subjective experiences is important and their school lives quality plays a substantial role. Therefore, a scientific framework of subjective well-being (SWB) for professionals in education and related areas is essential for designing appropriate and benefitting policies to Chinese and Asian adolescents. In the existing SWB studies, even though the concepts of SWB have been explored for decades, the lack of practical studies investigating the SWB related components and framework leads to the current study.

The purpose of this study was to develop an operational framework of SWB based on numerous subjective experiences, analyzed by a multilevel structural equation model. This study used an existing dataset collected by Don Bosco Village of Macau and Chui (2015), which consisted of 2,327 high school students from Macau (i.e., a region

nearby Hong Kong where Shek and Li collected their data). Given the proximity of the location and culture, I believe that my findings in this study would be comparable with those from Shek and Li's (2016) study.

The current proposed framework of SWB has been an integration and extension of previous literature (e.g., Diener, Suh, Lucas, & Smith, 1999; Randolph, Kangas, & Ruokamo, 2009). The components of the SWB framework are pleasant and unpleasant affect, and general life satisfaction. Four specific domains of satisfaction (i.e., self, health, family, and school satisfaction) are also included in this study in order to reflect the unique domains for the student population. In addition to SWB, the demographic information of gender, school grade level, and marital status of the student's parents have also been collected and used for grouping purpose as a means to investigate potential group differences.

2. LITERATURE REVIEW

2.1 Term Definitions

2.1.1 Subjective Experience and Subjective Academic Achievement

Subjective experience has been widely studied in different areas. Previous researches evidenced that it was not only a kind of perception to the environment and/or experience. Rather, it could have physiological impacts, like painfulness. Koyama, McHaffie, Laurienti, and Coghill (2005) demonstrated that people perceived the different level of pain with same physical stimulation of painfulness just based on different expectation and information provided. The researchers assessed the subjective painful experience (psychological) and the activation level of the pain-related area of the brain (physiological). Finally, they found that the expectation of decreased pain significantly reduced both psychological and physiological experience of pain. Similarly, in the educational setting, students usually made the judgments for their own ability of learning and as well as academic achievement based on their own subjective experiences, mostly by observing their peers and receiving the evaluations of their class teachers.

The concept of academic achievement generally refers to cognitive ability (Spinath, Spinath, Harlaar, & Plomin, 2006). Besides, it could be regarded as a subjective aspect of oneself that impacts academic achievement was an element of the components in the area of SWB.

3

In the study of children by Spinath et al. (2006), the researchers evidenced that self-perception of the ability of English, mathematics, and science correlated weakly or moderately to the actual achievement of these three academic subjects. In this paper, this self-perception of the ability in academic subjects could be called subjective academic achievement (SAA). Unfortunately, Spinath et al. (2006) only explored the relationship between SAA and objective academic achievement (OAA), and yet to research the dynamics of SAA and other factors, such as SWB. In fact, SAA, or subjective evaluation for the academic performance, was powerful for predicting psychological factors. Perez-Felkner, McDonald, Schneider, and Grogan (2012) studied students about their course-taking patterns in secondary schools and major orientation in the colleges. The researchers found that SAA on mathematics was one of the strongest predictors (another strongest predictor was OAA) for majoring in the fields related to STEM. In other words, the educators could interpret OAA as the standardized value for comparison in schools, while psychologists were able to assess the extent of SAA of the students and make predictions in other aspects (e.g., major orientation in the future, or job preference). SAA also could be the factor shaping the stereotype at an institutional level. Few women participated in science, engineering, and mathematics (STEM) fields was a relevant example. Women in general regards they have poor STEM ability and thus tend not to enter STEM industries.

On the other hand, the concept of SAA and self-efficacy (Bandura, 1977) should be distinguished with each other, in spite of there were overlapping in these two concepts. Bandura (1977) described self-efficacy as an individual's belief that his or her

capability to perform a particular task, such as studying. On the contrary, SAA was the extent of how an individual perceived the result of a particular task, and thus it matched the interest of this study. To compare with self-efficacy, the perspective of SAA provided more opportunities for educators to intervene students had already obtained poor academic result. Thus, it is helpful for the educators to establish intervention program by addressing this issue to minimize the negative impacts on the unpleasant feelings and promote wellness for the students.

Nicholls (1984) distinguished two conceptions of ability based on subjective experience. These two conceptions could be applied in the concept of SAA as well. The first conception is called less differentiated conception. It occurred when an individual considered a particular task with low ability if he had failed on it many times. In contrast, if the individual continues doing success in a task, he would think he got high ability on that task. In this case, the self-referenced approach was applied if the task required less differentiated conceptions of ability. While the task occupied more differentiated conceptions of ability. The individual made the judgment by the performance of others, rather than self-referenced. In other words, this individual was taking the social comparison approach (Suls & Wheeler, 2012) in the situation that the more differentiated conception took place. Under this condition, the high ability was considered if he or she kept succeeded on a task constantly that his or her peers usually failed.

Because of the common setting of a school class, students always sat together and were evaluated with their peers together by their teachers. The students tended to

judge their SAA good or bad by comparing the performance of their peers. In the perspective of Nicholls (1984), the students were taking the approach of social comparison in this situation. It meant that students evaluated SAA themselves by comparing with their peers. Nicholls (1984) referred this approach as ego-involvement. It was a theoretical connection between SAA and SWB. A student who usually self-evaluated positively for his academic achievement and thus this student had higher SWB in general than those students had a negative self-evaluation of their academic achievement.

2.1.2 Subjective Well-being

Numerous scholars proposed varied forms of conceptual definitions and synonyms of SWB over decades: The classic definition coined by Menninger (1930), he referred mental health as "the adjustment of human beings to the world and to each other with a maximum of effectiveness and happiness." Dunn (1961) thought about that positive health, or wellness, did not merely refer to an individual without illness, but rather involving the health mindset in one's own life. Later, in 1972, Travis and Ryan (2004) integrated the idea originated by Dunn (1961) as the well-known illness-wellness continuum clarified the relationship between illness and wellness. Travis commented that the continuum was not describing at where the status an individual was (e.g., got disabilities, or well-growth), but the direction regarding the wellness of the individual. This idea implied that an individual with wellness would develop a sense caring about his or her physical body, effective managing emotion, and growth positively.

In past decades, psychologists broke down the factor of SWB into different four dimensions for studying SWB in details and operational purpose. Diener et al. (1999) reviewed the area of wellness over three decades. In their perspective, subjective well-being was a board area study, rather than a single or several major constructs. There were four major dimensions in the area of SWB (summarized in Table 1). Firstly, the construct of affect should be separated into pleasant and unpleasant parts for research purpose and argued pleasant affect and unpleasant affect were two different (but related) concepts. Furthermore, the concept of affect itself was favorable to be examined in the long-term perspective in terms of studying wellness since it was a long-term status as well. Next, there were different specific domains of satisfaction, including general life, and at different time points in their lives, their roles in daily life, finances status, and groups. These various kinds of satisfaction contributed to SWB. For instance, under this model, SAA was an element under the domain of school satisfaction and it was reasonable and possible for SWB researchers to address this issue. For another example, Neugarten, Havighurst, and Tobin (1961) provided the operational definition of life satisfaction that positive self-concept was one of the components for measuring life satisfaction. In the perspective of Diener et al. (1999), the idea of positive self-concept would be a specific domain of satisfaction (i.e., the satisfaction of self).

Table 1

Components of Subjective Well-being

Pleasant affect	Unpleasant affect	Life satisfaction	Domain satisfactions
Joy	Guilt and shame	Desire to change life	Work
Elation	Sadness	Satisfaction with current life	Family
Contentment	Anxiety and worry	Satisfaction with past	Leisure
Pride	Anger	Satisfaction with future	Health
Affection	Stress	Significant others' views of one's life	Finances
Happiness	Depression		Self
Ecstasy	Envy		One's group

Note. The elements of this table were summarized from the work of Diener et al. (1999).

2.2 Summary of Past Findings:

The Relationship between the Factors Being Studied

In fact, in past decades, there were rare studies exploring the topic of SAA, especially its relationship to SWB. The main stem in the certain area psychologists focused on the OAA and academic self-efficacy of students for learning. The majority of related studies of youth (Turashvili & Japaridze, 2012; McDonald, 2012; Verboom, Sijtsema, Verhulst, & Penninx, 2014) found out that OAA was associated to SWB directly, and the causality was inter-directional. McDonald (2012) found that adolescents with a high level of OAA were able to apply their knowledge to increase the quality of life, and thus SWB would be higher than adolescents with a low level of OAA would. In contrast, adolescents with a high level of wellness tended to devote more for obtaining knowledge and skills so they could outperform academic activities than adolescents with lower SWB.

8

However, a study conducted by Topham and Moller (2011) focused on undergraduate students in the first year indicated a controversial finding in high education. The result indicated no differences between academic achievement and well-being. This piece of confounding result might indicate the relationship between the factors become more complicated while taking the age into account, or life stage changes (i.e., graduated from high school and enter university). Thus, the present study explored the age issue by forming junior and senior students groups for comparison. Secondly, the relationship between academic self-efficacy and SWB was addressed by previous studies. Scoth et al. (2008) examined academic self-efficacy and depression and the result indicated academic self-efficacy directly and negatively affected depression, which located on the opposite pole of illness-wellness continuum (Travis & Ryan, 2004). Another study conducted by Rosenberg, Schooler, Schoenbach, and Rosenberg (1995), they found a similar result that academic self-efficacy was a strong predictor of school performance and correlated with SWB. Again, although the concept of academic self-efficacy overlapped with SAA, the existing studies focused on the relationships between SAA and SWB were insufficient.

As mentioned in the previous section, a positive relation between OAA and SWB was widely accepted (e.g., McDonald, 2012). In recent years, psychologists focused on the mediators and moderators of the relationship between academic achievement and SWB, and other factors affecting academic achievement, SWB or both of them. As the study of Topham and Moller (2011), their findings proposed that the relationship between academic achievement and well-being might become more complex as the

youths grow older. Actually, there were two comprehensive meta-analyses found that socioeconomic status (White, 1982) and parental involvement (Jeynes, 2003) strongly correlated to academic achievement.

Regarding SWB, in the review of Diener et al. (1999), there were several major factors had impacts on SWB, the examples of intrapersonal factors including intelligence, personality temperament, coping strategies. The environmental factors liked religion, educational level, especially poverty, would relate to wellness.

Nevertheless, the SWB researchers studied the relationship between SWB and other factors influencing SWB for decades. They had not a consensus regarding the exact components of SWB itself and the causality among them. The separation of affect had been challenged because it could be two poles of a single construct. The dynamics of sub-indices of SWB still would not be clarified because of they were usually high correlated with each other and influenced by other factors such as the appearances of major life events or cognitive mature. An integrated model was a lack identifying the structure of SWB and its internal components.

In summary, the issues between subjective experience and SWB were rarely discussed in existing research, and thus the dynamics in details between subjective experience and SWB remained unknown. It was possible to make a hypothesis investigate the relationship between subjective experience and SWB how formulated.

3. THE PRESENT STUDY

SWB psychologists conducted studies in this area over decades. The dynamics of academic achievement and SWB became clearer. However, a concrete and operational framework of SWB had not yet established. The primary interest of the present study was to develop a SWB framework based on a multilevel structural equation model. Particularly, a database (Don Bosco Village of Macau & Chui, 2015) of a population in Asia region collected in 2015 was employed for the analyses.

3.1 Argument of the Studying of Academic Achievement

Regarding SAA, previous studies (McDonald, 2012; Perez-Felkner et al., 2012) mainly focused on the objective scores the students received and the influences on other external factors (e.g., SWB, major orientation) or being affected (e.g., poverty, intelligence). In fact, the objective test scores could be considered as a type of subjective evaluation from school teachers despite the objective scoring system. According to the concept of more differentiated conceptions of ability (Nicholls, 1984) and the social comparison theory (Suls & Wheeler, 2012), students usually made comparisons with their peers for evaluating their own learning ability, and it could be misjudged if the evaluation system was biased, or the methodology of the test itself was not appropriated. For instance, it was unfair that a teacher merely assigned English writing test to a dyslexic student for evaluating his overall academic performance of English learning, but this student was good at speaking or other English skills.

Studying of OAA actually would be useful for the understanding of human development, such as the previous study of major orientation in future college (Perez-Felkner et al., 2012). However, SAA, or to understand how students perceived their academic performance, was important for people to explore and understand the mental process and wellness of youths. For instance, a student felt glad for receiving a mathematics test result with a score of 80, and it was possible that another student felt disappointed even these two students paid the same effort for studying the test. The score of 80 reflected they both received the same level of OAA. In terms of SAA, the former student obviously obtained a higher level of SAA than the latter student did. In the educational setting, the teachers or other related workers should pay more attention to the latter student since this low level of SAA possibly might promote negative impacts on SWB.

3.2 Comprehension of the Concept of Subjective Well-being

In Figure 1, the holistic SWB framework was extended by the previous relevant literature (e.g., Randolph et al., 2009; Diener et al., 1999). Randolph et al. (2009) hypothesized a model and developed an overall school satisfaction scale based on the perspective of subjective well-being of Diener et al. (1999). The model in Figure 1 assimilated similar ideas and integrated with other relevant factors to illustrate a more clarified picture of SWB.

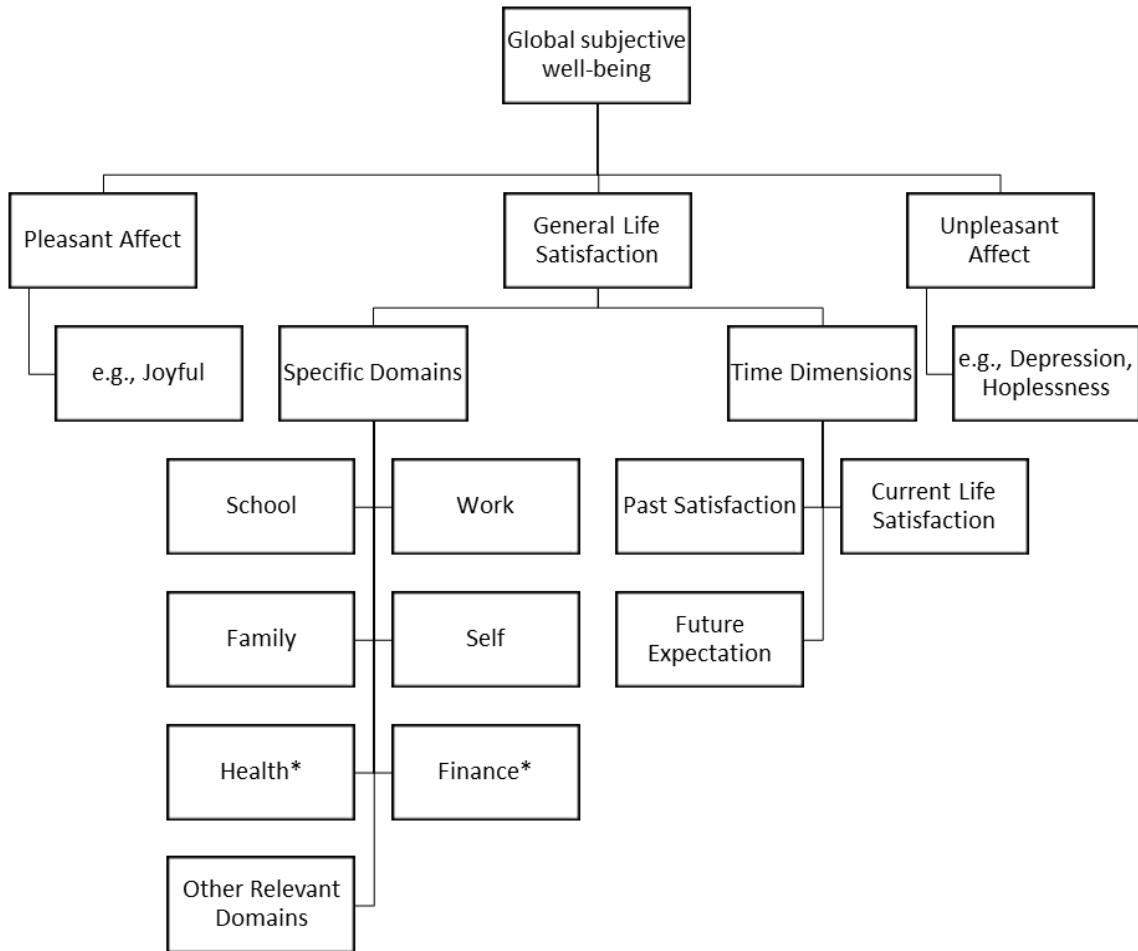*Figure 1.* The modified theoretical framework of subjective well-being. This framework was integrated by the ideas of Diener et al. (1999) and Randolph et al. (2009) and illustrated different dimensions of subjective well-being. Details were discussed in content. Asterisk of health and finance are to emphasize that they are subjective experience of satisfaction in health status and financial status, respectively.

As Figure 1 showed, it was reasonable to separate the concept of affect into pleasant and unpleasant components since it was possible that joyful feeling and stress occurred at the same time. For example, a doctoral student devoted himself entirely in his interest area. At the same time, the dissertation defense was coming. During this period, he felt euphoric because he could present his work to the experts, and he became stressful simultaneously for the dissertation defense because of the challenges of them.

Then, there should be a conduct of general life satisfaction mediating the relationship between the specific domains of satisfaction and the time dimension. Indeed, people generally had various extents of satisfaction in their daily life, such as a student perceived family getting trouble in financial difficulty (low finance satisfaction) but still satisfied his or her family life (high family satisfaction). Therefore, SWB researchers were possible to analyze the extent of satisfaction in the different domains of human beings. Besides, life satisfaction should be different chronically by major life events or the willingness of an individual, and thus the factor of satisfaction was relevant to be investigated in past, current, and/or future, in different domains. Hence, these various domains and the time dimension composed the construct of general life satisfaction.

Furthermore, there were three clarifications for this modified framework. First, several elements in the perspective of Diener et al. (1999) were dropped. These kinds of elements had already incorporated by the existing components of the framework as the subordinate elements. For example, the element of significant others' views of one's life was subordinated to the components of life satisfaction in Diener et al. (1999)'s classic

model. If the mother's view was effective to the life satisfaction of an individual, this element should contribute to the family satisfaction component. Then, in the SWB model, all components should be viewed in subjective aspects, especially the labels of health and finance elements can be misunderstood easily. SWB should be composed all elements in a subjective perspective by an individual. Thirdly, this holistic SWB framework was difficult to measure all specific domains of satisfaction at different time points in a single study. Thus, the proposed model to be studied currently extracted the four specific domains of satisfaction applicable in the educational setting (i.e., domains of school, family, health, and self) for the evaluation.

3.3 Considerations of the Covariates

Previous SWB researchers found that gender, age, school grade, and marital status of parents associated with the elements being tested in the studied model. In the study of Chaplin (2015), women showed a higher level of emotional expressivity. They felt positive emotions and internalizing negative emotions more frequent than men did. Sun, Chen, Johannesson, Kind, and Burström, (2016) collected more than 8,000 Chinese data sample, aged from 15 to 102 years old and measured their SWB status. The researchers evidenced that, in general, SWB of Chinese became lower while people grew older and men had a higher level of SWB than female. Similarly, SWB level would be different depending on the factors of school grade (Clark, Amar-Singh, & Hashim, 2014) and marital status of parents (Gohm, Oishi, Darlington, & Diener, 1998).

Based on the literature above, the factors of gender, age, school grade, and marital status of parents in the total sample model were treated as covariates. On the

other hand, these covariates would be the grouping variables as well for investigating any potential differences among these demographic groups.

3.4 Research Questions

The proposed model being examined was illustrated in Figure 2 and the method of multilevel structural equation model was applied to evaluate this model. Although the original model of Diener et al. (1999) was examined in certain of ways, for instance, Headey, Veenhoven, & Wearing (1991) assessed the relationship between six particular domains of satisfaction and SWB, or Duncan et al. (2001) examined the relationships of health satisfaction and SWB with latent growth model, the evidences was dispersed and controversial in some aspects. It was reasonable to argue that there should a general factor relating to life satisfaction mediating the relationships between those domains and SWB. The evidence of the proposed model is valuable for the unifying common dispersed understanding of the framework of SWB. For the same reason, this modified framework provides a concrete operational model for SWB researchers conduct related studies.
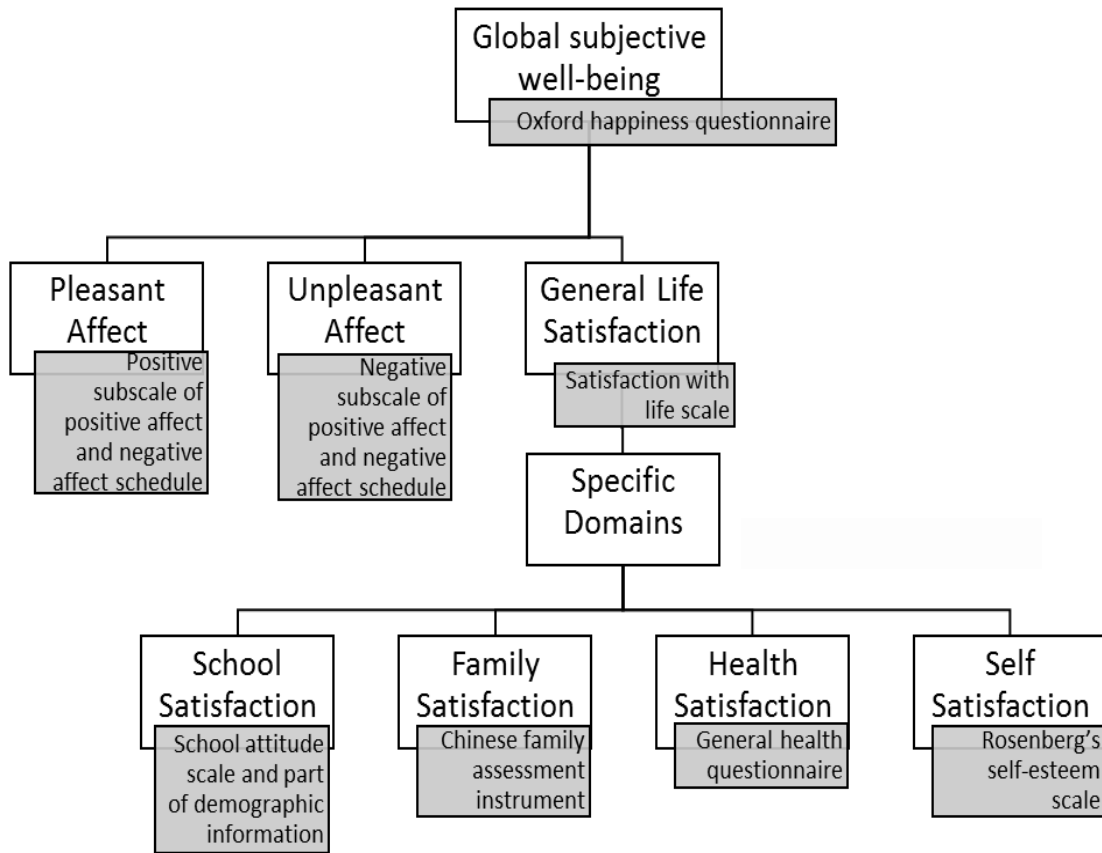
Figure 2. The proposed model. The factors studied and the corresponding measurement in the modified theoretical framework of subjective well-being. The inventories listed in the gray grids are corresponding to the SWB components.

In the present study, a dataset of youth in Macau (Don Bosco Village of Macau & Chui, 2015) was employed. Macau is an Asia region nearby Hong Kong. All participants were Chinese students and data was collected in 2015 by a youth center, Don Bosco Youth Village of Macau. The agent center cooperated with Dr. Wing Hong Chui, who was from the Department of Applied Social Sciences at City University of Hong Kong, to perform data collection progress. The database contained 8 inventories and only the components relating to SWB would be analyzed. The inventory items being analyzed were global SWB, pleasant and unpleasant affect, general life satisfaction, self-satisfaction, health satisfaction, family satisfaction, and school satisfaction. Additionally, the demographic items were used in this study including gender, age, school grade, and marital status of parents, as well as subjective academic achievement and satisfaction. Finally, the factors above came up 2 aspects of affect and 4 specific domains of life satisfaction, as well as global SWB and life satisfaction, for the present study (see Figure 2).

4. METHOD

4.1 Sampling

Don Bosco Youth Village of Macau (Centro de Formação Juvenil Dom Bosco, Macao), a domestic youth center in Macau, recruited Macau students as participants by requesting the permission of all local regular secondary schools. The data collection period was between April and November in 2015, except summer break. Dr. Wing Hong Chui, who was from the Department of Applied Social Sciences at City University of Hong Kong, co-operated together for monitoring the quality of the data collection progress. The combination of cluster sampling and convenient sampling was applied for the entire data collection progress. Students from special educations were excluded in the invitation list because the researchers regarded their particular education environments were confounding. Finally, 13 schools participated. All students from 3 schools became the participants and the rest of schools offered one class of students from each grade level for data collection.

4.2 Participants and Procedures of Data Collection

The agent assigned trained surveyors to each participated school for data collection. This method aimed to ensure the quality of the collected data. The surveyors were trained for providing standardized procedures and managing the progress of data collection.

The place of data collection was in the classroom or in the venues of the participated school, depending on the capacity of the place and the number of

participants. There was at least one surveyor was assigned to the classroom and at least three for venues. The surveyors distributed 9-page and paper-based questionnaires to the participants and asked them to completed with pens or pencils. The informed consent form was written on the first page of the questionnaire. In order to ensure the participants notice the consent request, the surveyors had pronounced each sentence of the consent form before the participants filled the questionnaire. Each participant could leave at any time during filling the questionnaire without any negative outcomes to the study and themselves. Because of the confidentiality, students and their school names would be anonymous. There were 2,460 students participated in the survey. However, if the collected questionnaires contained more than one empty section or ridiculous responses, those questionnaires were considered as invalid and excluded. Eventually, as reported in Table 2, the agent collected 2,327 valid questionnaires, age ranged from 12 to 20 (Mean = 15.62; SD = 1.92). The overall sample consisted of 40.5% male and 59.5% female, nested in 13 schools.

Table 2

Summary Statistics of the Demographic Information of the Total Sample

		Frequency	Percent	Valid Percent
Age	12	144	6.2	6.2
(*Mean* = 15.62, *SD* = 1.92)	13	192	8.3	8.3
	14	334	14.4	14.4
	15	422	18.1	18.2
	16	439	18.9	18.9
	17	415	17.8	17.9
	18	214	9.2	9.2
	19	105	4.5	4.5
	20	52	2.2	2.2
	Total	2317	99.6	100.0
Missing		10	.4	
Total		2327	100.0	
Gender	Male	939	40.4	40.5
	Female	1382	59.4	59.5
	Total	2321	99.7	100.0
Missing		6	.3	
Total		2327	100.0	
Grade Level	Junior	1043	44.8	45.2
	Senior	1263	54.3	54.8
	Total	2306	99.1	100.0
Missing		21	0.9	
Total		2327	100.0	
Parent Marital Status	Married	1889	81.2	84.1
	Divorced	356	15.3	15.9
	Total	2245	96.5	100.0
Missing		82	3.5	
Total		2327	100.0	
Clustered by Schools	School A	163	7.0	7.0
	School B	481	20.7	20.7
	School C	108	4.6	4.6
	School D	159	6.8	6.8
	School E	464	19.9	19.9
	School F	100	4.3	4.3
	School G	23	1.0	1.0
	School H	293	12.6	12.6
	School I	13	.6	.6
	School J	156	6.7	6.7
	School K	116	5.0	5.0
	School L	161	6.9	6.9
	School M	90	3.9	3.9
Total		2327	100.0	100.0

4.3 Instruments

In this study, there were seven inventories and relevant demographic items from the collected data. The inventories and demographic items correspond with the components of SWB framework (see Figure 2). If the original language of the certain inventory was not in Chinese, the researchers had applied the technique of backward translation for minimizing the discrepancy of the meaning of the items between the original language and Chinese version. In terms of reliability of internal consistency, the Cronbach alpha for each inventory ranged from .80 to .96.

4.3.1 Oxford Happiness Questionnaire

According to the definition of SWB and the holistic view of the Oxford happiness questionnaire (Hills & Argyle, 2002), this inventory was used to associate with the construct of global subjective well-being in the proposed model. It consisted of 29 items and 12 of them had to be reversed. Respondents would reflect their agreeableness to the statements by 6-point Likert scale, ranging from "strongly disagree" to "strongly agree". Example items included "I don't think I look attractive", "I am very happy", and "I find beauty in some things". The higher the score meant the greater general SWB. In this study, the Cronbach alpha of this scale was .91.

4.3.2 Positive Affect and Negative Affect Schedule

The positive affect and negative affect schedule (Watson, Clark, & Tellegen, 1988; Yik, 2007) was matched to the pleasant affect and unpleasant affect in the SWB framework. This affect inventory contained 20 items, half of them corresponded to positive affect and others related to negative affect. Respondents would select from

"very slightly" to "extremely" with a 5-point Likert scale to indicate the frequency they felt in the past three months. A positive affect item example included "inspired", while the example of negative affect would be "irritable". The higher score an individual got in both scale, the more frequency of positive and negative feeling the individual felt. The Cronbach alpha of positive affect and negative affect were .83 and .89 respectively in the present study.

4.3.3 Satisfaction with Life Scale

The component of general life satisfaction in SWB framework assessed by satisfaction with life scale (Diener, Emmons, Larsen, & Grifin, 1985). There were 5 items in this scale. The respondents would reflect their opinions with 7-point Likert scale, ranging from "very disagree" to "very agree". Example item included "I am satisfied with my life." A high score reflected high life satisfaction. The Cronbach alpha for this scale was .88.

4.3.4 Rosenberg's Self-esteem Scale

The Rosenberg's self-esteem scale (Rosenberg, 1965) was applied to evaluate the extent of self-satisfaction, which was one of the specific domains in life satisfaction. In this scale, there were 10 items and responded by 4-point Likert point. There were 5 items in this scale were reversed items. The respondents would reflect from "very disagree" to "very agree" for the statements. "I feel that I have a number of good qualities." was an example of this scale. It was considered as high self-satisfaction if an individual got a high score. In the current study, the Cronbach alpha was .83 in this scale.

23

4.3.5 General Health Questionnaire

Health satisfaction, which was the element in the SWB framework, was assessed by the general health questionnaire (Li, Chung, Chui, & Chan, 2009; Goldberg & Hillier, 1979). The statements in this inventory described whether any stressful events occurred in the past six months. One of the examples included "Have you recently lost much sleep over worry?" This scale was a 4-point scale with 12 items and including two sub-index, which were social dysfunction, and the sub-index of anxiety and depression. Respondents would indicate their frequency of the recent experience from "more than usual" to "much less than usual" or "not at all" to "much more than usual". The higher score indicated by an individual meant higher distress. For convenience purpose, the scores were coded reversely in the present study, and thus the higher score of this scale in this study reflected higher health satisfaction (i.e., lower distress). The Cronbach alpha for this scale was .84 in the current study.

4.3.6 Chinese Family Assessment Instrument

The Chinese family assessment instrument (Shek, 2002; Shek & Ma, 2010; Siu & Shek, 2005) was used to measure family satisfaction in the framework. It was 5-point Likert scale with 33 items, including 9 reversed items and contributing to five sub-dimensions related to the family relationship. These sub-dimensions of family consisted of mutuality (e.g., family members support each other), communication (e.g., family members talk to each other), conflict and harmony (e.g., there is not much quarrel among family members), parental concern (e.g., parents take care of their children), and parental control (e.g., a reversed item, parents scold and beat children.). However, only

the overall score was analyzed in the present study since the sub-dimensions in this inventory were not the scope of this study. Respondents had to choose the extent of similarity for the statements from "very similar" to "very dissimilar", and thus the higher score meant greater the level of dissatisfaction in the family in the original instrument. In order to be convenient for data analysis in the current study, the scores of this inventory were coded reversely. In other words, the higher score presented in the present study, the more level of family satisfaction. Moreover, the Cronbach alpha was .96 regarding this family scale in this study.

4.3.7 School Satisfaction

The school conduct associated with SAA positively (Shek & Li, 2016), and thus the domain of school satisfaction was evaluated by the school attitude scale (Cheng & Chan, 2003) and two global items regarding subjective academic performance and satisfaction. Regarding school attitude scale, there were 9 items and 4 of them had to be reversed. Besides, subscales of students' affect, behavioral intention, and cognition to school combine together for the overall school attitude. The example of subscale in affect contained "I obtain a sense of achievement from school", behavioral intention included "I participate actively in school life", and demonstration of cognition subscale was "I believe school can help me become a mature person". High score in this inventory represented more favorable emotions, behavioral intention, and beliefs relating to school life. For the two global items, respondents would reflect by 5-point Likert scale from "very bad / very dissatisfy" to "very good / very satisfy". In the present study, the Cronbach alpha was .80 of these 11 school satisfaction items.

4.3.8 Demographic Information

Besides the inventories above, the researchers collected the demographic information of participants, including age, gender, nationality, ethnicity, religiosity, and other variables. In the present study, only four demographic variables were used, which were age, gender, grade level, and parents' marital status (see Appendix A). The factor of age was coded as a continuous variable. The other three variables were coded as dichotomous variables: gender (male vs. female), grade level (junior vs. senior), and parents' marital status (married vs. divorced). These variables were treated as covariates in the model with total sample. Then, for investigating any potential group differences, these items were treated as grouping variables after the model of the total sample had been evaluated.

4.4 Data Analysis

The statistical programs of SPSS (Version 23) and Mplus (version 7.3) were applied interchangeably for all data analysis progress. The program of SPSS was used to manage all descriptive statistics of raw data. While the Mplus program was using for conducting the analysis of structural equation model with the method of maximum likelihood (ML) estimation for all model analyses. In order to control the cluster effect of the sample (i.e., the students nested in various schools), the standard errors of the estimated coefficients were adjusted for taking the cluster effect into account by using "type = complex" command in Mplus program (Muthén & Muthén, 1998 - 2015). In order to deal with the issue of multicollinearity, the technique of centering was applied to all the values of the observed items, except the demographic items.

5. RESULT

Table 3 showed the summary statistics of the observed item values in the total sample. Before running the model analysis, all inventory items were screened by Q-Q plots for evaluating normality.

Table 3

Summary Statistics of the Inventory Items Observed Values of the Total Sample

	N	Mean	S.E.	S.D.		N	Mean	S.E.	S.D.
OverallSWB	2157								
OverallSWB_Q1	2327	3.55	.028	1.339	OverallSWB_Q16	2322	3.90	.024	1.170
OverallSWB_Q2	2325	3.77	.024	1.159	OverallSWB_Q17	2319	3.91	.025	1.218
OverallSWB_Q3	2319	4.24	.024	1.173	OverallSWB_Q18	2321	3.83	.024	1.156
OverallSWB_Q4	2323	3.71	.027	1.291	OverallSWB_Q19	2315	3.46	.027	1.275
OverallSWB_Q5	2317	2.62	.031	1.499	OverallSWB_Q20	2319	3.42	.025	1.200
OverallSWB_Q6	2321	3.60	.030	1.433	OverallSWB_Q21	2323	3.75	.025	1.184
OverallSWB_Q7	2319	3.91	.025	1.182	OverallSWB_Q22	2320	4.00	.026	1.232
OverallSWB_Q8	2318	3.93	.024	1.179	OverallSWB_Q23	2308	2.98	.029	1.376
OverallSWB_Q9	2319	4.07	.029	1.403	OverallSWB_Q24	2320	3.92	.031	1.494
OverallSWB_Q10	2321	3.88	.031	1.492	OverallSWB_Q25	2326	3.81	.027	1.312
OverallSWB_Q11	2318	4.29	.028	1.369	OverallSWB_Q26	2307	3.54	.023	1.108
OverallSWB_Q12	2315	3.73	.025	1.183	OverallSWB_Q27	2315	4.35	.025	1.224
OverallSWB_Q13	2309	3.06	.028	1.357	OverallSWB_Q28	2323	3.86	.031	1.472
OverallSWB_Q14	2324	2.66	.024	1.143	OverallSWB_Q29	2324	4.50	.031	1.509
OverallSWB_Q15	2326	3.88	.026	1.251					
PleAffect	2288								
PleAffect_Q1	2327	3.16	.021	.996	PleAffect_Q6	2325	2.76	.024	1.160
PleAffect_Q2	2320	3.22	.021	1.030	PleAffect_Q7	2321	2.54	.024	1.167
PleAffect_Q3	2325	3.11	.021	.992	PleAffect_Q8	2322	3.04	.021	1.034
PleAffect_Q4	2321	3.13	.023	1.107	PleAffect_Q9	2318	2.99	.021	.993
PleAffect_Q5	2323	2.50	.021	1.026	PleAffect_Q10	2325	2.92	.021	1.031

Table 3 Continued

	N	Mean	S.E.	SD		N	Mean	S.E.	SD
UnpAffect	2290								
UnpAffect_Q1	2325	3.15	.023	1.110	UnpAffect_Q6	2325	2.96	.026	1.232
UnpAffect_Q2	2327	3.12	.024	1.138	UnpAffect_Q7	2322	2.29	.023	1.112
UnpAffect_Q3	2320	2.36	.024	1.166	UnpAffect_Q8	2323	2.67	.025	1.220
UnpAffect_Q4	2323	2.41	.024	1.181	UnpAffect_Q9	2319	2.63	.025	1.216
UnpAffect_Q5	2319	2.08	.025	1.192	UnpAffect_Q10	2327	2.50	.025	1.200
LifeSat	2287								
LifeSat_Q1	2326	4.38	.031	1.475	LifeSat_Q4	2321	4.55	.032	1.551
LifeSat_Q2	2323	4.48	.030	1.464	LifeSat_Q5	2324	3.69	.036	1.730
LifeSat_Q3	2299	4.65	.031	1.490					
SelfSat	2294								
SelfSat_Q1	2326	2.86	.012	.601	SelfSat_Q6	2323	2.78	.013	.648
SelfSat_Q2	2326	2.57	.014	.667	SelfSat_Q7	2324	2.73	.014	.666
SelfSat_Q3	2321	2.78	.015	.734	SelfSat_Q8	2320	2.26	.016	.761
SelfSat_Q4	2323	2.73	.013	.629	SelfSat_Q9	2324	2.28	.017	.812
SelfSat_Q5	2322	2.64	.016	.777	SelfSat_Q10	2326	2.50	.019	.905
HealthSat	2278								
HealthSat_Q1	2323	2.88	.012	.562	HealthSat_Q7	2324	3.15	.019	.932
HealthSat_Q2	2322	2.83	.014	.652	HealthSat_Q8	2324	2.38	.018	.873
HealthSat_Q3	2317	2.93	.014	.672	HealthSat_Q9	2320	2.72	.018	.861
HealthSat_Q4	2320	3.01	.015	.707	HealthSat_Q10	2324	2.70	.019	.904
HealthSat_Q5	2321	2.94	.014	.667	HealthSat_Q11	2323	2.91	.019	.910
HealthSat_Q6	2324	2.86	.015	.718	HealthSat_Q12	2327	3.08	.019	.927
SchoolSat	2289								
SchoolSat_Q1	2325	3.24	.020	.941	SchoolSat_Q7	2320	3.44	.021	.993
SchoolSat_Q2	2326	3.14	.020	.954	SchoolSat_Q8	2322	3.44	.023	1.113
SchoolSat_Q3	2323	3.32	.019	.919	SchoolSat_Q9	2324	3.41	.023	1.092
SchoolSat_Q4	2324	3.33	.020	.983	SchoolSat_AP	2317	2.82	.019	.892
SchoolSat_Q5	2321	3.16	.023	1.093	SchoolSat_AS	2322	2.49	.021	1.033
SchoolSat_Q6	2318	3.16	.019	.907					

Table 3 Continued

	N	Mean	S.E.	SD		N	Mean	S.E.	SD
FamilySat	2163								
FamilySat_Q1	2325	3.38	.023	1.091	FamilySat_Q18	2326	3.19	.021	1.020
FamilySat_Q2	2325	3.44	.023	1.098	FamilySat_Q19	2323	3.04	.024	1.164
FamilySat_Q3	2322	3.84	.022	1.045	FamilySat_Q20	2323	3.21	.024	1.142
FamilySat_Q4	2323	2.76	.023	1.126	FamilySat_Q21	2317	3.36	.023	1.117
FamilySat_Q5	2321	3.09	.023	1.096	FamilySat_Q22	2316	3.60	.029	1.384
FamilySat_Q6	2321	3.41	.023	1.119	FamilySat_Q23	2321	3.99	.021	1.033
FamilySat_Q7	2321	3.30	.025	1.190	FamilySat_Q24	2320	4.32	.021	.997
FamilySat_Q8	2320	2.51	.025	1.220	FamilySat_Q25	2321	3.02	.023	1.116
FamilySat_Q9	2323	3.17	.024	1.155	FamilySat_Q26	2314	3.46	.021	1.011
FamilySat_Q10	2323	3.16	.024	1.136	FamilySat_Q27	2323	3.08	.024	1.173
FamilySat_Q11	2324	3.25	.024	1.175	FamilySat_Q28	2322	2.79	.025	1.185
FamilySat_Q12	2319	3.16	.023	1.130	FamilySat_Q29	2307	3.91	.024	1.141
FamilySat_Q13	2326	3.81	.022	1.057	FamilySat_Q30	2317	3.50	.026	1.269
FamilySat_Q14	2322	3.28	.023	1.091	FamilySat_Q31	2321	3.69	.023	1.121
FamilySat_Q15	2318	3.44	.023	1.104	FamilySat_Q32	2326	3.53	.019	.933
FamilySat_Q16	2303	3.34	.024	1.136	FamilySat_Q33	2326	3.80	.021	1.001
FamilySat_Q17	2322	3.15	.022	1.063	**Valid N (listwise)**	1876			

5.1 The Measurement Model

In the measurement model, eight latent variables were identified according to the proposed model. These 8 latent variables were: global subjective well-being (global SWB, by 29 observed items), pleasant affect (by 10 observed items), unpleasant affect (by 10 observed items), general life satisfaction (by 5 observed items), self-satisfaction (by 10 observed items), health satisfaction (by 12 observed items), family satisfaction (by 33 observed items), and school satisfaction (by 11 observed items). Although the significant χ^2 difference test did not support perfect fit between the model and the data $\chi^2 = 35515.86$ ($p < .001$), and the goodness-of-fit indices of CFI was less than .95 (CFI

= .77), RMSEA and SRMR yielded acceptable good fit between the model and the data

(RMSEA = .04 and SRMR = .05). This measurement model with 8 latent factors was

supported by the analytic result. Table 4 showed the standardized factor loadings for the

corresponding latent constructs and all loadings were significantly different from zero (p

< .001).

Table 4

Measurement Model Factor Loading

	Loading	S.E.		Loading	S.E.
OverallSWB					
OverallSWB_Q1	0.45	0.03	OverallSWB_Q16	0.73	0.01
OverallSWB_Q2	0.18	0.03	OverallSWB_Q17	0.65	0.02
OverallSWB_Q3	0.67	0.01	OverallSWB_Q18	0.60	0.02
OverallSWB_Q4	0.56	0.02	OverallSWB_Q19	0.32	0.02
OverallSWB_Q5	0.16	0.02	OverallSWB_Q20	0.41	0.03
OverallSWB_Q6	0.51	0.03	OverallSWB_Q21	0.40	0.04
OverallSWB_Q7	0.63	0.01	OverallSWB_Q22	0.77	0.01
OverallSWB_Q8	0.51	0.02	OverallSWB_Q23	0.12	0.03
OverallSWB_Q9	0.73	0.01	OverallSWB_Q24	0.48	0.02
OverallSWB_Q10	0.51	0.04	OverallSWB_Q25	0.65	0.01
OverallSWB_Q11	0.52	0.02	OverallSWB_Q26	0.58	0.02
OverallSWB_Q12	0.68	0.01	OverallSWB_Q27	0.42	0.03
OverallSWB_Q13	0.33	0.05	OverallSWB_Q28	0.38	0.03
OverallSWB_Q14	0.22	0.04	OverallSWB_Q29	0.46	0.02
OverallSWB_Q15	0.77	0.01			
PleAffect					
PleAffect_Q1	0.60	0.02	PleAffect_Q6	0.19	0.04
PleAffect_Q2	0.60	0.02	PleAffect_Q7	0.53	0.01
PleAffect_Q3	0.57	0.02	PleAffect_Q8	0.66	0.02
PleAffect_Q4	0.64	0.01	PleAffect_Q9	0.54	0.02
PleAffect_Q5	0.68	0.02	PleAffect_Q10	0.70	0.01

Table 4 Continued

	Loading	S.E.		Loading	S.E.
UnpAffect					
UnpAffect_Q1	0.71	0.02	UnpAffect_Q6	0.77	0.01
UnpAffect_Q2	0.68	0.01	UnpAffect_Q7	0.52	0.02
UnpAffect_Q3	0.56	0.04	UnpAffect_Q8	0.80	0.02
UnpAffect_Q4	0.71	0.01	UnpAffect_Q9	0.75	0.02
UnpAffect_Q5	0.47	0.02	UnpAffect_Q10	0.72	0.02
LifeSat					
LifeSat_Q1	0.84	0.01	LifeSat_Q4	0.68	0.01
LifeSat_Q2	0.90	0.01	LifeSat_Q5	0.58	0.02
LifeSat_Q3	0.89	0.01			
SelfSat					
SelfSat_Q1	0.61	0.02	SelfSat_Q6	0.56	0.01
SelfSat_Q2	0.63	0.02	SelfSat_Q7	0.64	0.02
SelfSat_Q3	0.68	0.01	SelfSat_Q8	0.26	0.04
SelfSat_Q4	0.50	0.02	SelfSat_Q9	0.61	0.01
SelfSat_Q5	0.60	0.02	SelfSat_Q10	0.67	0.02
HealthSat					
HealthSat_Q1	0.36	0.02	HealthSat_Q7	0.44	0.02
HealthSat_Q2	0.35	0.02	HealthSat_Q8	0.60	0.03
HealthSat_Q3	0.36	0.02	HealthSat_Q9	0.70	0.02
HealthSat_Q4	0.43	0.02	HealthSat_Q10	0.74	0.01
HealthSat_Q5	0.46	0.02	HealthSat_Q11	0.77	0.01
HealthSat_Q6	0.49	0.02	HealthSat_Q12	0.75	0.01
SchoolSat					
SchoolSat_Q1	0.62	0.03	SchoolSat_Q7	0.22	0.04
SchoolSat_Q2	0.71	0.02	SchoolSat_Q8	0.38	0.02
SchoolSat_Q3	0.53	0.03	SchoolSat_Q9	0.63	0.02
SchoolSat_Q4	0.60	0.03	SchoolSat_AP	0.46	0.03
SchoolSat_Q5	0.60	0.03	SchoolSat_AS	0.40	0.03
SchoolSat_Q6	0.56	0.02			

Table 4 Continued

	Loading	S.E.		Loading	S.E.
FamilySat					
FamilySat_Q1	0.78	0.01	FamilySat_Q18	0.75	0.01
FamilySat_Q2	0.82	0.01	FamilySat_Q19	0.59	0.01
FamilySat_Q3	0.57	0.02	FamilySat_Q20	0.74	0.01
FamilySat_Q4	0.65	0.03	FamilySat_Q21	0.78	0.01
FamilySat_Q5	0.78	0.02	FamilySat_Q22	0.41	0.02
FamilySat_Q6	0.81	0.01	FamilySat_Q23	0.58	0.02
FamilySat_Q7	0.71	0.01	FamilySat_Q24	0.36	0.02
FamilySat_Q8	0.57	0.01	FamilySat_Q25	0.66	0.01
FamilySat_Q9	0.80	0.01	FamilySat_Q26	0.78	0.01
FamilySat_Q10	0.79	0.01	FamilySat_Q27	0.71	0.01
FamilySat_Q11	0.73	0.02	FamilySat_Q28	0.62	0.01
FamilySat_Q12	0.47	0.03	FamilySat_Q29	0.46	0.02
FamilySat_Q13	0.65	0.01	FamilySat_Q30	0.43	0.01
FamilySat_Q14	0.71	0.01	FamilySat_Q31	0.70	0.01
FamilySat_Q15	0.82	0.01	FamilySat_Q32	0.51	0.03
FamilySat_Q16	0.22	0.03	FamilySat_Q33	0.65	0.01
FamilySat_Q17	0.72	0.01			

Note. All factor loadings were standardized and significant at the 0.01 level (2-tailed, $p < .001$).

The correlation between all latent factors was reported in Table 5, while Table 6 represented the correlations between all observed factors which were computed by the average of corresponding items. In general, the direction of the bivariate correlation coefficient estimations between these eight latent factors were consistent with the past literature, the current data, and the hypotheses in the present study, except the significant correlation between the latent factors of pleasant and unpleasant affect, which was not significant in the observed data (see Table 5 and 6).

Table 5

Latent Constructs Correlation Estimations of Total Sample

	OverallSWB	PleAffect	UnpAffect	LifeSat	SelfSat	HealthSat	FamilySat
OverallSWB	1						
PleAffect	0.73	1					
UnpAffect	-0.45	-0.11	1				
LifeSat	0.63	0.38	-0.36	1			
SelfSat	0.74	0.61	-0.51	0.50	1		
HealthSat	0.63	0.43	-0.76	0.47	0.72	1	
FamilySat	0.54	0.32	-0.31	0.58	0.41	0.40	1
SchoolSat	0.66	0.49	-0.34	0.53	0.57	0.51	0.47

Note. All estimations of the correlation coefficients were significant at .01 level (2-tailed, $p < .001$), except the correlation between Pleasant Affect and Unpleasant Affect ($p < .01$).

Table 6

Pearson Correlation of the 8 Factors of the Total Sample

		Overall SWB	Ple Affect	Unp Affect	Life Sat	Self Sat	Health Sat	Family Sat	School Sat
OverallSWB		1	.60	-.45	.55	.69	.62	.52	.58
PleAffect		.60	1	-0.02*	.30	.48	.38	.26	.37
	N	2126							
UnpAffect		-.44	-0.01*	1	-.33	-.47	-.66	-.31	-.32
	N	2127	2260						
LifeSat		.55	.30	-.33	1	.42	.43	.56	.45
	N	2120	2253	2250					
SelfSat		.68	.47	-.45	.43	1	.62	.38	.48
	N	2130	2256	2257	2258				
HealthSat		.62	.36	-.64	.42	.61	1	.40	.46
	N	2115	2241	2244	2240	2245			
FamilySat		.52	.26	-.31	.56	.38	.39	1	.41
	N	2026	2129	2130	2130	2137	2121		
SchoolSat		.59	.37	-.32	.46	.47	.45	.42	1
	N	2126	2251	2254	2250	2258	2241	2133	

Note. All correlation coefficients were significant at .01 level (2-tailed, $p < .001$), except *. The coefficients in the lower-triangular included cases pairwise. The coefficients in the upper-triangular included cases listwise ($N = 1876$). Similar results were found between the analyses with cases pairwise and listwise.

5.2 The Structural Equation Models

5.2.1 The Model with Total Sample

Figure 3 showed the SEM model result with the total sample. The figure was simplified by hiding all indicators of the latent factors for reducing the figure complexity. The χ^2 difference test was significant ($\chi^2 = 36118.40$, $p < .001$) and thus it did not support the condition of a perfect fit between the model and the data. Regarding the goodness-of-fit indices, similar to the measurement model, the results showed fairly acceptable good fit between the structural model and the data based on both RMSEA and SRMR (RMSEA = .04 and SRMR = .06), while CFI was less than .95 (CFI = .76).
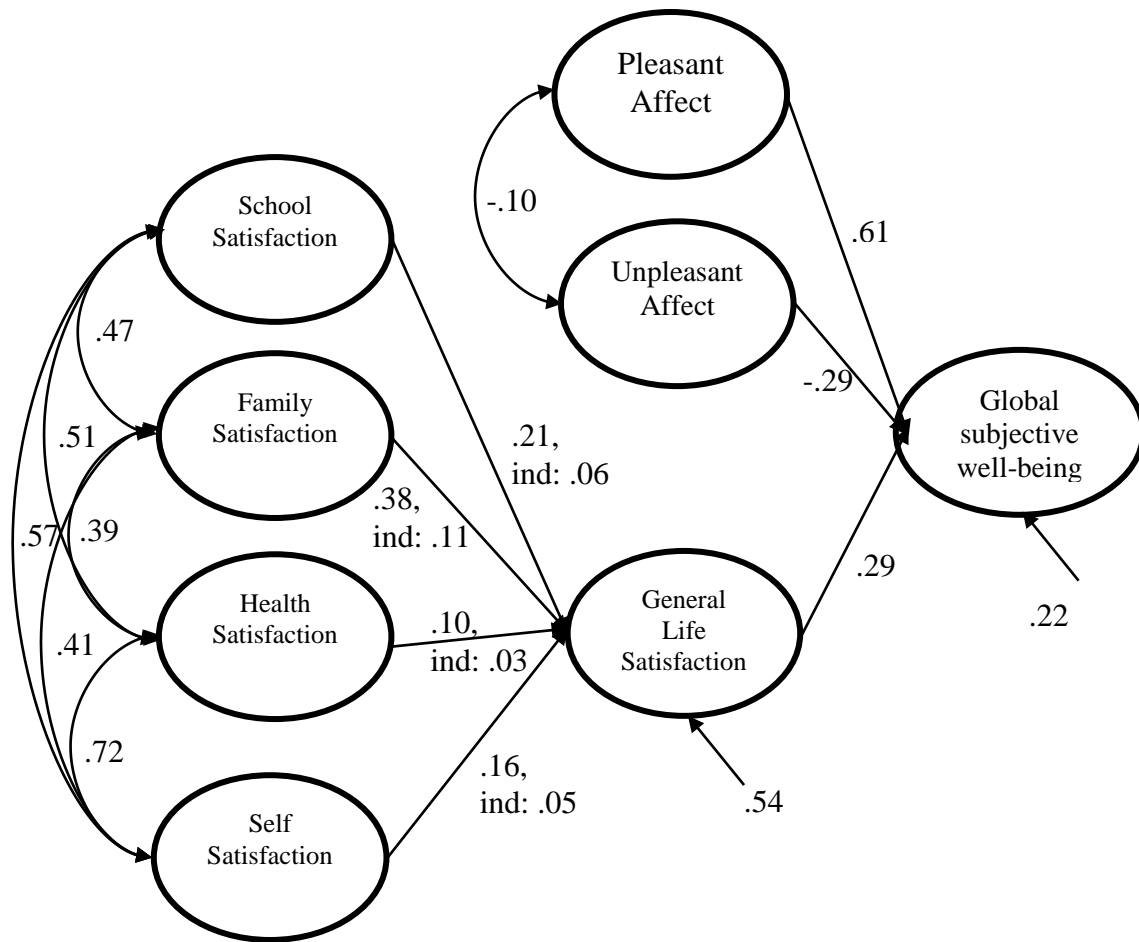
Figure 3. The hypothesized structural model with the eight constructs. χ^2 ($N = 2229$) = 36118.40, $p < .001$; RMSEA = .04; CFI = .76; SRMR = .06. The variables of gender, age, and parents' marital status were controlled for two endogenous constructs (i.e., General Life Satisfaction and Global subjective well-being). For reducing the figure complexity, the controlled variables and the indicators of all latent constructs were excluded. All estimated coefficients were standardized and significant at the level of .001, .01 or .05.

In this model, after taking age, gender, and parent's marital status into account, the regression coefficient estimations in all paths were significant at the levels of $p < .001$ or $p < .05$. The effects of pleasant affect (.61, $p < .001$), unpleasant affect (-.29, $p < .001$), and general life satisfaction (.29, $p < .001$) could significantly predict global SWB. The path for pleasant and unpleasant affect was release to correlate since these two constructs were derived from emotion. However, the correlation was weak (-.10, $p < .05$) under this model. The four domain-specific satisfaction constructs (i.e., school, family, health, and self) had significant effects on general life satisfaction (.21, $p < .001$; .38, $p < .001$; .10, $p < .05$; .16, $p < .001$, respectively). The indirect effects from these four domain-specific satisfaction to global SWB were significant as well (.06, $p < .001$; .11, $p < .001$; .03, $p = .01$; .05, $p < .001$, respectively). The estimations of the inter-correlation between these four domain-specific satisfaction constructs were significant, ranged from .39 to .72 ($p < .001$). The R-square estimations of the endogenous variables in this model, which were global SWB and general life satisfaction, were .78 ($p < .001$) and .46 ($p < .001$).

5.2.2 The Models Sub-grouping by Gender

The result of the models were grouped by male ($N_{male} = 903$) and female ($N_{female} = 1,326$) reflected in Figure 4 and 5. The indicators of all latent factors were hidden in the figures. The condition of perfect fit was not supported since the χ^2 difference test was significant ($\chi^2 = 49833.40$, the group of male contributed 21565.41, $p < .001$). While the goodness-of-fit indices indicated a fair acceptable good fit between the

structural model and the data based on both RMSEA and SRMR (RMSEA = .04 and

SRMR = .06), while CFI was less than .95 in this model (CFI = .74).

In the model of male participants, all path coefficient estimations were

significant at the levels of $p < .001$ or $p < .01$ by taking age and parent's marital status

into account, except the correlation estimation between pleasant affect and unpleasant

affect ($p > .05$). The constructs of pleasant affect (.64, $p < .001$), unpleasant affect (-.29,

$p < .001$), and general life satisfaction (.29, $p < .001$) significantly predicted global

SWB. The four domain-specific satisfaction constructs (i.e., school, family, health, and

self) had significant effects on the general life satisfaction (.24, $p < .001$; .38, $p < .001$;

.11, $p = .001$; .10, $p < .01$, respectively), as well as their indirect effects on global SWB

(.07, $p < .001$; .11, $p < .001$; .03, $p < .01$; .03, $p < .01$, respectively). The inter-correlation

between these four domain-specific satisfaction constructs were significant as well,

ranged from .38 to .74 (p < .001). The significant R-square estimations of global SWB

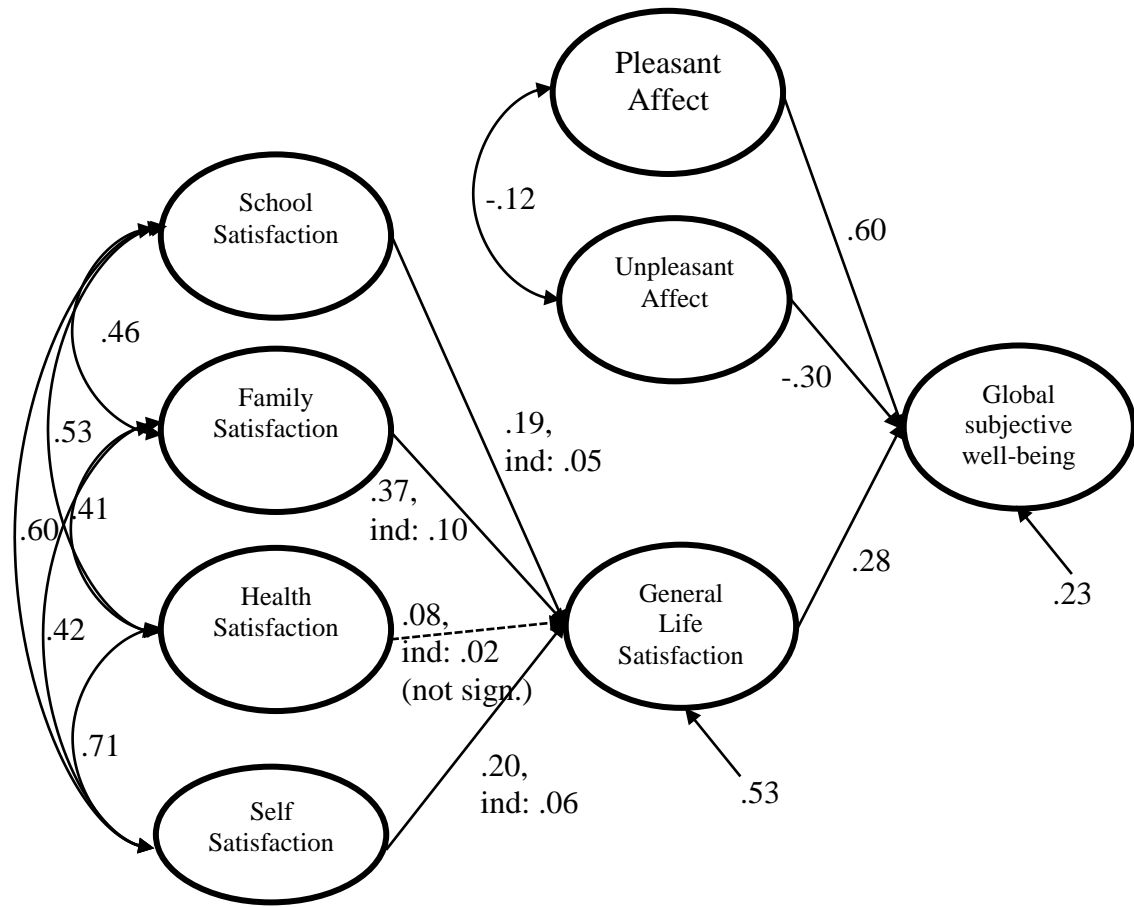and general life satisfaction were .79 ($p < .001$) and .45 ($p < .001$).
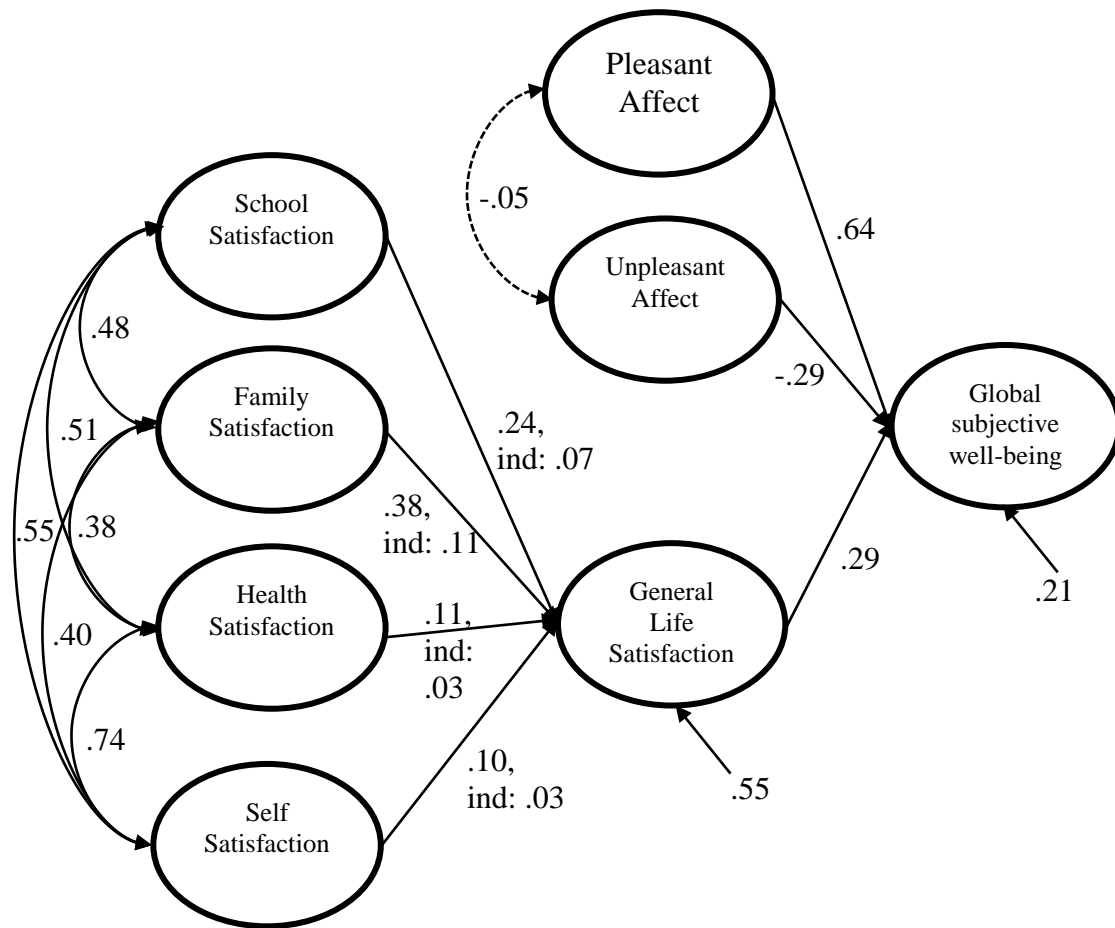
Figure 4. The hypothesized structural model of male, with the eight constructs. χ^2 ($N =$ 2229; $N_{\text{male}} = 903$) = 49833.40 (this group contributed 21565.41), $p < .001$; RMSEA = .04; CFI = .74; SRMR = .06. The variables of age and parents' marital status were controlled for two endogenous constructs (i.e., General Life Satisfaction and Global subjective well-being). For reducing the figure complexity, the controlled variables and the indicators of all latent constructs were excluded. All estimated coefficients were standardized and significant at the level of .001, .01 or .05, except the dashed path, which meant non-significant estimation.

Figure 5. The hypothesized structural model of female, with the eight constructs. χ^2 (N = 2229; N_{female} = 1326) = 49833.40 (this group contributed 28267.98), $p < .001$; RMSEA = .04; CFI = .74; SRMR = .06. The variables of age and parents' marital status were controlled for two endogenous constructs (i.e., General Life Satisfaction and Global subjective well-being). For reducing the figure complexity, the controlled variables and the indicators of all latent constructs were excluded. All estimated coefficients were standardized and significant at the level of .001, .01 or .05, except the dashed path, which meant non-significant estimation.

While the model with female participants showed similar results but two paths coefficient estimations were different from male. The non-significant correlation estimation between pleasant and unpleasant affect in male group was significant in female group (-.12, $p < .01$). Another difference between male and female was the regression coefficient estimations from the path of health satisfaction to general life satisfaction, and its indirect effect on global SWB, were not significant in the female group ($p > .05$). All other path coefficient estimations were significant at the levels of $p < .001$. The effects of pleasant affect (.60), unpleasant affect (-.30), and general life satisfaction (.28) significantly predicted global SWB. Besides health satisfaction, the domain-specific of school, family, and self satisfaction had significant effects on the general life satisfaction (.19; .37; .20, respectively), and their indirect effects on global SWB (.05; .10; .06, respectively). The inter-correlation between these four domain-specific satisfaction constructs were significant also, ranged from .41 to .71. The R-square estimations of global SWB and general life satisfaction were .77 and .47 with the significant level at $p < .001$.

5.2.3 The Models Sub-grouping by Grade Level in School

Figure 6 and 7 illustrated the models were grouped by students from junior and senior sections ($N_{junior} = 1,011$; $N_{senior} = 1,201$). All indicators of the latent factors were hidden for simplification purpose in the figures. The χ^2 difference test was significant ($\chi^2 = 47135.68$, the group of junior students contributed 21790.26, $p < .001$) and thus perfect fit was not assumed. The goodness-of-fit indices of RMSEA and SRMR

indicated fairly acceptable good fit between the structural model and the data (RMSEA = .04 and SRMR = .06), while CFI was smaller than .95 (CFI = .74).

In the model with junior students, all path coefficient estimations were significant at the levels of $p < .001$ or $p < .05$ after taking gender, age and parent's marital status into account. The effects of pleasant affect (.61, $p < .001$), unpleasant affect (-.28, $p < .001$), and general life satisfaction (.29, $p < .001$) had significant influences on global SWB. The correlation estimation of pleasant and unpleasant affect was also significant (-.16, $p = .001$). The four domain-specific satisfaction constructs (i.e., school, family, health, and self) had significant effects on the general life satisfaction (.20, $p < .001$; .40, $p < .001$; .07, $p < .05$; .19, $p < .01$, respectively), along with significant indirect effects on global SWB (.06, $p < .001$; .12, $p < .001$; .02, $p < .01$; .06, $p < .001$, respectively). The inter-correlation between these four domain-specific satisfaction constructs were significant as well, ranged from .44 to .72 ($p < .001$). The R-square estimations of global SWB (.80, $p < .001$) and general life satisfaction (.50, $p < .001$) were significant.
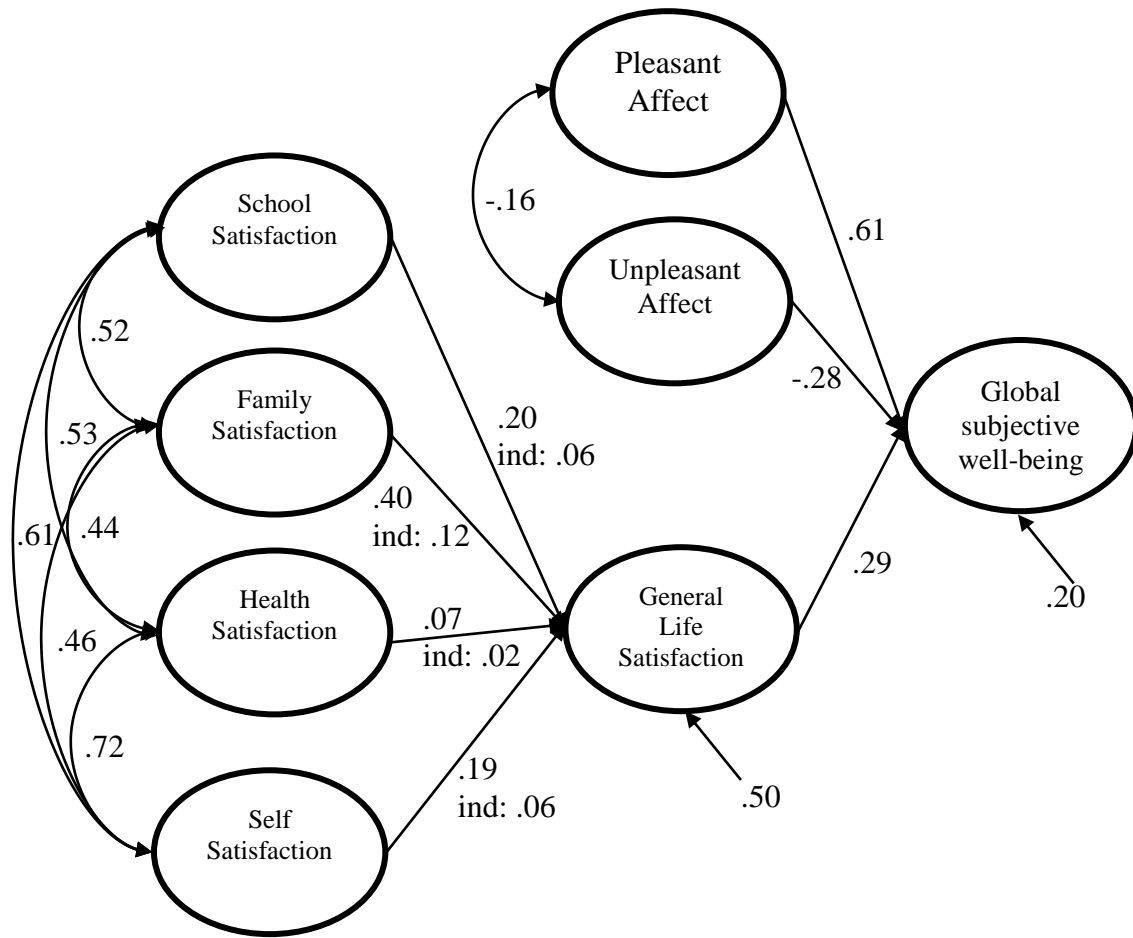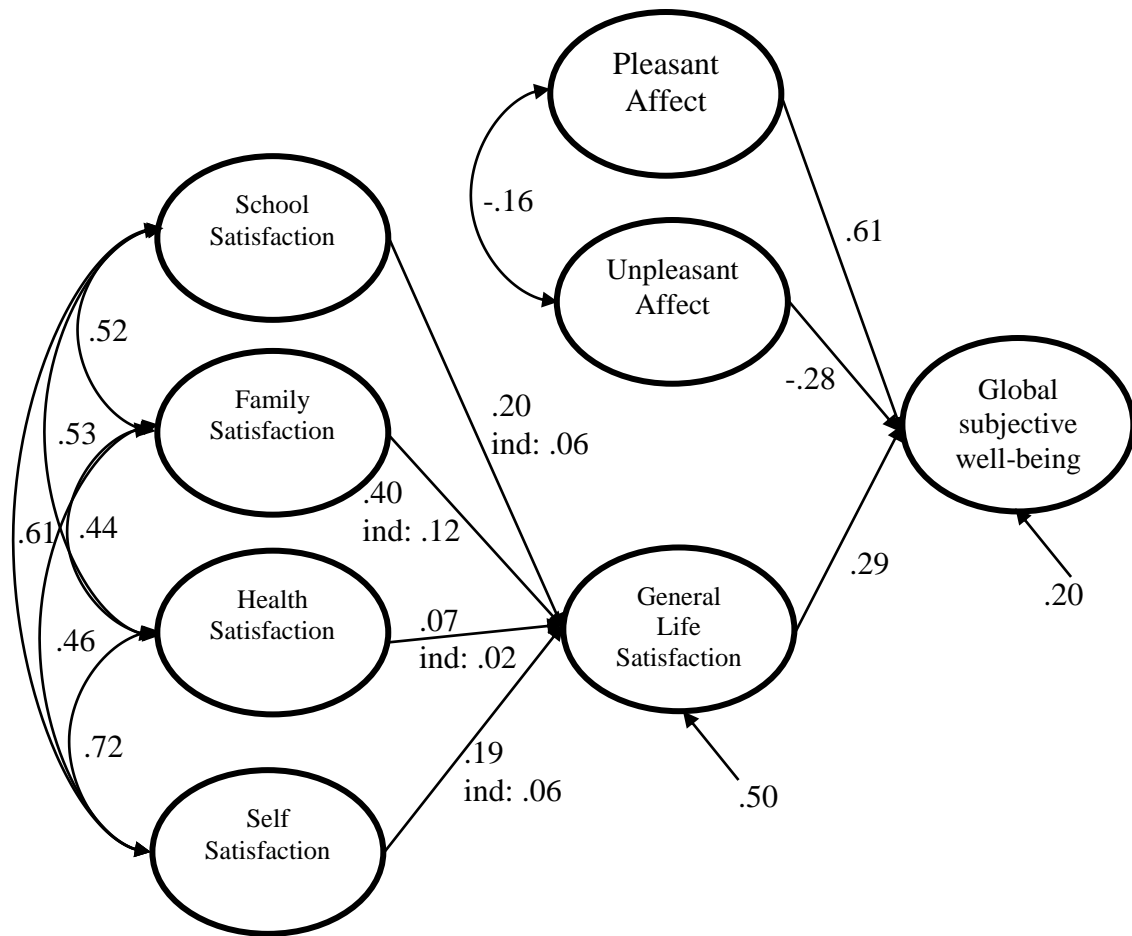
Figure 6. The hypothesized structural model of junior students, with the eight constructs.

χ^2 (N = 2212; N_{junior} = 1011) = 47135.68 (this group contributed 21790.26), $p < .001$;

RMSEA = .04; CFI = .74; SRMR = .06. The variables of gender, age, and parents'

marital status were controlled for two endogenous constructs (i.e., General Life

Satisfaction and Global subjective well-being). For reducing the figure complexity, the

controlled variables and the indicators of all latent constructs were excluded. All

estimated coefficients were standardized and significant at the level of .001, .01 or .05.

Figure 7. The hypothesized structural model of senior students, with the eight constructs.

χ^2 (N = 2212; N_{senior} = 1201) = 47135.68 (this group contributed 25345.42), p < .001;

RMSEA = .04; CFI = .74; SRMR = .06. The variables of gender, age, and parents'

marital status were controlled for two endogenous constructs (i.e., General Life

Satisfaction and Global subjective well-being). For reducing the figure complexity, the

controlled variables and the indicators of all latent constructs were excluded. All

estimated coefficients were standardized and significant at the level of .001, .01 or .05,

except the dashed paths, which meant non-significant estimations.

On the other hand, the model of senior students showed slightly different results. There were two non-significant paths coefficient estimations in the group of senior students. The estimation of the correlation coefficient between pleasant and unpleasant affect, and the regression coefficient from the path of health satisfaction to general life satisfaction were not significant ($p > .05$). All other coefficient estimations were significant at the levels of $p < .001$ or $p < .05$. The constructs of pleasant affect (.63, $p < .001$), unpleasant affect (-.29, $p < .001$), and general life satisfaction (.27, $p < .001$) significantly predicted global SWB. Besides health satisfaction, the domain-specific of school, family, and self satisfaction had significant effects on the general life satisfaction (.21, $p < .001$; .36, $p < .001$; .14, $p < .05$, respectively). In contrast to the junior group, there were only two significant indirect effects, which were the indirect effects of school (.06, $p < .001$) and family (.10, $p < .001$) satisfaction on global SWB. Additionally, the inter-correlation between these four domain-specific satisfaction constructs were significant, ranged from .35 to .72, $p < .001$. The R-square estimations of the endogenous variables in this model, which were global SWB and general life satisfaction, were .76 ($p < .001$) and .43 ($p < .001$).

5.2.4 The Model Sub-grouping by Marital Status of Parents

The models were grouped by marital status of the participants' parents ($N_{married}$ = 1877; $N_{divorce}$ = 352) were summarized in Figure 8 and 9. In these two figures, all indicators of the latent factors were ignored for reducing the figure complexity. The χ^2 difference test was significant (χ^2 = 47780.47, the group of married parents contributed 33142.75, $p < .001$) so that a perfect fit assumption was not supported. The goodness-of-

fit indices of both RMSEA and SRMR indicated a fair acceptable good fit between the structural model and the data (RMSEA = .04 and SRMR = .06), while CFI was smaller than .95 (CFI = .74).

Regarding the groups of the participants with married parents, all path coefficient estimations were significant at the levels of $p < .001$ or $p < .05$, with controlling the variables of gender and age. The effects of pleasant affect (.62, $p < .001$), unpleasant affect (-.29, $p < .001$), and general life satisfaction (.28, $p < .001$) on global SWB were significant. The correlation estimation of pleasant and unpleasant affect was significant as well (-.09, $p < .05$). Those four domain-specific satisfaction constructs (i.e., school, family, health, and self) had significant effects on the general life satisfaction (.20, $p < .001$; .39, $p < .001$; .10, $p < .05$; .15, $p < .001$, respectively) and their indirect effects on global SWB (.06, $p < .001$; .11, $p < .001$; .03, $p < .05$; .04, $p < .001$, respectively) . The inter-correlation between these four domain-specific satisfaction constructs were significant, ranged from .40 to .73 ($p < .001$). The significant R-square estimations of global SWB and general life satisfaction were .78 ($p < .001$) and .46 ($p < .001$).
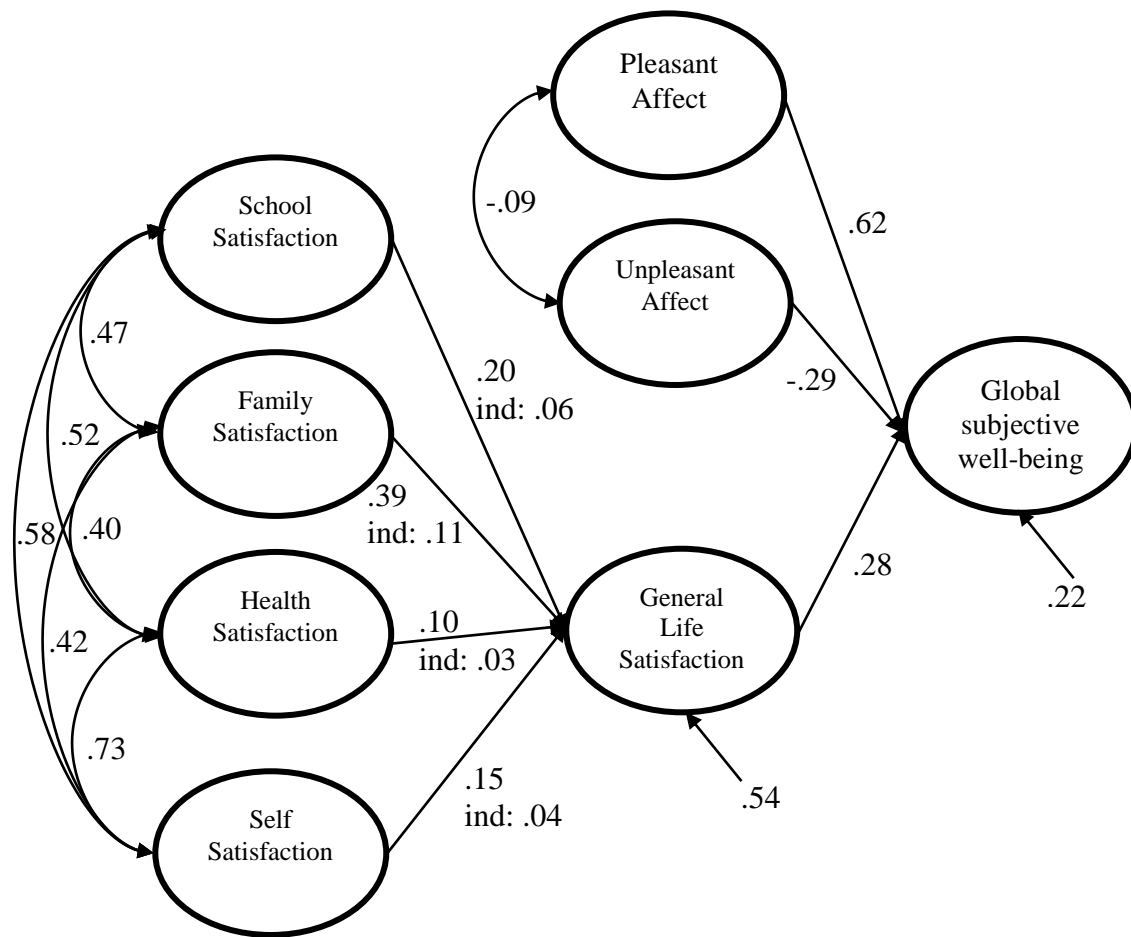
Figure 8. The hypothesized structural model of students from a normal family, with the eight constructs. χ^2 ($N = 2229$; $N_{married} = 1877$) = 47780.47 (this group contributed 33142.75), $p < .001$; RMSEA = .04; CFI = .74; SRMR = .06. The variables of gender and age were controlled for two endogenous constructs (i.e., General Life Satisfaction and Global subjective well-being). For reducing the figure complexity, the controlled variables and the indicators of all latent constructs were excluded. All estimated coefficients were standardized and significant at the level of .001, .01 or .05.
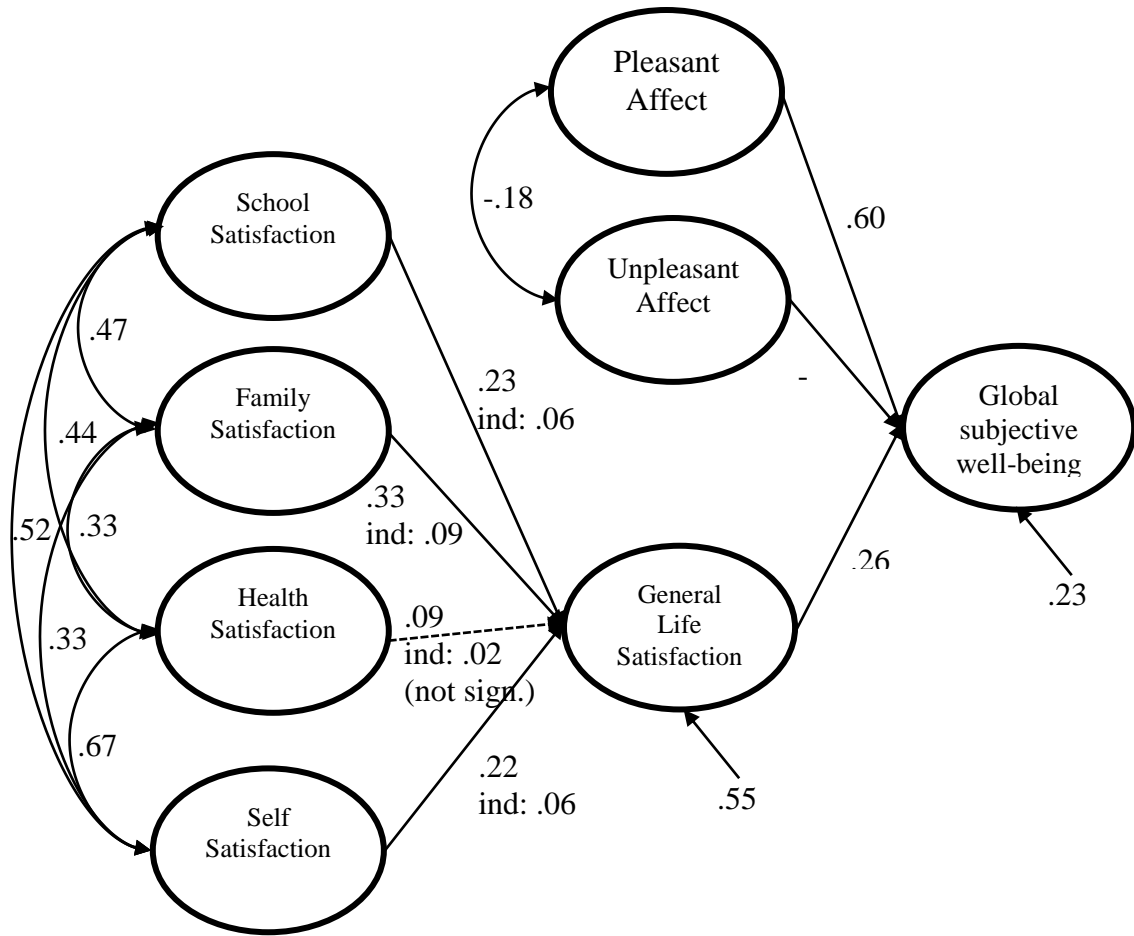
Pleasant Affect

School Satisfaction

-.18

.60

Unpleasant Affect

.47

.23
ind: .06

Global subjective well-being

Family Satisfaction

.44

.33
ind: .09

.52 .33

-

Health Satisfaction

.09
ind: .02
(not sign.)

General Life Satisfaction

.26

.33

.23

.67

.22
ind: .06

.55

Self Satisfaction

Figure 9. The hypothesized structural model of students from a divorced family, with the eight constructs. χ^2 ($N = 2229$; $N_{divorce} = 352$) = 47780.47 (this group contributed 14637.71), $p < .001$; RMSEA = .04; CFI = .74; SRMR = .06. The variables of gender and age were controlled for two endogenous constructs (i.e., General Life Satisfaction and Global subjective well-being). For reducing the figure complexity, the controlled variables and the indicators of all latent constructs were excluded. All estimated coefficients were standardized and significant at the level of .001, .01 or .05, except the dashed path, which meant non-significant estimation.

In contrast to the students with married parents, the model result of the group of students with divorced parents indicated a difference in one of the regression coefficient estimation, which was the regression coefficient of the path from health satisfaction to general life satisfaction ($p > .05$), along with the indirect effect on global SWB ($p > .05$). All other coefficient estimations were significant at the levels of $p < .001$ or $p < .05$. The effects of pleasant affect (.60), unpleasant affect (-.28), and general life satisfaction (.26) on global SWB were significant ($p < .001$). Except the construct of health satisfaction, the domain-specific satisfaction of school, family, and self-image had significant effects on the general life satisfaction (.23, $p = .001$; .33, $p < .001$; .22, $p < .001$, respectively), as with the indirect effects on global SWB (.06, $p < .001$; .09, $p < .001$; .06, $p < .01$, respectively). While the inter-correlation between these four domain-specific satisfactions constructs were significant, ranged from .33 to .67 ($p < .001$). The R-square estimations global SWB and general life satisfaction were significant (.77, $p < .001$; .45, $p < .001$).

6. DISCUSSION

The result of the structural equation model confirmed the hypothesized model in the present study. There was a fair-to-good fit of the model based on both RMSEA and SRMR supporting that there had been an acceptable level of the consistency between the data and the model. The correlation matrix of latent construct estimates and observed factor data shared similar patterns as well (see Table 5 and 6). In general, the results in the current paper demonstrated the original ideas from Diener et al. (1999) that SWB was contributed by pleasant and unpleasant affect, as well as life satisfaction that was derived from different domains of satisfaction, namely, in school, family, health, and self. As the model result described (see Figure 3), SWB was mostly contributed by pleasant affect, comparing with unpleasant affect and general life satisfaction. It was not surprising that a person given a high level of pleasant affect, his or her SWB would be better, or vice versa. This result implies that the unpleasant affect and general life satisfaction have impacts on the SWB (i.e., the higher level of unpleasant affect, the lower SWB; the higher level of life satisfaction, the high SWB).

Again, the key to achieve high SWB is to maintain happiness. However, maintain happiness is difficult, especially in our daily lives that always involves uncertainty. As the perspective of Neugarten et al. (1961), the extent of satisfaction with a particular domain, depended on the congruence between the desired and the achieved goals in that particular domain. Looking back to the participants of this study, all of them were students, which were the examined population. They were the people who still were

preparing for getting a better life in the future. Compared with adults, students tended to

expect that there are more discrepancies between the desired and the achieved goals

since they were young and tended to have fewer life experiences. Additionally, their

lives were relatively uncontrollable since they still depended on their parents or

guardians. Under this situation, the SWB ought to be contributed mainly by the tendency

of being and keeping happy, works as an attitude, that helps the students confront the

uncertainty and incidents in daily life. For instance, it is possible that a patient suffered

from malignant cancer develops a high level of SWB, if this patient has an energetic

mindset and positive attitude for keeping happy, regardless he or she is dying. Another

interpretation to explain why pleasant affect is the strongest predictor of SWB may be

the instrument of measuring global SWB with items associating with happiness.

The SEM result regarding the components of life satisfaction indicated that the

magnitudes of each specific domain were different in terms of the contribution to the

general life satisfaction. The self and health satisfactions had fewer effects (even non-

significant effects of health satisfaction in the groups of female, senior students and

students from a divorced family) on general life satisfaction than school and family

satisfactions. Both self and health satisfactions relate to the aspects of personal or

internal to an individual, while the school and family satisfactions involve the aspects of

the environment. The ideology of the traditional values in Macau can explain why the

environmental satisfaction has a larger impact on general life satisfaction than personal

satisfaction does in Macau students. As Hong Kong and other well-known societies in

Asia, Macau citizens share collectivistic values. The values in collectivism highlight

interpersonal harmony and filial piety and thus the collectivists tend to be other-focused. While individualistic values emphasize more on self-confidence, achievement, and the individualists are self-focus (Wang & Tamis-Lemonda, 2003; Triandis, 2000). The value of interpersonal harmony benefits school satisfaction for students, and filial piety facilitates family satisfaction. Therefore, students in Macau satisfice with the specific domains matching the collectivistic values promote a higher level of life satisfaction, in comparing with those domains less related to the values in collectivism. While the individualistic values of self-confidence and the tendency of self-focus are relating to the personal satisfaction. These individualistic values are less emphasized than the collectivistic values in Asia regions. Thus, the domains of satisfaction relating to individualism influence less on life satisfaction, regardless high satisfaction of the certain domains. Another explanation for this phenomenon is universal: Self and health satisfactions have fewer effects on general life satisfaction than school and family satisfaction in nature, and independent of the individualism-collectivism dimension in the society ideology. These two explanations raised questions for future studies.

Regarding the models were grouped by the demographics. There was an interesting finding among the model of the male group and the group of senior students. These two models indicated that the correlation between pleasant and unpleasant affect was not significant, but significant in the group of female and the group of junior student. Regarding the gender difference, this result contradicted to the finding of the previous study (Watson et al, 1988) that the inventory should be consistent across gender. However, the participants in that study were all students in a university of

51

United State, and thus it raised the issue of culture differences. Another study (Bagozzi, Wong, & Yi, 1999) for exploring cultural and gender differences in positive and negative affect supported the argument of culture differences. Their study incorporated the same inventory about pleasant and unpleasant affect in the present study as a part of their instrument to explore the cultural and gender issues. The participants were college students in Michigan and Beijing (i.e., a western region and an eastern region). Their findings matched the result of the present study partially. Bagozzi et al. (1999) found that there were strong positive correlations between positive and negative affect among Chinese female and weaker positive correlations for male. The difference in strength of the correlation resembled the result of the present study, but the direction of the correlation was opposite. A similar pattern was identified in the models were grouped by junior and senior students. The group of senior students had no correlations between pleasant and unpleasant affect, but the juniors. These patterns probably reflect that there might be a sub-culture of Macau apart from the domestic culture of China.

Lastly, the estimations of the models between the groups of students from normal family and divorced family shared similar patterns. It implied that the examined model is applicable for both students from normal or divorced family, while a previous study (Gohm et al., 1998) considered the family structure had influences for SWB. More studies are needed to verify the effects of family structure on SWB.

6.1 Limitations

The major purpose of this study was to establish a concrete theoretical framework of SWB. However, the participants of this study were all secondary students

and live in Macau, a region in Asia. It is confident to apply this model in Asian regions. At the same time, one possible limitation is the generalization to other populations. Although most of the employed instruments are verified for the populations with various cultures, differences are identified in this study. It suggests future studies can explore the generalization issues. Another limitation is the usage of consistency between the constructs and the instruments. As the diverse understanding of SWB, the use of instruments is hard to unify despite a concrete framework. For example, SWB researchers (e.g., Francis, 1999) employ the Oxford happiness questionnaire for measuring happiness, instead of SWB, although the concepts of these two constructs are overlapping with each other in some aspects.

7. CONCLUSIONS

The present study benefits for both academic and practical side. Academically, this study evidences a theoretical framework of SWB initially with a multilevel structural equation model technique with controlling by gender, school grade level, and marital status of parents. The examined model provides an operational framework and concrete components for SWB researchers conducting their studies. In addition, it suggests further SWB researchers can explore the effects of other specific domains of satisfaction contributing to general life satisfaction and SWB, as well as the time dimension of life satisfaction and SWB. The present study also provides directions for the SWB researchers conduct meta-analyses to incorporate all the domains of satisfaction and SWB to examine the holistic framework.

In the examined four domains of satisfaction in this study, the result indicated that cultural values differences (e.g., collectivistic values vs. individualistic values) might take place in the relationship of specific domains and general life satisfaction. On the other hands, indeed some types of domains have not been studied cannot be clearly distinguished from individualistic and collectivistic values, such as finance satisfaction. Finance can be satisfied by self-use, or beyond self (e.g., family finance satisfaction), and finance satisfaction definitely is able to affect life quality subjectively, and can be examined on an upper level, such as finance satisfaction of nations (Oishi, Schimmack, & Diener, 2012). In this example, matching this domain of satisfaction to the values of individualism and collectivism dimension may not be appropriate. It suggests further

SWB researchers can explore deeper the impacts of cultural values on life satisfaction and SWB.

For practical implications, the current results showed that the strongest predictor of global SWB was pleasant affect. It implies that the attitude of maintaining positive affect is particularly important for establishing a high extent of SWB. The school administrators should develop the education policies that can establish students' attitude of maintaining a positive affect for enhancing their wellness. Further researchers can explore the effectiveness of such policies in the educational setting for building up an appropriate atmosphere and positive attitude of students.

Additionally, the models were grouped by gender, school grade level, and parents' marital status were analyzed for detecting any potential group differences. Interestingly, the non-significant correlation between pleasant and unpleasant affect among male group contradicted with previous findings (Watson et al, 1988; Bagozzi et al., 1999), a similar pattern was found in the senior student group. It probably raises some clues that cultural differences take place in the impacts of demographic factors on the components in SWB. It suggests future studies can exploring deeper in this issue, especially the sub-cultural differences among Asia regions.

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APPENDIX A

THE DEMOGRAPHIC ITEMS OF THE INSTRUMENTS

<u>Demographic information</u>

Please fill in the following table by either writing down the answer or putting a tick in the appropriate box.

Age:	□ Equal to or younger than 10　□ 11　□ 12　□ 13　□ 14　□ 15　□ 16 □ 17　□ 18 □ 19　□ 20 □ Equal to or older than 21
Gender:	□ Male　　□ Female
Class Level:	□ F1　　□ F2　　□ F3　　□ F4　　□ F5　　□ F6
How do you *think* about your academic performance?	□ Very poor □ Poor □ Neutral □ Good □ Very good
Are you *satisfied* with your academic performance?	□ Very dissatisfied □ Dissatisfied □ Neutral □ Satisfied　□ Very satisfied
What is the marital status of your parents?	□ Married □ Separated □ Divorced □ Others: _____