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Science-Line Publication
www.science-line.com

ISSN: 2322-4770
Journal of Educational and Management Studies
J. Educ. Manage. Stud.,4 (1):14-21, 2013

JEMS

The Investigation of the Structural Relationship between Perception of Class and Psychological Basic Needs of University Students and their Academic Engagement

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ABSTRACT: The study present a model to describe structural relations between three groups of variables based on theories. The model is containing of class variables (connectedness, personal growth and management system), psychological basic needs (autonomy, competency and relatedness) and academic engagement (behavioral, cognitive and affective). A sample of 360 students participated in research. Results showed model have a good fit, also class variables have direct significant effect on psychological basic needs and on academic engagement in directly except of behavioral engagement (may be because of suited discipline and regularity).the correlation between class perception and academic performance was significant (but low) and between psychological basic needs and academic performance was significant considerably.

Keywords: Psychology, Cognitive, Affective and Behavioral

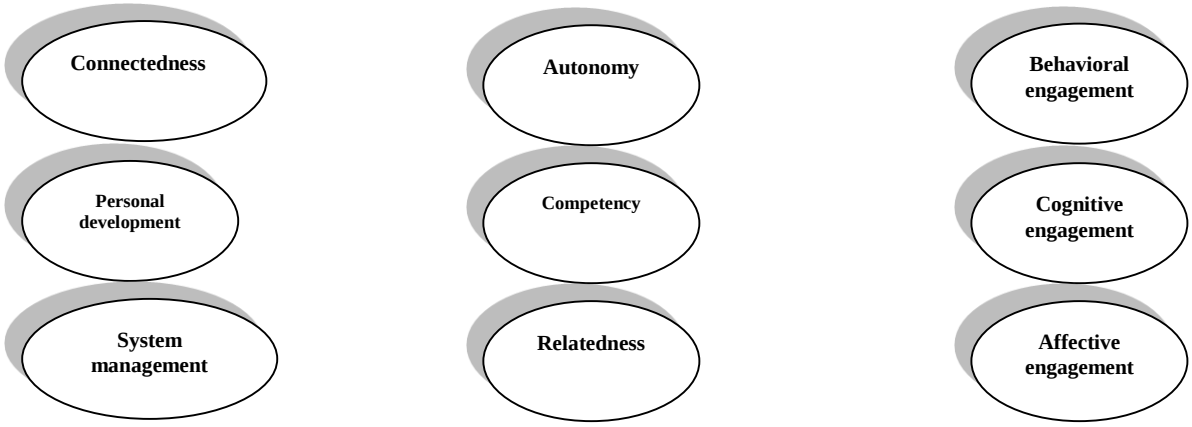
ORIGINAL ARTICLE
Received 02 January, 2014
Accepted 25 Feb. 2014

INTRODUCTION

Some of the education domain theories, such as self-determination theory (Deci and Ryan, 2000), provide a theoretical framework for knowing important motivational factors for engaging the students in classroom activities. According to this theory, the human behavior is supposed to be interactional within its social context. In a social context, like a school or a class environment, the situational factors can develop the students' psychological basic needs or stop them to grow (Deci and Ryan, 2002). According to self-determination theory, psychological basic needs are included in autonomy, competence and relatedness which are so vital and essential in growing competence, well-being and success of individuals. This theory shows that students' academic motivation will be reinforced by fulfillment of these three basic needs and the fulfillment of these needs can facilitate the students' academic engagement, self-regulation and academic achievement, as well. Competence in school is facilitated by opportunities for effective encounter to optimized challenges of homework. The relatedness is a feeling of belonging and relating to others in education environment. So, it can be concluded that class environment and teaching methods have an indisputable effect on cognitive processes and motivational beliefs. Baek and Choi (2002) have determined three distinct dimensions for classroom environment: communicative dimension, goal setting – personal growth dimension and up keeping or changing management system of class dimension. Communicative dimension shows identity and intensity of the interpersonal relationships in the classroom. Moreover, it refers to the extent of active participation of students in classroom and their supports from each other. Personal growth dimension includes related variables to specific functions in classroom environment and its potential for growth and personal progression and growth. The personal growth variables include task orientation, research and cooperation. Management system dimension of classroom has one variable which is equity (justice). This variable refers to this feeling that instructor encourages and supports him as much as other students, to provide equal opportunities for him and allow him to speak during the classroom as much as other students speak (Fraser, 1998). Ryan and Deci (2002) have shown that classroom environment and the communication manner of instructor have a direct and vital effect on psychological basic needs (self-command, competence and relatedness). So all that conflict and irregularity in this environment can mess up the learning processes. Accordingly, it can be concluded that class atmosphere and particularly the communications between instructor and students, have an obvious importance in psychological basic

To cite this paper: Asadian MH., Kavosian J., Bagi A., Hashami K., Arabzadeh M. and Hoseinpour M. 2014. The Investigation of the Structural Relationship between Perception of Class and Psychological Basic Needs of University Students and their Academic Engagement. *J. Educ. Manage. Stud.,* 4(1):14-21.

needs fulfillment and learning processes facilitation. Sunger and Gungoren (2009) have emphasized on these cases. They showed in their research that student's impression of class environment has a positive relation to psychological and motivational components of learning. Another motivational construct which closely relates to the class is academic engagement. Academic engagement is considers as one of the fundamental variables in dropout prevention and intervention (Reschly and Christenson, 2006) and basically a vital variable academic falloff (Alexander et al., 1993). Academic engagement and academic dropout correlates inversely. In done theories and researches in this field, academic engagement is introduced as a multidimensional construct (Feredrick et al., 2004) which is revealed in students' behaviors and psychological involvement. Respecting to academic engagement, three consistent dimensions are recognized in research which include behavioral engagement, affective engagement and cognitive engagement (Feredrick et al., 2004). According to Mers et al. when the students experience these three different dimensions of academic engagement, they would probably end up their school more successfully. Behavioral engagement dimension shows that the student has an active attention and consistency in classroom and does the classroom tasks and questions efficiently (Feredrick et al., 2004). In addition, this dimension of engagement includes positive behaviors like following principles of classroom and school and avoiding negative behaviors such as running away from the school and destructive behaviors (Feredrick et al., 2004). Affective engagement includes positive emotional reactions such as interestedness, pleasure and happiness in learning and valorising the school. Moreover, it includes the warm and close relationship to his or her instructor and classmates and adapting to school. Negative engagement that is another dimension of academic-affective engagement includes angriness, anxiety and agitation in school and it can be a cause of educational loss and learning deficiency. Third dimension of academic engagement is cognitive engagement. This dimension includes psychological autonomy, hardworking in classroom tasks and continuous trying. Pintrich and Degroot (1990) Believes that there is a relationship between cognitive engagement and metacognitive strategies of students such as goal setting, designing classroom tasks, using previous experiences and actively use of acquired knowledge in new conditions and situations. This characteristic of student can be induced from the cognitive strategies which he or she uses it. High cognitive engagement of student is related to his or her continuous trying in doing hard tasks (Meece et al., 1998). Reeve, explains that a students' autonomy defending class provides the conditions for cognitive, affective and behavioral-academic engagement. The classroom conditions that provide freedom and choice directly in doing tasks cause to facilitate their academic engagement. Overall, it can be said that conditions and dominant atmosphere of the classroom can have a direct relationship to the students' academic engagement. In present research these relationships are taken into consideration and according to researches and some proposed models such as Pekrun (2006), Boekaerts (1999), Vallerand (1997), and also researches done by Deci and Ryan (2002). The below model is designed to investigate the constructional relationships between proposed variables regarding theories and done researches.



According to this model, it is supposed that classroom variables have an indirect effect on cognitive, affective and behavioral engagement of students through psychological basic needs (including autonomy, competence and relatedness). That is to say psychological basic needs have an intermediatory

role in transmitting the effect of classroom variables on students' academic engagement. As well it is supposed for classroom variables to have a direct effect on students' academic engagement. However, regarding to research literature it is supposed that direct effect is weaker than its indirect effect. So, the main goal of this research is to find out whether the collected data protect the proposed direct and indirect effects or not.

MATERIALS AND METHODS

Subjects

Statistical population of present study includes all the students of Banadar Abbas branch of Samaa University in 2011_2012 academic year. Participants of the study were 550 people who selected through multistage sampling in three stages (first stage unit: academic group, second stage unit: academic major, third stage unit: classrooms).

Instruments

Class Perception

For measuring the class perception, WIHIC (What Is Happening In this Classroom) questionnaire made by Fraser et al. (1996) was used which is one of the most outstanding scales that combines the available questionnaires and has added other factors like justice and equity (Dorman Jeffrey,2008). This questionnaire is designed for high school level and in a lot of high school classes have been confirmed its validity by factor analysis (Higgins, 1998; Fraser and Aldridge, 2001).

The first version of the WIHIC questionnaire was included 90 questions and 9 subscales. But regarding statistical analysis of 355 high schools data and also the plenty of interviews with students about their classroom environment, this questionnaire was reviewed and corrected and finally it was prepared in 56 questions and 7 sub scales including student connectedness, teacher support, students' involvement, investigation, task orientation, cooperation and equity (Feraser et al., 1996). This instrument is set in the five degrees of Likert scale from "approximately never" to "always". Each one of the subscales can be scored separately. The estimated Cronbach's Alpha of this instrument was 0.83, 0.71 and 0.86.

Basic Psychological Needs Scale

Basic psychological needs scale is a collection of scales: The need of individual satisfaction of life, psychological need of job satisfaction and the psychological need of communication satisfaction. In the present study, the need of job satisfaction scale, related to high school students is used. This scale assesses three needs of autonomy, competence and relatedness regarding to education. Lardi et al. have prepared this scale based on self-determination theory. Deci et al. (2002) have revised this scale. In the present study, the last version of that (Deci et al., 2002) was used. This scale includes 21 items (7 autonomy items, 8 relatedness items and 6 competence items). The psychometric features of this instrument are investigated in the present study. The estimated Cronbach's Alpha of this instrument was 0.79, 0.81 and 0.77.

Affect Engagement Scale

For investigating of this dimension of academic engagement of student's negative and positive affective scales of students was used (Watson et al., 1988). By reading each item, the students describe their positive and negative feelings about the class in a 5 points scale. 10 items measure the positive feelings and 10 items measure the negative ones. The estimated Cronbach's Alpha of this instrument was 0.73.

Cognitive Engagement Scale

Miller et al. (1996) made this instrument. This instrument assesses the strategies of academic autonomy, and persistence and perseverance of learners regarding their homework and tasks. This instrument has 10 items. The estimated Cronbach's Alpha of this instrument was 0.88.

Behavioral Engagement

For assessing of this dimension of students engagement in the classroom, the amount of students' presence, absence, their punctuality etc. were used. The estimated Cronbach's Alpha of this instrument was 0.93.

Educational Performance

The students' GPA (Grade Point Average) of their latest semester was considered as criterion of educational performance.

Data Analysis and Statistical Methods

For data analysis, a set of parametric and nonparametric statistical methods were used. For investigating the psychometric features of research instruments exploratory and confirmatory factor analysis were used. Differentia coefficient and factorial value were used for calculating the validity and Cronbach's Alpha coefficient variation was used for measuring the reliability.

RESULTS

For the analysis of data, firstly psychometric characteristics (validity, reliability) of instruments estimated and approved. Then estimated descriptive data (table 1) prepared to use in data analysis.

Table 1. Descriptive indexes of research variables.

Variable	Number	MD	SD
Connectedness	360	85.64	17.63
Personal development	360	89.20	17.85
Managing system	360	98.14	15.60
Autonomy	360	17.27	3.30
Competency	360	20.46	4.20
Relatedness	360	27.99	5.35
Behavioral engagement	360	22.21	3.03
Cognitive engagement	360	38.63	5.89
Affective engagement	360	52.38	11.80
Educational performance	360	16.40	3.46

Table 2. Results of normal being of variables

Variable	Z	α
Connectedness	1.32	0.560
Personal development	1.02	0.451
Managing system	1.25	0.741
Autonomy	2.21	0.647
Competency	0.780	0.543
Relatedness	1.58	0.063
Behavioral engagement	1.47	0.213
Cognitive engagement	1.56	0.075
Affective engagement	1.47	0.272
Educational performance	0.540	0.325

The second hypothesis was approved (α<0.05).

Table 3. Goodness of fit index for path analysis

x^2	df	$(x^2.df$	CFI	GFI	AGFI	RMSEA
1351.21	742	1.82	0.89	0.96	0.95	0.05

Before analysis of structural model it was essential to examine two hypothesizes (normal distribution of variables and a linear-relation between variables). The normal distribution of variable evaluated by K-S test and approved (α >0.05) in table 2. Also, it is reported in this research Chi squire index, ($x^2.df$), Comparative Fit Index (CFI), Goodness of fit index(GFI), Adjusted Goodness of Fit Index (AGFI) and root mean Squire Error of Approximation (RMSEA). Table 3 shows results in Goodness of Fit are acceptable.

The main question of the study examined the fit of the model. The results showed that there is a goodness of fit based on obtained data. So the question of the study was confirmed and it would enable us to analyze the hypotheses of the study and to clarify the results of that.

With regard of good fit the under examination hypotheses are focused on the investigation of the structural relations of the multiple variables and their direct and indirect effects on academic performance. The results were meaningful and showed the selected variables are affective in anticipate of academic performance.

DISCUSSION

Connectedness dimension

As it was mentioned, the connectedness aspect refers to nature and intensity of student's relationships regarding other students and instructor and also active participation of student in class tasks.

The results show that the impact of communicative aspect on psychological basic needs (autonomy, competence and relatedness: 0.17, 0.22, 0.25 respectively) is statistically significant and meaningful.

Moreover, it shows that communicative variable can have positive effects on fulfillment and growing the psychological basic needs.

According to self-determination theory (Deci and Ryan, 1985 and 2000), educational environments and a high quality connectedness in it, is the best context for growing the psychological basic needs. So the results of this study which are related to the effect of connectedness aspect of classroom on students' psychological basic needs confirm the above theories. The instructor support of students reinforces their sense of freedom and freely expressing thoughts and also their understanding in class discussions and events. This process helps students to meet their needs of autonomy more easily, because the support of instructor confirms the students' capabilities and competence for autonomy. Moreover, the findings of this study confirm that a set of behaviors and interactions of instructors and students in classroom which includes self-commanding supportive roles, can improve their sense of competence. In these conditions the students imagine that they can do their tasks more successfully and efficiently and believe that they are more capable. With the exception of innate talents, the role of environmental variables of class is so important in appearing and meeting the needs.

Relatedness is another need of three psychological basic needs which is in line with learners' relationship and interaction in the atmosphere of institute. This finding of study shows that the quality of relationship between students and instructors acts as one of the supplies in accomplishing and reinforcing the relatedness in students.

This finding of the study is in line with Deci and Ryan's (1985, 2000) self-determination theory and suggested model of Vallerand (1997), Vallerand (1997) and Pekrun (2000). In line with this finding of the study, Omandson and Kualu showed that the support of teacher about students' autonomy affects directly on their sense of autonomy. In line with the mentioned results, Jung et al. showed in an extensive research that the students' autonomy support of instructor has a direct, positive and significant effect on relatedness psychological need about Korean students.

Gold believes that a desirable class should motivate students for having higher capabilities and expectations and helps them to arrive to their academic goals. The studies shows that there is a relationship between the students' cooperation and their sense of autonomy (Bush et al., 2006) and it is considered as one of the most important factors in meeting their psychological basic needs (Ryan and Deci, 2002). When they consider positively to each other and their ideas and confirm them, naturally they will have a more sense of competence and they can discover their capabilities more easily and finally the wisely and friendly interactions will leads them to a deeper sense of relatedness.

The results show that the direct effect of this aspect on cognitive engagement is statically significant (0.24) and also indirect effect of that through psychological basic needs (0.18). The effect coefficients of the affective engagement were also (0.29) and (0.37) respectively, which were statistically significant.

Personal Growth dimension

This dimension includes the relate variables which are related to specific functions in class environment and its potential for personal growth and progression and it includes task orientation, research and cooperation. Task orientation refers to the importance of doing and completing the lessons and tasks in universities.

The results showed that personal growth aspect of student's perception of class has a significant effect on psychological basic needs of autonomy, competence and relatedness and the resulted coefficients of variation are respectively 0.35, 0.24 and 0.21.

This aspect was measured through asking some questions to know if they do research for testing their ideas and to answer to the questions which rise from the discussion. It was also asked some questions about their freedom in the classroom. Based on the preceding matter, the expectation was that providing such a kind of conditions helps to reinforcing and meeting the basic psychological needs (autonomy, competence and relatedness). As the results of the study show, our expectation is in line with the mentioned description and the positive and significant resulted effects confirm them.

This finding of the study is in line with the results of the researches done by Connell and Wellborn (1991), Grolnick and Ryan (1987) and Deci and Ryan (2002). According to these findings it can be claimed that the effective cooperation and interaction between students and students and also between students and teachers which results the personal growth can prepare the conditions for reinforcing autonomy and competence and also to promoting the learner's relatedness. This finding of the study confirms the role of autonomy supportive environmental variables in psychological basic needs, as well.

The direct affect coefficients of personal aspect in cognitive and affective engagement were (0.13) and (0.24) and indirect ones were (0.16) and (0.17) respectively, which are statistically significant.

The System of Class Management dimension

This variable refers to students' feeling about the equity of instructor about encouraging and supporting students and distributing opportunities for self-presentation and his fairness in class. This aspect had a direct, positive and significant effect on psychological basic needs of students (autonomy, competence and relatedness) and their affects were 0.24, 0.15, and 0.19, respectively. In a more clear interpretation, it can be said that when the instructors provide a suitable condition for interactions and activities of students, this situation can be a good basis for autonomy reinforcement (Ryan and Deci, 2002) and to experience a position for competence reinforcement (Ryan and Deci, 2002, Bandura, 1997, Vallerand, 1997).

The results is in line with Pekran's study which showed that the educational environment helps reinforcing autonomy, cooperation and the sense of belongingness and also it is in agreement with the results of theoretical and practical works of Deci and Ryan (2002, 2003, 2004).

The direct effects of this variable on affective and cognitive engagements are 0.31 and 0.27 and its indirect effects through variables of psychological basic needs are 0.19 and 0.13 respectively, which the sum of these coefficients of variation is statistically significant.

Overall, these findings it is understood that the method of teaching and the manner of instructors' interactions in universities and the way of class

management, accompanied by a friendly relationship of students in academic background can increase the cognitive engagements of students about academic contents, their interestedness and motivation directly and indirectly.

But the findings of the study showed that the communicative, personal growth and management system aspects don't have any direct or indirect significant effect on behavioral engagement of students in the class. Behavioral engagement refers to the students' discipline, punctuality, their constant presence in a semester and the other same behaviors. It was expected that the student's perception about the class and all the class activities causes a better behavioral engagement of students in the universities. This hypothesis of the study was not confirmed. This finding of the study is in contrast to the findings of previous studies done. In order to make this finding of the study more clear, it can be said that probably, the method of roll call, the instructor's idea about students' punctuality, discipline, presence in the classroom and the management system of instructors and university can be effective which were not considered in variables of the present study. However, it can be said that the variables of student's perception about the classroom, cannot be considered as one of the behavioral engagement sources of students, at least in present study and present participants. This problem needs another research.

The psychological basic needs (autonomy, competence and relatedness) have a direct effect on students' academic engagement (behavioral, cognitive and affective).

The findings of the study shows that the direct effect of autonomy on affective, cognitive and behavioral engagements are 0.27, 0.17 and 0.40 respectively, for competence on cognitive engagement is 0.41, affective0 0.15 and behavioral 0.7 and for relatedness are 0.5, 0.27 and 0.14 respectively that is not statistically significant.

The least effect is on students' behavioral engagement. Just the relatedness psychological need has a significant effect on this variable and it shows that as much as relatedness and belongingness grow between students and the environmental condition is peaceful and suitable, to the same extent the academic engagement is increased and the students will join the class more energetic and more regular. This finding of the study refers to this fact that the self-determination theory of Deci and Ryan (2000) can provide a suitable framework for predicting the students' academic engagement.

Generally, considering the effective factors in behavioral engagement, more studies are needed emphasizing on dependent factors on different educational levels and age groups.

In the last phase of the study, the correlation between variables of the study and students' academic performance was considered. At beginning, we wanted to investigate the relationship between students' perception about the classroom, psychological basic needs and students' performance by a model. But the suggested model did not have enough fitting, so the investigating and presenting the correlations of findings is seemed to be enough.

There was a low positive correlation (0.17) between students' perception about classroom and their academic engagement, while other studies showed that the class environment has a vital and strong role in students' academic, psychological and behavioral performances.

Other researchers such as Linnenbrink and Pintrich (2002) showed that the psychological atmosphere of the class and its contextual and social features and also the teacher's support have a significant effect on learning behaviors, academic motivation and academic achievement. To clarify these findings, it can be said that with the exception of intelligence and educational talents, the atmosphere of the class provides the conditions for cooperation and an interaction between students and students and also between students and teachers which leads them into a better academic outcome.

A considerable correlation was seen between psychological basic needs and academic performance. This correlation was high between competence psychological need and academic performance, particularly. According to self-determination theory although psychological basic needs are intermediate variables, however they can influence other variables directly (Deci and Ryan, 1985).

Rio, showed that college students, who have a high perceived competence engage to the academic issues and feel mooe efficiency in educational backgrounds. Therefore, they will have a better academic performance.

The relationship between relatedness and academic performance was also significant. These findings were in line with researches done by Wentzel (2002) and Wentzel (1997). The researches have shown that the students' friendly treatment and relatedness and belongingness about themselves and their teachers effects considerably on academic performance.

In the group of academic engagement variables, the most amount of correlation was belonging to cognitive engagement. In order to clarify this finding of the study, it can be concluded that cognitive engagement makes students find better strategies for

solving their problems. Consequently, they learn better and it leads them into a better academic performance. To this extent, the findings of this study are in line with the studies done by and Feredrick et al. (2004).

The findings of this study and many of other studies shows that academic engagement can be a suitable and important predictor for academic performance.

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