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Cross-cultural differences in personality, motivation and cognition in Asian vs. Western societies

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Introduction

Culture has been defined as "*the integrated pattern of human knowledge, belief, and behaviour that depends upon the capacity for learning and transmitting knowledge to succeeding generations*" (Fernandez 2010), encompassing traditions, languages, and belief systems that affect perception of the world. Culture, with its common assumptions, values, and behaviours, is the shared way of perceiving and thinking among members of a group/nation (Berry, Poortinga, Breugelmans, Chasiotis, & Sam, 2011). Culture is a configuration of thoughts, feelings, and behaviours shared by group members which may impact on an individual's psychological well-being, goal orientation, motivation, and study approach (Manikutty, Anuradha, & Hansen 2007). Culture shapes individuals' attitudes and motivation towards academic learning (Klassen et al., 2013).

Several studies have included culture as an explanatory variable (e.g., Chiu, Kim, & Wan., 2008; Choi & Kim, 2013; Kang & Chang, 2016). Individual differences in personality, motivation and cognition (Saklofske & Eysenck, 2004) are influenced by social learning in adapting to cultural environments (Chang et al., 2011; Chiu et al., 2008; Chiu, Chia, & Wan, 2015; Stankov & Lee, 2008; van de Vijver & van Hemert, 2008). Wongsri (2004) found that culturally-shaped variables such as goal orientation, academic volitional strategies, depth of learning, and happiness/psychological wellbeing interact synergistically in impacting on academic learning (also see, Bernardo & Liem, 2013; Hwang & Matsumoto, 2013; Joy & Kolb, 2009; Zhue, & Leung, 2011). In the era of transnational education (Heffernan et al., 2010), it is germane to ask what is the role of cultural nuances in contributing to cross-cultural differences in academic performance?

Goal orientation theory is a major social-cognitive theory of achievement motivation (Dela Rosa & Bernardo, 2013; Macayan, 2012; Yeo, Loft, Xiao, & Kiewitz 2009). In the

Midgley et al. (1998) model, goal orientation is conceptualised as comprising: mastery (task-orientation), performance-approach, and performance-avoidance orientations (Macayan, 2012). While high task-oriented students value learning that is inherently meaningful, and high performance-approach oriented students seek favourable judgements from others, performance-avoidance oriented students try to minimise others' unfavourable judgements (Elliot, & Murayama, 2008). Watson, Meade, Surface, & van de Walle (2007) reported that goal orientation predicts academic self-efficacy, psychological wellbeing, and GPAs. Cultural conditioning clearly impacts on goal orientation and other predictors of learning (Dekker & Fischer, 2008; Gao, Xiang, Harrison, Guan, & Rao, 2008; King, 2016; Zhue & Leung, 2011).

Comparing cultures on achievement goals, using theoretical categorisation labels (e.g., individualistic vs. collectivistic; independent vs. interdependent – e.g., Yu & Yang, 1994), Macayan (2012) provided evidence for the differential effects of cultural orientations (Asian vs. Western) on academic performance. Previously, the varying impacts of mastery and performance (approach and avoidance goal orientations) on academic achievement had been reported (e.g., Salili, Chiu, & Lai, 2001). Achievement goals, mastery and performance orientation correlate positively in several Asian studies (Bernardo, 2003; Chang & Wong, 2008; Ho & Hau, 2008; Lau & Lee, 2008), contradicting the western notion that goal orientations are distinct from one another. Asian cultures exhibit a greater socially based collectivistic orientation (Berry et al., 2011), impacting on academic motivational orientation. Mastery goal orientation is aligned with more individualistically oriented cultures while performance goal orientation is associated with collectivist societies.

Cultural influences on learning approaches have received attention (Dennehy, 2015; Holtbrügge & Mohr 2010; Signorini, Wiesemes, & Murphy, 2009). Dennehy (2015) compared the learning approaches between Confucian-heritage and Western-heritage

students, based on the stereotype that Asian students are more likely to adopt a ‘surface learning approach’ whereas Western students tend to adopt a ‘deep learning approach’ based on intrinsic/mastery motivation wherein students try to master the learning material, whereas surface learning reproduces facts through rote learning, rather than understanding underlying principles (Biggs, 2014; Biggs, Kember, & Leung, 2001; Jongsataponsit, 2000; Phan, 2006). Approach-avoidance motivation plays a crucial role in students’ cognitive and volitional regulatory abilities (Bartels, Magun-Jackson, & Kemp, 2009).

Academic volitional strategies based on self-regulation theory, have been defined as "*the degree to which individuals are metacognitively, motivationally, and behaviorally active participants in their own learning process*" (Zimmerman, 1989). Self-regulation involves setting, monitoring, and managing learning behaviours and volitional strategies (emotional, motivational, cognitive and meta-cognitive control), in attaining academic goals (McCann & Turner, 2004; Zimmerman, 2002; Zumbrunn, Tadlock, & Roberts, 2011). Stress-reducing actions, self-efficacy enhancement, and negative-based incentives help students stay on task, enhancing academic performance (Bembenutty & Karabenick, 2013; Shepherd, 2006). Self-efficacy enhancement helps maintain confidence, while negative-based incentives focus on undesirable consequences of poor academic performance (McCann & Garcia, 1999). While self-regulatory learning studies have failed to examine culturally influenced individual differences (Lopez, 2000; McCann & Garcia, 2000), nevertheless, Pintrich (1999) argued that cross-cultural assessment of self-regulatory and volitional strategies pertaining to academic learning is essential.

Subjective wellbeing (happiness) is associated with personal growth across the lifespan, positive emotions and mental health, pursuing one’s intrinsic goals, self-acceptance, positive relationships, autonomy, environmental mastery, and purpose in life (Nielsen,

Paritski, & Smyth, 2009; Ryff et al., 2006). Both hedonism and eudaimonia (Huta, 2012) operate synergistically in contributing to happiness/psychological wellbeing (Henderson & Knight, 2012; Kashdan, Biswas-Diener, & King, 2008). According to Deci and Ryan (2008), in the hedonistic tradition, "*the focus is on happiness, generally defined as the presence of positive affect and the absence of negative affect…[whereas] in the…eudaimonic tradition, the focus is on living life in a full and deeply satisfying way.*" Measures of happiness correlate positively with creative thinking, reading, leadership, confidence, self-esteem, self-efficacy, communication skills, and positive goal orientation (Dagenais-Demarais & Sovoie, 2011; Fava & Ruini, 2014), and with academic success (Datu, Valdez, & King, 2017; Diener & Seligman, 2002). Inarguably, culture defines the interpretation of happiness (e.g., Lou, Gilmour, & Kao, 2001; Oishi, Graham, Kesebir, & Galinha, 2013; Uchida & Kitayama, 2009).

In contrast to the Judeo-Christian roots of Australian society, 93.6% of Thai are Buddhist. To-date, individual differences in Thai vs. Australian academic performance have not been investigated as a function of motivational and cultural variables (cf. Hwang & Matsumoto, 2013; Joy & Kolb, 2009; King & Watkins, 2013; McInerney & Walker, 2011; Pimparyon, Roff, McAleer, Poonchai, & Pemba, 2000). Wongsri (2004) had demonstrated that variables including happiness/psychological wellbeing (Schimmack, Radhakrishnan, Oishi, & Dzokoto, 2002), goal orientation (Caraway, Tucker, Reinke, & Hall, 2003), study approach (Biggs, 2014), and volitional strategies (McCann & Turner, 2004) influence academic performance. In our study there are discernable cultural differences, as Thailand places more emphasis on conformity (e.g., university students required to wear uniforms), whereas in Australian universities, students are regarded as adults. The age of majority in Australia is 18 years, whereas in Thailand it is 21 years. In Thai universities, students are

expected to listen carefully and respectfully without directly challenging the lecturer's authority or criticising his/her arguments. They may be required to memorise material, whereas Australian university students may be expected to adopt a more critical analytic style, and to more closely evaluate the statements and assertions of their lecturers.

Aim of Present Study

The present study investigated predictors of academic achievement among Thai and Australian university students. Standardised GPAs, measures of goal orientation, study approach, academic volitional strategies, and happiness/subjective wellbeing were obtained. Using a cross-cultural design, our study extends the work of Wongsri (2004) into the impact of learning-related predictors on academic performance and happiness/subjective wellbeing. Based on the literature review, we expected that Thai and Australian undergraduates would exhibit significant differences on several dependent measures.

Method

Participants

Students were enrolled in 4-year degree programs in Thailand and Australia. The combined sample (N=708), comprised N=395 undergraduates at Saint Louis College, Bangkok, and N= 313 undergraduates at XXXX XXXXXXXXXX, Queensland. Ethical clearance was granted both by the National Health and Medical Research Council (NHMRC) approved XXXX XXXXXXXXXX Human Research Ethics Committee (HREC), and by the corresponding XXXXX XXXXX XXXXXXXX Medical Research Ethics Committee (MREC). Only Asian students were included in the Thai sample, and only Caucasian students were included in the Australian sample. Students were asked to sign an informed consent form. Demographic characteristics are shown in Table 1.

Table 1

Design and Procedure

A between-groups design with multiple dependent measures was employed. The independent variable (IV) was: Country (Thai vs. Australian). As discussed below, the measures included the Oxford Happiness Questionnaire (OHQ), the Goal Orientation Questionnaire (GOQ), the Revised Study Process Questionnaire (R-SPQ-2F), and the Academic Volitional Strategy Inventory (AVSI). Also, a preliminary demographics' sheet was completed by both the Thai and Australian students.

Standard translation procedures were followed. The cross-cultural translation technique advocated by Banville, Desrosiers, and Genet-Volet (2000) was employed with initial translation of the measures into Thai language carried out by two bilingual translators. Translating the items from English into Thai, with subsequent independent back-translation from Thai into English ensured that both language versions were equivalent (cf. Cantwell, Archer, & Wongsri, 2002; Fetvadjiev & van de Vijver, 2015; Hambleton, 2001; Hambleton, Swaminathan, & Rogers, 1991; International Test Commission (ITC), 2005; Maneesriwongul & Dixon, 2004; van de Vijver & Hambleton, 1996; van de Vijver & van Hemert, 2008; van de Vijver & Tanzer, 2004; van de Vijver & Poortinga, 2005). Content validity was assessed using a bilingual group of Thai students who completed both the English and Thai translated versions of the measurement scales. Testing the equivalence of the measures across the two cultural groups verified both their scalar and metric measurement invariance.

Establishing the cross-cultural equivalence of the Thai language and English language measures was absolutely imperative in order to enable valid between-group comparisons and

to justify combining the two separate data sets in order to test the heuristic structural equation model (see below) of the empirically-observed interrelationships between the learning-related variables, happiness, and academic achievement.

Likewise, in order to enable direct comparison of academic achievement levels across the two samples, cumulative GPA scores (standardised on a 4-point scale for cross-country equivalence) were obtained from student records at both tertiary institutions, pursuant to informed consent having been obtained from the participants in each sample. XXXXX XXXXX XXXXXXX and XXXX XXXXXXXXXX are both private higher educational institutions.

Measures

Oxford Happiness Questionnaire (OHQ) – (Hills & Argyle, 2002; Kashdan, 2004), includes 29 self-report items (17 direct; 12 reversed) measured on a 6-point scale ranging from "*Strongly disagree*" to "*Strongly agree*". Cronbach alpha coefficients (cf. Boyle, 1991) for the Thai measures (Australian data in parentheses) were: Total Scale: $\alpha = 0.85$ (0.91), Direct items: $\alpha = 0.89$ (0.91), and Reversed items: $\alpha = 0.77$ (0.82). As for convergent validity, Hills and Argyle had reported correlations with measures of Extraversion ($r = 0.61$), Life Satisfaction ($r = 0.77$), Self-Esteem ($r = 0.81$), Life Orientation Test ($r = 0.79$), and Life Regard Index ($r = 0.77$). As for divergent validity, the OHQ correlated negatively with measures of Neuroticism ($r = -0.59$), Psychoticism ($r = -0.17$), and Depression ($r = -0.90$).

Goal Orientation Questionnaire (GOQ) – (Adesope, Zhou, & Nesbit, 2015; Midgley et al., 1998) comprises 18 self-report items rated on a 5-point scale ranging from "*Almost Never or Never True*" to "*Almost Always or Always True*". Alpha coefficients for the Thai-language measures (Australian data in parentheses) were: Total Scale: $\alpha = 0.82$ (0.82), Ability Approach Goal Orientation: $\alpha = 0.81$ (0.79), Ability Avoid Goal Orientation: $\alpha = 0.74$

(0.87), and Task Goal Orientation: α = 0.73 (0.82). Midgley et al. (1998) reported six-month retest coefficients for Task Goal Orientation (r = 0.63), and Ability-Approach Goal Orientation (r = 0.61), indicating moderate stability. Ability-Approach and Ability-Avoid factors exhibited some measurement overlap (Thai sample: r = 0.55; Australian sample: r = 0.50).

Revised Study Process Questionnaire (R-SPQ-2F) – (Biggs, 2014; Biggs, Kember, & Leung, 2001; Martinelli & Raykov, 2017), comprises 20 self-report items rated on a 5-point scale ranging from "*This item is never or only rarely true of me*" to "*This item is always or almost always true of me*". Alpha coefficients (Australian data in parentheses) were: Total Scale: α = 0.77 (0.67), Deep Study Approach: α =0.79 (0.82), and Surface Study Approach: α = 0.78 (0.69).

Academic Volitional Strategy Inventory (AVSI) – (McCann & Garcia, 1999; McCann & Turner, 2004; Shepherd, 2006) comprises 30 self-report items rated on a 5-point scale ranging from "*I almost never do this*" to "*I almost always do this*". Alpha coefficients (Australian data in parentheses) were: Total Scale: α = 0.87 (0.89), Self-Efficacy Enhancement: α = 0.80 (0.85), Stress Reducing Actions: α = 0.71 (0.75), and Negative-Based Incentives: α = 0.58 (0.74)), respectively. McCann and Garcia (1999) reported a stability coefficient over a 4-week interval (r = 0.72).

Results

Intercorrelations between background variables (country, sex, year, age) and also between learning-related variables (goal orientation, study process/approach), personality (happiness/psychological wellbeing) and GPA scores are shown in Table 2. It is evident that Country (Thailand vs. Australia) correlated substantially (-.47, $p < .01$) with academic grades

measured via GPAs (22% variance overlap) suggesting a discernible impact of culture on academic performance.

Table 2

Using SPSS (V21 for Windows), between-group MANCOVAs were carried out (with age, sex, and year level includes as covariates to control for between-group differences due to these background variables). The IV was Country (Thailand vs. Australia), while DVs were OHQ, GOQ, R-SPQ-2F and AVSI mean scores across groups (see Table 3), and the impact of AVSI subscale/domain scores on GPAs (see Table 4 below).

Table 3

Happiness/Psychological Wellbeing

Irrespective of Country (IV), there was a significant multivariate effect for Happiness/Psychological Wellbeing, $F(4, 1362) = 3.70$, $p < .001$, $\eta^2 = .01$. Students with higher positive affectivity obtained significantly higher GPAs, $F(2, 681) = 6.89$, $p = .001$, $\eta^2 = .02$. However, our results accord with large-scale cross-cultural surveys based on the Programme for International Student Assessment (PISA) data showing that subjective Wellbeing reports among Thai students is significantly higher ($p < .05$) than is the case for Western students (Lee & Wu, 2019).

Goal Orientation

There was a significant multivariate effect of Country, $F(3, 679) = 31.89$, $p < .001$, $\eta^2 = .12$, on Goal Orientation. Australian students scored more highly on Ability-Approach Orientation, $F(1, 681) = 82.53$, $p < .001$, $\eta^2 = .11$. There was a significant univariate effect with Australian students obtaining significantly higher Ability-Avoid Orientation scores, $F(1, 681) = 3.83$, $p < .05$. Irrespective of Country, students with higher Ability-Approach Orientation scores obtained significantly lower GPAs, $F(2, 681) = 4.42$, $p < .01$, $\eta^2 = .01$.

Study Approach

There was a significant multivariate effect of Country on Study Approach, $F(2, 680) = 10.99$, $p < .001$, $\eta^2 = .03$). There were significant univariate effects of Country on Deep Learning, $F(1, 681) = 14.84$, $p < .001$, $\eta^2 = .02$, and on Surface Learning, $F(1, 681) = 6.54$, $p = .011$, $\eta^2 = .01$. Higher Deep Learning scores were obtained by Thai students (Table 4).

There was a significant multivariate effect for Year Level on Study Approach, $F(6, 1360) = 2.99$, $p < .01$, $\eta^2 = .01$, plus a significant univariate effect, $F(3, 681) = 4.99$, $p = .002$). A linear trend analysis (Fig. 1) suggests a monotonic decline in Deep Study Approach scores with increasing years of study, $F(3, 681) = 2.80$, $p < .04$, $\eta^2 = .01$. There was a significant multivariate interaction between Country x Year Level, $F(6, 1360) = 3.38$, $p = .003$, $\eta^2 = .02$, and significant univariate interactions between Country x Year Level for both Deep and Surface Learning approaches, $F(3, 681) = 3.87$, $p < .01$, $\eta^2 = .02$; $F(3, 681) = 3.05$, $p = .03$, $\eta^2 = .01$.

Figures 1 & 2

Academic Volitional Strategies

There was a significant multivariate effect of Country on AVSI scores, $F(3, 679) = 58.65$, $p < .001$, $\eta^2 = .20$ (Table 3), and a significant univariate effect of Country on Stress-Reducing Actions (Australian students obtained lower scores), $F(1, 681) = 117.97$, $p < .001$, $\eta^2 = .89$. Thai students obtained significantly higher Self-Efficacy Enhancement, $F(1, 681) = 7.76$, $p < .005$, $\eta^2 = .01$, and Negative-Based Incentives scores, $F(1, 681) = 36.73$, $p < .001$, $\eta^2 = .05$. There was a significant multivariate effect of AVSI scores on GPAs, $F(6, 1358) = 4.40$, $p < .001$, $\eta^2 = .02$. Students with higher Stress-Reducing Actions scores, higher Self-Efficacy Enhancement scores, and lower Negative-Based Incentives scores significantly obtained higher GPAs.

Table 4

The classification of GPA scores into Low, Medium, and High respectively, revealed overall that students with high levels of academic volitional motivation (Stress-Reducing Actions, Self-Efficacy Enhancement, and Negative-Based Incentives) obtained higher GPAs than did students with low AVSI subscale scores.

Academic Performance Grades

Irrespective of Country there was a significant multivariate effect of Study Approach on GPAs, $F(4, 1360) = 4.50$, $p < .001$, $\eta^2 = .01$, and a monotonic increase in Deep Learning scores with increasing GPAs (Tukey's HSD, $\alpha = .05$).

Heuristic Structural Equation Model

The univariate and multivariate statistical analyses clearly showed a significant impact of COUNTRY on academic performance (measured in terms of GPAs). However, as linear model effects are direct effects, one may wonder whether there are also any indirect effects of Country on GPA mediated by constructs underlying the learning-related and personality measures (before undertaking the SEM analysis, it was first verified that both the dependent variable and the model errors were normally distributed, with constant variance, and zero average, respectively).

Using the combined sample data (N=708) and EQS (Version 6.3; Bentler, 2015; Ullman & Bentler, 2013), a heuristic structural equation model (SEM) was constructed to predict GPA and Happiness/Psychological Wellbeing from the demographic and self-report measures with two distinct latent factors (F1, Goal Orientation; F2, Academic Volitional Strategies). After trimming non-significant parameters and adding residual correlations, the model in Figure 3 provided a satisfactory fit to the empirical data (robust chi-square, χ^2 (61df) = 203.80, robust *CFI*=.95, robust *RMSEA* =.06, *RMSR* = .05 (cf. Byrne, 2006; Hu & Bentler, 1995; Kline, 2010; Yuan & Bentler, 2007; Yuan, Chan, Marcoulides, & Bentler 2016).

Figure 3

As Figure 3 shows, GPA was predicted by F1 (Goal Orientation) as well as four observed variables. Beta coefficients for F1, GOQ_TASK, SPQ_SLA, and SEX were about .10 while the beta coefficient for COUNTRY was -.50, with overall R^2 = .26. COUNTRY indirectly impacted on GPA via F1 ($p < .001$). The SEM model also shows that

Happiness/Psychological wellbeing was predicted by F2 (Academic Volitional Strategies) (.30), and by GOQ_TASK (.20), with an overall multiple $R^2 = .20$. The SEM confirms that the major predictor of GPAs was COUNTRY, highlighting the significant ($p < .001$) impact of cultural influence on academic performance (GPAs) among university undergraduate students. As shown in Figure 3, both Approach-Goal Orientation and Avoidance Goal Orientation factors impacted significantly ($p < .001$) on GPA scores.

Discussion

Personality (Happiness/Psychological wellbeing) was positively associated with higher GPA scores, suggesting that irrespective of culture, happier students exhibit superior academic performance. Ability-approach and ability-avoidance scores were higher among Australian students. Although there is evidence that Western students may exhibit higher mastery (task-orientation) and performance-approach goal orientation than Asian students (Dekker & Fischer, 2008), Thai students obtained higher deep study approach scores, consistent with the higher proportion of third- and fourth-year undergraduates (49.3%) as compared with only 18% of third- and fourth-year Australian undergraduates. Our findings concur with Marambe, Vermunt, and Boshuizen (2012) that, *"Asian learners would have a propensity for rote learning turned out to be a myth... Some patterns of learning turned out to be universal…."*

Thai students obtained higher scores on AVSI strategies (self-efficacy enhancement, stress reducing actions, and negative-based incentives). Those with higher GPAs reported greater self-efficacy enhancement than Australian students. Irrespective of culture, those with higher stress-reducing actions and self-efficacy enhancement scores, and lower negative-based incentives scores obtained higher GPAs.

Although the Australian students obtained lower mean GPAs, 82% of the Australian sample were either first- or second-year undergraduates (vs. 50.7% of the Thai sample). In general, higher scores on psychological wellbeing (OHQ), task goal orientation (GOQ), deep study approach (R-SPQ-2F), stress-reducing actions, self-efficacy enhancement, and lower negative-based incentives (AVSI) were directly related to higher GPAs.

The present findings confirm that personality and learning-related variables impact significantly on academic achievement among samples of Thai and Australian undergraduate students. Multiple significant differences in motivation and learning styles were found between the Australian and Thai students, showing that cultural factors play a role in influencing academic learning outcomes (as measured by cumulative GPAs in both samples). The heuristic SEM model provided further support for the notion that culture impacted significantly on academic performance outcomes.

Conclusions and Limitations

While cultural factors may account for some 20% of the variance in differential academic performance outcomes, one caveat is that the traditional concept of culture is hampered by the ever-increasing present-day cultural diversity (Abdallah-Pretceille, 2006), particularly with the advent of the ever-increasing plethora of social media platforms. The multicultural nature of both modern Australia and modern Thailand defies simple categorisation as "Western" or "Asian" respectively. University undergraduate students (especially in multicultural societies such as Australia) now typically come from a wide range of cultural backgrounds. Hong and Mallorie (2004) have pointed to the dynamic nature of culture in the modern world. Thus, ongoing technological advancements as well as globalisation have resulted in ever-increasing levels of cultural diversity, making simple "cross-cultural" comparisons increasingly problematic. This increase in cultural diversity

may be reducing the impact of culturally specific personality and learning styles on academic performance outcomes. In addition, it is possible that differences in personality, motivation, and learning-related variables reported by students across the two countries also may be impacted by the large difference in GDP per capita, impacting on the quality of education across the two countries which may in turn impact on students' academic performance.

Moreover, as the two samples differed in the proportion of students from each of the four undergraduate year levels, and also differed modestly on participant sex, the present findings need to be interpreted with care. As well, the cross-sectional nature of the present study necessarily precludes causal interpretations. The study was also based on the perspectives of students. The results might have differed somewhat from our present findings if the study had relied on the instructors' responses. As well, there may been some heterogeneity in the associations between the personality, learning-related, and academic performance variables depending on the differences in specific coursework completed by the Thai and Australian participants, respectively. As compared with the study of psychology, some natural science or technical programs of study may have fewer opportunities for broader knowledge testing. Furthermore, as measures were obtained across four separate years of the respective degree programs, the likelihood that deep study approaches might be employed more in later years of education was potentially problematic. Such limitations should be controlled in future research studies in this area. Further research is highly recommended, including a replication of this personality-learning study, as well as similar cross-cultural comparisons across a variety of different Asian and Western societies.

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Table 1

Demographic characteristics of Australian and Thai University Students

Demographic variables	Country			
	Australian (*N*=313)		Thai (*N*=395)	
	N	%	*N*	%
Sex				
Male	69	22.00	26	6.60
Female	244	78.00	369	93.40
Year of study				
First year	92	29.40	82	20.80
Second year	165	52.60	118	29.90
Third year	39	12.50	103	26.10
Fourth year and others	17	5.50	92	23.20
GPA				
Credit and below	263	84.00	278	70.40
Distinction or High Distinction	50	16.00	117	29.60

Note. Total *N* = 708.

Table 2

Intercorrelation matrix for combined Australian and Thai data (N = 708)

	Country	Sex	Year	Age	Goal Orientation	Study Process	GPA	Psychological well-being
Country								
Sex	-.23**							
Year	-.28**	.11**						
Age	.26**	-.01	.09*					
Goal Orientation	.28**	-.05	-.11*	.04				
Study Process	-.26**	.02	.11*	-.02	.25**			
GPA	-.47**	.19**	.13*	-.09*	-.08*	. 10*		
Psychological Wellbeing	.03	.02	-.04	.07	-.06	-.03	.13*	1

* p<.05; ** p<.01

Table 3

Means, standard deviations and Cronbach alpha coefficients for the Thai and Australian personality and learning-related variables

Instrument	Domain	No. of items	Mean (SD)			Alpha coefficient
			Overall	Thai	Australian	
OHQ	Positive Affect	17	4.42 (.76)	4.44 (.04)	4.40 (.04)	0.90
	Negative Affect	12	4.25 (.79)	4.05 (.04)	4.45 (.04)	0.79
GOQ	Task Goal Orientation	6	3.22 (.51)	3.17 (.47)	3.27 (.56)	0.78
	Ability-Approach Goal Orientation	6	3.05 (.86)	2.59 (.78)	3.51 (.80)	0.83
	Ability-Avoid Goal Orientation	6	2.67 (.84)	2.57 (.78)	2.78 (.90)	0.82
R-SPQ-2F	Deep Learning	10	3.24 (.66)	3.40 (.58)	3.05 (.70)	0.81
	Surface Learning	9	2.62 (.64)	2.67 (.64)	2.55 (.64)	0.77
AVSI	Stress-Reducing Actions	10	2.99 (.73)	3.34 (.54)	2.54 (.69)	0.80
	Self-Efficacy Enhancement	13	3.68 (.60)	3.79 (.52)	3.55 (.67)	0.83
	Negative-Based Incentives	7	3.61 (.70)	3.81 (.54)	3.35 (.78)	0.71

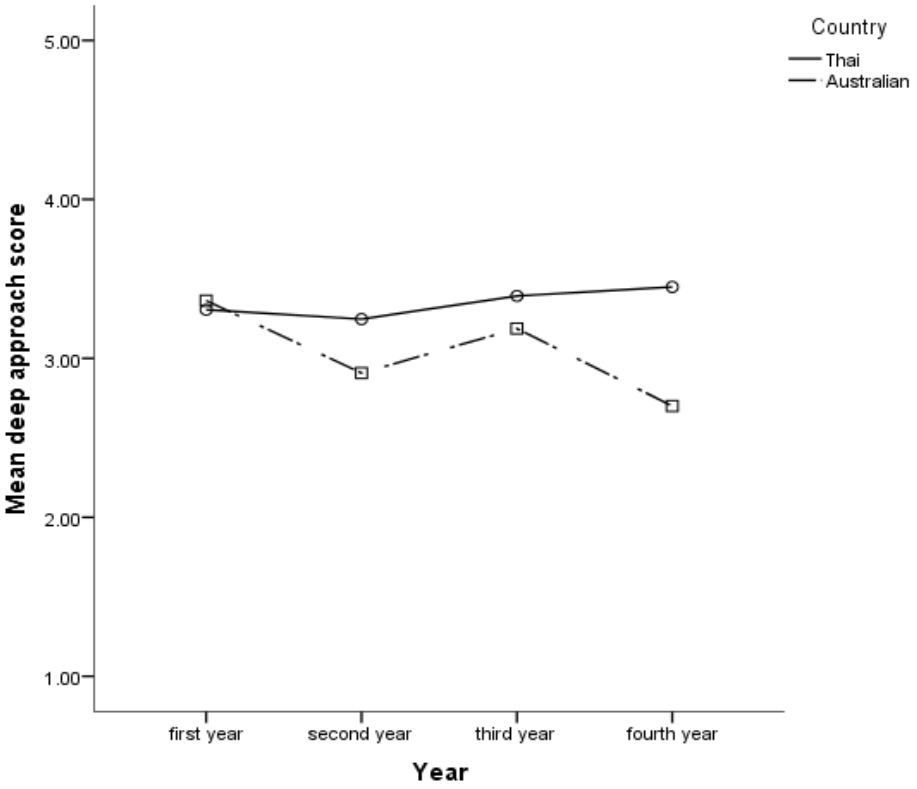
Notes: N_{Total} =708; N_{Thai} = 395; $N_{Aust.}$= 313.

Table 4

Academic Volitional Strategies Inventory subscale scores by Country and GPA

AVSI domain	GPA level	Mean (SD)		
		Overall	**Thai**	**Australian**
Stress Reducing Actions	Low	2.72 (.75)	3.23 (.55)	2.56 (.74)
	Mod	3.12 (.70)	3.38 (.54)	2.31 (.62)
	High	3.13 (.67)	3.31 (.54)	2.51 (.59)
Self-Efficacy Enhancement	Low	3.55 (.68)	3.52 (.63)	3.59 (.70)
	Mod	3.69 (.57)	3.77 (.51)	3.29 (.66)
	High	3.79 (.51)	3.85 (.46)	3.62 (.59)
Negative-Based Incentives	Low	3.51 (.74)	3.67 (.67)	3.60 (.75)
	Mod	3.67 (.71)	3.89 (.52)	3.06 (.82)
	High	3.64 (.64)	3.78 (.51)	3.16 (.76)

Notes: N_{Total} = 708; N_{Thai} = 395; $N_{Aust.}$= 313.


Country
Thai
Australian
Mean deep approach score
5.00
4.00
3.00
2.00
1.00
first year
second year
third year
fourth year
Year

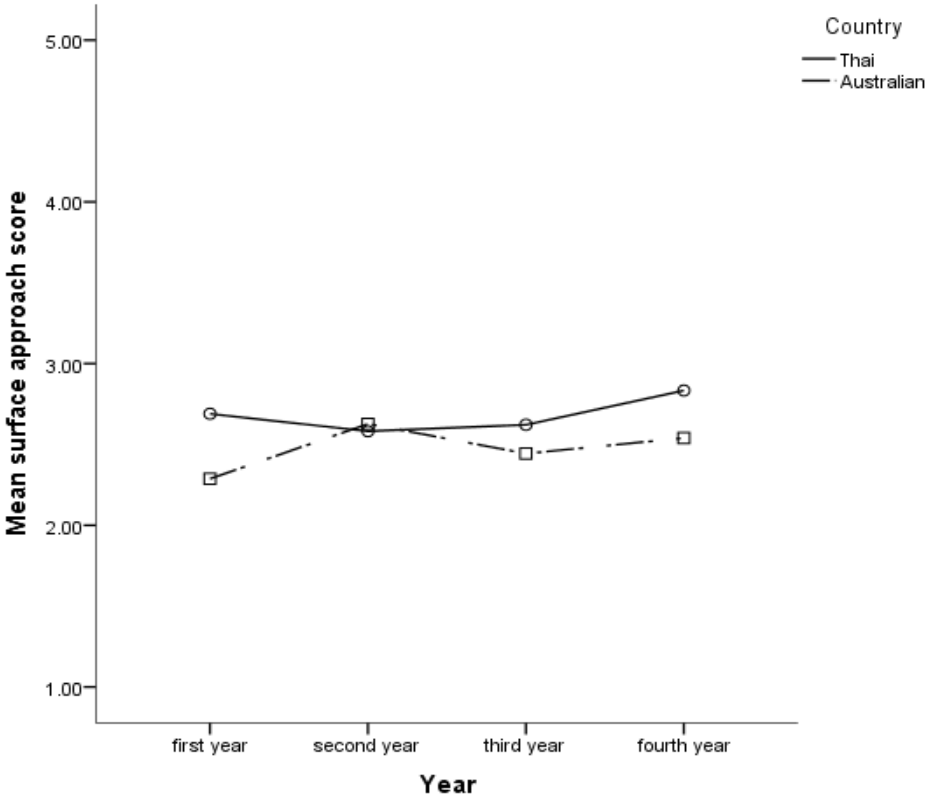

Country
Thai
Australian
Mean surface approach score
5.00
4.00
3.00
2.00
1.00
first year
second year
third year
fourth year
Year

Figure 1. Mean deep and surface approach scores by Country and Year Level

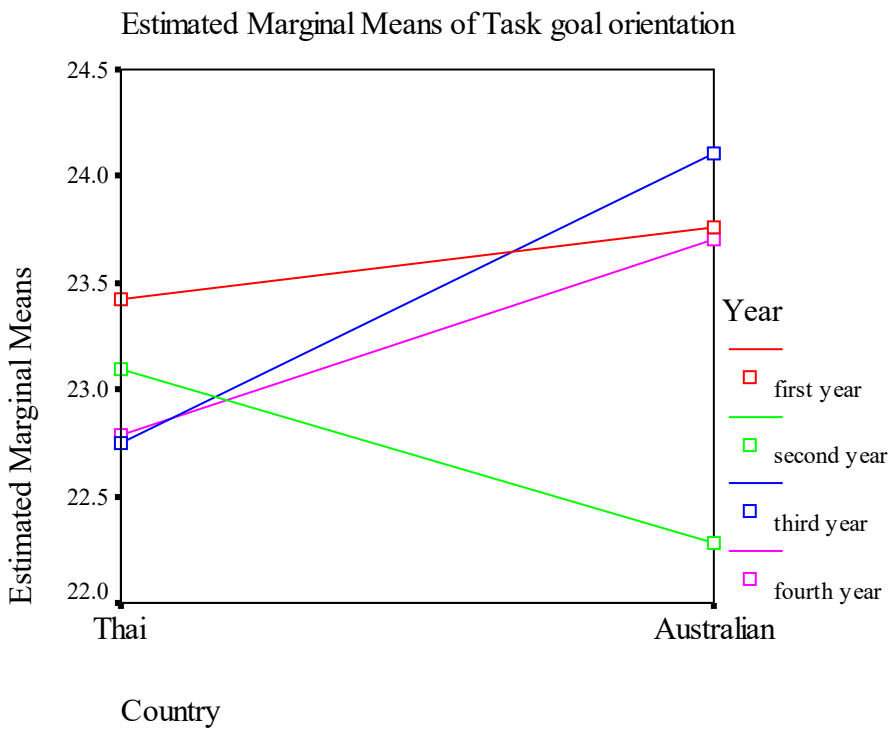


Figure 2. Interaction of Country x Year of study on task goal orientation

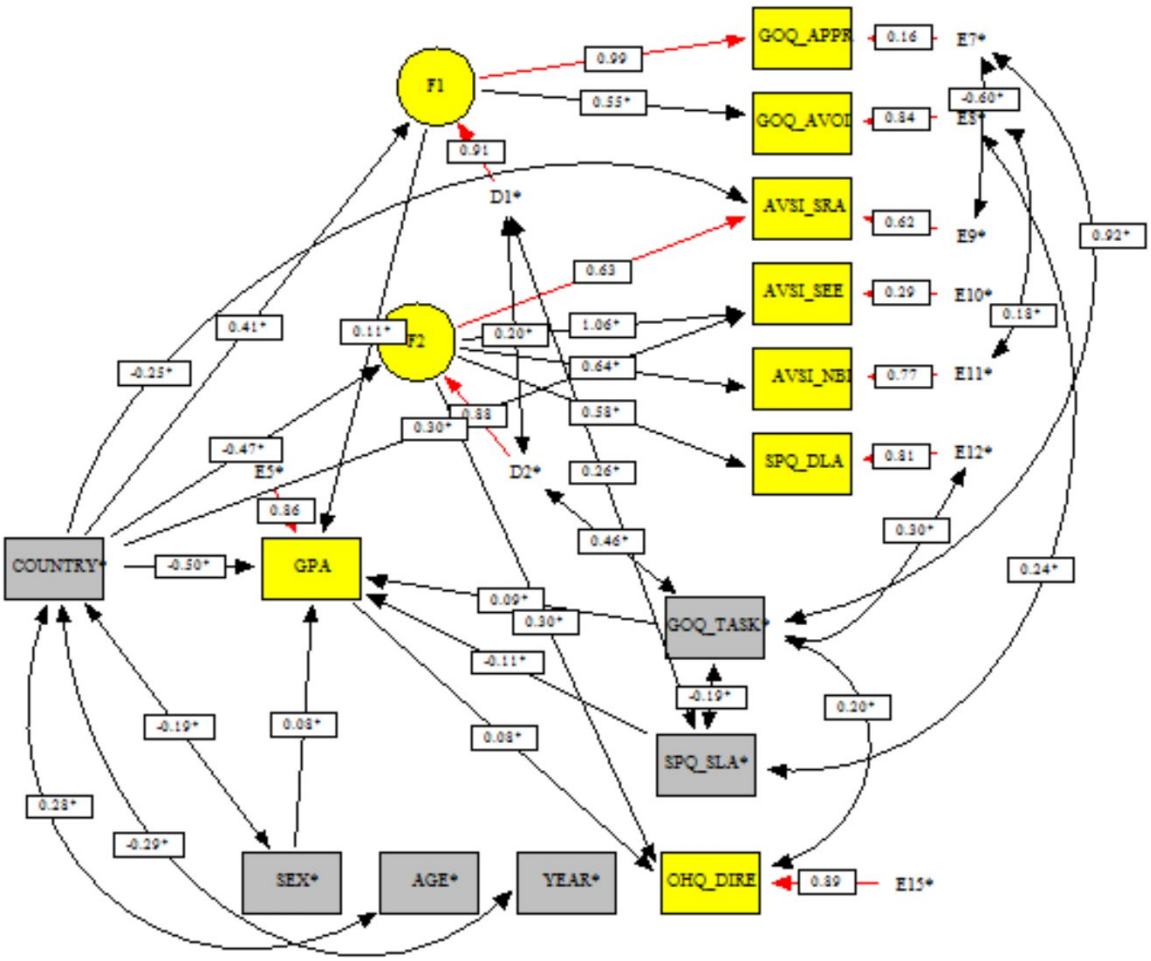


Figure 3. Predictors of GPA including Country, Goal Orientation, Academic Volitional Strategies, Psychological Wellbeing