The Association of Subjective Well-Being and Academic Success of Vocational School Students

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Abstract
There has been a growing interest in research examining the predictors of academic performance of students in higher education. However there is paucity of empirical evidence regarding Turkey. The aim of this study is to examine the association between subjective well-being and academic success of students. The analysis relies on a unique dataset collected through the administration of a questionnaire to 628 students studying at a Higher Vocational School in Central Turkey. The questionnaire is used to obtain data relating to socio-demographic and family characteristics of students. The participants are also asked to complete the Positive and Negative Affect Schedule (PANAS) and Satisfaction with Life Scale (SLWS) to assess their subjective well-being. Previous empirical studies generally employ a univariate approach and suggest that academic success is positively related to subjective well-being. However academic success and subjective well-being measures may be interdependent. In order to examine the presence of unobservable factors that simultaneously affect the various dimensions of life satisfaction and academic success, a multivariate probit model has been employed, and three probit models are simultaneously estimated, as well as the correlation among their respective error terms. The magnitude and the significance of the correlation terms reveal the presence of underlying unobservable variables, driving the satisfaction outcomes and academic success. Initial empirical results indicate that academic success, satisfaction with life, and affect-balance are simultaneously determined. Moreover academic achievement is strongly correlated with satisfaction with life, after controlling for a number of relevant socio-economic variables.

Keywords: Subjective well-being, Academic success, University students, Turkey, Multivariate probit model.
Introduction

Identifying the variables that influence the academic achievement of university students is of great importance for both policymakers and educational institutions. Such an analysis provides essential information for the public authorities in charge of the definition of optimal and efficient education policies. Moreover it helps the educational institutions to improve the quality of their programs. Numerous factors have been identified that affect academic performance such as the measures of student ability, student characteristics, parents’ education, family income, gender and ethnicity; as well as instructional techniques employed. However, empirical evidence indicates that the impact of these determinants vary with context, for example, culture, institution, course of study etc.

A vast economic literature has pointed to the important role that socioeconomic and family background plays in affecting student achievement (Şirin, 2005). The birth order, family size and sibship sex composition are also among the important determinants of an individual’s academic success. The economic theory inspired by the pioneering work of Becker (1960) suggests a negative relation between educational achievement and total family size (Becker and Lewis, 1973; Becker and Tomes, 1976; Hanushek, 1992; Black et al., 2005; Booth and Kee, 2006). The confluence model developed by Zajonc (1976), on the other hand, claims that one's intellectual development depends on the average intelligence of all family members. Accordingly, in the presence of many young children, the family's average intelligence is lower, which then tends to reduce or limit the individual's intellectual development.

In education economics literature an increased emphasis has been devoted to the association of student subjective well-being and student academic success. Subjective well-being (SWB) is defined as a person’s cognitive and affective evaluations of his or her life. These evaluations include emotional affective and cognitive-evaluative components of satisfaction and fulfillment. Thus subjective well-being is a broad concept that includes experiencing pleasant emotions (positive affect), and low levels of unpleasant moods (negative affect) (Diener 2000; Diener and Ryan, 2009). The cognitive evaluative component, on the other hand, consists of life satisfaction (Diener et al., 2002). A growing body of evidence indicates that high well-being and life satisfaction significantly improve life within the four areas of health and longevity, work and income, social relations, and
Accordingly, existing literature suggests that either subjective well-being is the predictor of academic success or there is a positive relationship between subjective well-being and academic success. The relationship between success and well-being is often conceived of as reciprocal in that well-being enhances success and, simultaneously, success fosters well-being (Lyubomirsky et al., 2005; Samuel et al., 2013; Keller et al., 2014). Previous empirical studies generally employ a univariate approach. But academic success and subjective well-being measures may be interdependent, which should be addressed in a system of equations framework. Although there is a body of literature investigating the relationship between subjective well-being and academic success for developed countries (Ayyash-Abdo and Sánchez-Ruiz, 2012; Borello and Capella, 2005; Suldo et al., 2011), there is paucity of empirical evidence for Turkey. The aim of this study is to examine the association between subjective well-being and academic success for students at a Higher Vocational School in Central Turkey, by taking account the possible interdependencies in academic success and well-being measures. This paper attempts to jointly model the academic success and two measures of subjective well-being of the students. For this purpose a multivariate probit model has been employed, and three probit models are simultaneously estimated, as well as the correlation among their respective error terms. The magnitude and the significance of the correlation terms reveal the presence of underlying unobservable variables, driving the well-being outcomes and academic success. The results of the study indicate that there are omitted factors that influence both academic success and the two measure of well-being, as the correlation among the disturbances of the three equations in the multivariate probit model are statistically significant. Moreover, satisfaction with life has a statistically significant impact on academic success, which is also enhanced by academic integration and institutional and goal commitment variables. Besides birth order and family size are important determinants of academic success. Empirical findings also indicate that increases in affect

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1 Please see Diener and Biswas-Diener (2008); Lyubomirsky et al. (2005) for a full review.
balance foster satisfaction with life. In addition to family structure variables, academic integration, support from family and friends, and institutional and goal commitment variables are determinants of affect balance. The rest of the paper is organized as follows: The next section summarizes the instruments employed in the study. Section three provides a descriptive analysis of the data. Section four presents analytical framework. Empirical results are summarized in section five. Section six discusses the empirical findings within the context of existing literature. Finally, section seven concludes.

Method

Participants

In order to investigate the association between academic success and subjective well-being, a survey has been administered at a two-year Higher Vocational School in rural Central Turkey, where there were 948 (462 first year and 486 second year) registered students at the time of the survey. A total of 628 (420 males and 208 females) students between the ages of \( M = 19.932\ SD=2.47 \) participated in the study.

Instruments and Variables

Demographic Inventory. Demographic Inventory was developed to gather information about family characteristics and consists of data related to sex, age, expected academic degree, seminar participation frequency at the university, involvement frequency of some activities (e.g. extracurricular activities, social media, and study), interaction frequency with faculty members (in- and out-of-class), frequency of meetings with the academic adviser, counselor, university staff, friends, family, etc. during the academic year. Furthermore data relating to the family background such as family size and structure, including sibship size and sex composition, income level, education levels of parents, and family place of residence has been obtained through survey. The sibship size is represented by the number of siblings in the family, whereas the sex composition variable is defined as the ratio of boys over girls in the family.

University Integration and Commitment Questionnaire (UICQ). The 17-item UICQ was used to measure the different constructs, namely, Academic Integration (3 items), Social Integration (4 items), Institutional and Goal Commitment (7 items), Encouragements from Friends and Family (3 items). The original constructs were comprised by Cabrera et al. (1993) from different questionnaires to measure different constructs in the two theories, namely, Student Integration Theory (Tinto, 1975, 1988) and Bean’s Student Attrition Theory (as cited in Cabrera et al., 1993). The questionnaire is a 5-point scale ranging from “1=...
strongly disagree” to “5 = strongly agree”. Students who get higher scores indicate a better level of integration to university. The validity and reliability studies of the UICQ for the Turkish sample were carried by Yıldırım et al. (2012). Confirmatory Factor Analysis (CFA) yielded 4-factor structure of Turkish version of UICQ. Results of the confirmatory factor analysis indicated a good fit (Bentler, 1990; Kline, 2005) \( [X_2 (109)=231.03, p=.000, X_2/df\text{-ratio} = 2.12; CFI=.93, SRMR=.060, RMSEA=.07] \). The total number of items of the questionnaire is comprised of 17 items in the Turkish version. The Cronbach alpha coefficients of the subscales for the original study ranged from .72 to .90. Although the total number of items of the questionnaire is comprised of 17 items in Turkish version, 1 item from Institutional and Goal Commitment subscale (“It is likely that I will re-enroll at (institution) next fall”) was omitted from the questionnaire in the present study, because the sample used in this study is collected from 2-year community college, and both first and second year students were included in the study.

**Positive Affect and Negative Affect Schedule (PANAS).** PANAS was developed by Watson et al. (1988). It consists of 10-item positive and 10-item negative mood adjectives. Participants are asked to rate how frequently they experience the emotions in a general time frame. Higher scores in Positive Affect reflect to be enthusiasm, alertness, and pleasurable engagement with the environment. Higher scores in Negative Affect refer to aversive mood states and subjective distress. In the original study, internal consistency reliabilities were reported ranging from .86 to .90 for Positive Affect, from .84 to .87 for Negative Affect. Turkish adaptation studies of the scale were conducted by Gençöz (2000).

**Satisfaction with Life Scale (SWLS).** SWLS was developed by Diener et al. (1985) to identify the individual differences concerning the cognitive evaluation of one’s life. Participants can evaluate their lives according to their subjective criteria. The scale measures global life satisfaction. In the original study, internal consistency reliabilities were reported as .87. SWLS solicits responses from individuals about the extent to which they agree or disagree with certain statements and it is designed specifically to capture satisfaction with life. The psychometric properties of the SWLS in Turkish culture were carried out by Durak et al. (2010).

**Operational Definitions of the Variables**

Academic Integration is the student’s satisfaction with academic performance and intellectual development.
Social Integration involves developing peer-group and faculty interactions. This variable is a composite score of the scales called Relations with Peer-Group and Relations with Faculty.

Institutional and Goal Commitment comprises from institutional fit and quality, confidence on college choice, importance of college degree, and sense of belonging to the college.

Encouragements from Friends and Family variable includes family and friends’ encouragement to continue enrollment at the college.

Subjective Well-Being is assessed with two instruments: Satisfaction with Life Scale (SWLS) and Positive and Negative Affect Schedule (PANAS) for the affect balance (negative affect subtracted from positive).

Academic Performance was measured by collecting year-end report card grades from school records. The passing grade, grade point average (GPA), is 2 out of 4.

School Involvement referred as the number of hours spent per week for activities such as, extracurricular activities (social, cultural, sports) both in the city and at the university, and in social media.

School and Social Interaction referred as frequency of interaction with faculty members (both in office hours and in out-of-class), counselor, friends, family, academic adviser, etc. during the semester.

The instruments were administered to the volunteer students as a group in the classroom setting during at the end of the fall semester. The administration of instruments lasted approximately 20 minutes. Participants’ anonymity and confidentiality were guaranteed.

Data

The survey for this study had been undertaken in the last week of December 2014. A total of 628 students out of 948 registered students have participated in the survey. When the missing observations and outliers are excluded, the sample covers the responses of 589 (202 female and 387 male) students. The data relating the previous and current academic success of the students has been obtained from the Registrar’s Office.

Descriptive analysis, presented in Table 1, indicates that nearly 65 % of students are male, and the average GPA is 2.19. The common family type is parents with three or more children (27.13%). Nearly 80% of students have a low socioeconomic background according to the level of monthly household income. The average monthly family income is less than 500 US
dollars. Generally fathers have a higher educational level compared to the mothers. Hence employment ratio for fathers is slightly greater than that of mothers. 86% of the students stated that their mothers are housewives and 80% of the fathers are employed. The majority of the students (68%) come from rural areas, only 10% of them reported that their family residence is in big cities. The average number of siblings is 4.5. Nearly 90% of the students live away from their families. Both academic and social interactions appear to be weak. Most of the students (68%) have never met with their advisers. Nearly 29% of the students report that they do not allocate time for out-of-class activities. Almost 25% of the students express that they spend 1-5 hours per week to socialize with their friends from the vocational school and / or from high school. With regards to the perceptions about the support from the vocational high school, they stated that they had been receiving a considerable amount of support from the academic staff. Moreover more than half of them are satisfied with vocational high school as they reported that their expectations have been met.

**Table 1 Descriptive statistics and sample characteristics**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPA</td>
<td>2.199</td>
<td>0.756</td>
</tr>
<tr>
<td>Age</td>
<td>20.20</td>
<td>1.818</td>
</tr>
<tr>
<td>Total number of siblings</td>
<td>3.46</td>
<td>1.636</td>
</tr>
<tr>
<td>Birth Order</td>
<td>2.46</td>
<td>1.576</td>
</tr>
<tr>
<td>Mother’s Education Level</td>
<td>2.72</td>
<td>0.879</td>
</tr>
<tr>
<td>Father’s Education Level</td>
<td>3.16</td>
<td>0.728</td>
</tr>
<tr>
<td>Academic Integration</td>
<td>9.57</td>
<td>2.748</td>
</tr>
<tr>
<td>Social Integration</td>
<td>13.58</td>
<td>3.818</td>
</tr>
<tr>
<td>Institutional and Goal Commitment</td>
<td>18.08</td>
<td>5.642</td>
</tr>
<tr>
<td>Encouragements from Friends and Family</td>
<td>9.87</td>
<td>3.255</td>
</tr>
<tr>
<td>Involvement</td>
<td>2.30</td>
<td>1.455</td>
</tr>
<tr>
<td>School and Social Interaction</td>
<td>1.81</td>
<td>1.158</td>
</tr>
<tr>
<td>PA</td>
<td>31.94</td>
<td>8.255</td>
</tr>
<tr>
<td>NA</td>
<td>25.56</td>
<td>7.333</td>
</tr>
<tr>
<td>Affect-Balance</td>
<td>6.382</td>
<td>9.906</td>
</tr>
<tr>
<td>Total Life Satisfaction</td>
<td>11.73</td>
<td>5.105</td>
</tr>
<tr>
<td>Subjective Well Being</td>
<td>18.11</td>
<td>12.442</td>
</tr>
</tbody>
</table>
Satisfaction with Life, Affect-Balance and Subjective Well-Being

Depending on the field of specialization, different estimation methods have been employed in the literature investigating the determinants of happiness (Kristoffersen, 2010; Ferrer-i-Carbonell and Frijters, 2004). Generally, psychologists and sociologists prefer to employ Ordinary Least Squares (OLS) regressions, treating happiness as a cardinal variable. Economists, on the other hand, regard happiness as an ordinal variable and thus opt for ordered response models (Van Praag, 2007). The preference of cardinality assumption by psychologists has been criticized by economists, arguing that the subjectivity of happiness hinders the assessment of the realism of the cardinality assumption (Ferrer-i-Carbonell and Frijters, 2004; MacKerron, 2012). Economists, by relaxing the assumption of cardinality, generally employ the standard ordered probit and logit models, which treat ordinal data as the discrete expression of a continuous latent variable of arbitrary scale (Blanchflower and Oswald, 2005). Yet results obtained using models that do and models that do not assume cardinality are usually extremely similar (MacKerron, 2012). There are empirical studies employing both methods in order to demonstrate that the research results are not biased by the particular technique used in the analysis (Stevenson and Wolfers, 2009); and that models which impose cardinality provide results that are very similar to those that do not, such as ordered logit and probit models (Clark and Oswald, 1996; Headey and Wooden, 2004; Van Praag and Ferrer-i-Carbonell, 2007; Ferrer-i-Carbonell and Frijters, 2004; Blanchflower and Oswald, 2004; Rasciute and Downward, 2010; MacKerron, 2012).

Previous empirical research on the association of life satisfaction and academic success has typically relied on analysis of variance (ANOVA) or single equation regression analysis. These studies regard academic success and other variables, which includes subjective well-being, as independent achievements or choices, failing to account for any interdependency among them. However, the random disturbances that affect academic success, affect-balance and satisfaction with life may be correlated. The choice of the specific estimator is also related with the way endogeneity that might exist in the analysis is handled (Rasciute and Downward, 2010). Endogeneity could stem from multiple sources, as academic success and happiness influences and is being influenced by a series of factors (Anand et al., 2011). Affect-balance, satisfaction with life and academic success variables could be simultaneously

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2 Please see Van Praag and Ferrer-i-Carbonell (2007; 2011) for more information on the cardinal and ordinal interpretations of happiness.
determined. Affect-balance, while influencing academic success and satisfaction with life, may also be affected by them. Recent literature agrees that a happier person is more likely to have a positive attitude and be successful (Mohanty, 2009). Additionally personality traits will likely have an impact on affect and satisfaction with life, as well as on academic success, giving rise to an endogeneity issue (Diener et al, 2003, for a review).

The current study recognizes the interdependencies among the three variables and investigates the association of academic success, affect-balance, and satisfaction with life in a simultaneous equations framework, by jointly estimating the equations in the form of multiple equation probit model, which contains extra parameters to account for the correlation across equations in the same sense as a seemingly unrelated regression model. For our analysis, we collapse both affect-balance and satisfaction with life variables into binary variables. The median values for affect-balance (AB) and satisfaction with life (SWL) are 6 and 11, respectively. Accordingly, for affect balance, scores above 6 indicate happiness, and score equal or below 6 indicate a lack of happiness. Similarly, for SWL, students are regarded as more satisfied with life if their score above the median, and less satisfied with life if their score is equal or below the median (median score for SWL is 11).

**Academic Success**

The passing GPA is 2 out of 4. Therefore a binary variable has been created which takes the value of zero for grades less than 2 and takes the value of one for grades equal to 2 and greater than 2.

**Analytical Framework**

The multivariate probit model, which takes unobservable heterogeneity into account, consists of a recursive system of equations. Its most important feature is that the random components of the equations are allowed to be freely correlated with each other. If there are unobservable individual characteristics, influencing all dependent variables, the model is able to take them into account. This approach is a generalisation of the bivariate probit model that allows for cross-correlation in the disturbance term between more than two probit models. The general specification for a multivariate probit model with three dependent variables is

\[ Y_i = \beta_i'X_i + \varepsilon_i, \quad i = 1, 2, 3, \]

where \( Y_i \) is an unobserved variable representing the latent variable, \( X_i \) is a vector of explanatory variables, \( \beta_i \) is a vector of unknown coefficients to be estimated, \( \varepsilon_i \) is the error
term which is normally distributed with mean 0 and variance 1, and the variance-covariance matrix of the error terms is

$$\Sigma = \begin{bmatrix}
1 & \rho_{12} & \rho_{13} \\
\rho_{12} & 1 & \rho_{23} \\
\rho_{13} & \rho_{23} & 1
\end{bmatrix}.$$  

The observed binary variable $Y_i=1$ if $Y_i^*>0$, 0 otherwise. Thus, the joint probability of a triplet $\{Y_i = y_i, \ i=1,2,3 \ | \ \beta, \Sigma \} = \int_{A_1} \int_{A_2} \int_{A_3} \phi(z_1, z_2, z_3, \rho_{12}, \rho_{13}, \rho_{23})dz_3dz_2dz_1,$

where $\phi$ is the density function of a multivariate normal distribution with mean vector 0 and the variance-covariance matrix (correlation matrix) $\Sigma$, and $A_i$ is the interval $(-\infty, \beta_i'X_i)$ if $y_i=1$ and $(\beta_i'X_i, \infty)$ if $y_i=0$ (Chib and Greenberg, 1998). The parameters $\beta_i$ and the three correlations of the error terms can be estimated via the maximum likelihood method (Greene, 2012).

**Model Specification**

In order to address the association between academic success (GPA), satisfaction with life (SWL) and affect-balance (AB) a multivariate probit model has been estimated where the correlation among the error terms are estimated as auxiliary parameters.

Our model consists of three equations

$$S_j = \beta_i X_j + \delta(SWL)_j + \phi(AB)_j + \varepsilon_{i,j} \quad (1)$$

$$SWL_j = \beta_i X_j + \gamma(AB)_j + \varepsilon_{2,j}$$

$$AB_j = \beta_i X_j + \varepsilon_{3,j}$$

Where S is the binary variable taking the value of one for passing grades; X denotes student characteristics; and SWL is a binary variable denoting satisfaction with life and AB denotes the binary variable for affect-balance for student j. The subscript j denotes an individual. Additionally the error terms are assumed to be zero-mean bivariate normally distributed with unit variance and correlation coefficients $\rho_{12}$, $\rho_{13}$ and $\rho_{32}$. The correlation between the errors in the equations, $\rho$, can be interpreted as the interdependence of the unobserved components in the academic success, satisfaction with life and positive affect equations. The explanatory variables in $X_i$ include various socio-economic and demographic characteristics of the students, such as monthly family income, number of siblings, geographical place of residence. The Wald test, and/or a Lagrange multiplier test, provide evidence on the
correlation between the unobserved explanatory variables of three equations so that if coefficients \( \rho_{12} = \rho_{13} = \rho_{32} = 0 \). (Fabbri and Monfardini, 2008). Equations (1) are estimated by full-information maximum likelihood. The likelihood-ratio test of whether the correlation coefficients of the residuals \( \rho \) are jointly equal to zero can be used as a Hausman endogeneity test (Knapp and Seaks, 1998). The Wald test, and/or Langrange Multiplier Test provide evidence on the correlation between the unobserved explanatory variables that affect all equations.

**Estimation Results**

The empirical results of the multivariate probit analysis are presented in Table 2, where LR denotes the Likelihood Ratio statistics testing the joint significance of the correlation coefficients. Empirical results presented in Table 2, regarding academic success, indicate that age, academic integration, institutional goal and commitment, number of siblings, satisfaction with life and living at a dormitory have a positive impact on the likelihood of academic success. However, social involvement and affect–balance have a negative impact on academic success likelihood. Being male also decreases the likelihood of success. The results relating to the satisfaction with life equation indicate that, as the level of income increases, the likelihood of life satisfaction increases. Besides academic integration, social integration and institutional goal and commitment positively affect the life satisfaction of the students. Empirical results indicate that increases in number of siblings enhance the affect-balance, whereas higher birth order has a negative impact on affect-balance. The sex composition variable, which is defined as fraction of male siblings, has a positive impact on affect-balance. Moreover the correlation coefficient parameters are statistically significant, signaling that the error structures of the equations are correlated. This suggests that the multivariate model is the correct specification. The LR test indicates high joint significance of the correlation coefficients.

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3 Initially all explanatory variables are included in the analysis. The final model has been reported in Table 2 after excluding the statistically insignificant variables.
### Table 2 Multivariate Probit Estimations

<table>
<thead>
<tr>
<th></th>
<th>GPA</th>
<th>SWL</th>
<th>Affect-Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>coefficient</td>
<td>p-value</td>
<td>coefficient</td>
</tr>
<tr>
<td>Age</td>
<td>0.120</td>
<td>0.000*</td>
<td>-0.382</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>0.087</td>
<td>0.001*</td>
<td>-0.010</td>
</tr>
<tr>
<td>integration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>-0.025</td>
<td>0.049**</td>
<td>0.025</td>
</tr>
<tr>
<td>integration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family and</td>
<td>0.015</td>
<td>0.441</td>
<td>0.011</td>
</tr>
<tr>
<td>friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td>0.015</td>
<td>0.011</td>
</tr>
<tr>
<td>Student</td>
<td>0.068</td>
<td>0.044**</td>
<td>-0.069</td>
</tr>
<tr>
<td>accommodation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWL</td>
<td>0.840</td>
<td>0.001*</td>
<td>-0.018</td>
</tr>
<tr>
<td>AB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constant</td>
<td>0.025</td>
<td>0.049**</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ρ(GPA – SWL)</td>
<td>0.424</td>
<td>0.005*</td>
<td>-3.021</td>
</tr>
<tr>
<td>ρ(GPA – AB)</td>
<td>0.102</td>
<td>0.100**</td>
<td></td>
</tr>
<tr>
<td>ρ(SWL – AB)</td>
<td>0.227</td>
<td>0.053***</td>
<td></td>
</tr>
</tbody>
</table>

**LR(ρ_{12} = ρ_{13} = ρ_{23} = 0) χ^2(3) = 10.395 (0.015)**

Note: (*), (**), (***)) denote significance levels at 1 per cent, 5 per cent and 10 per cent, respectively.

### Discussion

The purpose of the present study is to examine the association of academic success, satisfaction with life and affect-balance of university students. Using a multivariate probit modelling framework, we found that academic success, satisfaction with life and affect-balance are simultaneously determined and increases in satisfaction with life enhance academic success, and vice versa. Additionally affect-balance increases the likelihood of satisfaction with life. This study also shed light on the determinants of academic success, satisfaction with life and affect-balance of vocational school students. Generally findings support existing literature. Empirical research from this study suggests that family structure and sibship composition are associated with academic success. It emerges that students living at dormitories are more likely to be successful compared to students living alone or with their
families. This result indicates the importance of living environment for academic success (Adams et al., 2000; Enochs and Roland, 2006).

**Academic Success - Satisfaction with Life**

Life satisfaction has been regarded as one of the most well-established indicators of general wellness and positive functioning (Veenhoven, 1988; Suldo et al., 2006), which has been shown to be associated with satisfaction with schooling (Suldo et al., 2006, 2008). The earlier research (Huebner, 1991, Huebner and Alderman, 1993; Suldo et al., 2006) failed to find a significant association between life satisfaction and academic performance. Yet recent empirical studies report a positive impact of life satisfaction on students’ academic achievement (Verkuyten and Thijs, 2002; Gilman and Huebner, 2006; Suldo and Shaffer, 2008; Suldo et al., 2011; Shek and Li, 2015). Besides empirical evidence also indicates that correlation between academic success and life satisfaction could be reciprocal. Satisfaction at school can be a result of successful academic experiences, and can also stimulate further achievement. Hence life satisfaction enhances academic success, which in turn leads to higher levels of life satisfaction (Suldo et al., 2011; Crede et al., 2015), resulting in “the good circle” phenomenon (Samdal et al., 1999). The empirical results presented in this paper supports “the good circle” phenomenon, in that academic success, satisfaction with life and affect-balance are simultaneously determined. Academic success is predicted by satisfaction with life, which is positively associated with affect-balance and income level. Additionally, academic integration, social integration and institutional goal and commitment also enhance satisfaction with life.

Our results also suggests that economic well-being is positively associated with satisfaction with life supporting the findings of researches (Frijters et al., 2004; Diener and Biswas-Diener, 2002; Morrison et al., 2011). Any increase in income enhances the likelihood of being happy.

**Positive and Negative Affect (PANAS)**

Existing literature recognizes the importance of personal traits influencing long-term success in numerous life domains including work such as student achievement, career success, long term income (Boehm and Lyubomirsky, 2008; Lyubomirsky et al. 2005; Haase et al., 2012). Still the empirical studies cannot reach an agreement regarding the impact of positive affect on academic achievement. Some studies report a positive, although small and not necessarily significant, relation between positive affect and grades (Borrello 2005; Cheng and Furnham
2002; Marsh et al., 2006; Oishi et al. 2007). Whereas others find a negative (Mellanby et al. 2000; Trockel et al., 2000) or negligible / no relation (Chamorro-Premuzic and Furnham 2003; Mellanby et al. 2000; Nickerson et al., 2011) between the two variables. Nickerson et al. (2011) argues that positive affect is generally positively correlated with respondents’ self-assessments; but not significantly correlated with the objective college outcomes and is nearly always negatively correlated with the college-success variables recorded by the institution. Our results indicate a statistically negative impact of affect-balance on academic success, supporting the arguments of Nickerson et al. (2011).

Even though there are mixed results concerning the impact of positive affect on academic success, the literature agrees that it enhances satisfaction with life as emotionally meaningful life experiences have a lasting influence on subjective wellbeing (Lucas, 2007; Cohn et al., 2009). The empirical results of this study reports that increases in affect-balance enhance satisfaction with life, supporting the existing literature.

**Student Integration**

Tinto (1975, 1988), in his theory, explained why students depart from the university. In other words, his theory examines the process of student persistence in university and tries to understand reasons of student departure from university. According to Tinto, students bring some personal, familial, academic characteristics, and skills and abilities as well as intentions with respect to personal goal and institutional commitments with them while entering a university. All these pre-entry characteristics are reshaped by academic (e.g., academic performance, faculty/staff interactions) and social (extracurricular activities and peer group interactions) system of the university. The theory postulates that institutional experience combined with academic and social integration are critical in the long-term success. Negative institutional experiences, on the other hand, led to a decrease in academic and social integration of the students and ultimately promoted the student’s withdrawal.

Empirical results indicate that as academic integration escalates, academic success, satisfaction with life and affect-balance increases. Since the academic life is on the central of university life for students, it is expected that as the level of academic integration of students increases, their success and SWB increases too. This finding is consistent with the study of Lent et al. (2009) regarding the prediction of academic adjustment on life satisfaction, which is the cognitive part of SWB. The affective part of SWB is affect-balance. Although in this study the academic integration has been defined as the perceived academic performance and intellectual development, our findings indirectly support Oishi et al. (2007). They show that
the students who had moderate level of positive affect were the most successful in terms of GPA. Nickerson et al. (2011) also find that positive affect is positively associated with self-predicted likelihoods of college success, but negatively related to most college-success variables, such as GPA.

Findings from this study suggest that social integration has a positive impact on satisfaction with life and affect-balance, yet it does not have a statistically significant impact on academic success. Marsh (1992) found that although extracurricular activities have positive effects on university outcomes, like educational aspirations, academic achievement, and subsequent college attendance, the results also provided that participation in activities beyond an optimum level may have diminishing returns. However, according to Astin (1984), participating any extracurricular activity at university, such as social, cultural, or sportive clubs has a positive effect on student persistence. According to the Theory of Student Involvement (Astin, 1984), the greater the student’s involvement at university, s/he is more likely to develop a strong identification and attachment to university life. Therefore, students may develop more positive feelings to the university, which is closely related to the SWB of students. As a result, on the one hand social integration, which may capture the impact of non-academic interaction rather than academic one, may have negative effect on academic success; on the other hand, it has a positive effect on SWB of students.

**Institutional and Goal Commitment**

Institutional and goal commitment variable has a positive effect on academic success and SWB of students. In their meta analysis, Robbins et al. (2004) report that institutional commitment, social support, and social involvement have a moderate impact on student retention compared to academic goals, academic self-efficacy, academic skills. Institutional fit and commitment may be a predictor of retention, but it may not necessarily be associated with student success. Bean and Metzner (1985) and Bean (2005) state that the impact of external factors are more pronounced compared to that of institutional involvement factors for non-traditional students. Bean (2005) claims that high GPA is not necessarily associated with student retention. Since students with high GPA have a higher probability of transferring to other institutions, they may have a low commitment and institutional fit. Even though empirical studies investigating the association of SWB and institutional fit and commitment are scarce, it is plausible to expect a positive association between the two variables. If a student is content with his / her institution, and feels that s/he belongs to this institution, then
s/he may be committed to the institution with a high SWB. Hence institutional fit and commitment may be positively associated with SWB.

**Encouragements from Friends and Family**

The higher education is a stressful period for students because they need to cope with both complex new life roles and achieve academic success. Some students can deal with these challenges in a constructive way and increase their level of integration to university, whereas others are unable to meet the demands of their new roles effectively and experience difficulties in integration to university. Students getting away from their family homes for the first time may have difficulties in making friends or may feel homesickness, which could be overcome by family and friends’ support. Therefore encouragement from family and friends is regarded as a contributor to academic success and subjective well-being (Thomas, 2002; Cheng et al., 2012). Student accommodation may provide a supportive environment for those who are away from their family home and trying to adapt to new university life (Wilcox et al., 2005). Empirical results of this paper suggest that encouragement from family and friends has a statistically significant positive impact on affect-balance, but neither on academic success or satisfaction with life. Yet the positive impact of student accommodation on academic success may be an indication of peer support and encouragement.

**Family Structure**

A vast economic literature has pointed to the important role that socioeconomic and family background plays in affecting student achievement (Sirin, 2005). The birth order, family size and sibship sex composition are among the important determinants of an individual’s academic success. The economic theory inspired by the pioneering work of Becker (1960) suggests a negative relation between educational achievement and total family size (Becker and Lewis, 1973; Becker and Tomes, 1976; Hanushek, 1992; Diaz, 2003 and Booth and Kee, 2006). Black et al. (2005) states that controlling for birth order drive the observed negative relationship between family size and student achievement. Our results support Black et al. (2005), increases in family size enhance academic success, yet birth order hinders it. Additionally, affect balance has also been positively affected by family size (Nye et al., 1970) and negatively affected by birth order. Moreover as sex composition, expressed as the ratio of males, increases affect balance declines.
Conclusion

This study explores the association of academic success and two measures of subjective well-being. For this purpose, a set of questionnaires have been undertaken at a Higher Vocational School in Central Turkey, to obtain data relating to socio-demographic and family characteristics of students. Moreover the participants are also asked to complete the Positive and Negative Affect Schedule (PANAS) and Satisfaction with Life Scale (SLWS) to assess their subjective well-being. The questionnaire data has been supplemented by academic success data obtained from the Registrar’s Office. the sample covers responses of 589 (202 female and 387 male) students.

Previous empirical research on the association of life satisfaction and academic success has typically relied on analysis of variance (ANOVA) or single equation regression analysis, ignoring the possible interdependencies between the subjective well-being measures and academic success. The major contribution of this paper is to investigate the issue in a system of equations framework, where academic success, satisfaction with life and affect-balance are jointly modelled, recognizing any interdependencies among them, by employing a multivariate probit method. Empirical results indicate that academic success, satisfaction with life and affect-balance are simultaneously determined and happiness and academic achievement are mutually reinforcing supporting the findings of Lyubomirsky et al. (2005) and Quinn and Duckworth (2007). Though this study’s conclusions are limited by the sample, the empirical findings provide useful insight for policy makers.

Empirical results indicate that age, gender, academic integration and family size are among the factors that affect academic success. Academic success has been positively affected by students’ life satisfaction (SWL). SWL, on the other hand, has been positively affected by income, academic and social integration, and institutional and goal commitment. Additionally affect-balance has a positive impact on SWL but a negative impact on academic success in line with the previous empirical findings. With respect to affect-balance equation, academic and social integration, institutional and goal commitment, and family support variables have statistically significant positive impact. Besides family size and birth order also among the determinants of affect-balance.

Overall empirical results provided in this paper indicate that academic success and subjective well-being measures are mutually reinforcing. Therefore, rather than single equation modelling, a system estimation approach, taking the interdependencies among these variables
are more suitable. Moreover family size and structure influences both academic success and affect–balance, hence indirectly impacts students’ life satisfaction. Support from family and friends is important in elevating affect–balance, thus contributing to life satisfaction as affect–balance enhances students’ life satisfaction. The institutional and goal commitment, academic and social integration variables are important determinants of both academic success and satisfaction with life, though social integration is inversely related with academic success and positively related with satisfaction with life. Our results suggest that adopting policies that enhance institutional and goal commitment and academic integration of students, will improve both happiness and academic achievement of students.
References


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