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Review Article

The Relative Contribution of Psychological Flow and Resilience in Anticipating the Cognitive Failure of Elementary School Students

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The present study aims to determine the relative contribution of psychological flow and resilience in anticipating the cognitive failure among elementary school students. The sample consisted of (114) male and female students aged between 13 and 15 years. The descriptive method was adopted. The study employed and designed the following tools: the psychological flow scale, the psychological resilience scale, and the cognitive failure scale. The psychometric properties of these tools were checked. The results showed that the level of psychological flow among the participants is high, the level of psychological resilience among the sample is high, and the level of cognitive failure among the participants is low. The results also concluded that the psychological flow is suitable for predicting cognitive failure, as the regression coefficient was −7.436, which is a statistically significant value at the level 0.001; and the psychological resilience can be used in predicting cognitive failure, as the regression coefficient was −5.824, and it is a statistically significant value at the level 0.001. The study has a number of recommendations: designing training programs to develop the psychological flow of learners at all learning stages, holding seminars and workshops aimed at educating learners about the importance of psychological resilience for their enjoyment of normal mental health, and raising the awareness among the officials at the Ministry of Education about the need to train students on cognitive strategies that help reduce the level of cognitive failure.

1. Introduction

The development of societies is measured by the cognitive success of their individuals. The individuals have gone through unending changes, biological, developmental, environmental, or educational. These changes are permanent and result in sensitive changes in the lives of the individuals. Achieving a high level of success, psychological flow, and psychological resilience enable the individuals not only to face the rapid changes occurring to their lives but also to stay away from failure. Adjusting oneself to the rapid changes occurring to his life has become a necessity to restore reliability and the continuity of life. These changes vary across individuals, groups, and situations. Therefore, students may be unable to deal with many mental and cognitive problems that expose them to undergo many psychological disorders, such as anxiety, failure, and dropping out of education [1–5].

Recent research has shown that the low achievement of many students is not necessarily due to their weak mental abilities or low level of intelligence but may be due to their cognitive failure and consequently their lack of adaptation and compatibility with academic courses, which, in turn, leads to academic failure [6]. Consequently, the students need help to achieve a high level of self-confidence to face the internal and psychological conflicts and the frustrations they are exposed to which, in turn, enable them to positively adapt to various life situations, excel in school, achieve their ambitions, and reach distinguished positions among their colleagues [4, 7–9].

Cognitive failure has received a due attention from a number of fields, including cognitive psychology, developmental psychology, clinical psychology, educational psychology, and neuropsychology. Freud [10] presented an analysis and explanation of possible causes of performance lapses. Norman [11], Reason [12–14], and Heckhausen & Beckmann [15] showed a growing interest in the topic. The latter refer to the cognitive failure that occurs during the performance of a task that the individual usually performs successfully [16–18]. Cognitive failure has been used by psychologists to refer to lapses or mistakes that individuals commit in their daily lives, such as forgetting names, ideas, places, failing to notice and explain things, and the intellectual dispersion that accompanies cases of wrong mental responses, or unintentionally wasting things as cognitive errors [19–21]. There are several causes of cognitive failure, which are mainly fallen into two categories: permanent causes related to individual's abilities and external causes related to the external environment that surrounds the individual. The second category is described as temporary since it results from frustration in achieving success and excellence [22–24].

Cognitive failure is the possible result of a general failure in the cognitive control system. For example, when attention is diverted from the current task and focused on other stimuli, it is due to the dispersal of thoughts as a result of external or internal distractions such as dreams and cognitive failure that go through it. The individual goes through the processes of thinking, feeling, remembering, and paying attention, all of which are considered within the field aspect of this failure, although they are represented in the axes of cognitive organization [4, 25–27].

One of the most important reasons for studying cognitive failure is not limited only to the repetition of such errors, according to individual differences, neurological disorders, and age, but also extends to what may result from accidents in daily life. For example, forgetting to take off the landing stick before landing the plane, it could lead to a real catastrophe, hundreds of lives lost. Thus, studying cognitive failure is not only to provide a better understanding of the underlying mechanisms that lead to such errors but also to provide a better understanding of who is at risk of making such errors [28–30].

Reducing the phenomenon of cognitive failure among elementary school students is a major challenge that could take part in advancing their academic process, achieving the intended objectives, and improving the students' personality. Therefore, they may have the ability to self-control and perform school duties in a timely manner. Moreover, the students' ability to organize academic tasks will increase systematically [31–33].

The psychological flow is a human condition that represents the highest manifestations of positive mental health and the driving experience to improve the quality of life through complete immersion in work and tasks and compatibility with their requirements. However, psychological flow would necessarily lead to creative products, and at the same time, it urges individuals to avoid any distraction. In addition to the individual's enjoyment of achievement and his appreciation of his abilities and skills in facing the difficulties and challenges, individuals need to regulate their actions and focuses their attention to achieve the assigned goals. This is accompanied by a complete absence of self-awareness, and, at the same time, this condition is not associated with any type of anxiety or fear [34–36].

Psychological flow also helps an individual to focus while carrying out various activities and tasks and to immerse with the entire systems of their personalities while performing the task with dropping the time factor from his accounts; the continuation of the state of flow to the end of completing the task or activity completely; and in this case, the individual may continue in one flow state. It is continuous in which individuals can realize their self-esteem and thus their feelings of happiness and satisfaction with their lives. Psychological flow is a state of balance between the individual's awareness of his skills and the difficulty of the activity, with the individual's confidence that everything is under his control [37–39].

Psychological flow includes two parts: individual's balance with himself or his harmony with himself, meaning his ability to confront the conflicts that arise within him and the frustrations he is exposed to, and the extent of his freedom from tension and anxiety, his success in reconciling his various motives and impulses, and then the harmony of the individual with the conditions of his material environment [40–42].

Psychological resilience is an emotional and mental response that enables the individual to adapt positively to various life situations. The American Psychiatric Association defines psychological resilience as a process of agreement and positive response to shocks, adversities, and normal psychological pressures, such as family and health problems, work pressures, and financial problems [43–46].

Azlina and Jamaluddin [47] explain that psychological resilience is the individual's ability to carry out his functions despite the challenges and difficult circumstances surrounding him and his ability to make critical decisions in dealing with stressful situations and in solving problems.

Shaqqura [48] states that the student that enjoys a degree of psychological resilience is the one who finds new ways to satisfy his desires depending on any change in the circumstances surrounding him. So, students with psychological resilience enjoy a set of qualities: patience, tolerance, insight, independence, creativity, a sense of humor, initiative, making relationships, the ability to accept criticism and learn from mistakes, the ability to take responsibility and carry it out, and the ability to make the right decision.

Elementary stage is considered one of the most important stages in a student's life, as it represents the suitable time to develop basic skills for success, academic excellence, and integration with the adult world later on, moving and continuing the educational process, and reducing educational dropout resulting from cognitive failure. In light of the above, the study attempted to determine the relative contribution of psychological flow and psychological resilience in predicting cognitive failure among elementary school students.

2. Problem of the Study

The problem springs from the fact that individuals' behavior is based on their goals, values, and the standards that guide their behavior and enable them to satisfy their own needs and demands. Any individual usually looks for his needs for satisfaction, and among from these needs is the need for acquiring knowledge, unfortunately a human being cannot realize everything he wishes. Many studies, such as Al-Jubouri [1], Saleh [49], and Douri [2], indicated that there are many reasons that lead cognitive weaknesses. The reasons can be subsumed under the following items: the mood of the individual, routine, monotony, lack of motivation, lack of time, stress, psychological tension, insomnia, fatigue, sleep disturbances, excessive stimuli, noise, lack of information, or lack, which includes attention, focus, remembering, learning, problem solving, and special abilities for mental processes. As a result, there has been an urging need to study the relative contribution of psychological flow and psychological resilience in predicting cognitive failure among elementary school students. Thus, the present study seeks to answer the following questions:

(1) What is the level of psychological flow of elementary school students?

(2) What is the level of psychological resilience of elementary school students?

(3) What is the level of cognitive failure of elementary school students?

(4) Do psychological flow and psychological resilience contribute to predicting cognitive failure among elementary school students?

3. Objectives of the Study

The aims of this study were as follows:

(i) Identify the level of psychological flow, the level of psychological resilience, and the level of cognitive failure among elementary school students

(ii) Detect the relative contribution of psychological flow and psychological resilience in predicting cognitive failure among elementary school students

4. Significance of the Study

The importance of this study is evident in the following subsections:

4.1. First: Theoretical Significance

(1) Handling the variables of great importance to psychologists, mental health, and education, namely psychological flow, psychological resilience, and cognitive failure

(2) Being interested in elementary school students, which represents the active and most important period for building a promising future. Therefore, the interest in studying the academic and educational problems that they face in the process of acquiring knowledge and information and the way to address them is one of the basics of the educational process.

(3) Providing researchers with some theoretical foundations that could be used by later research to complement the present study or contribute to the expansion of other educational issues

4.2. Second: Applied Significance

(1) The study contributes to identifying the level of psychological flow, the level of psychological resilience, and the level of cognitive failure among elementary school students

(2) The study attempts to enrich the Arabic library with a number of scales used to measure psychological flow, psychological resilience, and cognitive failure

(3) The study is a serious scientific attempt to provide realistic results with the possibility of applying them in educational institutions, especially schools, to detect the phenomenon of cognitive failure, and to develop counseling and training programs to overcome this phenomenon and thus open the way for providing further studies and research to investigate this phenomenon.

(4) The Ministry of Education is expected to benefit from the results in the best investment of the students' mental abilities, which in turn contribute to the development of the basic skills necessary for academic success

5. Limits

Any generalization that can be drawn from the results of this study must be within the scope of its variables, the nature of the tools used and its sample from which it was derived, its methodology, and statistical analyses and its procedures. Therefore, the study is determined by the following limits.

5.1. Terminologies

5.1.1. Psychological Flow. Psychological flow is technically defined as the individual's experience of happiness about performing or being preoccupied with something or work. It reaches the highest levels of performance or the highest levels of preoccupation and to be involved in it without paying much attention to time and space and is less fearful and far from boredom [50].

Psychological flow is also known as the peaceful solutions to bring about adaptation to the conditions of life through appeasement, which is an agreement to stop the conflict, despite the fact that the problem has not ended or a solution has been reached, or conciliation; in other words, it is a process where an individual gives up some of his demands in order to find a compromise to the existing crisis [51].

According to the present study, psychological flow is defined as an ideal experience that occurs to an individual

when he performs tasks with maximum performance. The flow is determined by complete preoccupation with performance, low awareness of time and place during performance, forgetting self-needs, and automatic pleasure accompanied by joy and pleasure. It is measured procedurally by the degree obtained by the sample on the psychological flow scale and its dimensions.

5.1.2. Psychological Resilience.
Psychological resilience is defined as a dynamic process in which the individual displays positive adaptive skills in the face of adversity, dealing with harmony in the face of deep problems, and being able to regain his previous fitness after the crisis he has undergone [4, 52, 53].

According to the present study, psychological resilience is defined as the ability to cause an individual's emotional, social, and mental response according to situations, and it is an evolutionary process that includes adaptation, prevention, struggle, education, and return to normality, strength, and appreciation. It is measured procedurally by the degree obtained by the sample on the psychological resilience scale and its dimensions.

5.1.3. Cognitive Failure.
Cognitive failure is defined as failure in cognition, memory, and motor performance. Cognitive failure includes many types like failure in perception, failure related to information retrieval, and failure in identification that is related to disruption or failure of memory [54].

According to the present study, cognitive failure is defined as the failure of the individual in dealing with the information that he encounters, whether it is in the process of paying attention to it and realizing it, or in remembering the experience associated with it, or in the process of employing it to perform a task. It is procedurally measured by the degree to which the sample obtains on the cognitive failure scale.

5.2. Sample.
The study was applied to a sample of (114) male and female elementary school students in Al-Kharj Governorate, KSA. The study started at the beginning of the first semester of the academic year 2021/2022. Students' age ranges from 13 to 15 years with an average age of 14.3 and a standard deviation of 1.98.

5.3. Tools.
The author prepared a psychological flow scale, a psychological resilience scale, and a cognitive failure scale. After validating the tools, these scales were conducted on the study sample.

5.4. Method.
The author used the descriptive approach that aims to describe a phenomenon or problem, quantitatively depict, classify, and analyze it. This approach is considered the most appropriate to be used in applying the study tools and answering its questions.

6. Review of Literature

6.1. Psychological Flow Concept, Components, and Dimensions.
Psychological flow is a case that may occur in many people, even those who do activities for free, and it occurs in the individual from time to time and during it the individual spends much time in the activity that he practices, and the activity is a goal in itself, as the individual feels pleasure [55, 56].

Csikszentmihaly [57] indicated that the dimensions of psychological flow are as follows:

(a) Balance between challenges and tasks: it is represented by the individual's perceptions and confidence in his abilities to meet the requirements of the challenges, tasks, and activities he performs

(b) Clarity of goals: the goals must be clear, verifiable, and commensurate with the capabilities and interests of the individual, in order to facilitate the focus of awareness in the specific activity

(c) Integration into the task or activity: it means focusing on the task which enables individuals to perform better, as the body and the mind work as a unit to reach complete integration in the task

(d) Loss of sense and awareness of self: it means immersing oneself in place and time while performing the activity or task, and not paying attention to any stimuli not related to the activity

(e) Direct or immediate feedback: it means the process of immediate evaluation of an individual's success in the task he is performing and correcting his behavior according to this evaluation

(f) Distortion of sense of time: time seems to those who are going through a state of psychological flow as if it is passing unlike what they are accustomed to as if time has passed quickly

(g) Focusing attention: it is the process of paying attention on a specific aspect of stimuli and immersion completely (body and mind) in the task or activity.

(h) A sense of control: it means a sense of the ability to control the activity, which gives a state of perfect balance, and to stimulate the maximum levels of skills to face challenges

(i) Self-enjoyment: it represents a psychological state resulting from an internal reward that contributes to the continuation of performance without waiting for an external reward

Among the studies that dealt with psychological flow in the light of different variables and with different samples, a study [58] was applied to university students and found that there are statistically significant differences in psychological flow in favor of females, and there are no statistically significant differences in family support and psychological flow use according to the number of hours of use. Seddik and Samir [59] found a positive relationship between psychological flow and some personal factors, and the absence of a relationship between psychological flow and some

demographic variables. Al-Bahas [60] found a high level of psychological flow, the existence of a correlation between the dimensions of psychological flow (preoccupation with performance, forgetting oneself) and all dimensions of social anxiety, and absence of statistically significant differences between male and female students in the dimensions of psychological flow. Baza [61] applied his study to people with special needs and found development of motor skills, healthy behaviors, openness to the environment and positive communication by students, as well as teaching them to solve problems for situations commensurate with their capabilities. Bin Sheikh [62] applied his study to secondary education teachers and concluded that they have a specific level of psychological flow, that there are statistically significant differences in the degree of psychological flow depending on the variables of gender, seniority, and the difference in the subject, and that there is a relationship between emotional balance and psychological flow in a sample. Diab [63] applied his study to first-year secondary students and found a statistically significant correlation between males and females (talented and normal) in the level of psychological flow and perfectionism in favor of males. Al-Zahrani [51] applied his study to a sample of gifted students and concluded that psychological needs, psychological resilience, and psychological flow are average for the gifted and that there is a negative correlation between psychological needs on the one hand and psychological resilience and psychological flow on the other hand. Al-Lawati [64] conducted his study on academically talented university students and concluded that there is a positive correlation between psychological flow and anger management, and the absence of differences due to gender variable in psychological flow and anger management among the sample. Through the previous presentation of studies that dealt with psychological flow, we found few studies that dealt with the application of this variable on middle school students.

6.1.1. Psychological Resilience Concept and Dimensions. Kapikiran & Acun-Kapikiran [65] define it as the individual's awareness of his skills related to his ability and adequacy to overcome the crises that he faces through the use of internal sources of support, such as psychological adaptation skills, and external support, such as psychological and social support.

Conner and Davidson [66] indicate five dimensions of psychological resilience: self-efficacy, self-confidence and endurance, the spiritual dimension, positive acceptance of change, secure relationships, and control.

Patterson and Kelleher [67] point out three dimensions of resilience: the interpretation of current adversity and future potential, resilience to overcome problems, and actions or activities that an individual needs to become more resilient to face problems.

Gurgan [68] indicates that there are eight dimensions of resilience, which are strength of character, initiative, positive outlook, good communication, single goals, leadership, multiple visions, and verification.

Martin and Marsh [69] indicate that there are five dimensions of resilience: self-efficacy, planning, control, calm (low anxiety), and commitment (perseverance).

Al-Shuwail and Nasr [70] concluded that there are four factors of psychological resilience through factor analysis, which are the positive orientation of the future, the emotional dimension, the social dimension, and altruism and optimism, and that among the indicators of psychological resilience are the individual's ability to bounce back from setbacks, stopping the deterioration, speed of recovery, re-growth and development, ability to solve problems skillfully, enjoyment of learning and university life, and positive expectations of the individual.

Shaqqura [48] indicated three dimensions of psychological resilience: emotional, social, and cognitive dimensions. Al-Maliki [71] indicated that resilience consists of eight components: good and effective relationships, good dealing with stress and cognitive reconstruction for painful events, accepting change, making critical decisions, discovering and appreciating oneself, optimism and hope, being religious, and taking care of oneself.

Bastaminia et al. [72] indicated five dimensions of psychological resilience, which are cohesion with the family, cohesion with the social environment, coherence with the physical environment, coherence with a sense of inner wisdom, and thinking that supports the values of the individual. In this regard, Abdel-Gawad [73] indicated three dimensions of psychological resilience: emotional, social, and cognitive dimensions.

It is clear from the previous presentation of the dimensions of psychological resilience that they differed from one researcher to another, but it indicates that psychological resilience means the ability to face crises and adversities through self-efficacy, good communication, good and social family relations, positive orientation for the future, cognitive reconstruction of events, commitment, and perseverance. It reflects cognitive, emotional, and social dimensions of psychological resilience. It is the ability to produce an individual's emotional, social, and mental responses according to situations, an evolutionary process that includes adaptation, prevention, struggle, education, and return to normality, strength, and appreciation. This study will focus on emotional, social, and cognitive dimensions.

Some studies dealt with psychological resilience in the light of different variables; for example, Friborg et al. [74] applied their study to individuals enrolled in the military college results showed three personal factors related to the significance of resilience, namely, personal ability, personal strength, and social ability and a relationship between resilience and intelligence. Al Ghazal [75] applied his study to university students and concluded that there is a high level of psychological resilience and the presence of statistically significant differences in psychological resilience in favor of literary specialization. There are no differences in psychological resilience differences by gender. Shaqqura [48] applied his study to university students and concluded that there is an above-average level of resilience among students, and there are differences in psychological resilience in favor of males and no differences in psychological

resilience according to specialization. Al-Shuwail and Nasr [70] found that there are gender differences in positive psychological resilience and significant differences in favor of high positive psychological resilience compared with low psychological resilience in self-esteem. Abu Bakr [76] applied his study to university students and concluded that there is a negative and significant correlation between the scores on the psychological resilience scale and their scores on the stressful life events scale and there are no differences in psychological resilience according to gender and study group. Gonzalez-Torres and Artuch-Garde [77] found a positive and significant relationship between the strategy of confrontation focused on the problem and resilience and the absence of gender differences in psychological resilience. Baltaci and Karatas [78] concluded that psychological resilience can be predicted with the knowledge of social support and life satisfaction and there is the absence of statistically significant differences in psychological resilience between males and females. Rahat and Ilhan [79] concluded that it is possible to predict compatibility with university life with the knowledge of resilience and social support. Ismail [80] found a correlation between psychological resilience and mental alertness among university students. Abdul Hafez [81] concluded that there is a negative inverse correlation with a statistical significance between the level of psychological resilience and test anxiety. Abdul-Gawad [73] concluded that there is a positive direct correlation between psychological resilience and the ability to process information and that it is predictable with the ability to process information through psychological resilience and there are no statistically significant differences between the average scores of male and female students in both psychological resilience and information processing. Through the previous presentation of studies that dealt with the variable of psychological resilience, we found few studies that dealt with the application of this variable to elementary school students.

6.2. Cognitive Failure Concept and Dimensions. Abbas [7] indicated that cognitive failure is related to a defect in the processes of sensation, attention, perception, and remembering and processing information. Recent studies confirm in their interpretation of forgetting that information does not disappear from memory, but we fail to recall, retrieve, and identify it. Our ability to remember information is due to the failure to encode it or inaccurately storing it in memory, the quality of events that accompany the cognitive processing of this information and the degree of attention being reduced.

Wallace [30] indicated that cognitive failure includes three factors for common mistakes in daily life. This is evident through mistakes or lapses in memory, such as the person being absent-minded (errors in remembering) or errors and lapses in attention and perception of things around him. For example, failure to notice something closely related to personality (errors in perception) or errors in performance and motor skills, which he calls work lapses (errors in performance).

In this study, the focus was on that cognitive failure, which consists of three dimensions: failure to remember (which means errors related to information retrieval), failure to perceive (which means errors in awareness of sensory receptors and selection from them), and performance failure (which means unintended errors in the performance of business).

Some studies dealt with cognitive failure in the light of different variables such as Al-Naimi [82] concluded that students with cognitive success are better than their peers with cognitive failures in solving cognitive analogies. Al-Rikabi [19] concluded that there is no effect of the variables of gender and specialization in the cognitive failure scale, as well as there is no correlation between cognitive failure and personality type among the study members. Moreover, Nasser [83] concluded that there are no failures and no statistically significant differences in cognitive failures and learning styles according to the variables of gender (male-female) and specialization (literary-scientific). Al-Qadir and Al-Bayi'I [84] concluded that there is cognitive failure in university students who have a medium degree and that the cognitive failure can be predicted from the personality traits of individuals.

Saleh [49] concluded that the level of cognitive failure among middle school students is high with statistical significance, there are statistically significant differences in cognitive failure according to the gender variable (males-females) in favor of females, and there are no differences statistically significant in cognitive failure according to the variable of specialization. Tabitha and Michael [85] recommended that their sample suffers from cognitive failure in memory and attention that can lead to problems with daily activities, which leads to a higher level of cognitive failure and the existence of a relationship between negative emotion and cognitive failure. Al-Zuhairi [86] found a high level of cognitive failure and a low level of chaotic behavior and a negative correlation between cognitive failure and chaotic behavior. In [87], the author found a high level of cognitive failure among university students and an inverse relationship between cognitive failure and creative teaching. Abbas [7] found that middle school students do not have cognitive failure and academic procrastination and that there is a positive correlation between academic procrastination and cognitive failure. Also, Al-Jubouri [1] concluded that university students are characterized by a high level of cognitive failure and that females are more inclined to failure and there are no differences in cognitive failure according to academic specialization. Rashid and Kazem [54] concluded that middle school students have cognitive failure and that there are no statistically significant differences in cognitive failure according to the variables of gender and specialization. Zayed [88] found a positive and statistically significant correlation between academic procrastination, cognitive failure, and life stress, and the presence of statistically significant differences in academic delay, cognitive failure, and life stress according to gender variables (males and females) in favor of males.

7. Procedures

Procedures in the study include the exploratory study, a description of the tools used, how to prepare them, and the statistical control methods used in data analysis. It can be presented as follows.

7.1. First: The Pilot Study Sample. It was applied to a sample of (54) male and female elementary school students in Al-Kharj Governorate in the Kingdom of Saudi Arabia. They were randomly selected so that most of the basic sample characteristics of the study are available, in order to verify the validity and reliability of the study tools.

7.2. Second: Study Tools

7.2.1. Psychological Flow Scale. The author prepared it after reviewing the tools used in previous studies and theoretical frameworks in this field. In its initial form, the scale consisted of 20 items divided into 4 dimensions: clear goals, integration and focus, loss of sense of time, and self-awareness and immediate feedback nutrition. Each dimension consists of 5 items, and the response to the items is through the triple Likert method, so that the degree 3 represents always, the degree 2 represents sometimes, and the degree 1 represents rarely.

Validity of the Scale. The author submitted the scale in its initial form to a group of 10 specialists and asked them to judge the extent of the representation of the items to measure the psychological flow of middle school students, the integrity of the linguistic formulation of items, and any other observations they deem appropriate. A percentage of 90 and above was adopted to maintain the item, considering it appropriate. It became clear from the arbitrators' estimates that the items are sufficient to measure psychological flow, and the linguistic formulation of some items was modified. The validity of the scale was verified by calculating the correlation between each item of the scale and the total score of it. This is clear in Table 1.

   Validity of the scale was verified by using validity of the external test using the psychological flow scale prepared by Baza [50], and the correlation coefficient between the degrees on the two scales was equal to 0.84, which is a significant correlation coefficient at the level of significance 0.01, which confirms the validity of the scale.

Scale Reliability. Reliability of the scale was verified by calculating the value of Cronbach's alpha coefficient, and this value was equal to (0.85). It was calculated by half-fraction method using "Spearman-Brown" coefficient. "Getman" for stability, the value of the reliability coefficient was equal to (0.80), and these values indicate a high Reliability coefficient of the scale.

Scale Correction Method. The scale in its final form consists of 20 items distributed over four dimensions, and the response to the items is through the triple Likert method, so

TABLE 1: Correlation coefficients between the score of each item of the psychological flow scale and the overall score of the scale.

N	Correlation coefficient value
1	**0.604
2	**0.612
3	**0.564
4	**0.583
5	**0.558
6	**0.583
7	**0.590
8	**0.601
9	**0.623
10	**0.594
11	**0.598
12	**0.576
13	**0.570
14	**0.581
15	**0.601
16	**0.574
17	**0.544
18	**0.592
19	**0.603
20	**0.586

**Significant at 0.01.

that the degree 3 represents always, the degree 2 represents sometimes, and the degree 1 represents rarely. The degrees of the scale range between 20 and 60; the higher the degree, the higher the level of psychological flow of the respondent, and the lower the degree, the lower the level of the respondent's psychological flow. Thus, the level of psychological flow for the students is judged.

7.2.2. Psychological Resilience Scale. The author prepared a scale of psychological resilience after reviewing the tools used in some previous studies and theoretical frameworks in this field. The scale consisted of 33 items that measure the ability of individuals to produce the individual's emotional, social, and mental responses according to situations, divided into 3 dimensions: emotional dimension, social dimension, and cognitive dimension, and each dimension consists of 11 items, and the response to the items is through the triple Likert method, so that the degree 3 represents always, the degree 2 represents sometimes, and the degree 1 represents rarely. Criterion: from 1–1.66, low; 1.67–2.33, medium; and 2.34–3, high.

Validity of the Scale. The author submitted the scale in its initial form to a group of 10 specialists and asked them to judge the extent of the representation of the items to measure the students' psychological resilience, the integrity of the linguistic formulation of the items, and any other observations they deem appropriate, and a percentage of 90% and above was adopted to keep the item, and it was considered appropriate. It was clear from the arbitrators' estimates that the items were sufficient to measure psychological resilience, the linguistic formulation of some items was modified, and the validity of the scale was verified by calculating the correlation between each item of the scale and the total score of it. This is presented in Table 2.

TABLE 2: Correlation coefficients between the score of each item of the psychological resilience scale and the overall score of the scale.

N	Correlation coefficient value
1	**0.586
2	**0.584
3	**0.601
4	**0.576
5	**0.580
6	**0.559
7	**0.582
8	**0.590
9	**0.603
10	**0.605
11	**0.588
12	**0.601
13	**0.573
14	**0.559
15	**0.569
16	**0.587
17	**0.550
18	**0.576
19	**0.580
20	**0.564
21	**0.587
22	**0.589
23	**0.588
24	**0.553
25	**0.576
26	**0.590
27	**579
28	**0.562
29	**0.584
30	**0.589
31	**0.570
32	**0.602
33	**0.599

Significant at 0.01**.

Scale Reliability. Reliability of the scale was verified by calculating the value of Cronbach's alpha coefficient, and this value was equal to 0.84. The reliability was calculated by the half-fraction method using the "Spearman–Brown" coefficient and "Getman" for stability. The value of the reliability coefficient was equal to 0.79. These values indicate a high reliability coefficient of the scale.

Scale Correction Method. The scale in its final form consists of 33 items, and the response to the items is through the triple Likert method, so that the score 3 represents always, the score 2 represents sometimes, and the score 1 represents rarely. The scale scores range between 33 and 99; the higher the score, the higher the level of psychological resilience of the respondent, and the lower the score, the lower the respondent's level of psychological resilience. Criterion: from 1–1.66, low; 1.67–2.33, medium; 2.34–3, high.

7.2.3. Cognitive Failure Scale. The author prepared a cognitive failure scale after reviewing the tools used in some previous studies and theoretical frameworks in this field. The experience associated with it or the process of employing it

to perform a task. The response to the items is in a three-step Likert method, whereby a score of 3 represents always, a score of 2 represents sometimes, and a score of 1 represents rarely.

Validity of the Scale. The author submitted the scale in its initial form to a group of 10 arbitrators and asked them to judge the extent to which the items represent the cognitive failure, the integrity of the linguistic formulation of the items, and any other observations they consider appropriate. It was clear from the arbitrators' estimates that the items were sufficient to measure the cognitive failure, the linguistic formulation of some items was modified, and the validity of the scale was verified by calculating the correlation between each item of the scale and the total score of the scale, and this is presented in Table 3.

Scale Reliability. The reliability of the scale was verified by calculating the value of Cronbach's alpha coefficient, and this value was equal to 0.83, and the reliability was calculated by the half-fraction method using the "Spearman–Brown" coefficient and "Getman" for stability. The value of the reliability coefficient was 0.77. These values indicate a high reliability coefficient of the scale.

Scale Correction Method. The scale in its final form consists of 30 items, and the response to the items is through the triple Likert method, so that the score 3 represents always, the score 2 represents sometimes, and the score 3 represents rarely. The scale scores range between 30 and 90; the higher the score, the higher the level of cognitive failure of the respondent, and the lower the score, the lower the level of the respondent's cognitive failure, and the students' level of cognitive failure is judged based on the following criterion: from 1–1.66, low; 1.67–2.33, medium; 2.34–3, high.

8. Results

For data analysis and processing, the author used a SPSS Statistics 25 program.

8.1. Results of the First Question. "What is the level of psychological flow among middle school students?" To answer this question, the author used the means and standard deviations of the students' scores in the psychological flow scale, and this is presented in Table 4.

It is clear from Table 4 that the level of students' scores on the psychological flow scale came at a high level, and the author attributes this result to the fact that the participants have a state of integration in performance with full enjoyment to the point of self-forgetting. They have great energy towards work. They are great during their studies, and they enjoy and immerse themselves in studying. They have a high motivation and great passion for this study. The author attributes this to the availability of personal skills of students in a balanced manner with the requirements of the task or challenge they are doing, and their immersion in performance to the point of losing self-awareness, and high

TABLE 3: Correlation coefficients between the score of each item of the cognitive failure scale and the overall score of the scale.

N	Correlation coefficient value
1	**0.584
2	**0.590
3	**0.603
4	**0.587
5	**0.577
6	**0.562
7	**0.578
8	**0.580
9	**0.593
10	**0.559
11	**0.589
12	**0.570
13	**0.594
14	**0.587
15	**0.580
16	**0.590
17	**0.565
18	**0.603
19	**0.596
20	**0.584
21	**0.590
22	**0.585
23	**0.593
24	**0.592
25	**0.584
26	**0.578
27	**0.576
28	**0.580
29	**0.574
30	**0.593

**Significant at 0.01.

TABLE 4: Means and standard deviations of students' scores on the psychometric flow scale.

Psychometric flow scale	N	Mean	Standard deviations	Level
	114	2.74	0.853	High

TABLE 5: Means and standard deviations of students' scores on the psychological resilience scale.

Psychological resilience scale	N	Mean	Standard deviations	Level
	114	2.69	0.932	High

TABLE 6: Means and standard deviations of students' scores on the cognitive failure scale.

Cognitive failure scale	N	Mean	Standard deviations	Level
	114	1.50	0.758	Low

result is consistent with the findings of Al-Bahas [60], which indicated the high level of psychological flow among students at the College of Education. The results differ from the results of Al-Zahrani's study (2019) [51], which indicated that students are characterized by the degree of psychological flow.

8.2. The Results of the Second Question. "What is the level of psychological resilience among elementary school students?" In order to answer this question, the author used means and standard deviations of the students' scores in the psychological resilience scale, and this is presented in Table 5.

It is obvious from Table 5 that the level of students' degrees on the psychological resilience scale was at a high level. The author attributes this result to the fact that the sample has the ability to confront their problems and solve them in multiple ways, listen to conflicting opinions, and change their decisions if necessary. With recognition of their mistakes, as well as the diversity of their participation in various social activities and the participation of friends in solving their problems, managing their emotions in a balanced manner, enduring adversity and crises, feeling satisfied with their studies, confidence in their abilities and academic competence, and adapting to academic problems. The result can also be attributed to the fact that the members of the study have a constant desire for success and self-realization, despite exposure to pressures and some challenges in the educational environment. The individual who enjoys psychological resilience often considers stresses and problems as opportunities for personal growth and advancement. It can be noted that a high level of psychological resilience indicates that the individual has good mental health. This result is consistent with [48, 75], which indicated that the study sample members have a high level of psychological resilience.

8.3. Results of the Third Question. "What is the level of cognitive failure among middle school students?" To answer this question, the author used means and standard deviations of the students' scores in cognitive failure scale, and this is presented in Table 6.

It is obvious from Table 6 that the level of students' scores on the cognitive failure scale came at a low level. The

enjoyment of tasks, as they are distinguished focusing attention on the tasks that they perform as a means to prove superiority, excellence, and self-realization. This result agrees with the theoretical framework of previous studies, which indicates the existence of a close relationship between the state of flow and education in particular, where we find that learners have three possibilities based on the contents of the concept of psychological flow. The first is what is known as the state of anxiety and fear of failure which is achieved in the learner when the level of his abilities and skills is low. The second is what is known as the state of boredom and the apathy associated with the difference and negligence in educational performance. This situation is achieved when the learner's abilities and skills are high and he is faced with low learning tasks or challenges. The third is what is known as the state of flow and the associated euphoria, joy, and impulse towards intonation and creativity. This situation is achieved when the level of the learner's abilities and skills is also high. The tasks and challenges he faces are high. This

Table 7: The results of the analysis of variance, the multiple correlation coefficient, and the coefficient of determination of the multiple regression model between cognitive failure, psychological flow, and psychological resilience.

Source	SS	DF	MS	F	Sig	R	R2
Regression	4435.432	2	6843.825	83.839	0.001	0.873	0.762
Error	2563.211	110	257.653				
Total	6998.643	112					

Table 8: Multiple regression coefficients and their statistical significance for psychological flow and psychological resilience.

Variables	Regression coefficient	Standard error	Standard regression coefficient	"T" value	Statistical significance
Constant	3.563	4.232		0.845	0.429
Psychological flow	−6.143	0.192	0.521	***−7.436	0.001
Psychological resilience	−5.380	0.216	0.243	***5.824	0.001

**Significant at 0.001.

author attributes this result to the fact that the study sample members have a high level of psychological flow and psychological resilience, which increases their practice of cognitive processes and reduces their occurrence of errors. This also contributes to the efficient and competent performance of the academic tasks required of them, helps them to deliver the duties required of them on time, then their sense of satisfaction, and increase self-confidence and increase the correct beliefs in their minds, which in turn leads to reducing errors in attention, perception, and memory, and can be interpreted. This is because the students have fewer attention errors, as they have the ability to focus more and pay attention to the teacher's explanation and the tasks assigned to them. They also focus to a great extent on the lesson or the task without paying attention to other matters outside the lesson, so they do not suffer from mental wandering or distraction. They also have the ability to use cognitive strategies that reduce their cognitive failure so that they are more compatible with different educational situations and tasks, so they pay attention to the information well and understand it and thus learn it well, so they use this information without errors. This result agrees with [7, 83], which indicated the presence of cognitive failure among the study members to a low degree. This result differs from those of a study conducted by Al-Qadir and Al-Bai'I in 2014, which indicated the presence of cognitive failure. The study results have a medium agreement with the studies [1, 49, 54, 86, 87], which indicated the presence of cognitive failure among the study members to a high degree.

8.4. Results of the Fourth Question. "Does psychological flow and psychological resilience contribute to predicting cognitive failure among middle school students?" To answer this question, the author used a multiple regression analysis test (using the "Enter" method) to determine the extent of the ability of psychological flow and psychological resilience in predicting the cognitive failure of middle school students. Tables 7 and 8 show the results of this statistical analysis.

It is obvious from Table 8 that the multiple regression model between cognitive failure (R), psychological flow ($Q1$), and psychological resilience ($Q2$) can be formulated using equation (1).

8.4.1. Estimated Regression Model.

$$Y = 3.563 − 7.436 \times 1 − 5.824 \times 1. \tag{1}$$

This regression model indicates the following:

Constant = 3.563.

Regression coefficients: B1 = −7.436 and B2 = −5.824.

8.4.2. Validity of the Estimated Regression Model. The validity of the estimated regression model can be judged by commenting on the results of the multiple regression of psychological flow and psychological resilience shown in Tables 7 and 8, which are as follows:

The Explanatory Ability of the Model. Table 7 indicates that the multiple correlation coefficient (R) equals 0.873 and the coefficient of determination (R2) equals 0.762, which means that psychological flow and psychological resilience explain 87.3% of the changes that occurred in the dependent variable (cognitive failure) and the remaining 12.7% of the variance is due to other factors. Thus, the explanatory ability of the model is appropriate as it is greater than the explanation of 50% of the students' cognitive failure variance.

The Overall Statistical Significance of the Model. Table 7 includes the analysis of variance and indicates that the value of the statistical significance (Sig.) is equal to 0.001, which is less than the level of significance 1%, and therefore the regression model is statistically significant. The estimated regression model can be used to predict the cognitive failure of students through psychological flow and psychological resilience.

Partial Statistical Significance of the Model. It is obvious from Table 8, which includes the multiple regression coefficients and their statistical significance, that these coefficients were different in terms of their significance or lack of statistical significance on the one hand and in terms of the level of significance on the other hand. These results can be clarified as follows:

(a) The value of the constant in the equation is equal to 3.563, and this value is not statistically significant, so

the presence of this constant in the prediction equation is not necessary.

(b) It is noted that the regression coefficient −7.436 is statistically significant at the level 0.001, which is the regression coefficient of psychological flow, and this result indicates that psychological flow is suitable for use in predicting cognitive failure.

(c) It is noted that the regression coefficient −5.824 is statistically significant at the level 0.001, which is the regression coefficient of psychological resilience, and this result indicates that psychological resilience can be used in predicting cognitive failure.

The author concluded that the results indicate that psychological flow predicts cognitive failure, but the higher the level of psychological flow, the lower level of cognitive failure, and the lower the level of psychological flow, the higher the level of cognitive failure. This indicates that the relationship between these variables is negative and also psychological resilience is used in predicting cognitive failure, but the higher the level of psychological resilience, the lower the level of cognitive failure, and the lower the level of psychological resilience, the higher the level of cognitive failure. This indicates that the relationship between these variables is negative.

9. Recommendations of the Study

In the light of the results, the following recommendations were formulated: designing training programs to develop psychological flow of learners at all learning stages, holding seminars and workshops that aimed at educating learners about the importance of psychological resilience to enjoy normal mental health, and, eventually, urging officials at the Ministry of Education to raise teachers' awareness of the importance of training students on the use of cognitive strategies that help reduce their level of cognitive failure.

Data Availability

The data that support the findings of this study are included in the paper.

Conflicts of Interest

The author declares that there are no conflicts of interest.

Acknowledgments

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