

THE PREDICTIVE ABILITY OF THINKING STYLES IN PSYCHOLOGICAL IDENTITY STATES AMONG UNIVERSITY STUDENTS

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Abstract

The study aimed to investigate the predictive ability of thinking styles in psychological identity states among university students, and to identify the prevalent psychological identity states and the level of thinkingJaafar Kamel Al-Rababaah

styles associated with them. To achieve the study objectives, the research was conducted using a descriptive correlational approach. The study sample consisted of (502) male and female students, who were selected randomly from Hashemite University. The Cognitive Abilities Scale of Epstein et al. (1996) was also used, which was developed by Berzonsky et al. (2021). The researchers developed a scale of psychological identity suitable for the Arab environment, after verifying its psychometric properties. The study results indicated that the predominant psychological identity states among university students were identity achievement. The level of thinking styles (analytical vs. intuitive) among university students was high. The results also indicated that analytical and intuitive thinking can be used to predict psychological identity states. The study recommends employing a high level of thinking styles to support the process of adaptation and learning in university life, and conducting studies that address thinking styles and psychological identity states, in addition to other educational and psychological variables, among university students.

Keywords: thinking styles, psychological identity states, university students

INTRODUCTION

Thinking style is a distinct way of processing information. It involves how an individual acquires knowledge, organizes thoughts, forms perspectives and opinions, applies personal values, solves problems, makes decisions and plans, and expresses themselves to others. Thinking styles are described as an individual's tendencies to use specific methods in dealing with various stimuli, which in turn influence decision-making, problem-solving, responses, and outcomes (Freeman et al., 2014). Thinking styles are defined as the set of methods and patterns an individual uses when processing available information, as well as the preferred methods for decision-making, problem-solving,

planning, and expression (Borromeo, 2015). They are also defined as the set of intellectual approaches an individual uses to process available information, in response to problems and situations they encounter (Flanagin et al., 2020). Sternberg (1997) emphasized that thinking styles are preferential in the use of abilities, and do not constitute the abilities themselves. He also emphasized that the compatibility between thinking styles and abilities creates a synergy greater than the sum of its parts. He also emphasized that life choices need to be consistent with thinking styles as well as abilities. He also emphasized that individuals have features of thinking styles, not just one thinking style that is relied upon. It is worth noting that these styles vary across tasks and situations, and individuals differ in their preference for one thinking style over another, as well as the degree of flexibility in using each style. He also emphasized that these styles may vary throughout life, and they are measurable and teachable. Zhang & Sternberg (2002) classified individuals according to their thinking styles into thirteen, and divided them into five main categories, each containing a variety of styles: Form-based styles, which include monarchical, hierarchical, chaotic, and conflicting styles; Function-based styles, which include legislative, executive, and judicial styles; Level-based styles, which include global and local styles; Learning-based styles, such as liberal and conservative styles; and Scope-based styles, such as internal and external styles. Zhang & Huang (2001) emphasized that some cognitive and psychological factors influence thinking styles. Personality factors such as openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism can influence thinking styles. For example, individuals with high openness tend to be more inclined towards creative thinking and exploring new ideas.

In contrast, individuals with high conscientiousness may prefer organized thinking processes that follow specific steps and procedures. Cognitive abilities, including intelligence, information processing methods, memory, and problem-solving skills, may also influence thinking styles. Higher cognitive abilities may lead to more analytical and critical thinking styles. In contrast, lower levels of cognitive abilities may lead to difficulties in problem-solving, information processing, and decision-making, all of which rely on thinking (Zhang, 2002). To be more precise in identifying the thinking styles targeted in this study, a model was adopted that considers two ways of processing information: analytical thinking and intuitive thinking. Measuring the relative degree to which individuals rely on both processes may help understand the acceptance of different types of social communication (Freeman et al., 2014).

Analytical thinking is defined as the use of reason and the ability to understand things and use logic to establish and verify facts. It is rational and logical, and is close to effortful thinking. Intuitive thinking, on the other hand, is defined as the ability to acquire knowledge without the use of strenuous mental abilities. It is similar to an intuition, a gut feeling, or unconscious thinking (Fischbein, 1983). Analytical thinking is a gradual and logical process, typically involving the breakdown of a problem or issue into its parts to understand, address, or solve it. It is also driven by methods, following well-studied models and frameworks (sometimes derived from research). This justifies the association of analytical thinking with the need for knowledge. It reflects an individual's tendency to enjoy engaging in broad cognitive activity and increases their motivation to engage in cognitive activity rather than their actual ability to do so. Individuals with a high need for cognition tend to develop attitudes and take actions based on thoughtful evaluation of the information surrounding them (Green & Jenkins, 2020).

On the other hand, the intuitive thinking style is driven more by gut feeling and confidence derived from experience. It does not follow a specific set of analytical steps, but instead relies on indicators and trends observed from the internal and external environment to reach various decisions. Since no clearly available formulas are followed, it relies on the individual's ability to develop their own internal methods for understanding various issues (Freeman et al., 2014).

Both analytical and intuitive thinking styles have their positives. For example, the analytical style for a given problem is typically open-ended, allowing for the objective contribution of multiple individuals. This enables them to work together based on a generally understood model or framework. The advantage of the intuitive thinking style is that it is fast and efficient, relying on mental and empirical abilities to read meanings in observable patterns and extract solutions quickly (Green & Jenkins, 2020).

As for the downsides of the analytical and intuitive thinking styles, analytical methods often fail to account for the range and levels of variables. Relying on models also means they require specialized knowledge, whereas intuitive methods are highly individualized and rely on tacit knowledge that is not easily shared (Fischbein, 1983). Identifying emotions, feelings, and personal experience, and using concrete examples, can be more effective for individuals who think primarily intuitively, while presenting facts and logical arguments can be more effective for individuals who think analytically. Thus, these two thinking styles are linked by the need for knowledge, which is linked to the exploratory processing associated with impression formation and people's receptivity to different types of information (Freeman et al., 2014).

This is what was presented by the Cognitive-Experiential Self-Theory, led by its primary theorist, Epstein (1990). It proposed that individuals think within two parallel, interactive systems: a rational system and an experiential system. The rational system operates at the conscious level and is characterized by intentionality, analysis, and verbal

expression. The intuitive-experiential system is automatic, subconscious, holistic, associative, nonverbal, and closely linked to affect, with heuristic processing representing the normal state of the experiential system. Behavior and conscious thought are shared functions of these two systems. These two forms of thinking have been theoretically linked and described as essential components of the dual-process model of human cognition (Epstein et al., 1997).

Psychological Identity States

The concept of psychological identity was developed by Erikson in 1968 and is based on the growth and maturity of the personality within the social field. The psychosocial model of personality development presented by Erikson is one of the most important models that explains personality development, as he described it as "the identity of the individual or his two selves," such that the person has an entity distinct from others. He developed this concept and made it a central part of his psychological framework. He spoke about ego identity and defined it as the sense of identity that conceals the ability to experience oneself as something that has continuity and is the same thing, and then act accordingly (Hanoch, 1994).

Erikson (1994) defined psychological identity as the sum of the individual's experiences within the ego identity and the self identity through achieving commitment and realizing social roles. Marcia (1993) defined it as the individual's conscious decisions regarding their profession and life philosophy, and the individual's failure to reconcile these decisions results in identity disorder. Myers (2004) defined it as the level of anxiety and disturbance associated with an individual's attempt to realize the meaning of their existence in life by discovering what suits them in terms of principles, beliefs, goals, and social roles that are meaningful at both the personal and social levels. Digman (2013) defined identity as: the total sum of how the individual responds and interacts with others. It measures the individual's routine characteristics. Marcia (1966) also concluded that there are two dimensions to psychological identity formation, as outlined in Erikson's theory: discovery and commitment. Discovery refers to examining alternatives and options related to the crisis, with the intention of committing to them. Commitment refers to the final, self-determined decision that an individual makes regarding work, religious and political beliefs, social relationships, and the choice of a life partner. Erikson also indicated that the psychological identity states are identity achievement and identity disturbance. However, Marcia added two states that fall between the previous two states: decision suspension and identity closure. The following is a detailed explanation of these four states:

First, the state of identity realization, which means that the individual has gone through a period of crisis and has formed relatively firm commitments regarding a career choice, an ideological belief (whether religious or political), a life partner, a promotional activity, or an appropriate lifestyle. The final choice may be contrary to the parents' wishes, taking their ideological beliefs into account. At this level, the individual reevaluates their past experiences to arrive at solutions that free them to engage in the activity that suits them. The individual may also have achieved their psychological identity in one aspect, but not in all aspects.

Second, the state of suspended decision means that the individual is currently still going through a period of crisis and has no clear commitments. However, they are distinguished from individuals suffering from identity disorder by their active struggle to fulfill their commitments. Parental wishes remain important to them, but they strive to reach a compromise that balances their parents' wishes, societal demands, and their own abilities.

Third: Identity closure refers to people who have not experienced a crisis but have relatively stable commitments. They go along with what others plan, what they mean to them, and their beliefs, or lack thereof, as a result of their adherence to a particular point of view—that of their parents or significant others in their lives. If someone encounters a situation in which parental values are inconsistent with their own, they quickly shift their values and respond to the values of significant others in their life. Fourth: Identity disturbance refers to a person who has not decided on their career choice or ideological beliefs, and is uninterested in and incapable of making decisions in various areas of psychological identity.

Although all individuals share the four identity states, each individual has their own personal traits that they acquire from their environment or inherit from their parents. This is what Piaget emphasized regarding the importance of heredity. He also did not ignore the role of social interaction with other individuals, such as teachers, parents, and peers, as this plays an effective role in the individual's awareness that there are different points of view from his own. This helps him liberate himself from self-centeredness and seeing the world from only one side, because if he remains in the self-centered stage, he will become a rigid person who is fanatical about his opinion only, as he only sees the world from one perspective (Bang, 2009). To investigate the relationship between psychological identity states and thinking styles, Caddell & Clare (2013) conducted a study involving 50 individuals in the United States of America. The identity determination scale and the cognitive and functional abilities scale were administered to them. The results showed that the level of thinking was average, and the prevailing psychological identity states were disturbed identity. The results showed that the relationship between identity states and thinking styles is not direct.

To examine the relationship between psychological identity states and existential thinking style, Nobandegani et al. (2015) conducted a study with a sample of 370 male and female students at Shahid Chamran University in Iran. The results showed a positive correlation between identity states and existential thinking style. Landine (2016) conducted a study aimed at examining the relationship between the crystallization of the concept of self and identity states through thinking style. The study sample consisted of (202) male and female students at a Canadian university. The results showed a statistically significant positive relationship between identity states and rational and experimental thinking styles. To determine the relationship between thinking styles and identity commitment, Kaur & Tung (2019) conducted a study with a sample of 500 male and female students at the University of Punjab, India. The results showed a statistically significant positive relationship between rational thinking style and identity commitment. To reveal the predictive ability of thinking styles on identity states, Berzonsky et al. (2021) conducted a study with a sample of 269 male and female students at South Dakota State University. The results showed that thinking styles, as represented by the need for cognition and belief in intuition, positively predicted identity states. To investigate the predictive ability of thinking styles on identity states among university students, Zhang et al. (2022) conducted a study with a sample of 1,027 male and female students from nine universities in Shanghai, China. The results showed that the analytical thinking style positively predicts identity states, including identity closure, and determining commitment to it. To determine the relationship between thinking styles and identity processing patterns,

The study problem and its questions

The university stage is an important growth stage for students, as it corresponds to late adolescence, which contributes significantly to shaping the various aspects of their personalities through the situations and changes that occur during it, which may lead either to the formation of a normal, integrated personality that enjoys harmony and psychological health, or to a disturbed personality that may resort to abnormal adaptive methods. Through researchers' observations of university students, it was found that some of them follow the pages of celebrities and imitate them, exhibiting behaviors that include the inability of some students to get along with others and with themselves, as well as a lack of thinking styles in some of them. Due to the scarcity of studies investigating the relationship between thinking styles and psychological identity states, and the lack of consensus on the nature of this relationship, it was necessary to conduct a study whose problem is summarized as revealing the predictive ability of thinking styles in relation to psychological identity states. Accordingly, the problem of the study was defined as identifying the predictive ability of thinking styles in relation to psychological identity states among Hashemite University students. Therefore, this study seeks to answer the following questions:

1. What are the predominant psychological identity states among university students?
2. What is the level of thinking styles (analytical, intuitive) among university students?
3. What is the predictive power of thinking styles in determining the predominant psychological identity states among university students?

The Importance of the Study

The importance of the current study lies in its subject, which is to identify the predictive ability of thinking styles in psychological identity states among university students. This importance is evident in its theoretical significance. As this study is one of the rare studies that links these two variables, it is an original contribution in this field, providing new insights into the study variables and benefiting interested researchers and scholars. The results of the study may contribute to employing what will be written from the theoretical literature in explaining the relationship between the variables, which contributes to benefiting from it more comprehensively, and providing recommendations for the results that will result from the study, which will benefit those working in psychological counseling units in universities in building counseling and preventive programs. This study also aims to achieve the following objectives:

1. To identify the prevailing psychological identity states among university students.
2. To identify the level of thinking styles (analytical, intuitive) among university students.
3. To identify the predictive ability of thinking styles in psychological identity states.

The study terms and their operational definitions

Analytical thinking style: Epstein et al. (1996) defined it as the use of reason and the ability to understand things and use logic to establish and verify facts. It is rational and logical, and is close to effortful thinking. It is operationally defined by the score the student obtained on the thinking styles scale.

Intuitive thinking style: Epstein et al. (1996) defined it as the ability to acquire knowledge without using strenuous mental abilities. It is similar to instinctive feeling or unconscious thinking. It is operationally defined by the student's score on a scale of thinking styles.

Psychological identity: "It means the individual's feeling of being able to function as an individual without being closed off from others. This means achieving his uniqueness, strengthening his social roles, reevaluating his

relationships with his world and with others, and directing himself toward specific goals. It is a complex self-image that develops through social interaction." Psychological identity is defined operationally as: the score the student obtained on the psychological identity scale used in this study.

Identity Achievement: This state indicates that the individual has overcome an identity crisis, after a period of practical and active questioning, skepticism, and doubt about the individual's sense of who he is and what he could be, and his success in reaching specific and stable ideological and social commitments (Hanoach, 1994). It is operationally defined by the score the student obtained on the psychological identity scale used in the study.

Identity Diffusion: This condition refers to a person who has no ideological or professional commitments, nor does he even attempt to build these commitments. He is often apathetic and indifferent, and cannot make decisions in any of the various areas of psychological identity.

Identity foreclosure refers to individuals who have not experienced a crisis, yet have relatively stable commitments. They follow what others plan for them or what they mean for them. Their beliefs, or lack thereof, are a result of their parents' particular perspective. Their personality is rigid. If one of them faces a situation in which their parental values are not compatible with their own, they feel threatened (Bourne, 1978).

Moratorium: Suspension of a decision. This means that the individual is currently experiencing a period of crisis and has no clear commitments. However, he is distinguished from individuals with identity disorder by his active struggle to make commitments, i.e., he is preoccupied or concerned with them. Parental desires remain important to him, but he attempts to reach a compromise that balances between his own capabilities, societal demands, and parental desires (Bourne, 1978).

Study boundaries and limitations.

The study's limitations were human: it was limited to students at the College of Engineering at Hashemite University. The spatial limitations were applied within the College of Engineering at Hashemite University. The temporal limitations were the second semester of the 2024/2025 academic year. The study's limitations included the psychometric properties of the instruments used, the study sample, and the method of sample selection.

METHODOLOGY

This study employed a descriptive correlational approach, as it is suitable for the objectives of the current study.

Study Population and Sample

The study population consisted of male and female students from the College of Engineering at Hashemite University during the second semester of the 2024-2025 academic year.

Table 1. Study population

Level	Degree	N
First Year	Bachelor's	
Second Year	Bachelor's	
Third Year	Bachelor's	
Fourth Year	Bachelor's	
Fifth Year	Bachelor's	
Total number =		

Study sample

A random sample of students from the College of Engineering at Hashemite University was selected, so that the Number of study sample members reached 502 male and female students.

Table 2. Frequencies and percentages according to study variables

	Categories	Repetition	Ratio
Academic level	First Year		
	Second Year		
	Third Year		
	Fourth Year		
	Fifth Year		

Gender	Male		
	Female		
	Total		

Study tools

Thinking Styles Scale

This study used the Epstein et al. (1996) Cognitive Abilities Scale, which was developed by Berzonsky et al. (2021), and its validity and reliability were verified. The scale consists of (31) items distributed over two main dimensions: the analytical-logical thinking style, which has (19) items, and the intuitive-experimental thinking style, which has (12) items. Construct validity indicators were verified by applying the scale to a survey sample of 60 male and female students from the study community and from outside its sample. Construct validity indicators were calculated using Pearson's correlation coefficient to find the values of the corrected paragraph correlation with the dimension to which it belongs. The values of the correlation coefficients of the scale's paragraphs with their dimensions ranged between (0.49-0.78), and all values of the correlation coefficients were higher than (0.20), and were statistically significant at the significance level ($\alpha=0.05$). The scale in its final form consisted of (31) paragraphs, distributed over two dimensions.

Reliability of the Thinking Styles Scale

To estimate the internal consistency stability of the Thinking Styles Scale, Cronbach's Alpha was used on the data from the first application of the exploratory sample, which consisted of 60 male and female students from the study community and outside its sample. The retest stability of the scale was also verified by reapplying the scale to the previous exploratory sample, with a time difference of two weeks between the first and second applications, where the retest stability values for thinking styles ranged between 0.82 and 0.85, and the internal consistency stability values for thinking styles ranged between 0.79 and 0.81. These values are considered acceptable for the current study.

Correction of the thinking styles scale

The final form of the thinking styles scale consists of (31) paragraphs distributed over two dimensions, which are responded to according to a five-point scale that includes the following alternatives: (strongly agree and is given 5 points, agree and is given 4 points, neutral and is given 3 points, disagree and is given 2 points, strongly disagree and is given 1 point), in the case of paragraphs with a positive direction, and the scale is reversed in the case of paragraphs with a negative direction, which are paragraphs (1, 2, 4, 5, 6, 7, 9, 10, 11, 13, 15, 16, 18, 19); and to judge the level of arithmetic averages, the following classification was adopted: low (less than 2.34), medium (2.34 - 3.67), high (more than 3.67).

Psychological Identity States Scale

The Psychological Identity States Scale was developed after reviewing educational literature and previous studies, including Adams et al. (1989), which was based on Erikson's theory. This scale is suitable for individuals in the age group (14-56). The scale consists of (64) items to measure the four psychological identity states. Each psychological identity state consists of 16 items distributed over eight dimensions: choosing a life partner, the role related to sex, recreational activity, friendship, religious beliefs, political beliefs, choosing a career, and philosophy of life. The relationship between the dimensions ranges from 16 to 80. The scale items were answered according to a five-point scale. The researchers assessed the validity associated with a criterion by comparing the scores obtained using the Rosentel Identity Scale with those obtained using the new scale. The results indicated a statistically significant positive correlation between the state of achieving psychological identity and the Rosentel Scale.

In contrast, the states of identity suspension and identity disorder were related. Identity closure was negatively correlated with statistical significance on the same scale. The results of the factor analysis revealed the presence of four basic factors, with saturation levels exceeding one, namely: identity achievement, identity closure, identity disturbance, and identity postponement.

To assess the construct validity indications of the scale in the current study, the paragraph correlation coefficients were calculated using the total score of the axis to which it belongs in a survey sample from outside the study sample, consisting of 60 male and female students. The paragraph correlation coefficients with the total score of the identity closure axis ranged between (0.43-0.72), the paragraph correlation coefficients with the total score of the identity achievement axis ranged between (0.38-0.62), the paragraph correlation coefficients with the total score of the deferred identity axis ranged between (0.39-0.61), and the paragraph correlation coefficients with the total score of the disturbed identity axis ranged between (0.38-0.76). It is worth noting that all the correlation coefficients had acceptable and statistically significant scores; therefore, none of these paragraphs were deleted.

To ensure the stability of the study tool in the current study, it was verified using the test-retest method by applying the scale and then reapplying it after two weeks to a group outside the study sample, consisting of 60 individuals. The Pearson correlation coefficient was then calculated between their estimates at the two time points. The stability coefficient was also calculated using the internal consistency method according to the Cronbach alpha equation, and Table No. (3) shows the internal consistency coefficient according to the Cronbach alpha equation and the retest stability of the axes, and these values were considered appropriate for this study.

Table 3. Cronbach's alpha internal consistency coefficient and retest reliability of the axes

Axis	Test-retest reliability	Internal consistency
Identity Foreclosure	0.86	0.83
Achievement Identity	0.81	0.80
Deferred identity	0.83	0.77
Diffusion Identity	0.89	0.85

The following scale was adopted for the purposes of analyzing the results:

1.00-2.33 Low

2.34-3.67 Medium

3.68-5.00 High

The scale was calculated using the following equation:

Upper limit of the scale (5) - Lower limit of the scale (1) / Number of required categories (3)

= (5-1)/3 = 1.33

Then add the answer (1.33) to the end of each category.

STUDY RESULTS AND DISCUSSION

Results related to the first question: "What are the prevailing psychological identity states among university students?" To answer this question, the researchers used the arithmetic means and standard deviations of the students' scores on the psychological identity states scale, as shown in Table 4.

Table 4. Arithmetic means and standard deviations of students' scores on the psychological identity states scale

Psychological Identity States Scale	N	Mean	STD	Level
Identity Foreclosure	502	1.76	0.743	Low
Diffusion Identity		3.22	0.521	Moderate
Deferred identity		3.51	0.423	Moderate
Achievement Identity		4.47	0.632	High

It is clear from Table 4 that the prevailing psychological identity states among university students are identity achievement. Researchers attribute this result to the nature of the individual's social life, acting consciously, understanding what is going on around them, and being aware of both internal and external experiences. We can attribute this result to the conditions surrounding students, including their focus, effectiveness, and acceptance of different ideas from others. They live within a social and ideological system that represents a significant part of their daily interactions, affecting them and influencing their behavior, based on the inevitability of existing social interactions and the individual's ability to cope with important issues in their social and ideological environment (Kroger & Marcia, 2011).

The accelerating pace of social and ideological change, and the introduction of many systems that regulate the nature of relationships between individuals within societies, represent a valid reason that often carries many intellectual contradictions between modernity and authenticity, which forces students to fulfill their hobby, leaving much ambiguity around the answer to some important questions in shaping the individual's psychological identity (Maree, 2022).

Family upbringing methods represent the heart of the process of forming psychological identity. Thus upbringing patterns lead the individual to one of two paths: either forming a successful psychological identity, or forming a

distorted psychological identity, and in both cases the family is primarily responsible for that, and upbringing methods may carry many contradictions, in the methods of guidance and control, so stability leads to achieving the individual's identity, achieving support for psychosocial growth, and thus transforming its course from negative to positive (Adams & Marshall, 1996). The new environment, with its diverse data, stands as a prominent pillar in achieving the individual's identity; Especially if this is coupled with the availability of sources of guidance, counseling and awareness, the stability of values in society, whether religious values, marital values, and work ethics, worked to strengthen the basic foundations of the value system, (Maree, 2022). The results of the study differed from the results of the study by Caddell & Clare, 2013, which indicated that the prevailing psychological identity state was the disturbed identity, and the study by Zhang et al., 2022, which indicated that the prevailing psychological identity states were identity closure, while the results of the study by Kaur & Tung, 2019, which indicated that the prevailing identity state was the disturbed identity.

Results related to the second question: "What is the level of thinking styles among university students?" To answer this question, the researchers used the arithmetic means and standard deviations of the students' scores on the thinking styles scale, and Table 5 shows this.

Table 5. Arithmetic means and standard deviations of students' scores on the thinking styles scale

Thinking Styles Scale	N	Mean	STD	Level
Analytical thinking	502	4.36	0.432	High
Intuitive thinking		4.23	0.721	High

Table 5 shows that the level of analytical/intuitive thinking styles among university students was high. The researchers attribute this result to several factors. These factors may be attributed to the academic environment's promotion of critical and analytical thinking skills through its curricula and academic activities, as well as the fact that universities provide a learning environment that fosters critical thinking. Curricula include courses that require students to analyze information, evaluate evidence, and develop logical arguments. This type of education significantly contributes to enhancing students' analytical thinking.

Furthermore, interaction between students, their peers, and professors provides them with the opportunity to exchange diverse ideas and viewpoints. This interaction fosters the development of intuitive thinking skills, as students learn to generate ideas through group discussions. Furthermore, challenging academic subjects and research projects require students to use their analytical skills to solve complex problems. These challenges motivate them to develop new and effective thinking strategies, especially in the College of Engineering. The researchers also attribute the result to the university's role in encouraging students to be independent learners, requiring them to research and analyze information individually. This type of learning enhances their ability to think critically.

Furthermore, the cultural diversity at universities broadens students' horizons, as they meet people from different cultural backgrounds, prompting them to think in new and unconventional ways. Based on the above, these factors significantly contribute to the development of students' analytical and intuitive thinking skills, which are an essential part of their academic experience. The results of the current study differed from those of Caddell & Clare (2013), which indicated a moderate degree of thinking styles.

Results related to the third question: "What is the predictive ability of thinking styles in the prevailing psychological identity states among university students?"

To answer this question, the researchers used a multiple regression analysis test (using the "Enter" method) to determine the extent to which psychological identity states can be predicted through thinking styles. Table (6) and Table (7) below show the results of this statistical analysis.

Table 6. Results of the analysis of variance, the multiple correlation coefficient, and the coefficient of determination for the multiple regression model between identity and psychological states and thinking styles

Source	Sum of squares	DF	Mean of squares	Calculated F	Sig.	R	R ²
Regression	423.318	2	211.659	7.443	0.001	0.303	0.092
ERROR	4180.022	499	28.436				
Total	4603.340	501					

Table 7. Multiple regression coefficients and their statistical significance for thinking styles

Variables	Regression coefficient	Standard error	Standardized regression coefficient	T value	Sig
constant variable	4.054	8.628		0.470	0.639
Analytical thinking	0.322	0.119	0.395	***4.821	0.000
Intuitive thinking	0103	0.129	0.117	***6.412	0.002

*** The value is significant at the 0.001 level.

It is clear from Table 7 that the multiple regression model between psychological identity states (S), analytical thinking (S1), and intuitive thinking (S2) can be formulated in the following equation:

4/A-Estimated regression model:

$$S = 4.053 + 4.821 x_1 + 6.412 x_2$$

This regression model indicates:

- Constant value = 4.054
- Regression coefficients: B1 = 4.821 B2 = 6.412

4/b- Validity of the Estimated Regression Model:

The validity of the estimated regression model can be judged by commenting on the multiple regression results for analytical and intuitive thinking shown in Table 6 and 7 as follows:

1- The explanatory power of the model:

Table 6 indicates that the multiple correlation coefficient (R) equals 0.303 and the coefficient of determination (R^2) equals 0.092. This means that analytical thinking and intuitive thinking account for 9.2% of the changes in the dependent variable (psychological identity states). In comparison, the remaining 90.8% of the variance is attributed to other factors. Therefore, the explanatory power of the model is inadequate, as it accounts for less than 50% of the variance in students' psychological identity states.

2- Partial statistical significance of the model:

Table (7), which includes the multiple regression coefficients and their statistical significance, shows that these coefficients varied in terms of their statistical significance or lack of significance, on the one hand, and in terms of the level of significance, on the other. These results can be explained by the fact that the value of the constant in the equation is equal to (4.054), which is not statistically significant. Therefore, the presence of this constant in the prediction equation is unnecessary. It is also noted that the regression coefficient (4.821) is statistically significant at the 0.000 level, which is the regression coefficient for analytical thinking. This result indicates that analytical thinking can be used to predict psychological identity states. It is also noted that the regression coefficient (6.412) is statistically significant at the 0.000 level, which is the regression coefficient for intuitive thinking. This result indicates that intuitive thinking can be used to predict psychological identity states.

The researchers attribute the current result to the prediction of analytical and intuitive thinking styles in psychological identity states. This can be attributed to the fact that students with analytical and intuitive thinking styles tend to work freely and flexibly without being bound by rules (Sternberg & Wagner, 1991), which leads to increased flexibility, a sense of hope, self-efficacy, and optimism, all of which are reflected in their psychological identity states. Students do not prefer traditional situations or problems and solve them using familiar methods and approaches. They tend to go beyond the usual rules, laws, and procedures in addressing these problems and find innovative and novel solutions (Zhang & Sternberg, 2014). This may be due to the age group characterized by rapid change and the need to keep pace with technology and rapid development. Students also prefer innovation in their personal lives and the work they do, and are not bound by rules. They prefer ambiguous situations and seek innovation in work and life, which is reflected in their psychological identity states (Sternberg, 2002). The study results are consistent with the results of the study by Kaur & Tung, 2019; Kaur & Tung, 2019; Berzonsky et al., 2021; Zhang et al., 2022; Nobandegani et al., 2015; (Landine, 2016) which indicated the presence of a positive correlation between identity states and thinking styles, while it differed with the results of the study by Caddell & Clare, 2013 which indicated that the relationship between identity states and thinking styles is not direct.

Recommendations

1. Employing high-level thinking styles to support the process of adaptation and learning in university life.
2. Introducing students to the thinking styles that most accurately predict their psychological identity states, encouraging them to pay attention to these styles, and be aware of the appropriate methods for each individual.
3. Conducting studies addressing thinking styles and psychological identity states, as well as other educational and psychological variables, among university students.

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