

Cognitive beliefs among a sample of university students - a field study at Ammar Theliji University, Laghouat.

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Abstract:

This study aimed to identify the order of dimensions of cognitive beliefs among university students, as well as to reveal differences in cognitive beliefs according to gender and academic level. The study sample consisted of (90) male and female students, and we used the “Walid Shawki Shafik Essayid” (2009) scale for epistemological beliefs.

The results revealed that there is a difference in the dimensions of cognitive beliefs among university students, and that there are no statistically significant differences between males and females in cognitive beliefs, as well as the presence of statistically significant differences between the first year and the second year of the master’s degree in favor of the second year master’s students.

Keywords: cognitive beliefs, first year students, second year master’s students, university.

1- The problem of the study:

The interest of psychologists and researchers in the field of education in the subject of learning, as one of the renewed concepts with the modern era and the development of societies, which can be visualized as a process that occurs as a result of changes in the cognitive structure of the learner, especially if we are talking about an academic stage that is considered the top of the educational pyramid in any educational system, which is the university stage, as educational institutions that attract a group that can be relied upon to build the nation in the future.

While professions developed under the umbrella of the Fourth Industrial Revolution, and were accompanied by rapid development in various sciences and their branches, university programs and their contents remained far from this development and did not keep pace with it, as they did not produce research and self-educated students, and it did not reach the point of correcting his cognitive beliefs, nor how to acquire, build, and employ them in solving his problems, making his decisions, and issuing his judgements.

Therefore, the student’s transition to the university stage is considered a new step towards self-realization and charting his academic and professional future, to become a seeker of knowledge and a participant in acquiring it and employing it in solving problems and difficult tasks that he may face. It contributes to his intellectual independence by reshaping his vision and perceptions towards science and knowledge, whether acquired as experiences or in the fields of its application, and then giving them meanings.

Because university students need to understand themselves and understand the way things and events occur and their changes around them, they rely on their previous ideas and beliefs in their relativity or totality and their interconnectedness or contradiction.

The perceptions, beliefs, attitudes, and metacognitive information that students bring with them to learning situations occupy an important factor in the learning process and ultimate success. (Sorour Said Abd Elghani, 2011, p. 235)

In the learning and teaching situations they face, individuals are influenced by the beliefs they have about knowledge and learning, and cognitive beliefs affect their judgments and self-learning, the

goals they seek to achieve, and even their choice of the cognitive strategies they employ, as well as the forms of thinking they practice (Bakia Nafer Ahmad, 2013, p. 1021)

After entering the university, students face an academic life that differs from the one they lived in secondary school, as the student at the university bears great responsibility for his learning, and is required to acquire knowledge from multiple and diverse sources, and in different ways and methods. (Sally Talib Alwan and Amal Kadhem Mira, 2014, p. 281). Therefore, the cognitive beliefs of university students differ from those of students in previous educational stages.

Psychologists believe that cognitive beliefs are a system of implicit assumptions that students hold about the nature of knowledge and its acquisition, and that students' progress in an evolutionary manner through a sequence of stages in their cognitive beliefs. (Sally Talib Alwan and Amal Kadhem Mira, 2014, p. 281)

The epistemological beliefs of students differ depending on their academic specialization, as students specializing in natural sciences such as physics and engineering have deeper beliefs, compared to students specializing in the fields of humanities and educational sciences (Schommer, 2008).

Hofer (2000) also believes that students in social and humanities majors see knowledge as uncertain compared to students in engineering and management majors who see knowledge as certain. (Al-Moumni and Khazaali, 2015, p. 499)

The student's beliefs can also determine how he chooses the approach to learning, which strategy he uses and which he avoids, and the extent to which he will continue learning. (Ibrahim Abu Aakl, 2019, p. 829)

Schommer (1990) believes that insight into beliefs may advance our understanding of human learning. While research has focused on the importance of schemas and metacognition for understanding, schema theory explains why some students fail to integrate knowledge. Metacognition does not explain why some students fail to monitor their understanding, but we may find some plausible answers in examining epistemological beliefs. (Schommer, 1990, p. 503)

In light of this, some Arab and foreign academic studies have attempted to determine the level of cognitive beliefs and reveal differences in them, according to several mediating variables, such as the study of Walaa Fawzi Abd ElHhalim (2020), where the results concluded that there are differences between males and females in cognitive beliefs in favor of females, and that there are differences in Cognitive beliefs for the benefit of fourth year students.

- The results in the study of Kasem Iman (2017) showed that there were no statistically significant differences in Cognitive beliefs, according to the variables (gender and academic group), and the interactions between them.
- According to the study of Essayid Abd Elhamid and Mohamed Abd Elghaffar (2015), which found that there were no differences between the average cognitive scores according to academic specialization, and according to gender.
- While the results of the study by Al-Moumani and Khazaali (2015) indicated that students have an average level of cognitive beliefs on the total score of the scale and on its sub-dimensions, and that there are statistically significant differences in the students' scores on the cognitive beliefs scale as a whole, and there are no statistically significant differences in the students' scores on the cognitive beliefs scale as a whole and its sub-dimensions are attributed to gender.
- While we find a study by Sally Talib Alwan and Amal Kadhem Mira (2014), the results of which showed that the research sample has cognitive beliefs and self-regulated learning, and the results of the research indicated that there are statistically significant differences in cognitive beliefs in favor of males.

- As well as the study of Limoodehi and Tahriri (2014), the results of which indicated that second-year students possess higher cognitive beliefs than first-year students, and that there are no statistically significant differences in cognitive beliefs attributable to gender.
- The study of Asayid Abu Hachem (2010), which found that there were no statistically significant differences between males and females in cognitive beliefs, and that there were no statistically significant differences between first- and fourth-level students in cognitive beliefs except for the cognitive structure dimension, in favor of fourth-level students.

Here the researcher sees that there is a contradiction and difference in the results of previous studies, which dealt with the subject of cognitive beliefs, whether in terms of gender or academic level, which distinguishes our current study, as it attempts to investigate cognitive beliefs more broadly among a sample of university students in our local environment due to the importance of cognitive beliefs for the process of Learning, the learner, and his academic performance.

Based on the above, it is clear that cognitive beliefs are among the important and prominent concepts in the university student's path and the development of his academic performance, as they are expected to influence the way individuals deal with information during learning, and they have a direct impact on the mental performance of individuals, and how they understand and monitor this understanding. As well as how to solve problems and persevere in the face of difficult tasks (Mahmoud Awadh Aallah Salem and Amal Abd Elmohsen Zaki, 2009, p. 160)

Hence, we are faced with an urgent need to identify and understand the components and level of university students' cognitive beliefs.

On this basis, the problem of our studies becomes clear, which seek to answer the following questions:

- Is there a difference in the ranking of dimensions of cognitive beliefs among university students?
 - Are there statistically significant differences in the cognitive beliefs of university students according to the gender variable (males - females)?
- Are there statistically significant differences in the epistemological beliefs of university students depending on the variable of academic level (first year - second year of master's)?

2- Hypotheses:

- There is a difference in the arrangement of the dimensions of cognitive beliefs among university students.
- There are statistically significant differences in the cognitive beliefs of university students according to the gender variable (males - females).
- There are statistically significant differences in the cognitive beliefs of university students depending on the variable of academic level (first year - second year of master's).

3- Method and procedures:

The descriptive approach is the appropriate approach to address our topic, as it is applied to find out whether there is a relationship or differences between two or more variables, as it is the most appropriate for our study, to interpret the data and information obtained.

4- Study population and sample:

The study population consists of all students registered in the first year common core, and the second year of the Master's degree, at the Faculty of Social Sciences at Ammar Thelidji University in Laghouat, and their estimated number is: 2079 male and female students.

While the study sample consisted of 90 male and female students; (48) First year; (42) second-year master's degree students, selected randomly.

Table No. 01: represents the study sample according to the gender variable and the educational level variable.

Variables	GENDER		Educational level	
	Males	Females	First year	Second year Master's degree
Number	45	45	48	42
Percentage	% 50	% 50	% 53,33	% 46,66

5 - Study tool:

5 - 1 Scale of Cognitive Beliefs, prepared by “Walid Shawki Chafik Essayid” (2009), which contains (63) items, in which the following alternatives were used: (strongly agree - agree - not sure - disagree - strongly disagree). According to the Likert scale: 5–4–3–2- 1 (and vice versa for negative items)

5-2 Psychometric properties of the study tool:

A/ The validity of the scale in the current study: It was calculated using the end-to-end comparison method, by taking the subject’s scores on the cognitive beliefs tool, arranging the scores in descending order, taking 27% from the limits of the two ends of the high and low scores, and calculating their averages and the value of their standard deviation.

Table No. 02: Shows the results of the peripheral comparison validity of the cognitive beliefs scale.

Statistical indicators / variable	Nbr individuals N	Arithmetic mean \bar{X}	Standard deviation S	T value	Degree of freedom DF	Statistical significant	Significance level
Highest values 27%	12	25,44	1,94	10,53	16	0.000	Statistically significant at 0.05
Minimum values 27%	12	14,44	2,45				

It is clear from the table above that the p-value = 0.000 for the T-test (10.53) at the degree of freedom (16), is smaller than the level of statistical significance (0.05), so it is statistically significant, and therefore there are differences between the two groups, and this indicates that the questionnaire has the ability to distinguish between its aspects, it is valid (honest) and suitable for use in study.

B/ The stability of the scale in the current study:

The following table shows the reliability of the cognitive beliefs scale based on the Cronbach alpha method.

Table No. 03: shows the reliability of the cognitive beliefs scale using Cronbach’s alpha method.

Reliability coefficient	Significance level
0,89	0.01

It is clear from the table that the reliability value is acceptable, statistically significant, and indicates the stability of the scale.

6 - Results and discussion:

6-1 Presentation, analysis and discussion of the results of the first hypothesis:

- **Hypothesis text:** There is a difference in the arrangement of the dimensions of cognitive beliefs among university students.

Table No. 04: shows the levels of dimensions of cognitive beliefs.

Dimensions	Arithmetic Mean	Standard Deviation	Ranking
learning ability	5,67	1,94	2
Speed to learn	8,00	1,75	1
Constancy of knowledge	3,51	1,81	4
Knowledge structure	4,82	1,95	3
Source of knowledge	3,17	1,64	5

It is clear from the table above that Speed to learn is the most influential dimension on the study sample members, with an arithmetic mean of (8.00) and a standard deviation of (1.75); Then followed by learning ability, with an arithmetic mean of (5.67) and standard deviation (1.94); The structure of knowledge was ranked third with an arithmetic mean of (4.82) and a standard deviation (1.95); While knowledge stability ranked fourth with an arithmetic mean of (3.51) and standard deviation (1.81); The source of knowledge came in last place with an arithmetic mean estimated at (3.17) and a standard deviation of (1.64).

This indicates that the dimension of consistency indicates limited knowledge, due to the difficulty of students' cognitive beliefs. These two dimensions are called beliefs about knowledge, so that beliefs about the nature of knowledge affect understanding, cognitive processing, and learning to change concepts, which contributes to correcting wrong beliefs and opinions, and what increases Chances of success in solving problems and difficult tasks.

The difference in the dimensions of the students and their arrangement in this way are positive, as it affects them in terms of knowledge and learning. We can explain it through the similarity of teaching methods applied at the university level (lecture), in addition to the professors' focus on evaluative methods that rely on memorization and retrieval of scientific knowledge and concepts only, as well as their subjection to the same study programs, which are essentially separate and not integrated.

We did not find a study that applied the same scale and looked at the ranking of the dimensions of cognitive beliefs as a basic hypothesis, except for the study of Al-Moumni and Khazaali (2015), who took the ranking of the dimensions of cognitive beliefs as a matter of support.

6-2 Presentation and analysis of the results of the second hypothesis:

Hypothesis text: There are statistically significant differences in the cognitive beliefs of university students according to gender (male/female).

Table No. 05: shows the differences between the sexes (males/females) in cognitive beliefs:

Statistical indicators variable	Arithmetic mean \bar{X}	Standard deviation S	Nbr individuals N	T value	P Value	Degree of freedom DF	Significance level
Males	1.041	29.16	45	64	0.557	1.55	0.05
Females	1.047	33.37	45				

It is clear from the table above that the value of $p = 1.55$ for the “T” test (0.557) at the degree of freedom (64) is greater than the value of the significance level (0.05), so it is not statistically significant and therefore there are no differences in cognitive beliefs attributed to the gender variable. Hence, we reject the hypothesis because it is not verified.

We explain this result by saying that the sample members are in the same age group, in the same social and cultural environment, and at the same economic level. Perhaps it is due to the methods and methods of teaching, as they study with the same professors, and receive the same knowledge and information in the same way that they memorize automatically, and they are not even able to retrieve it, and most of the sample members proceed at the same pace in researching and investigating knowledge.

The current study agreed with the study of Kasem Iman (2017), the study of Essayid Abd El Hamid and Mohamed Abd ElGhaffar (2015), the study of Al-Moumni and Khazaali (2015), the study of Limodihi and Tahriri (2014), as well as the study of Abu Hachem (2010), in terms of the absence of Statistical differences between genders (males - females).

However, it differs from the study of Walaa Fawzi (2020), which found statistically significant differences in favor of females, and the study of Sally Talib Aalwan and Amal Kadhem Mira (2014), which found differences between the sexes in favor of males.

6-3 Presentation and analysis of the results of the third hypothesis:

Hypothesis text: There are statistically significant differences in the cognitive beliefs of university students, depending on the academic level (first year/second master’s year).

Table no. 06: Explains the differences between the two levels (first year/second year master’s) in cognitive beliefs:

Statistical indicators variable	Arithmetic mean \bar{X}	Standard deviation S	Nbr individuals N	T value	P Value	Degree of freedom DF	Significance level
first year	14,580	2,700	48	12,137	0.000	64	0.05
2 nd year master's	29,530	4,073	42				

It is clear from the table above that the value of $p=0.000$ for the T-test (12,137) at the degree of freedom (64) is greater than the value of the significance level (0.05); It is statistically significant, and accordingly there are differences in cognitive beliefs attributed to the academic level variable and in favor of the second year of the master's degree. Hence we accept the hypothesis because it is verified.

We can interpret this result by saying that second-year master's students have gained more experience with university life, which has made them more flexible in facing problems and more capable of solving them. They also acquired new knowledge and skills that changed their previous beliefs, especially the wrong ones, and this may be due to the fact that these students have deeper and more comprehensive learning strategies, have acquired research and investigation habits over the years, and have the ability to understand and perform academic tasks and duties more accurately and effectively.

While, we find first-year students relying on the lecturer to receive information ready, to save it automatically for exams, and nothing more! In addition, the number of students in the first year is always large, which prevents many of them from changing their way of learning and acquiring knowledge, and prevents them from employing and testing it experimentally.

The results of this hypothesis agreed with the study of Walaa Fawzi (2020), which found statistically significant differences in favor of the fourth year, and the study of Limoodihi and Tahriri (2014), which found statistically significant differences in favor of second-year students. It also contradicts the study of Kasem Iman (2017) and the study of Abu Hachem (2010), in that there are no differences between academic levels.

7 - Recommendations:

Based on the results shown above, our study recommends the following proposals:

- The necessity of developing cognitive beliefs among university students, without exception, to increase their motivation to learn and achieve good academic achievement.
- University professors must use active and effective teaching methods to modify students' beliefs and correct them in a better way.
- University professors must use objective evaluation methods that motivate students to increase their awareness that knowledge is experimental and uncertain.
- Building guidance programs to develop cognitive beliefs.
- Conducting more research on cognitive beliefs according to other variables, or according to correlational studies with other psychological and educational variables.

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