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## Modeling Learning Approaches of Agriculture Students, in Two Cultural Contexts

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### ABSTRACT

This study aimed to investigate and model psychological factors influencing learning approaches of agriculture students. A sample of 89 agricultural students from Tehran University (Iran) and 85 agricultural students from Flemish university (Belgium) participated in this study. Data were collected via a questionnaire and after that, descriptive and inferential statistics were applied for data analysis, using SPSS/v16.0. Our study revealed that both similarities and differences can be observed on the psychological characteristics of agricultural students in different cultural contexts. The findings showed that there were significant differences between the two groups (Iranian and Flemish students) on deep learning. So, the finding confirmed that learning approaches were context dependent. In this study, achievement motivation has been taken as a mediator between psychological factors and learning approaches in each cultural context. According to the findings in the Iranian and Flemish context, the most psychological dominant determinant for deep learning was self-efficacy beliefs and extroversion, respectively. For both groups, extrinsic motivation and intrinsic motivation had positive effects on surface learning and deep learning, respectively. Also, the two motivations showed negative effects on deep learning and surface learning, respectively. According to the findings, recommendations were put forth.

**Keywords:** Learning approaches, agricultural student, psychological characteristics, cross-cultural study.

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### Introduction

Agricultural sector is an important element of development. So, with the development of more diverse markets in agriculture, competence work-forces are required to improve agricultural production and successful implementation of agricultural policies in the country

(Sundstøl, 2004). Therefore, agricultural education is critical in providing the basis for the agricultural work-force and in agricultural development (MDESE, 2009; cited in French, 2010). Since learning approaches affect students' performance (Simons et al., 2004), it is vital to study

factors influencing agricultural students' learning approaches. Learning approaches can be differentiated as surface and deep learning approaches. Surface learning refers to learners' preference of using memorization as a mode of learning (Cavallo and Schafer, 1994), while deep learning refers to students' intention to learn the material being studied by integrating different concepts with each other (Burnett and Proctor, 2002). Some factors influencing students' learning and performance are psychological characteristic including achievement motivation, personality traits, test anxiety, and self-efficacy beliefs (Choosri and Intharaksa, 2011; Swanberg and Martinsen, 2010; Oludipe, 2009; Bandura, 1997).

**Achievement motivation:** Motivation, one of the most important aspects of human behavior, is a drive to do a specific behavior (Graham, 2004). Two dimensions of achievement motivation are intrinsic or extrinsic motivations. Doing an activity for one's own purpose showing intrinsic motivation (Isen and Reeve, 2005), while doing an activity in response to something apart from its own sake, such as the dictates of other people, shows extrinsic motivation (Lee et al., 2005). Intrinsic motivation is supposed to be associated with deep learning in comparison to extrinsic motivation (Deci and Ryan, 2000).

**Test anxiety:** tests which are applied to evaluate students' abilities and achievement (Rizwan and Nasir, 2010), are a source of anxiety. Test anxiety involves behaviors, feelings, and reactions (Wren and Benson, 2004) that follow concern about probable negative results or failure in an evaluative situation (Zeidner, 1998). Students with high anxiety level show low motivation in highly evaluative

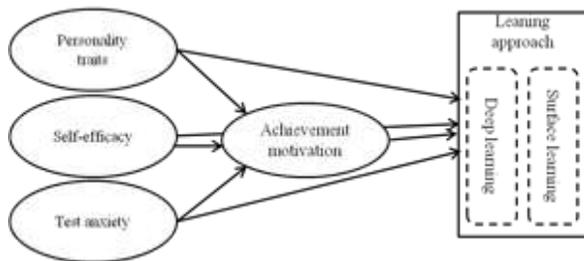
and competitive classrooms (Hancock, 2001). Test anxiety is a growing problem, occurring in different geographic and cultural settings (Bodas et al., 2008) and its levels in general do not differ extremely between nations (Nyroos et al., 2012).

**Self-efficacy beliefs:** Self-efficacy describes a belief in ability to perform upon a variety of situations (Chen et al., 2004). Self-efficacy is known important to improving the motivation of struggling learners (Margolis and McCabe, 2003; cited in Saracaloglu and Dincer, 2009). Research has indicated that achievement motivation is dependent upon the student's academic self-efficacy (Legault et al., 2006).

**Personality traits:** Personality is an individual's characteristics (Peabody and Goldberg, 1989) with five personality traits namely neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Costa and McCrae, 1995). (1) Neuroticism shows the individual's tendency to experience negative moods such as sadness (Benet-Martínez and John, 1998). (2) Extraversion indicates sociability and positive emotionality connected to responsiveness to rewards (DeYoung and Gray, 2009). (3) Openness to experience reflects the ability and interest in processing complex stimuli (Costa and McCrae, 1992). (4) Agreeableness involves the inclination toward cooperation and consideration of the concerns of others (5) Conscientiousness describes traits related to self-discipline and organization (Weisberg et al., 2011). Conscientious students are more motivated to have good academic performance than less conscientiousness students (Chamorro-Premuzic and Furnham, 2005). Mc-Crae and Costa made a proposal about the ability to generalize cross-cultural of the five-factor model of personality. By

studying six translations of the revised NEO personality inventory (Costa and McCrae, 1992) they found that all translated inventories had similar structures after varimax rotation (Allik, 2005).

Totally, achievement motivation has been found to be correlated with personality traits (Mandel and Marcus, 1988; Komarraju and Karau, 2005), test anxiety (Hancock, 2001), and academic self-efficacy beliefs (Bong and Skaalvik, 2003). In addition, the more a student is motivated to do an assignment, the more deeply he/she learns (Ross, 2008). Students with extrinsic motivation to learn take surface approach, while students with intrinsic motivation to learn take a deep approach (Felder and Brent, 2005). So, in this study we have taken learning approaches as dependent variable, and achievement motivation as a mediator between external factors and learning approaches. According to the literature review, theoretical framework has been drawn in Figure 1:



**Figure 1.** Theoretical framework of the study

### Cross-Cultural study

Culture is defined as a dynamic system of values, expectations, and associated practices that mediate people's thoughts and actions (Trumbull and Rothstein-Fisch, 2011). The goals of cross-cultural researches are to (1) test the current knowledge by using them in other cultures (2) find new aspects of the phenomenon being studied in cultural conditions (3)

integrate what has been learned from the first two approaches in order to create more nearly universal knowledge (Segall et al., 1998). In cross-cultural studies, a clear research question is to ask whether there is any difference in the level of variables among different countries. Woodrow (2001) stated that the way students learn was influenced by cultural traditions. Hofer et al. (2010) stated that cultures were influential social contexts on achievement motivation. So, more researches are needed to broaden our understanding of students' learning approaches and affected factors of all cultures. In his study the learning approaches of Iranian and Flemish agricultural students are investigated. Iran is officially a religious country and the official language of the country is Farsi. Flanders is the Dutch speaking part of Belgium. Flemish culture inherits major elements of European culture, reflecting elements of Anglo-Saxon, French and Latin cultures (Zhu et al., 2008).

### Materials and methods

In this study a sample of 89 agricultural students from the Tehran University and 85 agricultural students from the Flemish University participated.

Data were collected via a questionnaire which captured students' learning approaches (deep and surface learning; Biggs et al., 2001), achievement motivation (intrinsic and extrinsic motivation; Pintrich et al., 1991), personality traits (BFI<sup>1</sup>, cited in John and Srivastava, 1999), self-efficacy beliefs, test anxiety (MSLQ<sup>2</sup>; Pintrich et al., 1991), and demographic characteristics. Table 1 shows an example of the questionnaire items. Reliability and validity of the instrument were

<sup>1</sup>Big Five Inventory

<sup>2</sup> Motivation Strategies for Learning Questionnaire

determined through opinions of professors and application of coefficient alpha. The reliability of the instrument for different scales for both the Iranian and the Flemish groups was found to be acceptable ( $>.76$ ), according to the criteria adopted (George and Mallery, 2003). Using SPSS 16.0, descriptive and inferential statistics were applied for data analysis. The descriptive

statistics included frequencies, percentages, and mean; while inferential statistics included comparative tests (the two groups were compared with respect to personal and psychological characteristics) and path analysis (based on a series of regression).

**Table 1.** An example of the questionnaire items.

Scale	Subscales	Item
Learning approaches	Deep learning	I find that at times studying gives me a feeling of deep personal satisfaction
	Surface learning	My aim is to pass the course while doing as little work as possible
Achievement motivation	Intrinsic motivation	The most satisfying thing for me is trying to understand the content as thoroughly as possible
	Extrinsic motivation	If I can, I want to get better grades than most of the other students
Personality traits	Neuroticism	I see myself as someone who can be tense
	Extraversion	I see myself a person who generates a lot of enthusiasm
	Openness to experience	I see myself as someone who is ingenious, a deep thinker
	Agreeableness	I see myself as someone who can be cold and aloof
	Conscientiousness	I see myself as someone who perseveres until the task is finished
Self-efficacy beliefs		Compared with other students in my field of study, my learning and study skills are strong
Test anxiety		I feel my heart beating fast when I take an exam

## Results

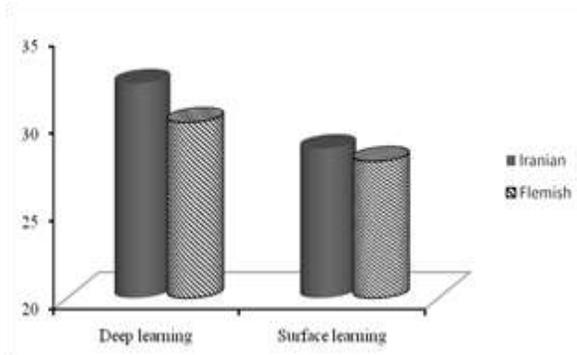
### Students' personal characteristic

Personal characteristic of agricultural students participated in this study showed that 72.2% of Iranian students and 43.5% of Flemish students were males, and the rest were females. Comparisons of Iranian and Flemish students on personal information indicated no significant differences between the groups on the basis of gender. Iranian students were on average 21 years old and Flemish students were on average 20 years old. 80.9% of Iranian students and 51.8% of Flemish students were city in origin. There were significant differences between the groups on age and place of born.

### Students' learning approaches

Figure 2 shows the two groups (Iranian and Flemish students) mean score of learning approaches. As it can be seen, on deep learning the score of Iranian students was 32.24 and the score of Flemish students was 30.02 (out of 50). On surface learning, the score of Iranian students was 28.52 and the score of Flemish students was 27.80.

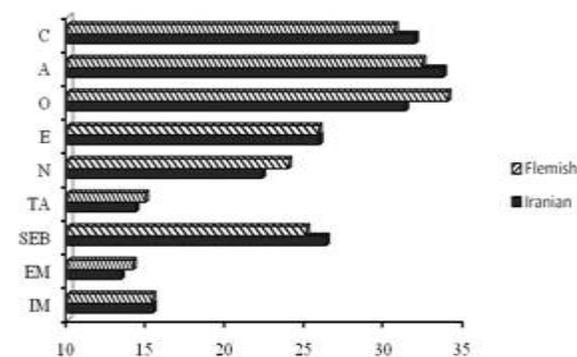
The findings showed that there were significant differences between the two groups on deep learning ( $t= 2.923, p=.004$ ).



**Figure 2.** Students' learning approaches

**Students' psychological characteristics**

As we mentioned earlier, achievement motivation, self-efficacy beliefs, test anxiety, and personality traits were psychological factors which were investigated by cultural differences. There were significant differences between the two groups (Iranian and Flemish) on extrinsic motivation ( $t= -1.977, p= .049$ ), self-efficacy beliefs ( $t= 2.073, p= .040$ ), neuroticism ( $t= -2.201, p= .029$ ), openness to experience ( $t= -2.847, p= .005$ ), and agreeableness ( $t= 2.248, p= .026$ ). The detailed results are showed in Figure 3.

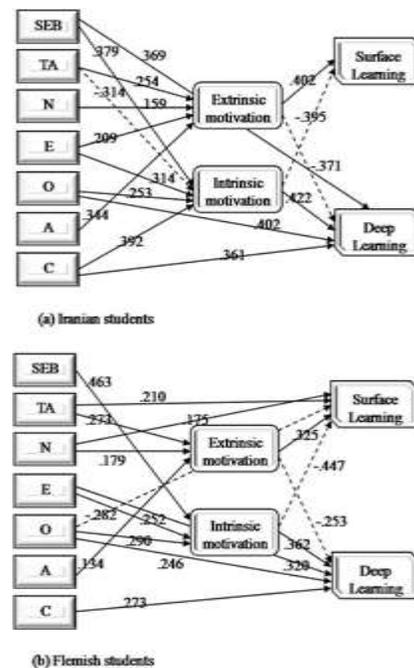


**Figure 3.** Students' psychological characteristics

Note: IM= *Intrinsic motivation*, EM= *Extrinsic motivation*, SEB= *Self-efficacy beliefs*, TA= *Test anxiety*, N= *Neuroticism*, E= *Extraversion*, O= *Openness to experience*, A= *Agreeableness*, C= *Conscientiousness*

**Psychological factors influencing students' learning approaches**

Figure 4 represents the effect size of psychological factors on students' learning approaches. In the Iranian context, agreeableness had the most effect on extrinsic motivation ( $\beta=.344$ ) and conscientiousness had the most effect on intrinsic motivation ( $\beta=.392$ ), according to the standardized weights. Among the Flemish students, according to the standardized weights, test anxiety had the most effect on extrinsic motivation ( $\beta=.273$ ) and self-efficacy beliefs had the most effect on intrinsic motivation ( $\beta=.463$ ).



**Figure 4.** Path analysis diagram: Effects of psychological factors on learning approaches

Note: Numbers on the arrows are standardized coefficients.

Table 2 shows the standardized direct, indirect, and total effects associated with each of the learning approaches. A coefficient connecting one variable to another in the model depicts the direct

effect of an independent variable on dependant variable. An indirect effect reflects the impact an independent variable has on dependant variable via a mediating variable in the model. According to the results, in the Iranian context, the most psychological dominant determinant was conscientiousness for surface learning

(with a total effect of -.154) and self-efficacy beliefs for deep learning (with a total effect of .528). In the Flemish context, the most psychological dominant determinant was openness to experience for surface learning (with a total effect of -.411) and extroversion for deep learning (with a total effect of .411).

**Table 2.** Direct, indirect, and total effects of the research model

Outcome	Determinant	Iranian			Flemish		
		Standardized estimates Direct	Standardized estimates Indirect	Standardized estimates Total	Standardized estimates Direct	Standardized estimates Indirect	Standardized estimates Total
Deep learning	Intrinsic motivation	.422	-	.422	.362	-	.362
	Extrinsic motivation	-.371	-	-.371	-.253	-	-.253
	Self-efficacy beliefs	.369	.159	.528	-	.167	.167
	Test anxiety	-	-.226	-.226	-	-.069	-.069
	Neuroticism	-	-.058	-.058	-	-.045	-.045
	Extroversion	-	.055	.055	.320	.091	.411
	Openness to experience	.402	.106	.508	-	.104	.104
	Agreeableness	-	-.127	-.127	-	-.033	-.033
	Conscientiousness	.361	.165	.526	.273	-	.273
Surface learning	Intrinsic motivation	-.395	-	-.395	-.447	-	-.447
	Extrinsic motivation	.402	-	.402	.325	-	.325
	Self-efficacy beliefs	-	-.149	-.149	-	-.206	-.206
	Test anxiety	-	.022	.022	.210	.088	.298
	Neuroticism	-	.063	.063	.175	.058	.233
	Extroversion	-	-.040	-.040	-	-.112	-.112
	Openness to experience	-	-.099	-.099	-.282	-.129	-.411
	Agreeableness	-	.138	.138	.043	-	.043
	Conscientiousness	-	-.154	-.154	-	-	-
	Educational goals and contents	-	-.132	-.132	-	-.151	-.151
Teaching and assessment	-	-.126	-.126	-	-.086	-.086	

## Discussions and conclusion

In this study, psychological factors influencing agricultural students' learning approaches were investigated. The findings revealed that there were significant differences between the Iranian and Flemish students on deep learning. It seems that learning approaches are context dependent (Case and Marshall, 2004). Aguinis and Roth (2005) also stated that cultural influences were a key issue when considering student learning processes. About psychological factors, we found that Iranian students had higher levels on a number of psychological factors

than their Flemish counterparts and vice versa. There was no significant statistical difference between the two groups on the basis of test anxiety. Both Iranian and Flemish students obtained a mean value that was close to the mid-point of the scale. This finding is of interest as test anxiety affects achievement motivation (Rizwan and Nasir, 2010; Hancock, 2001), and prevent some individuals from reaching their academic potential. Test anxiety is believed to be learnt in educational settings (Pekrun, 2000). What professors can do to manage students' test anxiety is

to consider new alternatives for assessing students' learning and performance. On-going assessment and allocating part of the grade to students' learning process or projects can be alternatives to focusing on the final exam only.

In this study, achievement motivation was assumed as a mediator between exogenous factors and learning approaches in each cultural context. First, we found that for the Iranian students, agreeableness and conscientiousness had positive influences on extrinsic and intrinsic motivation, respectively. In contrast, for the Flemish students, test anxiety and self-efficacy beliefs had positive influences on extrinsic and intrinsic motivation, respectively. Second, according to the total effects on each of the learning approaches, we found that conscientiousness and openness to experience affected surface learning negatively and self-efficacy beliefs and extroversion affected deep learning positively in the Iranian and Flemish context, respectively. In both groups, extrinsic motivation had positive effect on surface learning and negative effect on deep learning. In contrast, intrinsic motivation had negative effect on surface learning and positive effect on deep learning.

For both contexts to better learning, we recommend that learning environment be positive and supportive to motivate students. Also, we recommend that each university have a specialized consultation center to offer students useful information about the way they can control their test anxiety, increase their self-efficacy and positive characteristics related to deep learning approach.

The current study adds to the existing literature regarding student psychological factors and learning approaches, especially agricultural students. The results of this

study offer a useful model to examine the relationships between learning approaches and psychological factors in different cultures. For future study, we recommend to consider educational factors affecting learning approaches of students.

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