Research on Humanities and Social Sciences
ISSN (Paper)2224-5766 ISSN (Online)2225-0484 (Online)
Vol.7, No.6, 2017

Bilateral Interactions between Demographic Variables of the Degrees of Cognitive Motivation to Learn among the Students of the Faculty of Medicine at the University of Jordan

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Abstract
The study aimed to investigate the number of students in the Faculty of Medicine at the University of Jordan, distributed according to personal and demographic variables, and to determine the mean degrees of cognitive motivation for learning, and distributing them among the variables of the study, and the extent of bilateral interactions between the degrees of motivation and the research variables. The study sample consisted of (254) students in the first, third and fifth years, distributed as (92) male students and (153) female students. A cognitive motivation measure was established, in addition to the measurement of: personality style, the ideas about the university, and the level of thinking. A Bilateral analysis was conducted to the variables; results showed that there were significant differences in the interaction between demographic variables and the degrees of cognitive motivation for learning. The study also showed an interaction that is statistically significant between the average score at the college and both the thinking level and the idea about the university. The study concludes with a set of recommendations based on the results of the study.
Keywords: Bilateral Interactions, Demographic Variables, Cognitive Motivation

Introduction

Many educators were recently concerned when it comes to the issue of learning and how to motivate the learner to exploit all of his abilities and unleash his potential to the maximum in order to achieve optimum performance. Thus, we find that learning in classrooms and laboratories at the university aims to make desirable changes in the students to achieve better understanding of the learning process, and to improve and organize mental processing. The student that aims at achieving this level of understanding and wishes to improve and organize his mental skills often contributes to advance his academic scores, which drives him to achieve and accomplish his academic goals.

The student's academic performance is affected directly by his motivation towards learning. This has given great importance to the concept of motivation recently, as many academic behaviors of the student can be explained through his motivation to learn. The student's performance and motivation to carry out certain actions depend on the quality of motivation the student has, and that this motivation continues and evolves under the influence of many factors; including personal and environmental factors, and the interactions between them - For example, the interaction between the student and his teachers, or the curriculum, the laboratory work, or his interactions with his colleagues to accomplish specific tasks. (Wolters, 2004).

Understanding the impact of these factors separately or combined, according to bilateral sets or bilateral interactions; contributes towards identifying the circumstances that lead to success and academic excellence, and helps the planners of the academic programs and curricula in colleges of Medical Sciences and the College of medicine to continue its academic progress and achieve the optimum results in terms of increased efficiency in the development of distinct medical students.

The identification of the set of various factors that interfere and interact with the educational process, understanding and disclosing them, as well as the extent of their influence and overlap in the educational circumstances can contribute to providing a cohesive learning environment that motivates towards learning and contributes to its improvement in order to make students achieve high academic grades, and to make their adjustment in an academic and practical environment more positive. Moreover, the investment of their cognitive motivation for learning prevents them from wasting this energy, but instead focusing it toward achieving the highest and best performance or learning for the students in medical school. (Miller & Brickman, 2004).

The motivation for learning indicates an internal state in the learner which pushes him to be enticed by the educational stimuli, and to perform a purposeful activity while being involved in order to achieve the learning goals. (Qatami and Adas, 2002)

Those who believe in the cognitive trend presume that the learner has an internal motive which aims to achieve a state of educational equilibrium. These internal motivations inherent in mental activity refer to the adequacy of behavioral activity in itself, and do not only represent a means to an end. Therefore the learner enjoys a high ability of self-control. (Vander Zanden, 1980)

As it is already established, the definition of motivation from a cognitive stand point is an internal state

that motivates the learner acquaintances, cognitive structure, awareness, consciousness and attention. It pushes him to continue his activity or performance to reach a certain cognitive state. (Snowman, McCown and Biehler, 2009)

The cognitive motivation of learning is an essential component for the integration of mental processes, formed and existing knowledge that can be integrated with new information and knowledge. Consequently, a student in general - or more specifically a student in the Faculty of Medicine - performs cognitive processes through which he processes the new information acquired from the learning situations. These internal processes are partially driven internally in order to achieve understanding and regulation, in order to succeed in theoretical and practical requirements in the study of medicine.

The motivation for cognitive learning for students of the faculty of Medicine is in mergers with educational tasks, such as: expectations of success, getting high grades. Medicine students pass through difficulties and consume a lot of time in order to achieve success in this advanced specialty. (Moneta, 2004)

Considering the knowledge motivation factor which can affect the student's performance in general , and specially students of the Faculty of Medicine, in a positive way, students who excel this kind of motivation develop their self-organizing processes, causing them to focus on tasks of learning and use strategies to regulate the partial knowledge stock to face the challenges during learning. Thus, their academic performance will be a product of their hard work and focus, which appears as mental flows during problem solving activities, and thus they develop performance skills in educational activities.

The student's trends in learning can be linked to personal variables represented in the learning style, and thinking style that helps them meet challenges with determination, perseverance, and self regulation (Ryan & Deci, 2000a).

The motivation for cognitive learning is one of the basic elements that define learning in the different subjects of study in the university, including studying at the Faculty of Medicine (Brewer & Burgess, 2005). This means that the student in the medical path is motivated to learn the subjects introduced by the Faculty of Medicine - as is the case in the areas of application and medical training. Ryan and Deci have concluded that the learner with a high motivation is the learner that his responses are accompanied by excitement, attention, and enthusiasm towards learning situations, which are essential elements of the cognitive components of motivation to learning (Ryan & Deci, 2000a).

The motivation of cognitive learning, which the student at the Faculty of Medicine possesses, is portrayed in a large number of representative aspects: the level of trend of motivation that leads to action and involvement in learning for a period of time until the end of the task. He will be known as motivated towards learning the entirety of the time (Ames, 1990). When they are dedicated and have self-determination to achieve their goals they become self-motivated to push towards the completion of the study, and complete assignments during theoretical and applied education, whether as individuals or in groups. (Ryan & Deci, 2000)

The motivation of cognitive learning is the tendency towards complete involvement into the work on the tasks, being characterized by excitement, pleasure, as well as perseverance – particularly in the management of learning and its implementation during the tasks, while solving difficult problems, learning from their mistakes and being offered immediate feedback (Walker, Greene & Mansell, 2006).

The students of the Faculty of Medicine are students that can have a general willingness to go towards achievement driven by internal factors of motivation, like personal factors that are interconnected with the personality pattern and its positive influence on pushing towards learning with perseverance, positive expectation, receptivity in choice and mental processing (Bowman, 2007).

The motivation for cognitive learning can drive students to practice deep knowledge processing and gain them new experience that develops, which helps them understand how to better deal with situations and problems and focus on the factors affecting academic success and pass the placement tests; unlike students in other studies who rely on the process of memorization and repetition with external motivation to achieve similar goals (Honkimaki & Sakari, 2004).

The motivation of cognitive learning is a personal factor that accompanies each student during his schooling years, but its impact can vary by personal factors of the student whether they are learned or hereditary. The interactions between those factors can have a different effect on the ability of motivation to learn, especially among students of the Faculty of Medicine who focus all their efforts and abilities to succeed and excel, and to practice this profession to achieve a prestigious position in society, or to gain access to various excellent centers in the field of medicine or other fields (Linnenbrink & Pintrich, 2002a).

This explains the interest of the current study to examine the impact of bilateral personal interactions on cognitive motivational ability for learning in the Faculty of Medicine at the University of Jordan.

Studies indicate that the perception of the proper classroom environment, in addition to proper training, can support the hypothesis of mastering learning and be able to exploit the potential of a students' knowledge to the maximum. The availability of these personal characteristics could increase the affiliation of students for the class activities and help encourage them to participate and be involved in the learning process (Greene, Miller,

Crowson, Duke & Akey, 2004).

A number of studies show the importance of all the demographic factors, individually or correlated, can contribute in understanding the abilities of cognitive motivation for learning. These factors can prevail among the students in class, and their perception of affiliation, personal characteristics, achievement, accomplishment, trends, methods of thinking and learning, and the formulation of objectives while working to achieve certain goals. The studies also focused on the importance of understanding and realizing the classroom factors and their vital role (Miller & Brickman, 2004; Wigfield & Eccles 2002; Wolters, 2004).

A number of previous studies that have been mentioned could indicate that the variable of cognitive motivation for learning can be influenced by a number of personal and environmental factors and their interactions. This could contribute to an increased understanding of the factors that affect the cognitive motivation for learning among the students of the Faculty of Medicine who make up current members of the study sample.

The problem of the study:

Understanding the personal factors that contribute to raising the cognitive motivation for students of the Faculty of Medicine, its direction, and the achievement of educational goals, can lead to providing the proper environmental, educational and laboratory conditions, that support the achievement of this goal – as well as determining the degree of impact and the level of effectiveness could alert the planners of the curriculum, the design of the learning situations and courses, and evaluation methods to take into account these factors to invest in directing its power towards the education of the students in the College of Medicine.

Besides that, neglecting these factors by the researchers may reduce the chances of paying attention to them, and how effective they are and their impact on the academic and educational tracks. The study of these factors and testing their effects on learning can increase the attention of the literary medical education and taking into account the psychological and personal factors and studying them in order to guide college level medical education and invest the maximum cognitive capacities among the students of the Faculty of Medicine at the University of Jordan. This is where the importance and sense of the current study came to be.

The problem of the current study is determined by investigating the bilateral interactions between demographic variables and the abilities of cognitive motivation for the students in the Faculty of Medicine at the University of Jordan.

Questions of the study:

The study tried to answer the following questions:

1. How the samples of individuals in the Faculty of Medicine are divided over the demographic Variables?
2. What are the average scores of cognitive motivation for learning among the students in the Faculty of Medicine according to the interactions between demographic variables?
3. What is the effect of bilateral interactions of the demographic variables on the scores of the students of the Faculty of Medicine in the cognitive motivation to learn?

The importance of answering these questions is as follows:

First: The knowledge of the distribution of the study sample among the researched variables can help in understanding the demographic characteristics of those students who represent a sample of the study, and who are carefully selected when admitted to the faculty of medicine. This precision in selecting can be traced, as well as the great care in selection and its effect on the academic performance, and the students' level of cognitive motivation to learn.

The students of the Faculty of Medicine are a rare sample to obtain and that is due to their demanding work schedule when it comes to studying and working in labs, or in hospitals to practice medicine fully or partially. This provides us with a model of cognitive performance of learning which could be distinct or different from other students, this enables us also to identify which demographic variables are most influential on their grades and academic excellence.

Secondly: Knowing the average of the abilities of cognitive motivation for learning for students of the Faculty of Medicine can enable us to identify the relevant factors which have positive effects on the student's academic achievement and the cognitive motivation to learn. This can be beneficial as it will be possible to transfer these effects and take them into consideration when studying the students of the other faculties of the University of Jordan and other universities. This can also provide the researchers with knowledge that can open new horizons for teachers of the Faculties of Medicine at the Jordanian Universities – in particular the University of Jordan – to care and provide an educational atmosphere that drives and stimulates and excites the student for the suitable Medical Education.

The educational medical psychological literature could benefit from these results. If these results were connected with making the decisions, this could help in making learning and teaching conditions in the University more joyful and happy, and to benefit from the views of these student for planning the teaching and

classroom interaction for the students in the Faculty of Medicine, or the introduction of some leadership variables to increase the motivation of this rare specimen that could have a leadership role in the medical domain.

Knowing the average of the cognitive motivation abilities of learning for students, with consideration of demographic variables can help us understand the reasons behind the excellence or decline of the achievements of students in the Faculty of Medicine. Thus, increasing the benefit from studying these interactions between cognitive motivation for learning and demographic variables could help improve the learning and teaching of students of the Faculty of Medicine.

Thirdly: The bilateral interactions of the demographic variables, and their effects on the ability of cognitive motivation of learning can contribute to knowing the effects of these bilateral interactions, and their effect on the ability of cognitive motivation for learning, which will help provide researchers in the educational medical psychological literature take into consideration these interactions and pay attention to them while planning teaching and learning paths. This can increase the motivation of the students in learning and planning for their future, and increase the degree of achievement and excellence that they have.

It is important that teachers know about these interacting variables and their effects, for this can lead them to plan for grand and sophisticated objectives to achieve which require efforts of cognitive mentality higher than what they achieve when they use repetitive teaching routines. This also makes them consider the introduction of changes into the tracks of the academic courses in order to entice motivation of students, so they engage in learning, and thus achieve higher levels by introducing excellent doctors to the society. Especially that some scientists like Rogers (Woolfolk, 2010) assume that it is the students right to use their energies for learning and getting the best achievements out of this.

The Importance of the study:

The importance of the current study can be explained by the need to understand how the students of the Faculty of Medicine are distributed according to demographic variables, and surveying that will provide us ideally with a general idea of which society sectors these students come from, in addition to their distribution according to what has been identified of the variables of the students attitudes towards studying and the College, their personality patterns, methods of learning and thinking that they possess.

These factors can increase our understanding of the students' demographic variables which are distributed according to their levels of achievement and school years, which makes it possible for teachers of the Faculty of Medicine to design methods of teaching that suit every learning pattern for every student in the lecture. Hence students are divided into two learning types; Concrete or semi-concrete. Each of these types has its own educational applications, and how much the students learning and the teachers' teaching match in the Faculty of Medicine. Brophy,= (Brophy, 2004) emphasized the importance of matching the students' learning method with the teachers' teaching method, and the method of thinking that the teachers in the Faculty of Medicine possess which could contribute towards increasing the students' motivation towards learning and academic achievement.

Knowing the averages of the ability of cognitive motivation of students in the Faculty of Medicine can contribute to knowing the extent of these averages; and the extent of their ability, whether its extent rises or falls; this helps teachers care about these averages for the motivation of cognitive learning, if the results are low, teachers have to reconsider teaching methods and their designs, and to try to motivate students towards learning and orienting their learning performances towards their goals, and achieving and implementing them. This is apparent in the second question the study tried to answer.

Bilateral interactions that link every two variables together to test the extent of the interaction of these variables and their effect on the ability of cognitive motivation of the students of the Faculty of Medicine. This will help teachers understand the importance of these variables, and considering them when dealing with students, while allowing them to participate in the teaching plan to make it more responsive towards their needs and characteristics, thus making learning more efficient to them.

The motivation for cognitive reconnoitering which is indicated by this study is important in the research of factors of university education of the Faculty of Medicine students which has an importance in the community and the university.

This study provides a valuable educational and medical value for understanding the characteristics of students in the Faculty of Medicine, and that can help in laying down the criteria of admission, when it comes to choosing the students of the Faculty of Medicine and designing the learning environment. It also helps make educational tests that elevate the level of exploiting the personal characteristics and knowledge of these students when it comes to processes of perfecting performance.

We hope that the current study will have a great value in the theoretical research since it will provide research tools to measure cognitive motivation for learning, and distributing the characteristics of Medical students. It also will provide valuable theoretical literature when it comes to understanding important variables for the students in the Faculty of Medicine.

Procedural terminology and definitions:

The following terms and definitions are identified in this study:

- Cognitive motivation to learn:

It is the ability which pushes the learner, and his orientations towards the feeling of understanding or solving a cognitive issue, or the completion of missing knowledge to reach a state of knowledge equilibrium which represents itself as the score achieved on the scale of cognitive motivation to learn.

- Grade Point Average (school average):

It is the level of academic achievement the student gets, and it falls into three categories: Low which is less than 2, medium which is above 2 but less than 3, and high which is between 3 and 4, inclusive.

- The thinking style:

Includes interactions with the student's surroundings and the materials he deals with which is defined by the level of the method of thinking, and has two levels:

Concrete thinking level and Abstract thinking level:

- Concrete thinking, which is thinking done by examining things right in front of Medicine student.
- Abstract thinking, which is thinking done by understanding abstract symbols embodied in words, numbers, or abstract plans or graphs, and is embodied in this study by characteristics that point out to its distinctive features.

- Semantic ranking:

This can be identified by three levels, namely: First, Middle, Last.

- The idea (perception) about the University:

This can be identified by three levels, namely:

- Negative: The student expresses his hatred towards the university and towards attending the lectures, and avoids the University activities.
- Neutral: The student expresses it with words like: "It's nothing special."
- Positive: The student expresses it with words like: "I love it", "I love participating in college activities" and "I love my campus"

- Educational level:

First year, Third year, Fifth year.

- The Father's level of education:

This can be put into one of three levels:

High school diploma or below, Community college, or University education and above.

- The Mother's level of education:

This can be put into one of three levels:

High school diploma or below, community college, or University education and above.

- Personality pattern**:**

Personality patterns can be divided into three types, namely:

- Aggressive: The student who shows aggressive responses whether it is verbally, exclusionary, or negative which can be identified during his study.
- Neutral: Where the student justifies his behavior as without intervention or comment.
- Friendly: Where the student expresses tolerance, positivity, and acceptance of others.

Determinants of the study:

The outcomes of this study can be generalized according to the following determinants (parameters):

- The measure used and its psychometric properties, the measure has been built by the researcher based on the available psychological and educational literature and on previous related studies.
- The sample of medical students surveyed.
- Variables that could be identified and defined in the current study.

Previous studies:

There are very few studies concerning medical education. This type of study especially requires collaboration between specialists in educational psychology, cognitive learning, and the professors in the Faculty of Medicine. The difficulty of this collaboration is what lead to the rarity of this kind of study, which explains the need for doing studies about demographic variables and the variable of cognitive motivation for learning among Medical students in the University of Jordan; so a review of the available studies that justify carrying out the current study will be done in accordance with a timeline in order to clarify the procedures for the current study and selection of its variables and constructing a special tool to answer its questions.

Schommer (Schommer 1993) studied the demographic variables and cognitive processes of motivation, and evaluated the beliefs and cognitive thoughts of University students and students of Higher Institute, then did a comparison between them.

The study sample included 266 male and female students. The researcher (Schommer) applied a tool for beliefs and cognitive thinking that she developed in 1990. She entered the variables of upbringing, age, gender, education of parents, and used multiple deviation, mediums, and standard deviation. She found that the students of the Higher Institute more firmly believed in absolute and simple knowledge and faster learning, whereas University students showed a higher belief in the hnnate readiness rather than submissive and developed readiness for learning. It was also found that all the individuals in the study considered that the cognitive knowledge that the students develop is the most crucial factor in their academic performance in university and in their cognitive motivation (Schommer, 1993).

Walker and Greene's study (Walker & Greene, 2009) aimed at testing the relationship between motivational beliefs of the classroom achievement goals, the self-efficacy for classroom work, and the feeling of belonging of the students towards what happens in the classroom.

The study sample included 249 high school students; it tested how well the students were involved in classroom learning, and the effect of that on their grades, and the extent to which the students achieved their classroom objectives.

The study showed that when students adopted the idea of achieving the understanding of goals oriented towards achievement and integration of knowledge, this gave an indication for predicting the student's grades. It was also concluded that in order for students to excel at orienting themselves towards motivation to learn was one of the indicators about how well the students feel they belong in the classroom. The researcher indicated how important it is to guide students towards procuring excellence at learning and performance tasks during their learning process.

This means that directing students towards excelling in classroom performance, understanding, and achieving goals can lead to the development of motivation of students towards learning. This also applies to Medical students as they have orientations, expectations, and classroom performances. Their yearning towards belonging in the classroom procedures in learning and work could improve the motivation to learn and achieve higher grades and excellence in the Faculty of Medicine.

Tanaka, Mizuno, Fukuda, Tajima and Watanable's study (Tanaka, Mizuno, Fukuda, Tajima & Watanable, 2009) aimed at studying the effect of motivation as one of the core principles of academic achievement for medical students. The study discovered the extent of the distribution of academic personality traits represented in intrinsic academic motivation for medical students. 119 second year medical students were chosen from the Osaka City University and they answered a questionnaire about The Intrinsic Motivation Scale Towards learning, as well as personality traits that were measured with the TCI (The Temperament and Character Inventory).

An analysis of simple regression was performed for the temperament and character inventory (TCI) that included the following: perseverance, cooperation, and excellence achievement. These variables were connected with the dependent variable: the intrinsic motivation. The results showed that the Temperament and Character Inventory (TCI): perseverance, cooperation, and excellence achievement are connected to intrinsic academic motivation for medical students. The researchers then used the modified simple regression analysis for the two variables: age and sex and for the three dimensions: perseverance, cooperation, excellence achievement, all of which have been positively associated with the variable of intrinsic academic motivation.

Khan's study (Khan, 2009) aimed at investigating the impact of success factor in advanced and different courses learning, and its relationship to cognitive and non-cognitive properties. The study involved 450 students, both male and female, who were chosen from the faculties of medicine, engineering, law, library science, and teacher education at the University of (Aligh India). The individuals were chosen from a homogeneous class sample. The study was conducted in order to determine the cognitive abilities of intelligence, creativity, and the non-cognitive abilities. The scale of personal traits, social and financial status was used in order to measure social personal traits.

The study showed a superior performance by engineering students in cognitive mental operations, followed by medical students; that was especially in the personal characteristics that cognitive motivation represents one of its variables. The study concluded that the effectiveness of university students, including medical students, relies on cognitive and non-cognitive or personal factors. These factors can determine the orientation of the students, interests and the degree of cognitive motivation that students with practical jobs, like medicine and engineering, have.

In a study done by Adeleye and Ofili (Adeleye & Ofili, 2009) on medical students, and aimed to test the personality traits of medical students and the difficulty of understanding the statistical concepts, and discovering the reasons for these difficulties. A (Cross-sectional Questionnaire) for the difficulties connected with personal characteristics was used. The study included 293 students in their last year in medical school in the (University

of Benin) and a questionnaire was used to interview these students. The results show that 29.7% of the students expressed difficulty understanding statistical concepts. The main reason was that methods of teaching did not satisfy the concepts of statistics. Up to 66.7% expressed a lack of seriousness in preparedness and understanding. 24.1% realized that the concepts were naturally difficult, and 21.8% likelihood that more female than male students expressed dissatisfaction with the response to methods of teaching,.

The study conclusions assured that most medical students, especially female students in this study, faced difficulties in specialty materials due to the poor teaching methods. Also, the lack of motivation to learn this certain subject causes a decline in understanding it and in the amount of students who take it seriously. Motivation to learn, including statistical learning, contributes to the students' incentive to complete laboraty and educational tasks. The study recommends that medical teachers are responsible for enticing the motivation to learn for Medical students. The students having a lack of seriousness when it comes to dealing with these subjects, and the low capacity of the lecturer's ability to develop learning motivation for the students.

We have thus shown what psychological literature is available on the impact of cognitive motivation on learning, and considering the different demographic variables. This has provided guidance for the researcher towards the proper assumptions, and formulation of study method to test these variables for medical students in the Jordan University.

Method and procedures:

The study methodology is investigational and developmental survey. The study aimed at choosing the extent of bilateral interactions of the study variables to the degree of cognitive motivation to learning, according to what was defined by the degrees of the scale developed by the researcher.

The study procedures involved the following stages:

Demographic variables were identified in the theoretical background, defined, collecting data and information from the individuals of the study sample, and determining the extent of significance of differences of bilateral interactions according to the demographic variables.

The study population:

The study population included medical students according to their three levels, first, third, and fifth year, with a total of 245 students. It was possible to distribute the individuals involved in the study according to the demographic variables.

Research Criteria:

Four standards were used, namely:

The standard of cognitive motivation to learn

In order to achieve the objectives of the study, which include the identification of the degrees of cognitive motivation to learn for medical students in the University of Jordan, the following assumptions were adopted (Montea, 2004):

1. The tool assumes that cognitive motivation to learn can be linked to a group of hereditary factors and innate readiness, and these can develop according to environmental factors.
2. The cognitive motivation to learn is affected by factors that can be nurtured in accordance with environmental factors that help develop this motivation, and can contribute to increase the abilities of learning.
3. The cognitive motivation to learn develops with age. The older the learner is, or the higher his educational level is, the more he scores on the motivation scale with the help of environmental learning factors that can be provided to increase its levels.
4. That cognitive motivation to learn can be found among students, but the importance of it depends on discovering and exploiting it in order to develop and use it in improving learning and achievement.
5. Cognitive motivation to learn can be learned and taught, and as long as it can be learned and taught, it can be measured with an acceptable psychometric connotations tool.

   Psychological and educational literature which the cognitive theory of motivation relies on has been reviewed, in order to determine its fields, features and indicators to build the tool that is based on these fields of study. (Bowman, 2007), (Ryan & Deci, 2000a).

   The scale has been applied to a similar group other than the study sample members in order to derive the indicators of truth and reliability of the scale.

   In order to derive a truth indicator of the scale, it was presented to teachers of the Faculty of Educational Sciences, 3 professors, 4 associate professors and 3 assistant professors. Their remarks were taken into consideration, and they were mainly about verbal rephrasing or editing of some

paragraphs and their layout. Then they proceeded to judge how true the paragraphs were to the scale that measures cognitive motivation to learn, and it was agreed by 80% that it was. Thus, the indicators of the truth of the scale of cognitive motivation to learn were provided.

The operational definition of cognitive motivation to learn was adopted and assumed to be the driving force that affects the performances of the learner and his orientation towards a feeling of understanding or solving the cognitive problem, or filling in missing knowledge to achieve a state of cognitive equilibrium in learning the teaching subjects in the Faculty of Medicine.

Thus the paragraphs agreed upon were (30) paragraphs, and the medical student have to answer them according to three levels:

Agree and the tested student gets score (3). Moderately agree and he gets (2). Don`t agree and he gets only (1), which supposedly means that the student lacks cognitive motivation to learn in the Faculty of Medicine.

The stability of the scale of cognitive motivation to learn:

The reliability coefficient of the scale of cognitive motivation to learn was calculated using the retail midterm equation and Cronbach's alpha equation. The correlation coefficient was calculated between the total individual scores of the study sample on the single paragraphs (15 paragraphs) and the double paragraphs (15 paragraphs) making a total of 30 paragraphs for the scale of cognitive motivation to learn. The value of the reliability coefficient when calculating the Pearson correlation coefficient between two halves is (0.63) and that was considered significant, and the significance was considered sufficient.

As for Cronbach's alpha equation, the stability of the scale was assessed using the Cronbach's alpha equation for the paragraphs of the scale, alpha value was (0.66) and that was an indication to an acceptable level of reliability with a level less than 0.01.

Thinking style measurement (Thinking style):

Thinking styles can be divided into two patterns according to Jean Piaget (Woolfolk, 2010): Concrete thinking and Abstract thinking.

Concrete and Abstract thinking can be represented with performances decided by the person being tested from the Faculty of Medicine, and a set of aspects that are easy to identify relying on thinking styles and methods (Strenberg, 2006), (Costa & Kallick, 2000a) which is originally based on the cognitive foundations, and the cognitive theory which adopts the method of thinking and its processes.

Here is a list of these distinctive performances and characteristic of both thinking styles.

(Concrete Thinking)		Abstract Thinking)(
Recognize objects the way they appear. Turn things to know them. Treat things to know them. Tools I use to get to know things are senses. Test things according to their concrete appearance.		Express things in words or symbols Understand things dimensions from abstract signals that indicate them. Build techniques and methods to understand things that don't appear to me. Understand the dimensions of the hidden objects and represent them mentally. Represent concrete things by equations and symbols.

Measure of Personality Type:

There are different personality theories, including Allport`s theory which assumes that personality types grow and develop, and that this phenomenon is accompanied by changes depending on the growth phase that children and young people pass through. For the purposes of the current study, a cognitive trend has been adopted which assumes that everything done by the child is doomed by a target, and that the growth target is to reach a state of cognitive constructive body balance that helps him understand what is going on around him or what he is going through . (Anderson, 2006).

Accordingly three cognitive personality types have been assumed to represent the mental processes that medical students have, and their behavior in dealing with colleagues, the environment, and teachers at the university. Here's a list of the aspects of these types that can be decided by a university student himself. Namely:

Aggressive	Neutral	Friendly
Denouncing others' behavior. Using harsh words with others. Harass others verbally. Making attitudes that hurt others. Ignoring others intentionally. Making fun of others. Neglecting and denial of others. Calling others bad names. Making others fall in trouble. Using intelligence to slander others.	Students are not bad nor are they are good. Everyone has his good and bad qualities. Leave others be. Everyone has his own excuse. Backs down from situations that require a strong stand. Doesn't have anything to do with it. Time solves all problems. Let things be. Avoid problems and let others act. Each behavior is justified.	I love all people. Every person has the right to express himself. Students are good. Make others hear what I like to hear. Accept for others what I accept for myself. Every student in the college is good. All students are intelligent and have the right to respect their minds. Appreciate every idea I hear. Greet everyone in the morning. Let every student feel that he is my friend.

Ideas towards University:

The idea towards university usually develops through interaction with individuals, situations or objects, resulting in the idea of love, hatred, or neutrality; and this is the content of the trend from a cognitive point of view (Weiner, 2005), which is a set of ideas that result in cognitive and research performances, or student`s tendency towards certain performances, being away from it, or neutral.

It has been possible to identify the most clarifying expressions of trends towards university, as t identified by the students of Faculty of Medicine at the University of Jordan. It has been included in performance aspects of which the student chooses to apply to himself to determine if he carries negative, neutral, or positive trends towards the university, which are:

Negative	Neutral	Positive
I hate the students. I hate the teachers. I hate the lectures. I hate the university. I am bothered by any knowledge I gain in the university. The students feign interest. The knowledge we get is worthless. Teaching is theoretical and of no value. Teachers are weak in their specialties. Teachers lack experience.	I want to get a degree. Knowledge does not interest me. I pay attention only to get grades. The teacher's worth is determined by the words I hear from him. It's hard to remember the teacher's names. I wish I could keep the books and references I study. My goal is to pass. Teachers are all alike. The students are indifferent. We will eventually graduate.	University is a place for knowledge. At university we become men. University makes leaders in medical field. Proud of my university because it has it has extremely qualified teachers. I am proud to be a Jordan University graduate. I remember every step I take in the university campus. University is a place to reform creative minds. University is the country's gift to us. University improved my character. University was where I met my best friends.

Study conclusions:

A review of the number of members of the study answers the first question which is:

How are the individuals of the sample study in the Faculty of Medicine distributed within the demographic variables? In order to do that, demographic variables levels and the number of students were distributed within these levels, as in the tables (1-34):

Table (1) Classification of the study sample of students of the Faculty of Medicine according to variables of the Mother`s education, and gender

Mother`s education	Gender		Total
	m	f	
High school or below	18	41	59
Community college	17	33	50
Univ. degree & above	57	79	136
Sum	92	153	245

Table (1) shows that the students of the Faculty of Medicine are mostly from families where mothers have a university degree and above. The number of females is much more than that of males.

Table (2):Classification of the study sample of students of the Faculty of Medicine according to variables of the Thinking style & gender.

Thinking style	Gender		Total
	male	female	
Abstract thinking	22	45	67
Concrete thinking	70	108	178
Total	92	153	245

Table (2) shows the domination of concrete thinking among the students of the Faculty of Medicine, especially among females.

Table (3) Classification of the study sample of students of the Faculty of Medicine according to Birth rank & gender

Birth rank		Gender		Total
		M	F	
	first	31	62	93
	middle	38	73	111
	last	23	18	41
Total		92	153	245

Table (3) shows more female students in the Faculty of Medicine of the middle rank in their families, followed by females ranking first in their families.

Table (4) Classification of the study sample of students of the Faculty of Medicine according to variables of the Father`s education & gender.

Father`s education	Gender		Total
	m	f	
High school or below	11	29	40
Community college	12	17	29
Univ. degree & above	69	107	176
Sum	92	153	245

Table (4) shows that most students of the Faculty of Medicine are of families that their parents have a university education and above, an increase in the number of females has been noticed compared with number of males in college.

Table (5)Classification of the study sample of students of the Faculty of Medicine according to variables of the Thinking style & Study level.

The thinking style	Academic Year			Total
	first	third	fifth	
Abstract Thinking	23	27	17	67
Concrete thinking	58	71	49	178
Total	81	98	66	245

Table (5) shows the increase of the number of both students, male and female, in the third year that have concrete thinking; the table shows a decrease in the way of practicing concrete thinking among the students in the fifth year compared with students enrolled in the first year of school.

Table (6) Classification of the study sample of students of the Faculty of Medicine according to variables of the Personality type & Study level.

Personality Type	Academic Year			Total
	first	third	fifth	
Aggressive	4	6	2	12
Neutral	22	30	18	70
Friendly	54	61	46	161
Total	80	97	66	243

Table (6) shows that the highest pattern of personality type prevailing among the students of the Faculty of Medicine in accordance with the used standards in this study is the friendly type, the table shows that the students in the third year of school are the highest in this category, followed by the students of the first school year, followed in the ranking by students in the fifth school year (Actually, considering percentages, fifth year students would come first (70%) in the friendly behavior, followed by first year students (68%), and the third year students would come last, with (63%) only. The table also shows the small number of students in all three levels with aggressive type, neutral type came in the second place for all the groups.

Table (7) Classification of the study sample of students of the Faculty of Medicine according to variables of Idea about the university & Study level.

The Idea about the university	Academic Year			Total
	first	third	fifth	
Negative	4	24	9	37
Neutral	31	33	18	82
Positive	45	40	39	124
Total	80	97	66	243

Table (7) shows that the highest positive idea about the the university was among the students in the first year and less in the fifth, but generally it shows an increase among students who develop positive ideas towards the university. Again, if we consider percentages of positive idea, fifth year comes first with 59%, then first year, 56%, and last one is the third year, 41%.

Table (8) Classification of the study sample of students of the Faculty of Medicine according to variables of Mother`s education & Study level.

Mother`s education	Academic Year			Total
	fifth	third	first	
High school & below	34	15	10	59
Community college	18	13	19	50
University degree & above	14	70	52	136
Total	66	98	81	245

Table 8 shows that the greatest number is that of students in the third year whose mothers have finished university degree or above, while the least number is that of students in the first whose mothers have high school degree or less.

Table (9) Classification of the study sample of students in the Faculty of Medicine according to variables of the Academic average & Gender

School score	Gender		Total
	m	f	
Low	7	10	17
Average	45	65	110
High	40	73	113
Total	92	148	240

Table (9) shows that females scored higher than male students.

Table (10) Classification of the study sample of students of the Faculty of Medicine according to variables of Birth rank & Academic (college) year

Birth Rank	Academic Year			Total
	fifth	third	first	
first	16	42	35	93
middle	32	38	41	111
last	18	18	5	41
Total	66	98	81	245

Table (10) shows that the highest number of the students of the Faculty of Medicine was for the third year students who have first birth ranking in their families, and the lowest number was for first-year students

whose birth ranking is last in their families.

Table (11) Classification of the study sample of students of the Faculty of Medicine according to variables of the Father`s education & Academic (college) year

Father`s education	Academic Year			Total
	fifth	third	first	
high school & below	29	3	8	40
Community college	13	5	11	29
Univ. degree & above	24	90	62	176
Total	66	98	81	245

Table (11) shows that the highest number was of students in the third year of the Faculty of Medicine whose parents are holding a university degree or above and the lowest number of students in the third year, namely students whose parents got a high school degree or less.

Table (12) Classification of the study sample students of the Faculty of Medicine according to the variables of Gender & Academic year

	Academic Year			Total
	fifth	third	first	
female	42	56	55	153
male	24	42	26	92
Total	66	98	81	245

Table (12) shows the low number of students in the fifth year for males and females compared to the number of students enrolled in the first year of study at the Faculty of Medicine.

Table (13) Classification of the study sample of students of the Faculty of Medicine according to variables of School average & Academic year

School Average	Academic Year			Total
	fifth	third	first	
Low	6	7	4	16
Average	46	59	5	110
High	13	29	71	113
Total	65	95	80	240

Table (13) shows that the highest number of students who have attained high university average were from the first-year students, and the average was low among the fifth year students. The table also shows that the greater the level of the students is the lower the achievement. This shows clearly in the fifth year students' grades.

Table (14) Classification of the study sample of students of the Faculty of Medicine according to variables of Personality type & Gender.

Personality Type	Gender		Total
	male	female	
aggressive	5	7	12
neutral	26	44	70
friendly	60	101	161
Total	91	152	243

Table (14) shows more friendly and neutral female students compared to the numbers of friendly and neutral male students.

Table (15) Classification of the study sample of students of the Faculty of Medicine according to variables of Idea about the university & Gender

Idea about the university	Gender		Total
	m	f	
negative	18	19	37
neutral	26	56	82
positive	47	77	124
Total	91	152	243

Table (15) shows that the largest number of female students have positive thoughts, followed by neutral ideas toward the university. The table also shows that female students are more than male students.

Table (16) Classification of the study sample of students of the Faculty of Medicine according to variables of School average & Birth rank.

Rank	School score			Total
	High	Average	Low	
First	49	38	5	92
Middle	55	47	5	107
Last	9	25	7	41
Total	113	110	17	240

Table (16) shows that the highest number of students with high school score was from the middle rank of their families, as well as least number of low achievement.

Table (17) Classification of the study sample of students of the Faculty of Medicine according to variables of School average & Father`s education.

Father`s education	School score			Total
	High	Average	low	
High school & below	16	17	7	40
Community college	9	17	2	28
University degree & above	88	76	8	172
Total	113	110	17	240

Table (17) shows that students with high school score are the students whose fathers hold a university degree or above.

Table (18) Classification of the study sample of students of the Faculty of Medicine according to variables of School average & Mother`s education.

School average	Mother`s education			Total
	high	Average	low	
High school & below	20	29	9	58
Community college	20	25	4	49
University degree & above	73	56	4	133
Total	113	110	17	240

Table (18) shows that students with high school average are the students whose mothers hold a university degree or above.

Table (19) Classification of the study sample of students of the Faculty of Medicine according to variables of School score & The Thinking style.

Thinking style	School score			Total
	High	Average	Low	
Abstract thinking	32	28	6	66
Concrete thinking	81	82	11	174
Total	113	110	17	240

Table (19) shows that most students who use the method of concrete thinking got high or average scores, while the lowest number of students with average achievement are those with abstract thinking.

Table (20) Classification of the study sample of students of the Faculty of Medicine according to variables of School score & Personality type.

Personality type	School score			Total
	High	Average	Low	
Aggressive	4	5	3	12
Neutral	32	29	8	69
Friendly	76	76	6	158
Total	112	110	17	239

Table (20) shows that the highest number of students of the Faculty of Medicine was of the students with high and medium academic achievement, was from those who have friendly personality type.

Table (21) Classification of the study sample of students of the Faculty of Medicine according to variables of School score & Idea about the university.

Idea about university	School score			Total
	High	Average	low	
Negative	13	18	5	36
Neutral	38	36	7	81
Positive	61	58	4	123
Total	112	112	16	240

Table (21) shows that the students in the College of Medicine who formed positive attitudes and ideas about the university and themselves are those with high academic scores.

Table (22)Classification of the study sample of students of the Faculty of Medicine according to variables of Birth rank & Father`s education.

Father`s education	Birth Rank			Total
	Last	Middle	First	
High school & below	11	20	9	40
Community college	6	12	11	29
University degree & above	24	79	73	176
Total	41	111	93	245

Table (22) shows that the most students are those with middle ranking in their families; and their parents hold a university degree or above. The least number was of students with last ranking in their families and had parents who hold community college degree.

Table (23)Classification of the study sample of students of the Faculty of Medicine according to variables of Birth rank & Mother`s education.

Mother`s education	Birth Rank			Total
	Last	Middle	First	
High school & below	19	28	12	59
Community college	11	19	20	50
University degree & above	11	64	61	136
Total	41	111	93	245

Table (23) shows that most students have middle birth rank in their families, and their mothers hold university degree or above.

Table (24)

Classification of the study sample of students of the Faculty of Medicine according to variables of Birth rank & the Thinking style.

Thinking style	Birth Rank			Total
	first	middle	last	
Abstract thinking	10	32	25	67
Concrete thinking	31	79	68	178
Total	41	111	93	245

Table (24) shows that most students have middle rank in their families and use concrete thinking, followed by students with last rank in their families and use concrete style of thinking.

Table (25) Classification of the study sample of students of the Faculty of Medicine according to variables of Personality type & Birth rank.

	Birth Rank			Total
	Last	Middle	First	
Aggressive	3	3	6	12
Neutral	15	31	24	70
Friendly	23	75	63	161
Total	41	109	93	243

Table (25) shows that students with middle rank in their families were friendlier, followed by the first ranking ones.

Table (26)

Classification of the study sample of students of the Faculty of Medicine according to variables of Idea about the university & Birth rank.

Idea about the university	Birth Rank			Total
	last	middle	first	
negative	8	13	16	37
neutral	15	42	25	82
positive	17	55	52	124
Total	40	110	93	243

Table (26) shows that students with middle ranking in their families have more positive attitudes towards the university, followed by those with first ranking in their families.

Table (27) Classification of the study sample of students of the Faculty of Medicine according to variables of Personality type & Father`s education.

Personality type	Father`s education			Total
	University degree & above	Community college	High school & below	
Aggressive	9	0	3	12
Neutral	53	8	9	70
Friendly	113	21	27	161
Total	175	29	39	243

Table (27) shows low number of students with aggressive personality type, while students of fathers holding a university degree or above are more inclined toward friendly personality type.

Table (28) Classification of the study sample of students of the Faculty of Medicine according to variables of Idea about the University & Father`s education.

Idea about the university	Father`s education			Total
	University degree &above	Community college	High school & below	
Negative	28	4	5	37
Neutral	61	10	11	82
Positive	86	15	23	124
Total	175	29	39	243

Table (28) shows that the students whose parents have a university degree or above show positive ideas about the university, while the students who have parents holding community college degree have negative attitudes and ideas toward the university.

Table (29)Classification of the study sample of students of the Faculty of Medicine according to variables of the Thinking Style & Mother`s education.

Thinking style	Mother`s education			Total
	University degree &above	Community college	High school & below	
Abstract thinking	35	16	16	67
Concrete thinking	101	34	43	178
Total	136	50	59	245

Table (29) shows that the students whose mothers have a university degree and above have demonstrated high scores in the use of concrete ways of thinking, followed by students whose mothers have high school or below qualification, and also used the concrete ways of thinking.

Table (30)

Classification of the study sample of students of the Faculty of Medicine according to variables of Personality type & Mother`s education.

Personality type	Mother`s education			Total
	University degree &above	Community college	High school & below	
Aggressive	7	2	3	12
Neutral	36	17	17	70
Friendly	92	30	39	161
Total	135	49	59	243

Table (30) shows that the students whose mothers have university degree and above were friendlier, followed by students whose mothers have high school and below qualification.

Table (31)Classification of the study sample of students of the Faculty of Medicine according to variables of the Thinking style & Father`s education.

Father`s education	Thinking style		Total
	concrete thinking	Abstract thinking	
High school & below	43	16	59
Community college	34	16	50
University degree & above	101	35	136
Total	178	67	245

Table (31) shows that most students have concrete thinking, and are those whose parents have university degree and above, followed by students whose parents hold high school degree and below.

Table (32) Classification of the study sample of students of the Faculty of Medicine according to variables of Personality type & the Thinking style.

Personality type	Thinking style		Total
	Concrete	Abstract	
Aggressive	6	6	12
Neutral	53	17	70
Friendly	119	42	161
Total	178	65	243

Table (32) shows that most students from the Faculty of Medicine are those who use concrete ways of thinking and have friendly personality type, followed by students who use the methods of abstract thinking and their personality type is friendly.

Table (33) Classification of the study sample of students of the Faculty of Medicine according to variables of Idea about the university & the Thinking style.

Idea about university	Thinking style		Total
	Concrete thinking	Abstract thinking	
Negative	22	15	37
Neutral	60	22	82
Positive	95	29	124
Total	177	66	243

Table (33) shows that the highest number of students with the most positive tendency about the university are those with concrete thinking, followed by students who have a neutral thought and ideas about the university and also have concrete thinking.

Table (34)Classification of the study sample of students of the Faculty of Medicine according to variables of Personality type & the Idea about the university.

Idea about the university	Personality type			Total
	Friendly	Neutral	Aggressive	
Negative	21	11	5	37
Neutral	48	29	5	82
Positive	92	29	2	123
Total	161	69	12	242

Table (34) shows that most students hold a positive idea about the university with friendly personality type, followed by the neutral students.

A graphical representation that shows the distribution of the study sample of students from the Faculty of Medicine, according to demographic variables:

Figure (1): The distribution of the study sample according to the gender variable

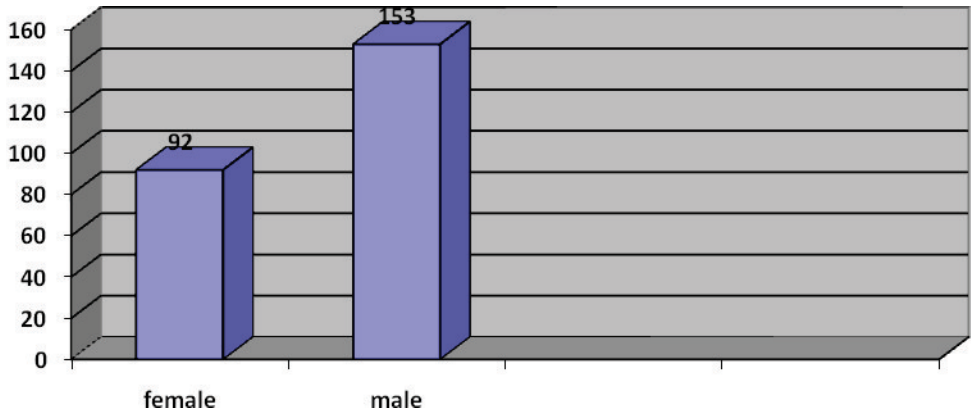


Figure (2): The distribution of the study sample according to birth rank

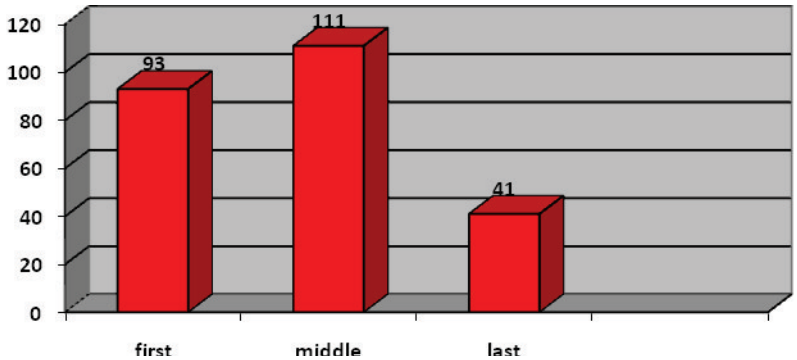


Figure (3): The distribution of the study sample according to the thinking style

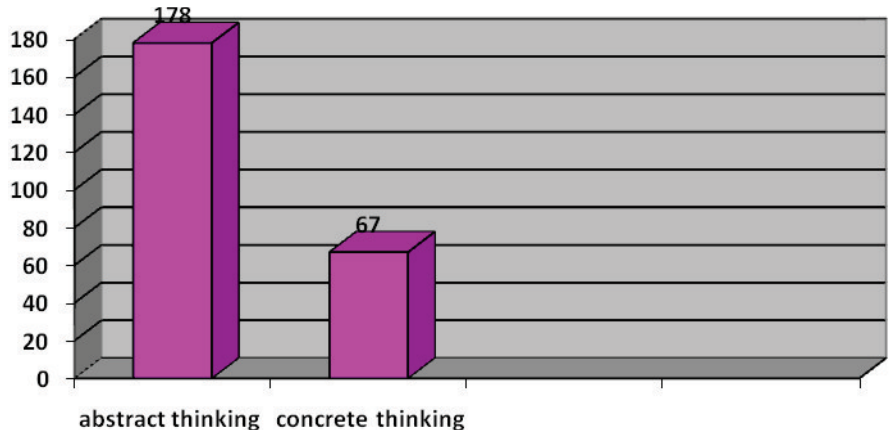


Figure (4): The distribution of the study sample according to the variables of the thinking style and study level

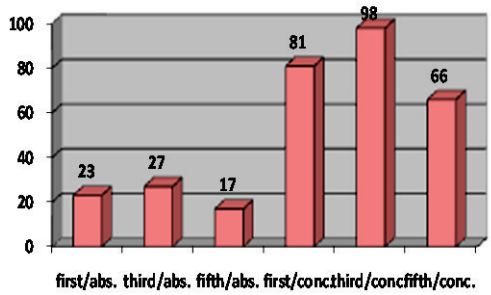


Figure (5): The distribution of the study sample according to the variables of father`s education and student's gender

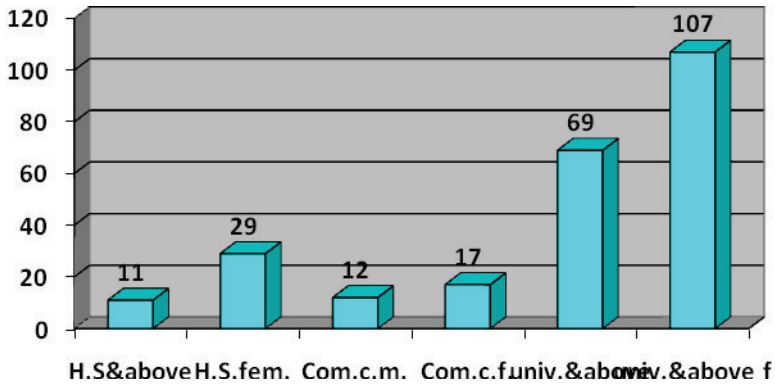


Figure (6): The distribution of the study sample according to the variables of the school year and personality type

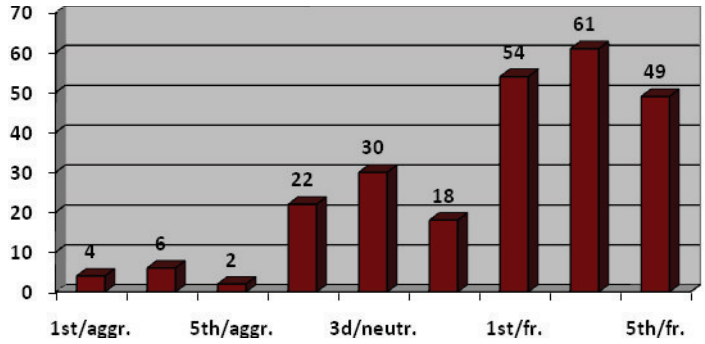


Figure (7): The distribution of the study sample according to the variables of the school year and the idea about the university

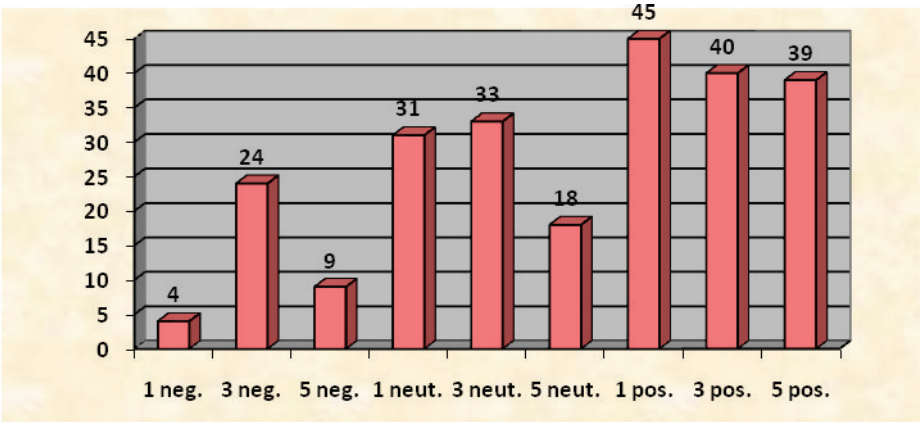


Figure (8): The distribution of the study sample according to the variables of the school year and mother`s education

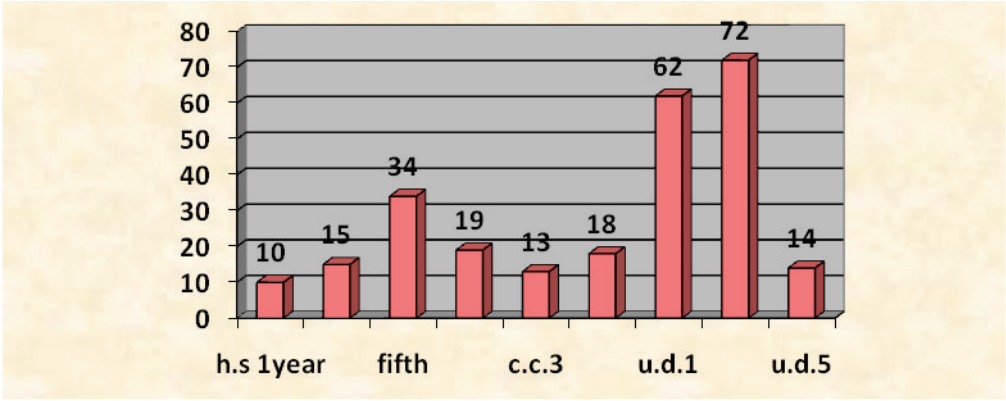


Figure (9): The distribution of the study sample according to the variables of the school year and father`s education

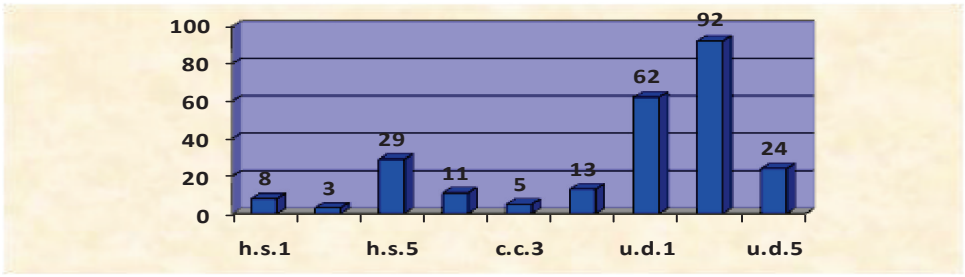
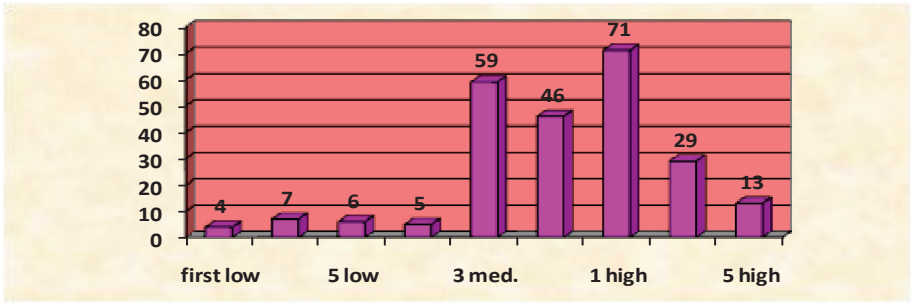


Figure (10): The distribution of the study sample according to the variables of the school year and school score



Now we will answer the second question of the study:
What is the mean scores of cognitive motivation for learning among the students of the Faculty of Medicine in accordance with the interaction between demographic variables?

Mean scores of cognitive motivation for learning among students ranged between (2.14 - 2.54) while the theoretical mean ranges between 1 and 3.

This means that the individuals' mean of the study sample in the scores of cognitive motivation for learning has reached 2.34, while the theoretical mean is 1.50, which means that medical students generally scored higher than the theoretical mean in the motivation for learning in the Faculty of Medicine.

The tables from(35-41) show the arithmetic means and standard deviations of the bilateral interactions,

which have the number of cells of demographic variables for individuals more than (10) members of the students of the Faculty of Medicine at the University of Jordan.

Table (35)The arithmetic mean and standard deviation for students' scores in cognitive motivation for learning in accordance with the interaction between the variables of Gender and the Idea about the university (negative, neutral, and positive).

	Female				Male				Total			
	negative	neutral	positive	Total	negative	neutral	positive	Total	negative	neutral	positive	Total
Arithmetic mean	2.29	2.44	2.54	2.47	2.35	2.38	2.34	2.35	2.32	2.42	2.46	2.43
No.	19	56	77	152	18	26	47	91	37	82	124	243
Standard deviation	0.29	0.43	0.30	0.36	0.31	0.33	0.39	0.36	0.30	0.40	0.35	0.36

Table (35) shows that the highest arithmetic mean of cognitive motivation to learn was for female students who have a positive idea about the university, followed by those who have neutral idea about the university, the lowest mean of cognitive motivation to learn was of female students who have negative idea about the university, their mean was 2.29.

Table (36) The arithmetic mean and standard deviation for students' scores in cognitive motivation for learning in accordance with the interaction between the variables of Gender and the Study Level

	Female				Male				Total			
	1st	3d	5th	Total	1st	3d	5th	Total	1st	3d	5th	Total
Arithmetic mean	2.48	2.41	2.53	2.47	2.21	2.38	2.40	2.34	2.39	2.40	2.49	2.42
No.	55	56	42	153	26	42	24	92	81	98	66	245
Standard deviation	0.42	0.36	0.27	0.36	0.53	0.32	0.24	0.38	0.47	0.34	0.27	0.37

Table (36) shows that the highest mean of cognitive motivation to learn was for female students in the fifth school year at the college, the lowest performance mean was for male students in the first school year.

Table (37) The arithmetic mean and standard deviation for students' scores in cognitive motivation for learning in accordance with the interaction between the variables of Gender and Father`s education.

	Female				Male				Total			
	High school & below	Community college	University & above	Total	High school & below	Community college	University & above	Total	High school & below	Community college	University & above	Total
Arithmetic average	2.49	2.51	2.46	2.47	2.27	2.28	2.36	2.34	2.43	2.41	2.42	2042
No.	29	17	107	153	11	12	69	92	40	29	176	245
Standard deviation	0.36	0.28	0.37	0.36	0.48	0.49	0.35	0.38	0.40	0.39	0.36	0.37

Table (37) shows that the highest mean of cognitive motivation for learning among students of the Faculty of Medicine, was for female students whose fathers hold (Community College) diploma, as for the lowest score it was for the performance of male students whose fathers hold a university degree or above.

Table (38) The arithmetic mean and standard deviation for students' scores in cognitive motivation for learning in accordance with the interaction between the variables of Gender and Mother`s education.

	Female				Male				Total			
	High school & below	Community college	University & above	Total	High school & below	Community college	University & above	Total	High school & below	Community college	University & above	Total
Arithmetic average	2.47	2.48	2.46	2.47	2.45	2.14	2.36	2.34	2047	2.37	2.42	2042
No	41	33	79	153	18	17	57	92	59	50	136	245
Standard deviation	0.38	0.35	0.36	0.36	0.26	0.51	0.35	0.38	0.34	0.44	0.36	0.37

Table (38) shows that the highest mean of cognitive motivation for learning among students of the Faculty of Medicine, was for female students whose mothers hold (Community College) diploma, as for the male students, the highest performance was for students whose mothers have high school degree and below, the table shows the increase of the arithmetic mean of cognitive motivation for learning for both male and female students whose mothers hold high school diploma and below.

Table (39) The arithmetic mean and standard deviation for students' scores in cognitive motivation for learning in accordance with the interaction between the variables of Thinking style & The Idea about the university.

	Abstract thinking				Concrete thinking				Total			
	negative	neutral	positive	Total	negative	neutral	positive	Total	negative	neutral	positive	Total
Arithmetic average	2.19	2.40	2.50	2.39	2.41	2.43	2.45	2.44	2.32	2.42	2.46	2.43
No.	15	22	29	66	22	60	95	177	37	82	124	243
Standard deviation	0.33	0.53	0.33	0.42	0.24	0.34	0.36	0.34	0.30	0.40	0.35	0.36

Table (39) shows that the highest performance was that of students with abstract thinking, who hold positive ideas about the university. As for those with concrete thinking, the highest performance of the cognitive motivation for learning in the Faculty of Medicine was also for those who have positive ideas about the university.

Table (40) The arithmetic mean and standard deviation for students' scores in cognitive motivation for learning in accordance with the interaction between the variables of Gender & The school achievement (average).

	female				male				Total			
	low	medium	high	Total	low	medium	high	Total	low	average	high	Total
Arithmetic mean	2.20	2.45	2.53	2.47	2.23	2.38	2.31	2.34	2.21	2.42	2.45	2.42
No	10	65	73	148	7	45	40	92	17	110	113	240
Standard deviation	0.47	0.37	0.31	0.36	0.33	0.31	0.45	0.38	0.40	0.34	0.38	0.37

Table (40) shows that the highest performance of cognitive motivation for learning in the Faculty of Medicine is that of female students who earned high academic average, while the highest degree of performance of cognitive motivation for learning for male students have medium school average.

Table (41)The arithmetic mean and standard deviation for students' scores in cognitive motivation for learning in accordance with the interaction between the variables of Gender & Thinking style.

	female			male			Total		
	abstract	concrete	Total	abstract	concrete	Total	abstract	concrete	Total
Arithmetic mean	2.42	2.49	2.47	2.27	2.36	2.34	2.37	2.44	2.42
No.	45	108	153	22	70	92	67	178	245
Standard deviation	0.45	0.31	0.36	0.44	0.36	0.38	0.45	0.34	0.37

Table (41) shows that the highest degree of performance of cognitive motivation for learning according to thinking style was that of female students who exhibit concrete thinking; similarly, the highest degree of performance of cognitive motivation for learning for male students was for those who have concrete thinking.

In order to achieve the objective of the study represented in answering to the third question, namely: What is the impact of bilateral demographic variables interactions on the scores of the students of the Faculty of Medicine in the cognitive motivation to learn?

Bivariate analysis has been conducted (2ANOVA) to examine the effect of bilateral interactions of gender, school year, school average, birth rank, father`s and mother`s education, thinking style, idea about the university, and personality type on the students abilities (scores) in cognitive motivation to learn, by using bivariate analysis, as shown in table (42). Tables (35-41) show the mean and standard deviation of the bilateral interactions between variables, which has the number of individuals in the interactions cells more than 10.

Table (42)Analysis of bivariate to examine the interaction between variables on student's abilities (degrees or scores) in the cognitive motivation to learn.

	Sum of squares	Degrees of Freedom	Squares average	Value of F	Significance level
Gender	0.082	1	0.082	0.685	0.409
School (academic) year	0.326	2	0.163	1.361	0.259
School average	0.844	2	0.422	3.523	0.013
Birth rank	0.103	2	0.051	0.429	0.652
Father`s education	0.083	2	0.041	0.345	0.709
Mother`s education	0.524	2	0.262	2.186	0.115
Thinking style	0.142	1	0.142	1.183	0.278
Idea about the university	0.602	2	0.301	2.512	0.084
Personality type	0.448	2	0.224	1.871	0.157
Gender*school average	0.240	2	0.120	1.000	0.370
Gender*thinking style	0.075	1	0.075	0.625	0.430
School average* thinking style	0.204	2	0.102	0.850	0.429
Gender*birth rank	0.043	2	0.022	0.181	0.853
Gender*idea about the university	0.244	2	0.122	1.019	0.363
School year*gender	0.038	2	0.019	0.158	0.854
Gender*father`s education	0.120	2	0.060	0.503	0.606
Gender*mother`s education	0.587	2	0.294	2.451	0.089
Thinking style*Idea about the university	0.742	2	0.371	3.098	0.047
Error	24.446	204	0.120		
Total	30.832	237			

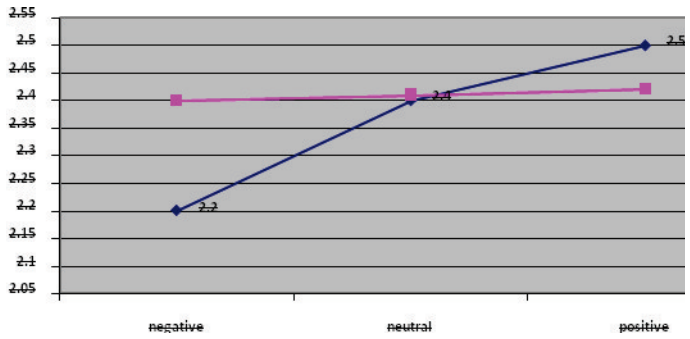
The results in the previous table (42) show the following:

There are statistically significant differences in the degree of cognitive motivation according to student`s school average, the value F = 3.523, Toki`s test for comparative dimensions shows that the source of this difference was between students with low achievement with a mean score of 2.21 and those with high achievement, with a mean score of 2.45.

The reaction between the level of thinking and the idea about the university has an impact on the degree of cognitive motivation for students. It shows in the mediums and the figure below that students with concrete thinking and positive idea have a higher average of cognitive motivation than students with abstract thinking and positive idea about the university - Whereas students with concrete thinking and a negative or neutral idea about the college had a lower average than students with abstract thinking and a negative or neutral idea about the college.

No other effect of the other bilateral interactions was shown on the degree of cognitive motivation for medical students.

Figure (12) Arithmetic mean for the degree of cognitive motivation according to thinking style and the idea about the university.



Discussion and recommendations:.

The need for the study of personal factors affecting the learning of medical students in the Faculty of Medicine arose due to the fact that they are a rare sample that is hard to obtain globally. There are very few

students who could come to answer the questions, or can spend an hour for the researcher in order to explore the factors in a preliminary study, and then conduct a study to investigate the personal factors.

It is also not easy for medical students to have confidence in researchers from other areas as it is the case in this study. There is a need for vigorous effort required from the researcher to obtain the confidence of tested students and have their proper response to the measure tools, which takes at least an hour.

The consultancy (idea) that drove the researcher to conduct a sample survey at the Jordan University, and to review the related studies in universities world wide of Medical students, as these represent the students who attain the highest grades in high school examinations, either the Jordanian "Tawjihi" or equivalent world tests. Recognizing these demographic variables and personality variables most pertinent to them can push theorists, researchers and university presidents and directors to plan for these students that require high care and costly services and rehabilitation.

The availability of such results can direct the teachers, at the Faculty of Medicine, and the administrators and planners in the university, to the possibility of providing some of the characteristics and develop them among the students of other colleges to achieve better academic results, and that this could contribute to improve the adaptation of the students and to exploit their potential in learning, and character building.

The research tried to answer three questions:

The first question is about demographic characteristics of the students of the Faculty of Medicine, it has been shown that these students have more of concrete thinking, and this method of concrete thinking was associated with high achievement, in addition to having parents of high level of education, who hold a first university degree and above., whether it is from the father's or mother`s side , and their personality is friendly , which is motivated by the love of people, and respect for their right to express themselves, assuming goodwill as a property of individuals, listen to others, respect and appreciate them, and believing that people are smart, and having a sense of friendliness and friendship to others, and low aggressive trends towards university (Anderson, 2006).

The results also show that medical students carry positive ideas about the university, especially in the first year of study, and they feel proud about competencies and leadership available in the Faculty of Medicine. The results also show that medical students perceive their college as a place for outstanding minds which leave their imprint in the society, and that they are like a gift to their homeland, All this has a significant impact on their personalities and basically pushes them towards excellence and creativity, On the other hand, we find from the study statistics that these students show low levels of negative thoughts towards the university and education, in addition to lack of skepticism about the capabilities of their teachers at the college (Weiner, 2005).

The results of the current study show that the students 'level of cognitive motivation for learning is high; this has been proved by considering their high degree in cognitive motivational ability, this might be due to students personal and demographic characteristics, and the method of selection of the students of the Faculty of Medicine: they have the highest high school averages. This shows that high motivation of students may be also associated with their achievement at the university as it shows in the case of the fifth year students.

These results coincided with studies reviewed previously, which assumed that the choices of students in foreign universities are associated with their high expectations of success and achievement (Schommer, 1993; walker & Greene, 2009; Khan, 2009).

As for the second question on the mean degrees of cognitive motivational abilities for learning among students and their interactions with demographic variables, the results show higher grades of cognitive motivational learning = (2.14 - 2.54) degree.

This means that most of the students of the Faculty of Medicine have demonstrated higher cognitive motivation abilities than the theoretical level, which is (1.5) degree, which means all three cognitive motivational characteristics measured in the scale of motivation applied in this study converge for the current students of the Faculty of Medicine at most of their personal and demographic variables.

The study also shows that the students ideas and perceptions about the university were high and above-average, i.e., they appeared positive, and they tend to spend their time at the university, and enjoy it. It also shows that students with concrete thinking abilities have high cognitive motivational degrees or abilities to learn. This explains the integration of students at work throughout the day in the laboratory, the library, or during their time of study.

It has been possible to say that the friendly personal style, concrete thinking style, and positive ideas and beliefs about the university are personal factors associated with high thinking abilities as shown by measurements built to test and measure these variables. This was done according to students' estimations, in order to classify them according to the specific levels of the proposed variables.

These results agree with the theory of cognitive motivation for learning, and with its reasoning which assumes that motivated students get high grades; and that students who have positive ideas and friendly personal style and high academic average have high cognitive motivation (Weiner, 2005).

The education of the parents could also have an effect; since they represent the environment that affects their children; and that applies especially to medical students during their upbringing, as parents' behavior, culture and interactions with their children could have a positive influence in building highly professional expectations, such as those in the medical profession. This parents' impact can happen when they describe the doctor's image, the society's expectations of him, and his social status. This contributes to increasing the students' motivational degrees to learn, and produce successful outcomes. These results coincide with the theoretical literature provided by Wiener in his studies and research, which were summarized in his book: Motivation. (Weiner, 2005).

As for the third question on the variables of gender, school year, academic average, birth rank, father and mother`s education, thinking style, the idea about the university, and the personality style, and their interactions, the results showed there are statistically significant differences of the interactions of the academic average, the thinking style and the idea about the university, which means that there are significant differences of variables and the levels of cognitive motivation to learn; and that they can be used to understand the effects on students' cognitive motivation to learn in the Faculty of Medicine, according to the independent variables levels identified in the study. No previous studies have been made in this field.

This confirms the importance of the study of the independent factors at different levels s, as to know the students' demographic realities, and to predict their abilities and degrees in cognitive motivation for learning and achievement. This is what this study has added, compared to other studies.

Recommendations:

Based on the results of the current research the following we were able to reach the following recommendations:

1- Knowing and identifying the personal characteristics and the various demographic variables of the individual contribute in identifying the degrees of cognitive motivation for learning among the students of the Faculty of Medicine.

2- The achievement of the students of the Faculty of Medicine and their success can be identified using a scale of cognitive motivation for learning, the demographic variables and personal characteristics.

3- The cognitive motivational abilities of the students of the Faculty of Medicine can be identified by using other measures, such as knowing of the ideas and variables of the students, their level of thinking, and their personality style measured by specific standards designed especially for this purpose.

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