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Academic motivation of the first-year university students and the self- determination theory

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The Self Determination Theory has identified various types of motivation along a continuum from weakest to strongest. Yet, until recently, no reliable method existed to measure accurately the strength of motivation along this continuum. Vallerand et al. (1992) developed the Academic Motivation Scale (AMS) to measure the validity of the Self Determination Theory in education. This theory identifies three levels of academic motivation – intrinsic, extrinsic and amotivation - which are measured by AMS. The current study assesses the academic motivations of the first year students in a non-profit university using this scale. Statistical procedures such as descriptive statistics, ANOVA and t-tests were used in analyzing data. The differences in gender and differences among various faculties are investigated and results disclosed with relevant recommendations.

Key words: Intrinsic, extrinsic, amotivation, self-determination, academic motivation scale.

INTRODUCTION

Learning is a process that entails many issues. The most potent of these issues is motivation, which may be defined as an internal state that arouses, directs and maintains behavior. That internal state is a necessary component of any type of activity undertaken. The ramifications of this became globally apparent, especially after the dissemination of the concept of scientific management of Frederick Taylor at the beginning of the twentieth century. Since then, interest in motivation has intensified and more and more research has been conducted with the end result of various theories shedding light on motivation.

Among early theories of motivation, the Theory of Hierarchy of Needs (Maslow, 1954), Theory X and Theory Y (McGregor, 1960) and the Two Factor Theory – also called motivation-hygiene theory - (Herzberg et al., 1959) can be mentioned. Later came the Theory of Needs (McClleland, 1961), Cognitive Evaluation Theory (de Charms, 1968; Deci, 1975), Goal Setting Theory (Locke, 1968), Self Efficacy Theory (Bandura, 1997), Reinforcement Theory (Komaki et al., 1996), Equity Theory (Adams, 1965) and the Expectancy Theory (Vroom, 1964). And then Deci and Ryan introduced the Self-Determination Theory (1985) which proposed that individuals had an innate desire for stimulation and learning from birth. The extent to which this natural drive is realized depends upon the fulfillment of the individual's psychological needs which are delineated as the need for competence (understanding how to realize various external and internal results and being efficient in doing so), the need for autonomy (being self- initiating and self-regulating of one's behavior) and the need for relatedness (developing secure and satisfying connections with others in one's social life). The needs and the environment interact to generate several types of motivation - intrinsic (the drive to pursue an activity simply for the pleasure or satisfaction derived from it), extrinsic (pursuing an activity out of a sense of obligation) or amotivation (absence of intent or drive). Among early fields of application of the self-determination theory was education (Deci et al., 1991). Furthermore, a scale was developed by Vallerand and his colleagues that provided a measurement of the academic motivation in education (Vallerand et al., 1992).

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The distinction between and the relative importance of intrinsic and extrinsic motivation is a classical undertaking in psychology. Intrinsic motivation relies on internal, personal factors such as needs, interest and curiosity. When an individual is intrinsically motivated, incentives or punishments are not required because the activity itself is found to be rewarding. Three components or subscales make up the intrinsic motivation: to know, to accomplish things and to experience stimulation. The intrinsic motivation to know is associated with the need for autonomy and may be depicted as performing for the pleasure and the satisfaction derived during the process of learning, exploring and understanding. An example may be a student studying a book for the pleasure of discovering what he/she does not know. Intrinsic motivation toward accomplishment is related to competence and is getting involved in an activity in an accomplished or creative way. Expanding efforts beyond the requirements of a project or a term paper just for personal satisfaction may be cited as a case in point. Intrinsic motivation to experience stimulation is linked to relatedness and may be delineated by the example of a student going to school to get involved in a stimulating class discussion (Vallerand et al., 1992). The stimulation may reflect intellectual or physical sensations.

On the other hand, extrinsic motivation refers to the types of behavior that are pursued not for the sake of deriving personal pleasure or satisfaction from learning or exploring an educational activity but for attaining an outcome such as earning a good grade or avoiding teacher's reprimand (Deci et al.,1991). When extrinsically motivated, individuals pursue activities that provide rewards that are external to the activity itself. An example may be an athlete who participates in the Olympics to obtain a gold medal and the associated fame and fortune that go with it. Deci and Ryan, in their work Intrinsic Motivation and Self-Determination in Human Behavior (1985), proposed the existence of three types of extrinsic motivation. In an ascending manner, these are the external regulation, identified regulation and introjected regulation. The external regulation refers to behavior that is carried out for obtaining medals and/or good grades from assessments and also for avoiding parental or social pressure and it entails minimum amount of self-determination. The introjected regulation follows the external regulation and is the state in which the individual has internalized the reasons for his or her actions. Such internalization replaces the external source of control with an internal one, which may be self-imposed guilt and/or anxiety. A student may get to class on time regularly and behave properly during the lesson or may feel guilty if he or she does not study or practice. The extrinsic motivation with the highest level of self-determination is the identified regulation which depicts the state in which the individual values and judges a behavior to be important for him or her, especially to the extent that such a behavior has been chosen by him or her. For example, an athlete may practice because he or she recognizes that the practice will improve his or her performance (Vallerand, 2004) or a student may study extensively in order to improve his or her knowledge.

The last type of motivational construct is identified to be amotivation (Deci and Ryan, 1985) which may be defined as relative absence of motivation. The individual lacks purpose and intentionality. A student may question his or her studying every day or an athlete may start to wonder whether participating in sports still represents a worth-while objective.

The Academic Motivation Scale (AMS) was developed by Vallerand et al. (1992) to assess the motivation level of university students, taking into consideration the intrinsic, extrinsic factors and amotivation. The scale is designed to assess the extent to which an individual's academic motivation is intrinsically or extrinsically driven and has been used mostly in Canadian, Australian, American and British universities (Barkousis et al., 2008; Grouzet et al., 2006; Cockley et al., 2001; Spittle et al., 2009; Vallerand et al., 1992; Nunez et al., 2004). Besides these investigations, various studies have been carried out in Turkey such as those of Arıoğul (2009), Umay (2002) and Sungur and Senler (2010).

Other scales have been developed to assess the internal motivation but none of them have reached the efficiency and the popularity level of the AMS. Among these are the Achievement Goal Questionnaire of Finney et al. (2004), the Mastery, Performance and Alienation Goal Scale of Archer (1994).

Purposes of the study

This particular study has been carried out in a non-profit university in Istanbul, Turkey with three major purposes: to try to determine if a difference exists between male and female students in terms of their academic motivations; whether or not students of different faculties have different academic motivations; and to what extent do external supports such as scholarships affect academic motivation.

MATERIALS AND METHODS

Participants

Those who participated in the survey were all first-year students studying at a university with a number of faculties. As the medium of instruction is English, the scale used was the English version. The total number of valid questionnaires was 728, with 355 (49%) from female students and 372 (51%) from male. The ages of the students ranged from 18 to 22. From a statistical point of view, this represents the parent population comprising the first- year students.

The scale and the collection of data

The Academic Motivation Scale has been utilized along with a demographic questionnaire. The scale was developed originally in French, and then translated to English. It is a 28-item form with a 7-

Table 1. Cronbach's alpha coefficients.

Subscale	Alpha (n = 728)
Intrinsic – to know	0.78
Intrinsic – toward accomplishment	0.84
Intrinsic – to experience stimulation	0.79
Extrinsic – identified	0.74
Extrinsic – introjected	0.77
Extrinsic – external regulation	0.72
Amotivation	0.76

Table 2. Descriptive statistics and the t-test results for motivation by gender.

Motivational subscale	Gender				t	df	p
	Male		Female				
	Mean	SD	Mean	SD			
Intrinsic – to know	4.99	1.15	5.26	1.08	-3.206	726	0.01
Intrinsic – towards accomplishment	4.47	1.06	4.72	1.03	-3.277	726	0.01
Intrinsic – to experience stimulation	4.38	1.15	4.70	1.13	-3.747	726	0.00
Extrinsic – identified	5.08	1.12	5.61	1.03	-6.604	726	0.00
Extrinsic – introjected	4.51	1.32	4.79	1.33	-2.855	726	0.04
Extrinsic – external regulation	5.11	1.25	5.50	1.14	-4.409	726	0.00
Amotivation	2.95	1.40	2.43	1.24	5.293	726	0.00

point Likert scale that ranges from 1, which implies no correspondence, to 7, which indicates perfect correspondence with the items. The scale consists of three parts – intrinsic motivation, extrinsic motivation and amotivation. The intrinsic part consists of three subscales – to know, toward accomplishment and to experience stimulation. The part on extrinsic motivation comprises the subscales of identified, extrinsic and external. The third part, amotivation, stands by itself. Vallerand et al. (1992) maintained that the internal consistency of the Academic Motivation Scale ranged in 0.80s and displayed a test/retest correlation value of 0.79. In addition, Spittle et al. (2009), who carried out a similar investigation, reported an internal consistency that ranged from 0.72 to 0.86. Cronbach's alpha of Arioğul (2009) was reported to be 0.770 and 0.801. Still in another study, Fairchild et al. (2005) evaluated new and existing validity evidence for the Academic Motivation scale. The demographic questionnaire dealt with the gender and faculties.

The procedure

The study was conducted during regular class time. The students were informed that their participation was voluntary and their responses would remain confidential. No time limit was imposed.

Analysis of the data

Descriptive statistics, one-way ANOVA and the independent sample t-test were the statistical tools used for analyzing the data. One-way ANOVA and independent sample t-test were applied in order to ascertain the differences between the motivational subscales. No weights were attached to any one of the items. The following Cronbach's alpha coefficients were obtained for subscale items of the AMS (Table 1).

RESULTS AND DISCUSSION

In the following two sections, the results are presented and discussed.

Is there a difference between male and female students in their academic motivation?

Descriptive statistics and independent t-test were used to determine whether a difference existed in the academic motivations of female and male students. The analysis showed statistically significant differences between male and female students at p = 0.05 confidence level in all of the motivational subscales displayed in Table 2.

It has been found that the female students are more intrinsically and extrinsically motivated than the males overall. In their part, the answers of the male students to items such as, "Because with only a high-school degree, I would not find a high-paying job later on", "In order to obtain a more prestigious job later on", "Because I want to have the good life later on" and "In order to have a better salary later on" show that male students have a propensity for external regulation. In addition, in answering items such as "Honestly, I do not know; I really feel that I am wasting my time in school", "I once had good reasons for going to university, now, I wonder whether I should continue", "I cannot see why I go to university and frankly, I couldn't care less" and "I don't

Table 3. The results of the ANOVA with homogenous variances.

Motiv. subscale	Faculties												F	df	p
	Sci.and Lit.		Bus. Man.		Commun.		Engin.		Arch.		Law				
	Mean	SD	Mean	SD	Mean	SD	Mean	σ	Mean	SD	Mean	SD			
Intrin. – to know	5.36	1.19	4.97	1.035	5.11	1.19	5.05	1.099	5.03	1.046	5.40	1.144	2.577	5/723	0.025
Intrin. – accomplish.	4.93	1.101	4.64	1.036	4.42	1.09	4.48	1.054	4.52	0.934	4.63	1.056	3.591	5/723	0.003
Intrin. – stimulation	4.70	1.334	4.63	1.131	4.53	1.099	4.36	1.11	4.37	1.096	4.81	1.042	2.763	5/723	0.018
Extrin. – introject	4.62	1.415	4.62	1.277	4.48	1.407	4.74	1.285	4.57	1236	4.89	1.454	1.058	5/723	0.038
Extrin – ext reg	5.51	1.225	5.36	1.088	4.79	1.375	5.39	1.219	5.21	1.051	5.55	1.135	6.083	5/723	0.000

Table 4. The results of the ANOVA with non-homogenous variances.

Motiv. subscale	Faculties												F	df	p
	Sci. and Lit.		Bus. Man.		Commun.		Engin.		Arch.		Law				
	Mean	SD	Mean	SD	mean	SD	mean	SD	mean	SD	mean	SD.			
Extrin. – iden.	5.51	1.236	5.41	1.056	5.07	1.248	5.29	1119	5.26	0.893	5.59	0.927	2.865	5/723	0.014
Amotivation	2.13	1.141	2.96	1.332	2.98	1.503	2.71	1.378	2.70	1.262	2.54	1.162	6.613	5/723	0.000

know; I can't understand what I am doing in school", the male students seem to be more amotivated than the females. This finding contradicts that of Arıoğul (2009) who found no significant difference between males and females in any of the subscales and corroborates those of Spittle et al. (2009), Vallerand et al. (1992), Nunez et al. (2004), Barkousis et al. (2008) and Cockley et al. (2001) – studies in which females scored higher than males. This may be due to the developmental differences between boys and girls.

Do the academic motivations of the students vary according to faculties?

In order to answer this question, the ANOVA process – analysis of variance - was performed. Analysis of variance is a procedure used for comparing sample means to see if there is sufficient evidence to infer that the means of the corresponding population distributions also differ.

The null hypothesis is that the academic motivations of the students do not change according to their faculties with the alternative hypothesis claiming the opposite, that in at least some of the faculties, the motivations are different.

Prior to the ANOVA, the Levene test was carried out for determining the homogeneity of the variances and this yielded two sets. The ANOVA was applied directly to the first set that encompassed subscales with homogenous variances (Levene values ≥ 0.05) and the results are listed in Table 3. Table 3 illustrates that in so far as the intrinsic motivational subscales and the introjected and externally regulated subscales of extrinsic motivation are concerned, the null hypothesis that the motivations of the students do not change according to the faculties may be rejected and the alternative hypothesis that faculties instigate differences in the academic motivations of the students may be accepted.

The set of subscales whose variances are not homogenous (Levene values < 0.05) are given in Table 4.

Replacing the one-way ANOVA with the Welch test, the results in Table 5 have been obtained. Like the ANOVA of Table 4, the Welch test of Table 5 confirms the rejection of the null hypothesis and the acceptance of the alternative.

Combining the Tables 3 and 5, it is possible to assert that the academic motivations of the students differ according to the faculties. Individuals in different faculties experience different motivations. Scheffe's comparison of means identified the predominant motivation of the

Table 5. The results of the Welch procedure for subscales with non-homogenous variances.

Motiv. subscale	Faculties												Statistic	Df1	Df2	P
	Sci. and Lit.		Bus. Man.		Commun.		Engin.		Arch.		Law					
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD				
Extrin. – iden.	5.51	1.236	5.41	1.056	5.077	1.248	5.29	1119	5.26	0.893	5.59	0.927	2.760	5	290.567	0.019
Amotivation	2.13	1.141	2.96	1.332	2.98	1.503	2.71	1.378	2.70	1.262	2.54	1.162	7.597	5	287	0.000

Table 6. Descriptive statistics and t-test results for the effects of scholarships.

Motivational subscale	Scholarship		No scholarship		Levene		t-test		
	Mean	sd	Mean	Sd	f	Sig	t	df	P
Intrinsic – to know	4.820	1.240	4.680	1.160	0.186	0.667	2.550	1448	0.011
Intrinsic – toward accomplishment	4.390	1.220	4.420	1.120	2.727	0.099	-0.086	1448	0.932
Intrinsic- to experience stimulation	4.440	1.180	4.400	1.170	1.139	0.286	-0.715	1448	0.475
Extrinsic – identified	4.990	1.220	4.950	1.150	0.190	0.663	0.541	1448	0.589
Extrinsic – introjected	4.460	1.370	4.520	1.690	0.819	0.366	-0.371	1448	0.711
Extrinsic – external regulation	4.860	1.280	4.950	1.300	0.940	0.759	-0.887	1448	0.376
Amotivated	3.060	1.460	3.330	1.360	4.790	0.029	-2.280	1448	0.010

students as being extrinsic in nature. The results illustrate that among the six faculties, the Science and Literature seem to be the best in intrinsic motivation with the Law leading in extrinsic. The students of the Engineering Faculty are highly susceptible to external regulation. Those of the Communication Faculty have scored highest in amotivation and in general, received lower scores in both intrinsic and extrinsic subscales.

When combined, the overall intrinsic mean for all the students returned an average of 4.77 and the extrinsic mean was 5.11. The fact that the participating students have scored higher in extrinsic subscales than intrinsic evokes the arguments of other researchers that external events, imposed goals and competition stifle intrinsic motivation (Vallerand et al., 1992).

Understanding the relationship between goal orientation and motivation may be important for long term, especially those between mastery and intrinsic motivation and avoidance and extrinsic motivation. More research may unearth the underlying factors.

To what extent do external supports such as scholarships affect academic motivation?

Again, an analysis has been carried out for establishing the extent to which academic motivation is affected by external events such as scholarships. The results obtained are given in Table 6. Levene's test was used for determining the homogeneity of variances for every subscale ($p \geq 0.05$), with the findings indicating no differences in variances, with the exception of amotivation. Moving on to evaluating the mean values using the t-test, with the exception of the subscales of intrinsic – to know and amotivated, all the subscales turned out to be more than 0.05, confirming the hypothesis of mean values of those subscales being equal.

Ostensibly, since the loss of a scholarship may represent a drain on financial resources, it may be expected that families put pressure on the students and demand success. However, contrary to such expectations, with the exception of two subscales, the findings suggest that scholarships

do not play very little, if any, role in academic motivation.

Considering the two subscales of amotivation and intrinsic – to know, it may be surmised that since an amotivated student may feel that he or she may be wasting time in school, it may be superfluous to anticipate the impact of any external influence such as a scholarship. A student who is in the intrinsic-to know subscale studies because of the pleasure and satisfaction he or she derives while learning new things, broadening his or her knowledge. As has been mentioned previously, such a motivation is observed in individuals who are engaged in an activity or behavior for its own sake with no intention of material gain. Perceived rewards such as scholarships do not alter their stance. A scholarship would probably ensure the efforts put in, anyway.

The results of the t-test in Table 6 show that there is no difference between the mean values of the remaining five subscales, indicating that scholarships do not exert much of an influence. Promised rewards such as prizes and money and threatened punishments are often utilized as a means of procuring desired behaviors. Research on intrinsic motivation has consistently shown that although such external events may serve to manipulate behavior while they are operative, they also tend to undermine intrinsic motivation for interesting tasks and hinder internalization. Performance evaluations in school systems, deadlines in general, competition etc have been found to decrease intrinsic motivation. Each of these external events is typically used to pressure the individual to think, feel or behave in a specific way. The presence of such a pressure signifies to the individual that he or she is being controlled, which leads to diminished sense of autonomy. These arguments are cited by other researchers in Deci et al. (1991) and Vallerand et al. (1992).

LIMITATIONS

A number of limiting factors should be taken into consideration for assessing the study appropriately. The first limitation of this research is the fact that the Academic Motivation Scale is employed at a single institution, an issue that hinders generalization.

The second constraint is the lack of previous documented research which might have been used for comparison. The Academic Motivation Scale has been used for analyzing the student populations of other countries, however, only a number of attempts have been made in this country. Common premises are not available currently.

The location of the institution in the study is another drawback. As this university is located in a large metropolitan city, results obtained can only be used to infer about universities in similarly sized metropolitan cities. No inferences of smaller urban areas can be drawn from this study as the range of the socio-economical conditions of the country is quite wide.

The last limiting factor is confidentiality due to which the names, thereby the GPAs and the minimum admission levels of the students to the university were kept anonymous. Student's profiles have not been a part of this study and hence, no correlation between these and the motivation subscales was possible.

Conclusion

This particular study has been carried out with two major purposes in mind: to find out whether or not a difference exists between male and female students in terms of their academic motivations and to try to determine if the academic motivations of the students in different faculties are the same.

The analysis has demonstrated that a significant difference between the academic motivations of male and female students exists and that the motivations of the students in different faculties are not the same but vary. The extrinsic motivation seems to be more deeply rooted than intrinsic.

Intrinsic motivation should be viewed as a valuable asset as it is closely related to several desirable outcomes such as increased attention, greater creativity, flexibility, spontaneity, persistence and study skills (Koestner et al., 1984). Previous research has revealed that if the autonomous behaviors of the students are supported, this in turn would lead to greater intrinsic motivation (Pelletier et al., 2002; Reeve et al., 1999).

The intrinsic motivation, extrinsic motivation and amotivation comprise a continuum that reflects the degree of self-determined behavior, where more internalized behaviors produce a greater sense of self-determination in the following manner:

Amotivation ► extrinsic motivation ► intrinsic motivation

Thus, if the motivation level of an amotivated student who feels that he or she is wasting his or her time in school can be raised to the level where he or she would be experiencing pleasure and satisfaction while learning new things, then the motivational level of that student has been elevated to intrinsic, where the degree of self-determination is the highest. This requires belief, commitment, conscious and planned support both of the students and the teaching staff.

As intrinsic motivation has been shown to increase performance, further research examining the motivation of the teaching staff and ways in which it may be strengthened and maintained may be recommended as much as that of the students. In addition, it would be beneficial to include other universities in order to determine whether or not the trends observed in this study are common or just peculiar to a single institution.

Such an endeavor could benefit from the hierarchical model developed by Vallerand (2000), using it as a framework to explore the educational outcomes. Achieving such an outcome necessitates amendments not only in educational policy but also in the mind-set of the teaching staff who prefer to be controlling rather than supporting autonomy.

For optimal motivation level, feelings of competence, autonomy and relatedness should be in harmony with the educational environment. The intrinsic motivation of the students may be enhanced if their autonomies are promoted, if the academic performances of the students are evaluated in a supportive and encouraging manner, and if the students learn what it means to relate to others socially. In other words, if the environmental conditions that would satisfy the need for competence, the need for autonomy and the need for relatedness are created, even a motivated students may attain intrinsic motivation (Deci and Ryan, 1985). The relevance of this becomes more apparent if the fact that a regular student receives about 15 000 h of instruction within two decades of education is taken into consideration.

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