Modelling the effects of Psychological Well-Being Attributes on Students’ Happiness

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Abstract. Assessing psychological well-being of students and their happiness towards life is important towards building a healthy nation and future generation with sound mental state. This study describes the effects of psychological well-being attributes on the happiness of students using hierarchical regression modelling. The attributes which include general health, vitality, self-acceptance, academic stress, self-control, and positive relation are measured in a questionnaire developed based on a focus group interview and sources relating to psychological well-being issues. A sample of 384 undergraduate students under the Science and Technology programmes of study from a local public university in Malaysia were surveyed. The study shows that there are highly significant positive effects of students’ general health, vitality, and self-acceptance on their happiness with self-acceptance being the most important predictor. Even though academic stress and self-control are not significantly related, these attributes are found to be negatively related with happiness. Generally within the context of this study, students’ happiness at this public university are associated with strong vitality, and high self-acceptance and strong positive relation with peers.

1. Introduction

Nurturing good psychological well-being and happiness of students at higher learning institutions is currently under the purview of the Minister of Education Malaysia where he has called for a study to be conducted, as quoted verbally by the Vice Chancellor of UiTM. Both of them believed that happiness is one important attribute to student’s success at tertiary level. Currently, an escalating amount of attention is being focused on the transition from schools to higher education since psychological problems are frequently experienced by young adult students. From school to college, students are required to participate in various motivational programmes that require transformation as a challenge to personal growth. These transformations are expected to take place and often taken as part of the process of change. However, these transformations are less likely to be measured and associated with happiness and psychological well-being of the students. Therefore this study aims to determine the Psychological Well-Being and Happiness Index of Science and Technology students at UiTM Shah Alam and to model the relationship between Psychological Well-Being dimensions and Happiness of the students. To begin with, various attributes of psychological well-being pertaining to this study are reviewed in the following sections.
1.1. Attributes of Psychological Well-Being

Psychological well-being of students was measured using The Scales of Psychological Well-Being (SPWB) [1], [2]. The dimensions include autonomy, environmental mastery, personal growth, positive relationships with others, purpose in life and self-acceptance. On the other hand, students’ happiness and psychological well-being were measured in a sample of high school students in Tabriz, Iran using a self-reported written questionnaire [3]. General health status, happiness, self-efficacy, perceived stress, hopefulness, and life satisfaction were measured in the questionnaire using different types of scale. In another study, happiness was measured on the employees using 6 domains of PERMAI model where it was manifested in 135 items [4]. Two domains that is, engagement and accomplishment were found to be significantly related to happiness [5]. Meanwhile, [6] examined the relationship between self-compassion and psychological well-being based on six attributes - autonomy, environmental mastery, personal growth, positive relations with others, purpose in life and self-acceptance. Table 1 describes the psychological well-being attributes measured in this study.

Table 1. Psychological Well-Being.

| Variables                  | Variables Description                     |
|----------------------------|------------------------------------------|
| Happiness Towards Life     | Level of Happiness                       |
| General Health             | The state of health of respondent        |
| Vitality                   | The state of being strong and active      |
| Self-Acceptance            | Satisfaction of the respondents with oneself |
| Academic Stress            | Academic Workload of respondent          |
| Self-Control               | Ability to control oneself, emotions or desires |
| Positive Relation          | Social relationship with people surrounding |

1.1.1. General Health

Psychological well-being is positively related to mental health [7] and quality of life [8]. In another study, using general health as the determinant of psychological well-being [9], health-related quality of life of respondents was evaluated using Health Utilities Index. These attributes have been considered important and become the foundation of the index (vision, hearing, speech, ambulation, dexterity, emotion, cognition, pain and discomfort). The final index scores have been computed by considering these attributes to reflect the health-related quality of life score. The study found that obesity is one of the factors that increase the risk factor of psychological well-being as well as physical comorbidities and mental health.

A study by [10] have not dealt with the entire relationship of general health and the happiness of the students but only looked at multivariate relationships involving general health and happiness as the outcome variable and intelligence as the independent variable. Such approaches, however, have failed to address the multivariate relationship of general health and happiness of the students. In another study, [11] conducted a study in association with emotional intelligence and general health of medical science students. However, they did not consider happiness, nor did they examine other attributes such as emotional intelligence and academic achievement. Also, their analysis does not take account of happiness nor do they examine other attributes such as emotional intelligence and academic achievement.

1.1.2. Vitality

Vitality refers to situations in which it is based on the theory of self-determination, which is defined as perceived energy emanated from the self [12]. However, [13] pointed out that vitality is more on positive
feeling of having energy left to the self. Several psychological well-being attributes have been identified in the past studies. Physical activity could have an important mediating role in the relationship between social environment and mental health due to its potential to buffer the adverse effects of stress [14] and to increase vitality in older adults [15]. In contrast with [1], he conducted a study to compare psychological well-being between gender and several levels of physical activity of students where it was measured using the short form version of the International Physical Activity Questionnaire (IPAQ) [16].

A one-way MANOVA has been carried out to investigate the differences in psychological well-being scores between the physical activity levels. There were significant differences in environmental mastery and self-acceptance subscales, and low level of physical well-being with low psychological well-being scores. Findings on 378 university students suggested that vitality affects students’ happiness and life satisfaction through mediating rather than moderating effect. No attempt was made to measure the association between vitality and happiness [17].

1.1.3. Self-Acceptance
According to [18], self-acceptance individuals possess a positive attitude toward themselves. These individuals acknowledge and accept multiple aspects of self-including good and bad qualities. [19] stated that common humanity integrates self-acceptance of being a human with limits and self-forgiveness as being imperfect. In fact, self-acceptance and mindfulness are the core processes of psychological flexibility [20].

[21] indicated that change processes in acceptance and valued action are beneficial for an engaged and meaningful life while [22] stated that positive validation of self-improvement (self-acceptance) is likely to be satisfying and therefore promote student psychological well-being. On the other hand, [23] found that self-acceptance and affiliation were negatively related to psychological well-being since they were prone to physical health, spiritual understanding and feeling.

However, [24] have not dealt with happiness of students. Instead, the study investigated the relationship between psychological well-being and mental toughness on psychological well-being attributes (self-acceptance, autonomy, environment mastery, personal growth, positive relations, and purpose in life). Therefore, this study attempts to fill the gap where happiness of the students is included in the study.

1.1.4. Academic Stress
[25] demonstrated that the amount of psychological stress as an indicator of the level of psychological well-being among students is more at the beginning of the college year. Therefore, students at the first college year have less psychological well-being. This psychological indicator was regarded as burdens experienced by the students along their journey of studies. Apart from focusing the burdens on the students, there was also a study in medical field done by [26].

On the other hand, [27] studied the sources of stress among final year medical students in India. They defined that the stress among the students was caused by an existing stress-causing factor or "stressor." All were aware of fearfulness of examinations especially practical examination in a medical college. The study summarised that the main stressor was related to academic examinations; thus an attempt was made to identify the stress profile of final year medical students at the time of academic examinations.

In their thorough investigation into academic stress and perceived happiness among college students, [28] concluded that perceived happiness of the college students was significantly differed based on their stress level. Further analysis was tested on the students’ perceived happiness to assess happiness differences based on stress levels using Multivariate Analysis of Variance (MANOVA).

1.1.5. Self-Control
Self-Control is the capacity to alter or override dominant response tendencies and the ability to regulate behaviour, thoughts, and emotions. A study by [29] on university students shows that there is a positive correlation between high self-control and better psychological adjustment and well-being.
Other than that, [30] conducted a study regarding self-control. They demonstrated the effects of regulatory focus on psychological well-being based on Trait Self-Control generated by [31]. Participants in promotion and prevention focus triggered the groups to perform equivalently and had the same self-control, whereas promotion-focus induced reported more task pleasures. In other words, this indicates that promotion-focused people are happier than prevention-focused people during goal pursuit. Moreover, people in higher self-control are not necessarily experience more well-being.

1.1.6. Positive Relation
Positive relationship is defined as socially integrated feelings, cared about and supported by others, as well as satisfied with one’s social connections [32]. In this study, there was growing evidence that there is a positive association between positive relationship and the outcome, which is happiness.

Relationship is defined in terms of feeling connected to, supporting, and being supported by others, related to greater life satisfaction, hope, gratitude, and spirituality. The findings of this present study are aligned with the growing body of literature demonstrating the benefits of maintaining positive relationships with others [33]. A study by [34] indicated that parenting relationship is the predictor of increased level of depression and decreased satisfaction with life of the students. Furthermore, a study by [35] showed that positive emotions or in other words happiness of the university students were basically promoted by positive support in their learning process. In view of this, [36] found that positive traits and relation are predictive of happiness and life satisfaction.

2. Methodology

2.1. Design, Sample and Instrument
An explanatory research was employed for measuring the effects between happiness and the psychological well-being attributes. Attributes were measured using an instrument developed based on a focus group interview and selected resources relating to psychological well-being issues. A survey method was employed on students from Science and Technology area of studies at a local public university in peninsular Malaysia.

Based on the homogenous characteristics of the faculties, a two-stage cluster sampling was used. In two-stage cluster sampling, several faculties were selected based on a simple random sampling method. From the chosen faculties, students were chosen at random regardless of their programmes of study. The faculties chosen are considered as the primary sampling units (PSU) and selected students from the chosen faculties are the secondary sampling units (SSU). The sample is 384 undergraduates who had participate in this study assuming any limitations that might occur such as non-response and the refusal to cooperate.

The duration of data collection was expected to complete within three weeks. The formula for calculating the required sample of clusters (n) for cluster sampling is as stated below as written in equations (1) and (2).

\[ n = \frac{N \sigma^2}{ND + \sigma^2} \]  
\[ D = \frac{BM}{Z^2} \]

where

- \( n \) = Number of clusters (faculties) in the sample
- \( N \) = Number of clusters (faculties) in the population
- \( \sigma^2 \) = Population variance. Variance is the measurement of the variability from an average or mean. The estimated variance will be selected from the pilot study
- \( B \) = Bound of error of estimation
- \( \bar{M} \) = Population Mean
Z = Critical value

For 95% confidence interval with a very small sample like 50 respondents, the margin error is about 14% while for sample of 1000, a margin error of 3% is required [37]. Nonetheless, [38] stated that for \( B = 10\% \), one requires \( n=100 \), for \( B= 5\% \), one needs \( n=400 \), for \( B=3\% \), the requirement is \( n =1000 \), whereas for \( B=1\% \), a sample size of \( n= 10000 \) is required.

The number of sample for the second stage of cluster sampling was obtained using the simple random sample formula as shown in Equation 3 [39].

\[
n = \frac{p(1-p)Z^2}{e^2}
\]

where
- \( p \) = The assumed prevalence of the event in the population under study.
- \( z \) = The critical value obtained from a standard normal distribution.
- \( e \) = The maximum absolute error that the user is willing to accept.

This study developed a single survey instrument comprising three sections. The questions included were of mixed type in both close ended and open-ended structures. Likert scales were applied in this instrument ranging from 1 (strongly disagree) to 5 (strongly agree).

All the values used in determining the Psychological Well-Being and the Happiness of the students were measured using index score instead of mean score. Methods used in constructing the composite indices are based on [15]. All scores of items obtained through the questionnaire were included in the computational of Psychological Well-Being Index and Happiness Index score. Equation (4) is the general formula of the index score.

\[
\text{Index Score} = \frac{\sum_{i=1}^{n} X_i}{S(N)} \times 100 \%
\]

where
- \( X_i \) = Score of items
- \( S \) = Highest possible scores of items
- \( N \) = Number of items

Equations below are the hierarchical regression models prior to entry of Psychological Well-Being Attributes.

\[
Y_{ij} = \alpha_{ij} + \beta_1 X_1 + \varepsilon_{ij}
\]

\[
Y_{ij} = \alpha_{ij} + \beta_1 X_1 + \beta_2 X_2 + \varepsilon_{ij}
\]

\[
Y_{ij} = \alpha_{ij} + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon_{ij}
\]

\[
Y_{ij} = \alpha_{ij} + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_{ij}
\]

\[
Y_{ij} = \alpha_{ij} + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon_{ij}
\]

\[
Y_{ij} = \alpha_{ij} + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon_{ij}
\]

where
- \( Y_{ij} \) = Happiness Index of Student
- \( \alpha \) = Constant
- \( X_i \) = General Health
- \( X_i \) = Academic Stress
2.2. Hierarchical Regression Analysis

Hierarchical regression modelling is appropriate in this study because it is able to estimate the population distribution of unobserved parameters and multiple parameters related by the structure of the theoretical problem [39]. Hierarchical modelling is also extremely flexible within the setting of linear modelling as it allows the researchers to use domain knowledge in many ways to identify how the response depends on the covariates. This method is also useful in evaluating the contributions of predictors above the predictors’ contribution beyond previously entered predictors for examining incremental validity [40].

Unlike other regression, hierarchical regression involves the variables to be entered in the order in which the theory is based. As stated earlier the order of entry of the variables are made by the researcher based on the theory and past research instead of utilizing the algorithm within a computer software. This study did not just look at the relationship between the variables, but also identify the variable that has the most significant effects on students’ happiness. Unlike simple linear regression, hierarchical regression does not ignore the nested structure of the data which can lead to aggregation bias and ecological. Thus, hierarchical modelling is preferred as it is able to investigate the level of variability of the achievement scores in full population.

3. Results and Discussion

3.1. Correlations between Happiness and Psychological Well-Being Attributes

As indicated in table 2, all attributes demonstrate a significant positive correlation (p < 0.01). This indicates that increase in Psychological Well-Being attributes (i.e., General Health, Vitality, Self-Acceptance, Academic Stress, Self-Control, and Positive Relation) are associated with an increase in Happiness of the students. Among all the attributes, with a correlation of 0.661, Self-Acceptance is found to have a strong positive relationship with students’ Happiness. The observed association between Happiness and Self-Acceptance is suggesting that students with higher Self-Control are generally happier than those with lower Self-Control. Contrary to Self-Acceptance, there is a weak positive relationship between Academic Stress and Happiness of the students (r = 0.325). The analyses also revealed that General Health (r = 0.467), Vitality (r = 0.541), Self-Control (r = 0.458) and Positive Relation (r = 0.53) all have moderately positive relationship with Happiness of the students.

Table 2. Bivariate Correlations among Happiness and Psychological Well-Being Variables.

|               | Happiness | General Health | Vitality | Self-Acceptance | Academic Stress | Self-Control | Positive Relation |
|---------------|-----------|----------------|---------|-----------------|-----------------|--------------|-------------------|
| Happiness     | 1         | 0.467**         | 0.541** | 0.661**         | 0.325**         | 0.458**      | 0.527**           |
| General Health| 1         | 0.593**         | 0.596** | 0.465**         | 0.557**         | 0.438**      | 0.481**           |
| Vitality      | 1         | 0.614**         | 0.460** | 0.465**         | 0.557**         | 0.489**      | 0.506**           |
| Self-Acceptance|          | 1               | 0.750** | 0.550**         | 0.489**         | 0.506**      | 0.355**           |
| Academic Stress|         | 1               | 1       | 0.489**         | 0.355**         | 1            |                   |
| Self-Control  | 1         | 0.480**         | 1       | 0.489**         | 0.355**         | 1            |                   |
| Positive Relation|       | 1               | 1       | 0.750**         | 0.549**         | 1            |                   |

**Mean** 74.68 66.08 68.10 70.43 57.51 61.65 71.78
**Std. Deviation** 10.50 12.70 12.40 13.10 14.72 12.39 13.10

**Correlation is significant at 0.01 level (2-tailed)**
3.2. Hierarchical Regression Analysis

Table 3. Model Summary.

| Model | R   | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | F Change | df1 | df2 | Sig. F Change |
|-------|-----|----------|-------------------|---------------------------|----------------|----------|-----|-----|--------------|
| 1     | .467| .218     | .216              | .218                      | 106.340        | 1        | 38  | .000          |
| 2     | .486| .237     | .233              | .19588                    | 9.405          | 1        | 38  | .002          |
| 3     | .528| .279     | .273              | 8.95100                   | 22.132         | 1        | 38  | .000          |
| 4     | .586| .344     | .337              | 8.54821                   | 37.654         | 1        | 37  | .000          |
| 5     | .636| .404     | .397              | 8.15436                   | 38.496         | 1        | 37  | .000          |
| 6     | .710| .504     | .496              | 7.45520                   | 75.223         | 1        | 37  | .000          |

Table 3 shows that in model 1 where General Health is included has accounted for 21.8 % of the variance in the students’ Happiness. Entrance of Academic Stress attribute into the next model (model 2) resulted in an R Square Change of 0.19. This means that entry of Academic Stress attribute increased the explained variance in students’ Happiness by 1.9 % to a total of 23.7% (R-square) as shown in Table 3. This increase is significant by the F change test, F (1,381) = 9.405, p <0.002. This result also suggests that entry of Academic Stress attribute represent a significantly more powerful predictor. In model 3, Self-Control attribute is then included. The entry of Self-Control attribute into the model resulted in R square change of 0.042. It signifies that entry of latter variable increased the explained variance by 4.2 % to a total of 27.9 %.

The model is assessed further by adding another attribute Vitality, which is found to be significant. The attribute included in model 4 accounted for 34.4 % of the variance in Happiness. It also resulted in an R-squared change of 0.065. This means that Vitality explained the variance by 6.5 % and sum up to 34.4%. It is noted that the increment is significant by the F change test, F (1,381) = 37.65, p < 0.01. Positive Relation attribute is included in model 5. The attribute produces R squared change of 0.061 in which this attribute explained the variance by 6.1% and accounted for 40.4% of the variance explaining the students’ Happiness. F change of this model (F-value = 38.50) signify that the addition of Positive Relation to the model is significant (p < 0.01). The last dimension of Psychological Well-Being which is Self-Acceptance, is included in model 6. The value of R-square change indicates that Self-Acceptance had increased the explained variance in students’ Happiness by 9.9 % to a total of 50.4 %. The output shows significant F change, F (1,377) = 75.22 when a new variable is included.

From the overall model, Self-Acceptance attribute represents the most significant powerful predictor as it produces the largest R Square change among all variables. The addition of attribute at each level resulted in an increment of R-square. Entry of Self-Acceptance attribute (Model 5) resulted in an R Square Change of 0.1. This concludes the addition of attribute had increased the explained variance in students’ Happiness by10 % to a total of 50.4%. This increment is significant by the F Change test, F (1,377) = 75.223, p < 0.01.

Based on the results of hierarchical regression analysis, prior to Model 6, only three Psychological Well-Being attributes, namely Vitality, Positive Relation and Self-Acceptance are found to be significant predictors of students’ Happiness (p< 0.05) where each attribute produces standardized Beta coefficients of 0.13, 0.18, 0.36, respectively. Statistically, an increase in one percent score of Vitality, Positive Relation, and Self-Acceptance, students’ Happiness is estimated to increase by 13%, 18%, and 36%, respectively when other variables are held constantly. This indicates that happier students are active in their daily life, have good and positive relation with people around them and are also satisfied with their life. Hence, from Model 6 the final regression model (reduced) contains only three significant variables that are used to predict students’ Happiness where the model explained all the variability of Happiness around its mean is about 50.1%. The final model is shown in equation (8).
\[
\hat{y} = 27.21 + 0.13X_1 + 0.18X_2 + 0.36X_3 \quad (8)
\]

where

\[X_1=\text{Vitality}\]
\[X_2=\text{Positive Relation}\]
\[X_3=\text{Self-Acceptance}\]

4. Discussion and Conclusion

This study is a first attempt to investigate the effects of psychological well-being attributes on the happiness of science and technology students at this local university using hierarchical regression modelling. In particular, this study has demonstrated a different perspective of hierarchical regression modelling attributes compared to a previous study by [11]. The use of hierarchical regression model allows the researchers to evaluate the contributions of each attribute based on theory and empirical observations. In the context of this study, all psychological well-being attributes demonstrate significant positive correlations with happiness. These three attributes Vitality, Positive Relation, and Self-Acceptance were found to be significantly important in predicting students’ Happiness with Self-Acceptance being the most powerful predictor of happiness as it accounts for the largest R² change in the model at 10% followed by Vitality (6.5%) and Positive Relation (6.1%). In contrast, Academic Stress and Self-Control are the least related to students’ happiness. Though not significantly related, these attributes indicate a negative relationship with happiness and it aligns with a previous study by [1]. The results of this study came with a limitation. It does not represent all science and technology nor the social science students at this particular university. The study could be expanded to more students in other areas where comparisons can be made across different areas of study and social background.

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References

[1] Lapa T Y 2015 Physical Activity Levels and Psychological Well-Being: A Case Study of University Students Procedia - Social and Behavioral Sciences 186 739–743 doi: https://doi.org/10.1016/j.sbspro.2015.04.122
[2] Ryff C D 2013 Psychological Well-Being revisited: Advances in the science and practice of eudaimonia Psychotherapy and Psychosomatics 83(1) 10–28 doi: https://doi.org/10.1159/000353263
[3] Heizomi H, Allahverdipour H, AsghariJafarabadi M and Safaian A 2015 Happiness and its relation to Psychological Well-Being of adolescents Asian Journal of Psychiatry 16 55–60 doi: https://doi.org/10.1016/j.ajp.2015.05.037
[4] Tsuchiya T, Mahmud Z and Lokman A M 2018 Relationship between Workers’ General Happiness and Emotional Components@ PERMAI és In Int. Conf. on Kansei Engineering & Emotion Research (Springer: Singapore) pp 878-88
[5] Othman A K., Mahmud Z, Norance S and Noordin F 2018 Measuring employee happiness: Analyzing the dimensionality of employee engagementIn Int. Conf. on Kansei Engineering & Emotion Research (Springer: Singapore) pp 863-869
[6] Sun X, Chan D W and Chan L K 2016 Self-compassion and Psychological Well-Being among adolescents in Hong Kong: Exploring gender differences Personality and Individual Differences 101 288–292 doi: https://doi.org/10.1016/j.paid.2016.06.011
[7] Jovanović V 2015 Structural validity of the Mental Health Continuum-Short Form: The bifactor
model of emotional, social and Psychological Well-Being. *Personality and Individual Differences* 75 154–159 doi: https://doi.org/10.1016/j.paid.2014.11.026

[8] Singh K., Ruch W and Junnarkar M 2015 Effect of the Demographic Variables and Psychometric Properties of the Personal Well-Being Index for School Children in India. *Child Indicators Research* 8(3) 571–585 doi: https://doi.org/10.1007/s12187-014-9264-4

[9] Romain A J, Marleau J and Baillot A 2018 Impact of obesity and mood disorders on physical comorbidities, Psychological Well-Being, health behaviours and use of health services. *Journal of Affective Disorders* 225 381-388

[10] Amirian M E and Fazilat-Pour M 2016 Simple and multivariate relationships between spiritual intelligence with General Health and Happiness. *Journal of religion and health* 55(4) 1275-1288

[11] Gorgich E A C, Barfroshan S, Ghoreishi G, Balouchi A, Nastizae N and Arbabisarjou A 2015. The Association of Self-Assessed Emotional Intelligence with Academic Achievement and General Health among Students of Medical Sciences *Global Journal of Health Science* 8(12) 27

[12] Deci E L, Ryan R M, Deci E L and Ryan R M 2009 Psychological Inquiry: An International Journal for the Advancement of Psychological Theory. The “What” and “Why” of Goal Pursuits: Human Needs and the Self-Determination of Behavior. The ”What” and “Why” of Goal Pursuits: Human Needs and the Self-Determination of Behavior. May 2013 37–41

[13] Nix G A, Ryan R M, Manly J B and Deci E L 1999 Revitalization through Self-Regulation: The Effects of Autonomous and Controlled Motivation on Happiness and Vitality. *284* 266–284

[14] Diez Roux A V and Mair C 2010 Neighborhoods and health. *Annals of the New York Academy of Sciences* 1186(1) 125-145

[15] Solberg P A, Hopkins W G, Ommundsen Y and Halvari H 2012 Effects of three training types on Vitality among older adults: A self-determination theory perspective. *Psychology of Sport and Exercise* 13(4) 407–417 doi: https://doi.org/10.1016/j.psychsport.2012.01.006

[16] Öztürk M 2005 A research on reliability and validity of international physical activity questionnaire and determination of physical activity level in university students (Turkish: Ankara-Hacettepe University Health Science Institute an Unpublished PhD Thesis)

[17] Uysal R 2014 Subjective Vitality as Mediator and Moderator of the Relationship between Life Satisfaction and Subjective Happiness. *14*(2) 489–497 doi: https://doi.org/10.12738/estp.2014.2.1828

[18] Ryff C D 2013 Psychological Well-Being revisited: Advances in the science and practice of eudaimonia. *Psychotherapy and Psychosomatics* 83(1) 10–28 doi: https://doi.org/10.1159/000353263

[19] Neff K 2003 The development and validation of a scale to measure self-compassion. *Self and Identity* 2(793220055) 223–250 doi: https://doi.org/10.1080/15298860390209035

[20] Wersebe H, Lieb R, Meyer A H, Hofer P and Gloster A T 2017 The link between stress, well-being, and psychological flexibility during an Acceptance and Commitment Therapy self-help intervention. *International Journal of Clinical and Health Psychology* doi: https://doi.org/10.1016/j.ijchp.2017.09.002

[21] Hayes S C, Stronsahl K and Wilson K G 2012 Acceptanceand commitment therapy: An experiential approach to behaviorchange (New York: Guilford Press)

[22] Sosik J J, Chun J U and Koul R 2017 Relationships Between Psychological Wellbeing of Thai College Students, Goal Orientations, and Gender. *Psychology in the Schools* 54(7) 703–717 doi: https://doi.org/10.1002/pits.22024

[23] Kasser T I M 1996 Aspirations and Well-Being in a Prison Setting? 1367–1377

[24] Stamp E, Crust L, Swann C, Perry J, Clough P and Marchant D 2015 Relationships between mental toughness and psychological wellbeing in undergraduate students. *Personality and Individual Differences* 75 170–174 doi: https://doi.org/10.1016/j.paid.2014.11.038

BewickKoutospoulou G, Miles J, Slaa E and Barkham M B 2010 Changes in Undergraduate...
Student’s Psychological Wellbeing as They Progress through University Studies in Higher Education 35(6) 633–645

[25] Germain V, Dabakuyo-Yonli T S, Marilier S, Putot A, Bengrine-Lefevre L, Arveux P and Quipourt V 2017 Management of elderly patients suffering from cancer: Assessment of perceived burden and of quality of life of primary caregivers Journal of Geriatric Oncology 8(3) 220–228 doi: https://doi.org/10.1016/j.jgo.2016.12.001

[26] Sharma B, Wavare R, Deshpande A., Nigam R and Chandorkar R 2011 A study of Academic Stress and its effect on vital parameters in final year medical students at SAIMS Medical College, Indore, Madhya Pradesh Biomedical Research 22(3) 361–365

[27] King K A, Vidourek R A, Merianos A L and Singh M 2014 A study of stress, social support, and perceived Happiness among college students Üniversiteöğrencileriarsindastres sosyaldestekvealgilanmutluluküzerinebir 2(2) 132–144

[28] Van Gordon W, Shonin E, Sumich A, Sundin E C and Griffiths M D 2014 Meditation Awareness Training (MAT) for Psychological Well-Being in a Sub-Clinical Sample of University Students: A Controlled Pilot Study. Mindfulness 5(4) 381–391 doi: https://doi.org/10.1007/s12671-012-0191-5

[29] Ouyang Y, Zhu Y, Fan W, Tan Q and Zhong, Y 2015 People higher in Self-Control do not necessarily experience more Happiness: Regulatory focus also affects subjective well-being Personality and Individual Differences 86 406–411 doi: https://doi.org/10.1016/j.paid.2015.06.044

[30] Tan S H and Guo Y Y 2008 Revision of Self-Control scale for Chinese college students Chinese Journal of Clinical Psychology 16(5) 468–470

[31] Kern M L, Waters L E, Adler A, White M A, Kern M L, Waters L E, … White M A 2015 A multidimensional approach to measuring well-being in students: Application of the PERMA framework The Journal of Positive Psychology 9760 (November 2016), 1–10. Doi: https://doi.org/10.1080/17439760.2014.936962

[32] Taylor S E 2011 Social support: A review The Oxford handbook of health psychology ed H. S. Friedman (New York, NY: Oxford University Press) pp 189–214

[33] Schiffrin H H, Liss M, Miles-McLean H, Geary K A, Erchull M J and Tashner T 2014 Helping or Hovering? The Effects of Helicopter Parenting on College Students’ Well-Being Journal of Child and Family Studies 23(3) 548–557 doi: https://doi.org/10.1007/s10826-013-9716-3

[34] Rowe A D, Fitness J and Wood L N 2015 International Journal of Qualitative Studies in Education University student and lecturer perceptions of positive emotions in learning January 2015 37–41 doi: https://doi.org/10.1080/09518398.2013.847506

[35] Azizan N H, Mahmud Z and Rambli A 2018 Measurement Instrument and Indicators of Subjective Well-Being: A Review Paper Journal of ASIAN Behavioural Studies 3(11) 22-33

[36] Hunter P 2017 Margin of Error and Confidence Levels Made Simple iSixSigma Retrieved at https://www.isixsigma.com/tools-templates/sampling-data/margin-error-and-confidence-levels-made-simple/

[37] Kotrlik J and Higgins C 2001 Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research Information Technology, Learning, and Performance Journal 19(1) 43doi: https://doi.org/10.1109/LPT.2009.2020494

[38] Gelman A, Carlin J B, Stern H S, Dunson D B, Vehtari A and Rubin D B 2014 Bayesian data analysis 2 Boca Raton, FL: CRC press

[39] Lewis M 2007 Stepwise versus Hierarchical Regression: Pros and Cons Online Submission