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Academic self-efficacy in first year students college of health sciences

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Abstract: Self-efficacy learning is an important component of learning for college. Academic self-efficacy refers to the degree of confidence that health sciences students could successfully complete on college-task. The purpose of this research lies on the specific characteristics of health sciences students according to their academic self-efficacy by comparing their profiles with students that chose a different discipline. The Academic self-efficacy sample was done to 2089 subjects: 902 women and 1187 men, all of them freshmen students from the different careers at the Autonomous University of Chihuahua who responded to a survey questionnaire, with an average age of 18.23 years (SD = 0.74). This is a quantitative approach with a descriptive survey design type. The results obtained by comparing students of health sciences, with students from other disciplines show that perceived self-efficacy in academic behaviors is very similar each other.

Keywords: Student's Beliefs, College, Academic Performance, Student's Characteristics, Academic Self-Efficacy

1. Introduction

Self-efficacy is traditionally understood as referring to a domain or a specific task. However, some researchers have given a general meaning of self-efficacy refers to the confidence that students could successfully do on a given college related task, as a personal competence on how effective can be the person to confront a variety of stressful situations [1-3]. Self-efficacy can be defined as each individual's judgments about their own abilities which will organize and execute their actions until accomplishing the desired performance [4,5], in the same way [6] states, person's beliefs that has about their abilities to organize and execute routes for an action required in unexpected situations or based on performance levels, or [7] defined it as the belief of a person has on their abilities to learn or perform behaviors at pre-defined levels.

The social-cognitive theory proposed by Bandura [8] emphasizes the role of self-reference by which the human beings are capable of acting in their environment and consequently to transform it, people create and develop self-perceptions about their ability, the self-perceptions

become the means by which they pursue their goals and make their decisions [9,10]. That is, the way people act is part of the intervention product of their beliefs about what they are qualified.

Within educational contexts have been interesting to understand the cognitive and behavioral factors that help or hinder student's performance in their academic work and how the academic tasks are related to their overall development. In the educational psychology area, the self-efficacy has received special attention and has generated significant research advances that have contributed to the improvement of pedagogy experiences and teaching [11,12]. Empirical research has amply demonstrated that self-efficacy is to be more predictive of academic performance than other cognitive variables [13], also it is able to predict later success [4,14] and it is an important cognitive mediator of competence and performance as favoring cognitive processes [15].

Therefore the belief self-efficacy can be developed and to increase the people's opportunity to get a better performance. It consolidates the idea of improving the perception of being able to learn is a valuable educational objective. The

empowerment will serve as a carrier for improving other outcomes such academic achievement and self-esteem.

This research is basically a descriptive study that attempts to characterize students opting for a degree in health sciences, as to the perceived effectiveness of their academic performance, to compare their profile with those students who choose another career.

2. Method

2.1. Participants

A sample of 2,089 university students, 902 women and 1,187 men, aged 17-20 years ($M = 18.23$; $SD = .74$) participated in the present study. The sample was constituted by all the first year university students from each degree offered of the Autonomous University of Chihuahua (January-June 2012). A convenience sampling was used in order to try covering the representative of all the degrees.

2.2. Instrument

The self-efficacy in academic behaviors was measured by the *Self-efficacy Academic Behaviors Scale* [16]. This questionnaire consists of a 13-item scale with three subscales: communication (4 items), attention (5 items) and excellence (4 items). According to previous studies [17,18], in the Mexican academic context students are commonly assessment by a scale from 0 to 10, in the present study a Likert-type scale from 0 to 10 was chosen. For each domain (item) participants are asked about how capable they feel, how much interest they have, and if they would make an effort to change how they will be capable. Therefore, all the participants responded to each of the 13 items of the questionnaire in the three different scenarios: (a) *Scenario of perceived ability*, responding into the context "how capable I feel to... to manage in each of the domains of the competences above mentioned"; (b) *Scenario of interest in being able*, responding into the context "how much interest I have in being able to... to manage in each of the domains of the competences above mentioned"; and (c) *Scenario of change to be able to*, responding into the context "if I would make an effort to change, how much capable I will be able to... to manage in each of the domains of the competences above mentioned".

When calculating the scores for the three subscales (communication, attention and excellence) five different scores or indexes were calculated: (1) *Perceived self-efficacy*, obtained from the average scores in the scenario of perceived ability; (2) *Desired self-efficacy*, calculated from the average scores in the scenario of interest of being able; (3) *Reachable self-efficacy*, obtained from the mean scores in the scenario of being able; (4) *Dissatisfaction or dissonance in self-efficacy*, calculated from the mean difference between desired self-efficacy and perceived self-efficacy; and (5) *Possibility of improvement in the perceived self-efficacy*, calculated from the mean difference between reachable self-efficacy and perceived self-efficacy. A higher score

indicates greater self-efficacy, whereas a lower score represents lesser self-determination. The *Self-efficacy Academic Behaviors Scale* demonstrated adequate psychometric properties (GFI = .936; RMSEA = .063; Cronbach coefficient alphas = .836, .800 and .740 for attention, excellence and communication, respectively) [11].

2.3. Design

Regarding the design of the study, a quantitative approach with a descriptive and transversal survey design was used [19]. The independent variable was discipline (Education and Humanities, Health Sciences, Physical Education, Agricultural Sciences, Political Sciences, Social and Administrative Sciences, Engineering and Technology) and the dependent variables were the mean scores on the five Self-efficacy indexes of the subscales communication, attention and excellence.

2.4. Procedure

All the freshmen university students from each degree offered by the Autonomous University of Chihuahua in the semester January-June of 2012 were invited to participate in the present study. These university students were fully informed about all the features of the project. Then, all the students that agree to participate were asked to sign a written informed consent. After the student's approvals were obtained, participants completed the above mentioned questionnaire by means of the instrument module administrator of the *Scales Editor Version 2.0* [20].

Participants completed the questionnaire in the computer centers of their faculties during a session. At the beginning of the session the researchers gave a general introduction about the importance of the research and how to access the questionnaire through the software. When the participants were into the editor, the instructions about how to fill out the questionnaire correctly appeared before the instrument. Additionally, the participants were advised to ask for help if confused concerning either the instructions or the clarity of a particular item. Completion of the entire questionnaire took approximately 30 minutes. At the end of the session their participation was welcomed. Afterward, when all the participants completed the questionnaire, the data were collected by means of the results generator module of the *Scales Editor Version 2.0* [20].

2.5. Data Analysis

Descriptive statistics for all the variables were calculated. Subsequently, after verifying that the data fulfill the assumptions of parametric statistical analyses, a one-way univariate analysis of variance (ANOVA) followed by the Scheffé test, were used to examine the differences between health sciences and the other disciplines on the reported self-efficacy in communication, attention and excellence scores. All statistical analyses were performed using the SPSS version 20.0 for Windows (IBM® SPSS® Statistics 20). The statistical significance level was set at $p < .05$

3. Results

It's important to explain that, for possible comparisons between the different disciplines. We are only interested in those which compare the perception of the health sciences students with other disciplines students' on each of the 5 items previously defined.

3.1. *Subscale Communication*

According to the results there are significant differences in the first four indexes studied (Table 1). Students from health sciences are perceived with a higher level of self-efficacy wanted on the Communication factor than students from other disciplines, as well as a higher self-efficacy wanted on engineering and technology students, no other differences found correspond to comparisons related to health sciences students (Table 2).

3.2. *Attention Subscale*

According to the results there are significant differences in all indexes studied (Table 3). In the attention factor, students of health sciences are perceived with higher efficacy and less chance to improve their self-efficacy than political sciences students, who wish a higher level of efficacy than students from other disciplines, and with a greater possibility to be more self-efficacious than agricultural sciences students. Other differences found do not correspond to the comparisons related to health sciences students (Table 4).

3.3. *Excellence Subscale*

In according to the results there are significant differences in all indexes studied (Table 5). In the excellence factor, health sciences students are perceived with higher efficacy and less chance to improve their self-efficacy than physical education, education and humanities, political sciences, agricultural sciences, engineering and technology students. The health sciences students are perceived with a higher level of wished self-efficacy than students from other disciplines. They are most likely to be more self-efficacious than agricultural sciences, engineering and technology students. Finally, the health sciences students with a lower level of dissatisfaction or disagreement with their perceived self-efficacy than education and humanities, engineering and technology students. Other differences found do not correspond to students related to comparisons health sciences students (Table 6).

4. Discussion and Conclusions

Below to provide a summary of the main findings in our study, always trying to determine the differences and similarities between the freshmen students of health sciences and other disciplines of the Autonomous University of Chihuahua in their perceived self-efficacy in different academic behaviors.

4.1. *Self-Efficacy Perception*

Regarding the studied academic behaviors, self-efficacy perceived for students in health sciences is similar to that of students in other disciplines, because of the 18 possible comparisons only six of them were found with significant differences: in attention factor, the health sciences students perceived with most self-efficacy that of political science students, and the excellence factor, with higher self-efficacy than students in other disciplines; except for social and administrative sciences students, than no difference. This means that in relation to indicators of communication factor: expressing ideas clearly, make comments and relevant inputs, in case of disagreement to be able to of engage in dialogue with teachers, feeling good about their performance when speaking in front of a class or group of people; the indicators of attention factor are: to listen carefully when the teacher explains a question clarifies any doubt to a partner, or listening to questions and contributions from colleagues, to pay attention when teachers or peers give the class and listen carefully to the questions and comments from my teachers, students of health sciences are perceived as self-efficacy as students from other disciplines.

4.2. *Desired Self-Efficacy*

The desired self-efficacy profile by the health sciences students in academic behaviors studied, it is always higher than that of students in other disciplines, because of the 18 possible comparisons only one of them resulted in no significant differences.

4.3. *Reachable Self-Efficacy*

The profile of the students in health sciences in self-efficacy level in the future academic behaviors studied is very similar to that of students in other disciplines, as only four of the possible comparisons resulted in significant differences.

4.4. *Dissatisfaction or Dissonance in Self-Efficacy*

The profile of students in health sciences in relation to the dissatisfaction or dissonance in their perceived self-efficacy in academic behaviors studied is practically equal to that of students in other disciplines, as only two of the possible comparisons were with differences significant.

4.5. *Possibility of Improvement in the Perceived Self-Efficacy*

The possibility of improvement in the perceived self-efficacy profile of students in health sciences in academic behavior is similar to that of students in other disciplines, because of the 18 possible comparisons were only six of them with significant differences: in attention factor, are less likely to perceive improvement in their self-efficacy for students of Political Sciences, and the excellence factor, with no chance of improvement in self-efficacy than students in five of the six disciplines that was compared.

In summary, the results obtained when comparing the efficacy profiles of students in health sciences freshman, with new students from other disciplines show that self-efficacy in academic behaviors, except for self-efficacy desired is concerned, is very similar between each other, which is a very encouraging result as it does see that the idea that students come to certain degrees of " lower quality " than other degrees, it's just a prejudice.

Table 1. Results of ANOVA for the discipline variable on the five self-efficacy indexes. Communication subscale.

Source	SS	df	MS	F
Perceived self-efficacy				
Discipline	49.79	6	8.30	3.51**
Error	4920.38	2082	2.36	
Desired self-efficacy				
Discipline	53.65	6	8.94	10.13**
Error	1837.56	2082	0.88	
Reachable self-efficacy				
Discipline	25.23	6	4.21	5.69**
Error	1539.05	2082	0.74	
Dissatisfaction or dissonance in self-efficacy				
Discipline	19.66	6	3.28	2.17*
Error	3150.45	2082	1.51	
Possibility of improvement in the perceived self-efficacy				
Discipline	12.89	6	2.15	1.57
Error	2850.14	2082	1.37	

* p <.05 ** p <.01

Table 2. Mean of the self-efficacy indexes. Communication subscale.

Self-efficacy index	Discipline						
	PE	HS	EH	SAS	PS	ET	AS
Perceived self-efficacy	7.5	7.6	7.5	7.8	7.5	7.4	7.4
Desired self-efficacy	9.0 _a	9.4 _a	9.2	9.4	9.1 _a	9.1 _a	9.0 _a
Reachable self-efficacy	9.3	9.3 _a	9.2	9.4	9.3	9.1 _a	9.1
Dissatisfaction or dissonance in self-efficacy	1.5	1.8	1.7	1.6	1.6	1.7	1.6
Possibility of improvement in the perceived self-efficacy	1.8	1.7	1.7	1.6	1.9	1.7	1.7

Note. PE=Physical Education; HS=Health Sciences; EH=Education and Humanities; SAS=Social and Administrative Sciences; PS=Political Sciences; ET=Engineering and Technology; AS= Agricultural Sciences. Means in the same row with the subscript "a" differ at a level of at least p = .05 with the mean of the discipline of health sciences. Means with the subscript "a" that are in de same row differ at a level of at least p = .05 with the mean of the discipline of health sciences (HS).

Table 3. Results of ANOVA for the discipline variable on the five self-efficacy indexes. Attention subscale.

Source	SS	df	MS	F
Perceived self-efficacy				
Discipline	32.87	6	5.48	5.08**
Error	2243.69	2082	1.08	
Desired self-efficacy				
Discipline	36.51	6	6.08	12.85**
Error	985.49	2082	0.47	
Reachable self-efficacy				
Discipline	6.96	6	1.16	3.59**
Error	671.86	2082	0.32	
Dissatisfaction or dissonance in self-efficacy				
Discipline	8.43	6	1.41	2.23*
Error	1311.79	2082	0.63	

Source	SS	df	MS	F
Possibility of improvement in the perceived self-efficacy				
Discipline	21.64	6	3.61	5.43**
Error	1382.27	2082	0.66	

* p <.05 ** p <.01

Table 4. Means of the self-efficacy indexes. Attention subscale.

self-efficacy index	Discipline						
	PE	HS	EH	SAS	PS	ET	AS
Perceived self-efficacy	8.2	8.4 _a	8.3	8.3	7.9 _a	8.2	8.2
Desired self-efficacy	9.3 _a	9.7 _a	9.4 _a	9.4 _a	9.2 _a	9.3 _a	9.3 _a
Reachable self-efficacy	9.5	9.6 _a	9.5	9.6	9.5	9.5	9.4 _a
Dissatisfaction or dissonance in self-efficacy	1.0	1.2	1.2	1.2	1.2	1.1	1.1
Possibility of improvement in the perceived self-efficacy	1.3	1.2 _a	1.3	1.3	1.6 _a	1.3	1.2

Note. PE=Physical Education; HS=Health Sciences; EH=Education and Humanities; SAS=Social and Administrative Sciences; PS=Political Sciences; ET=Engineering and Technology; AS= Agricultural Sciences. Means in the same row with the subscript "a" differ at a level of at least p = .05 with the mean of the discipline of health sciences. Means with the subscript "a" that are in de same row differ at a level of at least p = .05 with the mean of the discipline of health sciences (HS).

Table 5. Results of ANOVA for the discipline variable on the five self-efficacy indexes. Excellence subscale.

Source	SS	df	MS	F
Perceived self-efficacy				
Discipline	91.79	6	15.30	9.64**
Error	3304.21	2082	1.59	
Desired self-efficacy				
Discipline	20.05	6	3.34	9.85**
Error	706.21	2082	0.34	
Reachable self-efficacy				
Discipline	6.50	6	1.08	4.25**
Error	530.49	2082	0.25	
Dissatisfaction or dissonance in self-efficacy				
Discipline	40.06	6	6.68	5.51**
Error	2522.85	2082	1.21	
Possibility of improvement in the perceived self-efficacy				
Discipline	56.67	6	9.44	8.65**
Error	2272.06	2082	1.09	

* p <.05 ** p <.01

Table 6. Means of the self-efficacy indexes. Excellence subscale.

self-efficacy index	Discipline						
	PE	HS	EH	SAS	PS	ET	AS
Perceived self-efficacy	8.3 _a	8.8 _a	8.0 _a	8.5	8.2 _a	8.1 _a	8.2 _a
Desired self-efficacy	9.5 _a	9.9 _a	9.6 _a	9.7 _a	9.5 _a	9.6 _a	9.6 _a
Reachable self-efficacy	9.7	9.8 _a	9.6	9.7	9.7	9.6 _a	9.6 _a
Dissatisfaction or dissonance in self-efficacy	1.2	1.1 _a	1.5 _a	1.2	1.3	1.4 _a	1.4
Possibility of improvement in the perceived self-efficacy	1.4 _a	1.0 _a	1.6 _a	1.2	1.4 _a	1.5 _a	1.4 _a

Note. PE=Physical Education; HS=Health Sciences; EH=Education and Humanities; SAS=Social and Administrative Sciences; PS=Political Sciences; ET=Engineering and Technology; AS= Agricultural Sciences. Means in the same row with the subscript "a" differ at a level of at least p = .05 with the mean of the discipline of health sciences. Means with the subscript "a" that are in de same row differ at a level of at least p = .05 with the mean of the discipline of health sciences (HS).

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