

# University Students' Cognitive Resilience

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## Abstract

The current study aims to determine the level of cognitive flexibility among university students, as well as to identify differences in cognitive flexibility based on the gender variable. The researcher employed a descriptive methodology with exploratory and comparative approaches in this study. The study was conducted on a sample of 123 university students from the College of Social and Human Sciences at Hamma Lakhdar University in El Oued. The participants were selected using simple random sampling. Data collection tools included the "Cognitive Flexibility Scale" developed by Abdelwahab (2011). Statistical methods such as the mean and T-test were employed. The current study yielded the following results:

- There is an average level of cognitive flexibility among university students.
- There are statistically significant differences in cognitive flexibility among university students based on the gender variable.

**Keywords:** cognitive flexibility, university student.

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## 1- Problem Statement:

The university stage is considered a crucial and fundamental phase in an individual's life, where they strive to achieve their goals and aspirations. It is through this stage that their future life and academic and professional path are determined. The primary objective of this stage is for the student to reach the desired state of learning, which entails mastering knowledge and skills that they can apply effectively in real-life situations and their daily lives. In order for the student to successfully pass through this stage, they must exert effort, perseverance, and bear the academic burdens and university requirements, in addition to facing problems and pressures in their daily life. All of this requires an appropriate level of cognitive flexibility. The university student needs to learn thinking skills. In order for the student to successfully pass through this stage, they must exert effort, perseverance, and bear the academic burdens and university requirements, in addition to facing problems and pressures in their daily life. All of this requires an appropriate level of cognitive flexibility.

The university student needs to learn thinking skills to adapt to new circumstances and think innovatively in order to effectively deal with them. Additionally, they require self-organization of their skills and the ability to achieve their set goals. This stage necessitates thinking, organization, and cognitive flexibility to achieve academic goals and outline future plans. Therefore, the student needs to acquire the skill of cognitive flexibility in thinking (Sweed, 2003). Cognitive flexibility is considered a mental ability that helps individuals achieve mastery. Meeusen asserts that cognitive flexibility, like other cognitive strategies, is an important tool for distinguishing between individuals in their abilities and differentiating one person from another in their approach to dealing with various life situations and problems. It is also fundamental in interpreting many aspects related to a person's personality. Cognitive flexibility plays an active role in determining response patterns and adaptation strategies in different situations, whether in problem-solving or in an individual's interaction with social situations (Al-Kubaisi, 1989, p. 33). Learning the skill of cognitive flexibility involves increasing options and allowing students to explore different perspectives. It also entails changing their way of thinking from time to time and transitioning from conventional and habitual thinking to perceiving things in diverse and varied ways (Saadah, 2003). Some researchers argue that cognitive flexibility is positively influenced by high motivation and clear vision. Developing high levels of cognitive flexibility in students makes them more capable of effectively dealing with problem-solving compared to others who lack this ability. This cognitive process liberates their mental processing resources to adapt to new situations. Therefore, it can be asserted that cognitive flexibility skill and its presence are essential for university students. As the student enters this stage, they are capable of thinking differently from the preceding stage. They embark on a new phase characterized by specialization, directing themselves towards a specific field of knowledge that requires cognitive flexibility in their thinking. Thus, this study aims to assess the level of cognitive flexibility among university students.

## **2- Study Questions:**

1. What is the level of cognitive flexibility among university students?
2. Are there statistically significant differences in cognitive flexibility among university students based on the gender variable?

## **3- Study Hypotheses:**

1. University students possess a high level of cognitive flexibility.
2. There are statistically significant differences in cognitive flexibility among university students based on the gender variable.

## **4- Study Objectives:**

Any scientific research or study aims to achieve specific objectives. The objectives of this study are:

1. To identify the level of cognitive flexibility among university students.
2. To explore the differences in cognitive flexibility among second-year undergraduate students based on the gender variable.
3. To contribute to enriching the knowledge base and adding new insights to scientific research.

#### **5- Significance of the Study**

The significance of this study is evident in the following points:

1. This study helps highlight the importance of cognitive flexibility by examining its characteristics, utilization, and application in the field of specialization.
2. It contributes to increasing the effort, initiative, and perseverance in the academic field among specialized students, enhancing their abilities to process information, which provides insights into their behaviors.

#### **6- Procedural Definitions for the Study:**

**Cognitive Flexibility:**

It refers to the student's ability to construct, modify, and process information in specific and unexpected academic situations. It is the degree of cognitive flexibility attained by the university student on the applied cognitive flexibility scale used in the study.

3. Furthermore, this study gains importance through its obtained results, which naturally serve as a new addition to the field of scientific research.

#### **7- Method of the Study:**

In this study, we adopted a descriptive methodology utilizing both exploratory and comparative approaches.

#### **8- Study Limitations:**

The limitations of this study are as follows:

**Spatial limitations:** The study community is limited to the University of Shuhada Hama Lakhder in the Wadi region.

**Human limitations:** This study was conducted on second-year undergraduate students in the Faculty of Social and Human Sciences at the University of Shuhada Hama Lakhder in the Wadi region.

**Temporal limitations:** Data collection for this study took place during the academic year 2022-2023, specifically between the months of December and March.

#### **9- The Community and Sample of the Study:**

According to "Al-Assaf," the original community of the study is everything on which we can generalize the research results, whether individuals, books, or schools (Al-Assaf, 1995, p. 90-91).

Due to the possibility of applying the study to all individuals in the study community, a random

sample was relied upon as the best method for data collection. The current study community consists of 123 out of 526 undergraduate students (second-year) in the Faculty of Social and Human Sciences at the University of Shuhada Hama Lakhder in the Wadi region.

**10- Study Instruments:**

The data collection for the field study relied on the following instrument:

"Cognitive Flexibility Scale by Abdulwahab (2011)":

This scale consists of 30 items, and respondents provide their answers using the following alternatives: (Suitable/Not Suitable/Clear/Not Clear). The results are scored as follows: 4/3/2/1.

**11- Psychometric Properties of the Study Instrument:**

1. Validity: It is the extent to which the test or instrument measures what it is intended to measure (Malham, 2002, p. 266).

2. Internal Consistency Reliability: The internal consistency reliability of the scale was verified by calculating the Pearson correlation coefficient between the scale items and the total score of the scale using the statistical software SPSS version 22.

The following table illustrates the correlation coefficients between each item and the total score of the scale.

**Table (1):** correlation coefficients between each item and the total score of the scale.

Item numbers	Correlation value	Significance level	Item numbers	Significance level	Significance level
01	**0.373	0.000	17	**0.594	0.000
02	**0.502	0.000	18	**0.546	0.000
03	**0.424	0.000	19	**0.566	0.000
04	**0.501	0.000	20	**0.543	0.000
05	**0.540	0.000	21	**0.486	0.000
06	**0.532	0.000	22	**0.543	0.000
07	**0.492	0.000	23	**0.585	0.000
08	**0.512	0.000	24	**0.545	0.000
09	**0.482	0.000	25	**0.528	0.000
10	**0.641	0.000	26	**0.579	0.000
11	**0.571	0.000	27	**0.446	0.000
12	**0.504	0.000	28	**0.537	0.000
13	**0.500	0.000	29	**0.565	0.000
14	**0.409	0.000	30	**0.555	0.000
15	**0.518	0.000			
16	**0.559	0.000			

The results of the previous table indicate that all Pearson correlation coefficients between the scale items and the total score of the scale are statistically significant at a significance level ranging from 0.005 to 0.001. The minimum correlation coefficient value was 0.373, while the maximum

value was 0.641. Therefore, all scale items exhibit internal consistency with the total score of the scale, confirming the internal consistency reliability of the scale.

Based on the results of the internal consistency from the previous table, it becomes evident that the study instrument (the scale) demonstrates high validity, which allows us to apply it to the entire sample.

Reliability: Reliability refers to the consistency of obtaining the same results when the test is administered multiple times under similar conditions (Abu Hawij, 2002: 165). In the current study, the stability of the scale was measured using the Cronbach's alpha method.

• Reliability using Cronbach's Alpha:

Cronbach's alpha coefficient is considered one of the most important measures of internal consistency for a test. This coefficient links the overall stability of the test to the stability of its individual items. An increase in the stability of the items relative to the total variance leads to a decrease in the reliability coefficient (Maamria, 2007: 148).

Reliability of the Cognitive Flexibility Scale in this study was estimated from the survey data using the Cronbach's alpha method, as shown in the following table:

Table (2): Shows the stability of the cognitive elasticity scale by the Cronbach alpha method.

Sample	Number of items	Alpha Cronbach
123	30	0,904

Based on the results in the table, it is evident that the Cronbach's alpha coefficient for the Cognitive Flexibility Scale is 0.904, indicating that the scale exhibits high stability or reliability.

12- Statistical Methods:

- Mean: It is used to calculate the average of a set of numerical values.
- t-test: A statistical test used to compare the means of two groups and determine if they are significantly different.

13- Presentation, Analysis, and Discussion of the First Hypothesis:

The first hypothesis states that "There is a high level of cognitive flexibility among university students."

Below is a table showing the results of the sample individuals in the cognitive flexibility variable, categorized according to the levels of the cognitive flexibility scale.

Table (3): Cognitive Flexibility Levels.

Flexibility	Domain	Iteration	Percentage
low	32 - 63	05	04 %
medium	64 - 95	78	63%
High	96 - 128	40	33%
Total	32 - 128	123	100%

Based on the previous table, it is evident that the level of cognitive flexibility among university students falls within the average range. The majority of the sample individuals obtained scores in the average level.

Below, we present the overall results of the sample individuals in the cognitive flexibility variable.

**Table (4):** Level of flexibility among respondents.

Total Scores	Arithmetic mean	Domain	Level
12139	98.69106	96 - 128	High

Therefore, the hypothesis in the current study was not supported.

The results from Tables 3 and 4 indicate that the level of cognitive flexibility among university students was average. This can be attributed, in our perspective, to the fact that when university students experience higher psychological pressure, their cognitive flexibility tends to be higher. This is because in the absence of problems or situations that require the individual to think and find solutions, the level of cognitive flexibility remains at an average or lower level. As Jamal al-Din al-Afghani once said, "Crisis gives birth to determination, improvement occurs only in adversities " The student's failure to reach a mature stage may be due to emotional imbalance and the inability to organize their thoughts. According to a study by Al-Dossouki (2021), the importance of cognitive flexibility emerges as a cognitive function that helps individuals change and diversify their mental approaches to different matters, by analyzing difficulties into manageable factors and utilizing them to find alternative solutions.

**14- Presentation, Analysis, and Discussion of the Second Hypothesis:**

The second hypothesis states that "There are statistically significant differences in cognitive flexibility among university students based on gender."

Below is a table showing the results of the sample individuals (males and females) in the cognitive flexibility variable.

**Table (5):** Results of Sample Members (Males - Females) in the Cognitive Flexibility Scale.

Cognitive flexibility		Sample size	Arithmetic mean	The difference between the two averages
Sex	Male	22	110.2727	14.11
	Females	101	96.1683	

The previous table indicates that the mean average for females is lower than the mean average for males, with a difference of 14.11. Therefore, the difference between them is statistically significant. To confirm the statistical significance of the difference between the means of the two groups, the results of the t-test for assessing the significance of differences in cognitive flexibility between the mean scores of males and females are presented below.

**Table (6):** Significance of the Difference in Elasticity by Gender Variable.

e	Sample size	Arithmetic mean	Standard deviation	Value "P"	Significance level "P"	value "T"	Significance level "T"	Resolution
Male	22	110.27	21.26	2.661	0.105	3.533	0.001	function
Female	101	96.17	15.92					

The calculated value of "t" in the previous table is 3.533. Since the significance level is 0.001, which is significantly smaller than 0.05, it is statistically significant. Therefore, it can be concluded that there is a statistically significant difference in cognitive flexibility between the mean scores of males and females. Hence, the second hypothesis in the current study has been confirmed.

The results from Tables 5 and 6 indicate the presence of differences in cognitive flexibility based on the gender variable. This can be attributed to the inherent characteristics of each gender. For example, males tend to exhibit greater flexibility in thinking, problem-solving, and adapting to the natural environment, among others. Their problem-solving approaches are often less complex compared to females. This may be due to the fact that males are considered to have less cognitive complexity in their mental performance and other areas. Furthermore, these differences may arise from the lack of alignment in circumstances, cognitive experiences, and the expected unified progression. This mismatch could contribute to the observed variations and the inability of male and female university students to achieve equal levels of ability, performance, and problem-solving proficiency.

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