



## Normization of Dynamic-Impatience Test in the Field of thought Excitement

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**Keywords:**

Dynamism-Impatience, Cognitive

Resilience, Emotional Tenacity, Test,

Emotion of Thought

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**Purpose:** The aim of this research is the norming of the Test of Dynamism-Impatience in the realm of emotion of thought.

**Methodology:** The population of this study consists of students aged 15 to 17 years in Tehran. The sample includes 973 students, selected randomly through multistage cluster sampling from the 22 districts of Tehran. The instrument used in this research is the Test of Dynamism-Impatience in the realm of emotion of thought, which contains 69 questions. This test was initially administered to three hundred individuals, and after analysis and examination, the final test with the same 69 questions was conducted and analyzed. The test overall comprises three subscales: cognitive resilience, emotional tenacity, and impatience. The reliability of the test was examined through retesting, and the results showed that the correlation between the components of all three examined realms of the test was above 0.9 and significant at the 0.01 level ( $P > 0.01$ ), indicating high reliability of the test.

**Findings:** The validity of the test was analyzed and evaluated through construct validity using factor analysis. The initial (exploratory) factor analysis was conducted to extract the main factors of the three fundamental realms of the test. It was hypothesized that the test overall consists of twelve basic components, and exploratory factor analysis revealed that the test in total is made up of eight main components. These components were analyzed through confirmatory factor analysis.

**Conclusion:** The results showed that the standardized factor loadings of all items are higher than 0.32, indicating that all items of this test have the necessary potential for measuring the latent variables extracted and are supported by confirmatory factor analysis. Finally, the normative tables of the test are also presented.

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## **Introduction**

Adolescence plays a critical and decisive role in human life. Attention to this period is such that, firstly, psychologists and educational experts often regard adolescence as the most prominent stage in human personality development; and secondly, researchers consider the presence of conflicts, disorders, and mental instabilities during these years as fundamental factors in the emergence of problems throughout an individual's life (Shokouhi-Yekta & Malayeri, 2015). Therefore, in the formation of a modern and advancing world, emotion of thought and creativity are considered important components of social life. Psychological, philosophical, and political research supports the notion that emotion of thought and creativity in students represent a change in method for understanding phenomena. Moreover, emotion of thought is one of the most important fields in psychology and educational sciences (Fedotova & Liton, 2015). According to Avril (1992), students who are prone to creative emotions spend more time recognizing emotions and make efforts, showing more attention and precision towards their own emotions and those of others. This characteristic, termed as readiness, is equivalent to acquiring information and knowledge in cognitive creativity models. Kazemi Haqiqi (2007), through extensive review of the sixty-year research history in the realm of creative personality and based on continuous professional and clinical experiences, presented a "Six-Faceted Paradigm for Creative Personality." According to this paradigm, six fundamental realms play a role in the formation of creativity: inner readiness, environmental collaborative participation, feedback, utilization of experience, movement, and special thought, which in a coherent and integrated interaction lead to the emergence of a seventh realm with an emotional nature, referred to by the author as "Dynamism-Impatience," and this specific emotion causes creativity. Based on this, creativity depends on dynamism and impatience. "Dynamism" refers to "a strong feeling of power accompanied by enthusiasm and an active, curious experience for a major exciting discovery," and "impatience" refers to "anxiety, internal entrapment, and unease resulting from thought circulation, accompanied by physical manifestations, making the individual feel pressured for activity." Emotion of thought pays attention to the integrated nature of the emotional and cognitive domains of creativity and considers the creative process as resulting

from cognitive and emotional transformations (Castro, Camras, Halberstadt, & Shuster, 2018). Additionally, emotion is a mental, biological, purposeful, and social phenomenon that occurs in different individuals and is not significantly influenced by cultural conditions and learning, invoking specific physiological responses (Gould, 2019). In this regard, Research by Hollebeek & Chen (2014) emphasizes the need to explore both positively and negatively valenced manifestations of brand engagement, highlighting the importance of considering the full spectrum of emotional experiences. Similarly, Cole et al. (2019) provide insights into emotion dysregulation as a dynamic process, elucidating the bidirectional interplay between emotions, actions, and thoughts, emphasizing the contextual factors that contribute to dysregulation. This highlights the dynamic nature of emotion regulation and its implications for emotional well-being. Furthermore, Lux et al. (2022) focus on the affective and personal aspects of spontaneous thought, shedding light on the emotionally charged and self-relevant thought topics that constitute mind wandering and spontaneous thought. This underscores the affective dimensions of thought processes and their role in shaping spontaneous cognitive experiences. The literature also explores the dynamic nature of emotional experiences in various contexts. For instance, Wassing et al. (2016) discuss the role of restless REM sleep in emotion regulation, emphasizing the relevance of dynamic physiological processes in influencing emotional states. Additionally, Duncan & Elias (2020) emphasize the importance of surfacing unconscious emotions, thoughts, and feelings in the research process, highlighting the dynamic and multifaceted nature of subjective experiences.

Therefore, humans have faced and continue to face various issues in their life path, and solving these issues has led to the emergence of various psychological and biological phenomena. Each psychological phenomenon is the outcome of a coherent interactive system composed of capabilities (cognitive and others such as intelligence), actions, personality, attitudes, motivation, and body (biological basis). These five realms, in a coherent interactive dynamic, lead to the emergence, formation, and manifestation of a psychological phenomenon (Kazemi Haqiqi, 2015). On the other hand, humans employ various methods to solve their problems, utilizing their intelligence and abilities and adopting creative ways. In our country, in

the field of interactive psychology and in the area of creativity, Kazemi Haqiqi first presented the theory of emotion of thought at the seventeenth conference of the World Council for Gifted and Talented Children (England, 2007), and this theory has since spread in international forums. This theory significantly aids in predicting creativity. On the other hand, problem-solving is an issue that humans face from the beginning of their lives, and the process of problem-solving, and subsequently decision-making, necessitates emotion of thought. Kazemi Haqiqi has thoroughly examined and scientifically tested the coherence and integration of personality domains (individual readiness), cognitive (thought and experience), and emotional realms. In search of a clearer profile of the emotional domain of creativity, he devised a new plan for creating an emotional measurement tool for creativity, known as the Test of Dynamism-Impatience.

The Test of Dynamism-Impatience is an instrument developed for the first time by Kazemi Haqiqi (Kazemi Haqiqi, 2010). In addition to his professional experience, specialized expertise, and clinical observations, the literature review of sixty years related to the creative personality, including the study of more than seven hundred research studies and articles, was utilized by him in creating this test. Dynamism refers to a strong feeling of power along with enthusiasm in an active, curious experience for a major exciting discovery, and impatience refers to anxiety, internal entrapment, and unease resulting from thought circulation, accompanied by physical manifestations, making the individual feel pressured for activity. The Test of Dynamism-Impatience, a twelve-factor instrument, comprises two scales: dynamism and impatience. The dynamism scale measures six factors and includes two subscales: emotional tenacity and cognitive resilience. The impatience scale also measures six factors. The dynamism scale includes enthusiasm, curiosity, a strong feeling of power, major discovery, humor, and fascination for experience, while the impatience scale consists of unease, internal entrapment, thought manifestations, anxiety, thought circulation, and feeling pressured (Kazemi Haqiqi, 2014).

This test, despite its necessity, has not yet been normed. In this research, the twelve-factor Test of Dynamism-Impatience was administered to both male and female students, and after data collection, the process of statistical data analysis was conducted for its norming. Thus, this research aims to answer the following

questions: What are the underlying factors in the Test of Dynamism-Impatience in the realm of emotion of thought? Are the factors extracted from the Test of Dynamism-Impatience in the realm of emotion of thought confirmed by the collected data? Do the factors extracted from the Test of Dynamism-Impatience in the realm of emotion of thought have acceptable reliability and validity?

### **Methods and Materials**

The present research is a descriptive study of the survey and norming type. The statistical population of this investigation consists of male and female students aged 15 to 17 years in Tehran who were enrolled in the 2016-2017 academic year. Considering the objectives of the research and the fact that the target population is distributed in clusters based on regions, schools, and classes, a simple cluster sampling method was used to select the educational regions of Tehran for test implementation. Thus, districts one, four, twelve, and twenty were randomly selected for conducting the test. In research based on factor analysis to achieve valid factors, samples must be representative. However, there is no consensus among various experts regarding the necessary sample size for factor analysis. According to Guilford, the minimum sample size is 200 people. Klein believes that for data with a specific factor structure, samples of 100 people are also sufficient (Klein, as cited by Niktash, 2001). According to Camrey (1973, as cited by Hooman, 1996), a sample size of 100 is weak for factor analysis, 200 is relatively appropriate, 300 is good, 500 is very good, and 1000 is excellent. Considering the aforementioned, financial capabilities, time constraints, and the manpower required for data collection and analysis, a sample size of 1000 was determined, and in practice, the test was administered to 973 students across 9 high schools. The initial phase of exploratory factor analysis was conducted on three hundred individuals to identify the test's fundamental factors, and in the final phase, confirmatory factor analysis was performed on the test data of 973 people, including the initial 300. Additionally, to answer the research's second question, a test-retest was conducted on 60 individuals after two weeks. After completing the preliminary administrative steps and identifying the schools, the test was administered in April, May, and June 2017 by the researcher and colleagues in a uniform manner across the schools where the subjects were studying. In each case, after introducing the test and providing general

explanations and clarifying potential ambiguities in understanding the test items, the subjects were assured of the appropriate applications of the test results and, importantly, the confidentiality and independence of the results from their academic and disciplinary matters. They were then asked to individually indicate their agreement with items describing their psychological and psychophysiological states on the answer sheet, within the specified options described above.

In this study, the Test of Dynamism-Impatience in Emotion of Thought, authored by Nasereddin Kazemi Haqiqi, was used. The Test of Dynamism-Impatience in the realm of emotion of thought was created by Nasereddin Kazemi Haqiqi in 2014 with the aim of measuring dynamism-impatience in the realm of emotion of thought. This test consists of 69 items that measure dynamism-impatience in the realm of emotion of thought across three scales: cognitive resilience, emotional tenacity, and psychological impatience, on a Likert scale (strongly agree to strongly disagree). Cognitive resilience itself comprises five components: curiosity (7 items), pursuit (6 items), body tremors (3 items), thirst and hunger (3 items), and experientialism (3 items). The emotional tenacity scale consists of three components: movement (5 items), excitement (3 items), and activity (3 items). Finally, the psychological impatience scale is made up of four components: worry (4 items), psychological weariness (8 items), doubt (8 items), and thought wandering (4 items). The test's answer sheet uses a Likert scale with five options, measuring the subject's agreement with each item that examines one of their psychological or physiological states on a scale from very low to very high, and demographic characteristics such as the educational level of the subjects' parents are also inquired at the beginning of the test. In the considered scale, the option "very low" on the Likert scale is scored as 1, low as 2, medium as 3, high as 4, and very high as 5. An individual's score on each subscale is calculated by summing the numbers representing the chosen options. Accordingly, in the current analysis, the factorial validity of each realm was evaluated separately using exploratory factor analysis.

To examine the factorial validity of the test, exploratory factor analysis with the principal component analysis (PCA) approach was used in all three realms: cognitive resilience, emotional tenacity, and psychological impatience. At this stage, the scree plot was used to

determine the number of components, and varimax rotation was used for component extraction. Furthermore, the internal consistency of the components was examined using Cronbach's alpha coefficient. Finally, the support of the components extracted in exploratory factor analysis was examined through confirmatory factor analysis, the table of standardized factor loadings, and confirmatory index figures. It is noteworthy that data registration, calculations, and various analyses were all performed using computers and software packages SPSS and AMOS 7.0.

### **Findings**

31 participants (3.10%) were 15 years old, 129 participants (43%) were 16 years old, and 140 participants (46.7%) were 17 years old. The mean age and standard deviation of the participants were 16.36 years and 0.663, respectively. The field of study for 95 participants (31.7%) was Mathematics, 130 participants (43.3%) were in Experimental Sciences, and 75 participants (25%) were in Humanities. The educational level of the fathers of the participants was as follows: below high school diploma for 42 participants (14%), high school diploma for 75 participants (25%), associate degree for 15 participants (5%), bachelor's degree for 96 participants (32%), master's degree for 54 participants (18%), and Ph.D. for 18 participants (6%). The educational level of the mothers of the participants was: below high school diploma for 58 participants (19.3%), high school diploma for 115 participants (38.3%), associate degree for 29 participants (9.7%), bachelor's degree for 54 participants (18%), master's degree for 38 participants (12.7%), and Ph.D. for 6 participants (2%).

Question 1: What are the underlying factors in the Test of Dynamism-Impatience in the realm of emotion of thought?

To answer the first research question, the factorial validity of each realm of the Test of Dynamism-Impatience in the realm of emotion of thought was evaluated separately using exploratory factor analysis. This involved analyzing cognitive resilience in the first phase, emotional tenacity in the second phase, and psychological impatience in the third phase using exploratory factor analysis with the principal component analysis (PCA) approach.

Table 1. Mean, Standard Deviation, Correlation Coefficients, and Cronbach's Alpha of the Extracted Components of the Cognitive Resilience Domain

Component	1	2	3	4
Curiosity-Experientialism	-			
Body Tremors	**218.0	-		
Pursuit	**426.0	016.0	-	
Hunger and Thirst	**302.0	**340.0	*122.0	-
Mean	78.29	54.5	57.18	85.7
Standard Deviation	56.8	12.3	23.3	82.2
Cronbach' Alpha	868.0	811.0	655.0	573.0

\*\*p<0.01

As seen in Table 1, the Cronbach's alpha coefficients for the four extracted components of curiosity-experientialism, body tremors, pursuit, and hunger and thirst were 0.868, 0.811, 0.655, and 0.573, respectively, indicating acceptable internal consistency for the items of each extracted component. Moreover, the correlation coefficients obtained in Table 1 show that, except for the correlation coefficients between the

two components of body tremors and pursuit, the correlation coefficients between the other components are significant at least at the 0.05 level. Since the correlation coefficients between the extracted components are not greater than 0.8, it can be claimed that the items of each extracted component measure an independent component.

Table 2. Mean, Standard Deviation, Correlation Coefficients, and Cronbach's Alpha of the Extracted Components of the Emotional Tenacity Scale

Component	1	2	3
1. Tenacity.Movement	-		
2. Activity	**433.0	-	
3. Excitement	**410.0	**576.0	-
Mean	49.17	52.9	61.10
Standard Deviation	92.4	68.2	53.2
Cronbach' Alpha	866.0	755.0	645.0

\*\*p<0.01

As observed in Table 2, the Cronbach's alpha coefficients for the three extracted components of movement, activity, and excitement were 0.866, 0.755, and 0.645, respectively, indicating acceptable internal consistency for the items of each extracted

component. Moreover, the correlation coefficients obtained in Table 2 indicate that the correlation coefficients between the components are significant at the 0.01 level.

Table 3. Correlation Coefficients Among the Components of the Test of Dynamism-Restlessness in the Realm of Emotion of Thought

Variable	1	2	3	4	5	6	7
1. Curiosity-Experientialism	-						
2. Body Tremors	**218.0	-					
3. Pursuit	**426.0	016.0	-				
4. Hunger and Thirst	**302.0	**340.0	*122.0	-			
5. Tenacity.Movement	**184.0	*129.0-	**246.0	062.0	-		
6. Activity	**279.0	**153.0-	**299.0	099.0	**433.0	-	
7. Excitement	**457.0	100.0-	**291.0	**157.0	**410.0	**576.0	-
8. Psychological Impatience	**393.0	**552.0	080.0	**352.0	**149.0-	**227.0-	075.0-

\*\*p<0.01

According to the results of Table 3, the component of curiosity-experientialism is positively correlated with all other components of dynamism-impatience at the 0.01 level. Body tremors are negatively correlated with the components of activity and movement at the 0.01 and 0.05 levels, respectively. Pursuit is positively correlated with the components of hunger and thirst at the 0.05 level and with the components of activity and movement at the significant level of 0.01. Hunger and thirst are positively correlated with the components of excitement and psychological impatience at the 0.01 level. Movement is positively correlated with the components of activity and excitement and negatively with the component of psychological impatience at the 0.01 level. Activity is positively correlated with the component of excitement and negatively with the component of psychological impatience.

Question 2: Do the factors extracted from the Test of Dynamism-Impatience in the realm of emotion of thought have acceptable reliability?

To answer the second question, the Test of Dynamism-Impatience in the realm of emotion of thought was administered to 60 individuals at two time points, two weeks apart. The mean age of this sample group was 16.32, and the standard deviation of their ages was 0.596. The group consisted of 30 females and 30 males. The calculation of correlation coefficients between the components of cognitive resilience showed that the correlation coefficient between scores from two administrations for the component of curiosity-experientialism was 0.997, for body tremors 0.991, for pursuit 0.996, and for hunger and thirst also 0.996. It is noteworthy that the overall correlation coefficient

between the cognitive resilience scores in two administrations was 0.998. All mentioned correlation coefficients were significant at the 0.01 level, indicating the reliability of the component scores of the cognitive resilience scale of the Test of Dynamism-Impatience in the realm of emotion of thought. The calculation of correlation coefficients between the components of the emotional tenacity realm showed that the correlation coefficient between scores from two administrations for the component of movement was 0.999, for activity 0.997, for excitement 0.998, and for the overall score of the emotional tenacity scale in two administrations was 0.999. All mentioned correlation coefficients were significant at the 0.01 level, indicating the reliability of the component scores of the emotional tenacity scale of the Test of Dynamism-Impatience in the realm of emotion of thought. Moreover, the correlation coefficient between the two administrations for the psychological impatience scale was 0.999, significant at the 0.01 level. Overall, given the very high correlation coefficients obtained, it can be said that the component scores of the Test of Dynamism-Impatience in the realm of emotion of thought have a relatively high reliability coefficient.

Question 3: Are the components extracted from the Test of Dynamism-Impatience in the realm of emotion of thought in exploratory factor analysis supported by confirmatory factor analysis?

Figure 1 shows the measurement model of the cognitive resilience scale of the Test of Dynamism-Impatience in the realm of emotion of thought and its factor loadings using standardized data.

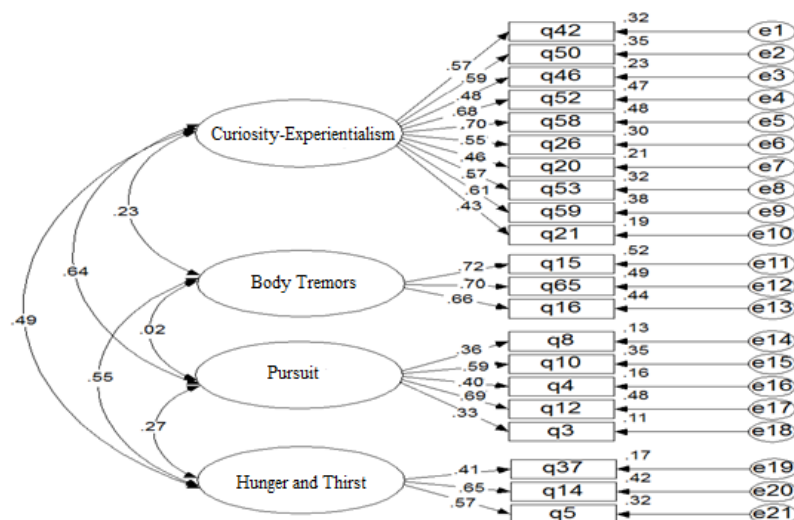


Figure 1. Measurement Model of the Cognitive Resilience Scale of the Test of Dynamism-Restlessness in the Realm of Emotion of Thought

In the next phase, the three-factor structure of the emotional tenacity scale of the Test of Dynamism-Impatience in the realm of emotion of thought (activity, movement, and excitement), which was extracted from exploratory factor analysis, was evaluated using confirmatory factor analysis and maximum likelihood estimation. The analysis results showed that the model's chi-square does not fit the data ( $p < 0.01$ , chi-square = 175.483,  $df = 41$ ,  $N = 972$ ). In contrast, other fit

indices such as the normalized chi-square (chi-square/ $df = 4.280$ ), the root mean square error of approximation (RMSEA = 0.058), the comparative fit index (CFI = 0.954), the goodness of fit index (GFI = 0.969), and the adjusted goodness of fit index (AGFI = 0.950) support the model's fit with the data. Table 4 shows the estimated standardized factor loadings for each item of the emotional tenacity scale of the Test of Dynamism-Impatience in the realm of emotion of thought.

Table 4. Parameters of the Measurement Model of the Emotional Tenacity Scale of the Test of Dynamism-Restlessness in the Realm of Emotion of Thought

Indicator	Non-standard factor loading (B)	Standard factor loading ( $\beta$ )	Standard error	Critical ratio
Activity-q61	1	735.0		
Activity-q56	800.0	595.0	058.0	**687.13
Activity-q17	854.0	639.0	060.0	**147.14
Tenacity.Movement - q24	1	678.0		
Tenacity.Movement - q27	125.1	774.0	057.0	**895.19
Tenacity.Movement- q6	961.0	682.0	053.0	**056.18
Tenacity.Movement - q36	006.1	646.0	058.0	**253.17
Tenacity.Movement - q18	002.1	714.0	053.0	**741.18
Excitement - q33	1	764.0		
Excitement - q51	984.0	733.0	083.0	**872.11
Excitement - q31	530.0	417.0	052.0	**170.10

Note: The unstandardized factor loadings for items 61, 24, and 33 have been fixed at one; therefore, their standard errors and critical ratios have not been calculated.

\*\* $p < 0.01$

According to the results presented in Table 4, the standardized factor loadings of all items are higher than 0.32. The highest factor loading belongs to item 27 (movement) with a beta of 0.774, and the lowest factor loading belongs to item 31 (excitement) with a beta of

0.417. Based on this, it can be said that all items have the necessary capability to measure the three variables of excitement, activity, and movement of the emotional tenacity scale of the Test of Dynamism-Impatience in the realm of emotion of thought. Figure 2 shows the measurement model of the emotional tenacity scale of the Test of Dynamism-Impatience in the realm of emotion of thought and its factor loadings using standardized data.

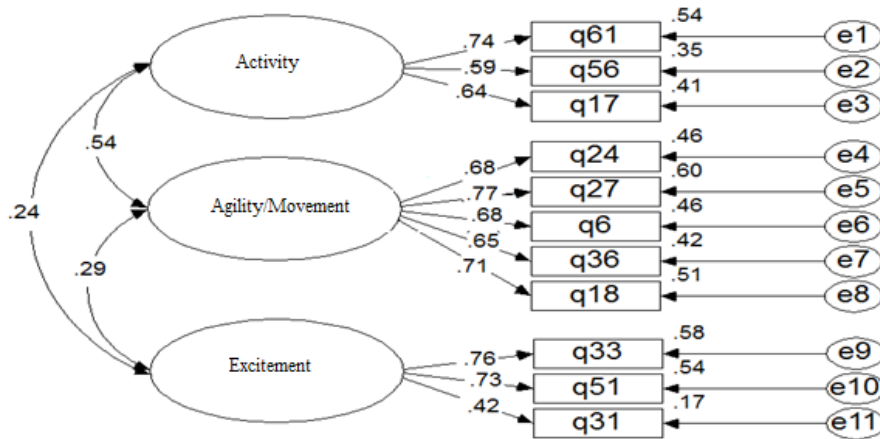


Figure 2. Measurement Model of the Emotional Tenacity Scale of the Test of Dynamism-Restlessness in the Realm of Emotion of Thought

In the final phase, the one-factor structure of the psychological impatience scale of the Test of Dynamism-Impatience in the realm of emotion of thought was evaluated using confirmatory factor analysis with AMOS 7.0 software and maximum likelihood estimation. The analysis results showed that the model's chi-square does not fit the data ( $p < 0.01$ , chi-square = 1118.124,  $df = 252$ ,  $N = 972$ ). In contrast, other fit indices such as the normalized chi-square (chi-square/ $df = 4.437$ ), the

root mean square error of approximation (RMSEA = 0.059), the comparative fit index (CFI = 0.912), the goodness of fit index (GFI = 0.909), and the adjusted goodness of fit index (AGFI = 0.890) support the model's fit with the data. Table 5 shows the estimated standardized factor loadings for each item of the psychological impatience scale of the Test of Dynamism-Impatience in the realm of emotion of thought.

Table 5. Parameters of the Measurement Model of the Psychological Restlessness Scale of the Test of Dynamism-Restlessness in the Realm of Emotion of Thought (Latent Variable: Psychological Restlessness)

Indicator	Non-standard factor loading (B)	Standard factor loading ( $\beta$ )	Standard error	Critical ratio
q35	1	763.0		
q34	019.1	763.0	041.0	**864.24
q40	919.0	721.0	039.0	**253.23
q67	893.0	687.0	041.0	**021.22
q66	882.0	680.0	041.0	**760.21
q43	875.0	634.0	044.0	**120.20
q41	846.0	655.0	041.0	**883.20
q30	859.0	649.0	042.0	**625.20
q32	766.0	623.0	039.0	**736.19
q62	689.0	594.0	037.0	**711.18
q54	728.0	624.0	037.0	**761.19
q48	767.0	601.0	040.0	**963.18
q39	785.0	656.0	037.0	**928.20
q19	749.0	606.0	039.0	**131.19
q9	672.0	529.0	041.0	**519.16
q64	645.0	529.0	039.0	**492.16
q68	681.0	554.0	039.0	**362.17
q57	595.0	522.0	037.0	**285.16



q11	607.0	528.0	037.0	**485.16
q47	617.0	489.0	041.0	**183.15
q44	688.0	496.0	045.0	**416.15
q63	471.0	415.0	037.0	**767.12
q38	520.0	417.0	041.0	**815.12
q25	523.0	393.0	043.0	**073.12

The unstandardized factor loading for item 35 has been fixed at one; therefore, its standard error and critical ratio have not been calculated.

\*\*p<0.01

According to the results presented in Table 5, the standardized factor loadings of all items are higher than 0.32. The highest factor loadings belong to items 34 and 35 (beta = 0.763), and the lowest factor loading belongs

to item 25 (beta = 0.393). Based on this, it can be said that all items have the necessary capability to measure the psychological impatience scale of the Test of Dynamism-Impatience in the realm of emotion of thought. Figure 3 shows the measurement model of the psychological impatience scale of the Test of Dynamism-Impatience in the realm of emotion of thought and its factor loadings using standardized data.

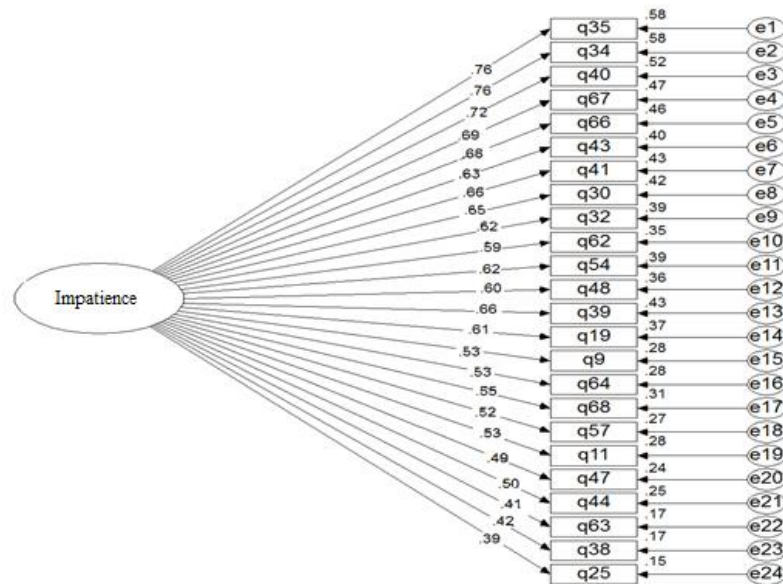


Figure 3. Measurement Model of the Psychological Restlessness Scale of the Test of Dynamism-Restlessness in the Realm of Emotion of Thought

In conclusion, based on the confirmatory factor analysis results, which showed that all items have the necessary capability to measure the latent variables extracted from confirmatory factor analysis, it was concluded that the components extracted from the Test of Dynamism-Impatience in the realm of emotion of thought in exploratory factor analysis are supported by confirmatory factor analysis. This finding indicates the factorial validity of the Test of Dynamism-Impatience in the realm of emotion of thought.

**Conclusion**

The current research was conducted with the aim of norming the Test of Dynamism-Impatience in the realm of emotion of thought. Previous studies that used the Test of Dynamism-Impatience showed that, overall, the creativity of gifted and talented adolescents negatively correlated with four elements of the Impatience scale and was independent of two elements of Impatience (thought circulation and physical manifestations). In that research, the highest negative correlation belonged to anxiety (-0.34). The correlation of these adolescents' creativity with Dynamism was higher than with Impatience (0.51 vs. -0.18). A common feature among

both genders participating in this research is the correlation of adolescents' creativity with the Dynamism scale of the emotion of thought test, which is more prominent among gifted and talented adolescent girls (0.56 vs. 0.44). In both genders, creativity showed a correlation with excitement, a strong feeling of power, humor, and the manifestation of simple emotions. If we accept that the creativity of gifted and talented adolescents, both girls and boys, depends on Dynamism and the absence of Impatience, especially seeking excitement, a strong feeling of power, humor, and the manifestation of simple emotions, it implies a particular inclination towards noticeable restless excitement, pleasure from adventure and excitement, enjoyment of physical activities and excitement, the pleasantness of various sports activities, a wide range of entertaining interests, precise learning of physical activities, possessing high skills in performing physical activities, easy execution of sports movements, the stimulating nature of every ambiguous problem and any challenge large enough for curiosity without becoming overwhelmed, a strong feeling of power in engaging in interesting and novel activities, not feeling the passage of time while solving a problem, noticeable humor, and the manifestation of simple emotions along with impatience for experience are related to their creativity. Therefore, creative thinking of gifted and talented adolescents depends on "a strong feeling of power for active and curious experience of a major exciting discovery; provided that they do not experience anxiety, impatience, internal entrapment, and a feeling of being under pressure." The independence of these adolescents' creativity from thought circulation and physical manifestations means that thought circulation and physical manifestations are neither necessary for the creativity of gifted and talented adolescents nor do they hinder it. The findings of the mentioned research confirm the results of studies that emphasize the relationship between curiosity, experientialism, activity, self-confidence, and emotional traits with creativity. In the mentioned research, the factor of adolescents' talent and intelligence as well as their gender differentiation was considered in data analysis. However, a common factor in both studies is the age range of the subjects, which suggests that if the correlation between creativity and emotion of thought of non-gifted students is studied, the results may not significantly differ from those obtained in the mentioned test. However, to investigate the differences and predict the creative potentials of non-gifted (average) students,

it is suggested that the correlation of the test used in the mentioned research (the creativity test developed by Dr. Jamal Abedi) with the emotion of thought test be analyzed and statistically reviewed.

The analysis results in response to the first research question—what are the underlying factors in the Test of Dynamism-Impatience in the realm of emotion of thought—indicated that this test measures three general scales: cognitive resilience, emotional tenacity, and psychological impatience. The theoretical view posited that the cognitive resilience scale in this test consists of five main components: curiosity, pursuit, body tremors, thirst and hunger, and experientialism. However, the execution of the principal component analysis showed that this scale comprises four components. Based on the analyses, the items of the two components of curiosity and experientialism formed an independent component named curiosity-experientialism, which itself could indicate how thin the line is between the conceptual notion of curiosity and individual experientialism that is dynamic enough to be placed in a single component. As "bravery to explore beliefs" can be another interpretation of "adventure," and as we know, experiencing and experimenting often involves "adventure" and undertaking risky activities (Sternberg & Lubart, 1993, as cited by Kazemi, 2015). Ultimately, it was concluded that cognitive resilience itself consists of four components: curiosity-experientialism, pursuit, body tremors, and thirst and hunger. The analyses also confirmed the theoretical view that the emotional tenacity scale consists of three components: movement, excitement, and activity. Although the initial test assumed that the Impatience scale consisted of four components: anxiety, psychological weariness, doubt, and thought wandering, the execution of the principal component analysis showed that this scale is comprised of only one component, leading to the conclusion that factors such as an individual's doubts, anxieties, mental entrapments, thought circulations, and thoughts, and everything mentioned in the items of this realm, all indicate the emergence of an issue named Impatience. As mentioned, this concept has symptoms similar to those of depression syndrome.

The analysis of the test and retest data, conducted at two-week intervals on 60 individuals with the aim of answering the second question of the Test of Dynamism-Impatience in the realm of emotion of thought examining its reliability, showed that the correlation coefficient between the scores of the two

administrations for the curiosity-experientialism component was 0.997, for body tremors 0.991, for pursuit 0.996, and for thirst-hunger also 0.996, and the overall correlation coefficient between the scores of cognitive resilience in the two administrations was 0.998. All the mentioned correlation coefficients were significant at the 0.01 level, indicating the reliability of the component scores of the cognitive resilience scale of the Test of Dynamism-Impatience in the realm of emotion of thought. The reliability coefficient (Cronbach's alpha) of the cognitive resilience subscale was reported as 0.78, and this difference could be due to the increase in the number of questions (from 52 to 69 questions), the method of calculating reliability, and also narrowing the age range of the subjects.

The calculation of correlation coefficients between the components of the emotional tenacity scale showed that the correlation coefficient between the scores of the two administrations for the movement component was 0.999, for activity 0.997, for excitement 0.998, and for the overall score of the emotional tenacity scale in the two administrations was 0.999. All the mentioned correlation coefficients were significant at the 0.01 level, indicating the reliability of the component scores of the emotional tenacity scale of the Test of Dynamism-Impatience in the realm of emotion of thought. In the test referred to by the author, the reliability coefficient (Cronbach's alpha) of the emotional tenacity scale was 0.81, and this difference could also be due to the aforementioned reasons. Additionally, the correlation coefficient between the two administrations for the psychological impatience scale was 0.999, significant at the 0.01 level. In the author's test, the reliability coefficient (Cronbach's alpha) of the Impatience scale was reported as 0.92, which could be due to the reasons mentioned for the other two scales. Overall, given the very high correlation coefficients obtained, it can be said that the component scores of the Test of Dynamism-Impatience in the realm of emotion of thought possess a relatively high reliability coefficient.

In examining the response to the third research question regarding whether the components extracted from the Test of Dynamism-Impatience in the realm of emotion of thought in exploratory factor analysis are supported by confirmatory factor analysis, the test was administered to 973 individuals, and the factorial structure of all three scales of the test, extracted from exploratory factor analysis, was evaluated using confirmatory factor analysis. The results of the confirmatory factor analysis showed that the

standardized factor loadings of all items are higher than 0.32, indicating that all items of this test have the necessary capability to measure the latent variables extracted and are supported by confirmatory factor analysis. This finding indicates the factorial validity of the Test of Dynamism-Impatience in the realm of emotion of thought. It should be noted that in the author's initial test, the moment correlation coefficients as a validity index for the Dynamism scale ranged significantly from 0.39 to 0.74, and for the Impatience scale, between 0.4 to 0.75. Overall, considering the statistical indices and norm tables resulting from the research, the findings can be used to investigate the emotional and cognitive domains of adolescents' psychological system, provide suitable diagnostic utility, and predict their creative potentials.

Among the limitations of the current research are the absence of similar studies on the research topic in Iran, the novelty of the topic, and the scarcity of both English and Persian resources related to the topic. This research was conducted on students aged 15 to 17 years in Tehran. It is suggested that considering the statistical population examined by the test developer, it be implemented and analyzed in other age groups and nationwide. This research and the normed test could be highly applicable in schools and significantly assist in enhancing teachers' accurate understanding of students and appropriately adjusting teaching and educational methods through a deeper understanding of their psychological characteristics.

### **Acknowledgments**

The cooperation of all participants in the research is thanked and appreciated.

### **Declaration of Interest**

The authors of this article declared no conflict of interest.

### **Ethics principles**

In this study, ethical considerations such as obtaining full consent from all participants, maintaining confidentiality and secrecy of information, and allowing participants to withdraw from study.

### **Authors' Contributions**

All authors contributed equally.

## References

- Castro, V. L., Camras, L. A., Halberstadt, A. G., & Shuster, M. (2018). Children's prototypic facial expressions during emotion-eliciting conversations with their mothers. *Emotion, 18*(2), 260.
- Cole, P., Ramsook, K., & Ram, N. (2019). Emotion dysregulation as a dynamic process. *Development and Psychopathology, 31*(3), 1191-1201. <https://doi.org/10.1017/s0954579419000695>
- Duncan, C. and Elias, S. (2020). (inter)subjectivity in the research pair: countertransference and radical reflexivity in organizational research. *Organization, 13*5050842092852. <https://doi.org/10.1177/1350508420928524>
- Fedotova, O., & Latun, V. (2015). The first Russian project of the Asian Academy: new geopolitical vector. *Mediterranean Journal of Social Sciences, 6*(4), 356.
- Guild, E. (2019). On Tenderness and Tickling: Body, Emotion, Thought.
- Hollebeek, L. and Chen, T. (2014). Exploring positively- versus negatively-valenced brand engagement: a conceptual model. *Journal of Product & Brand Management, 23*(1), 62-74. <https://doi.org/10.1108/jpbm-06-2013-0332>
- Kazemi Haghighi, N. (2007). The hexahedral paradigm of creative personality: "A review of sixty years of literature for the 21st century," World Council for Gifted and Talented Children, 17th Biennial World Conference.
- Kazemi Haqiqi, Nasereddin. (2010). The relationship between emotion of thought and creativity among gifted and talented boys and girls, *Exceptional Children Quarterly, 1*(1), 9-22.
- Kazemi Haqiqi, Nasereddin. (2015). Creativity. Tehran: Taban Khord Publications.
- Kazemi Haqiqi, Nasereddin. (2015). The Interactive School of Talent and Intelligence: A New Perspective in Foundations; The Tripartite System of Intelligence, *International Journal of Talent, 1*(1), 3-9.
- Lux, B., Andrews-Hanna, J., Han, J., Lee, E., & Woo, C. (2022). When self comes to a wandering mind: brain representations and dynamics of self-generated concepts in spontaneous thought. *Science Advances, 8*(35). <https://doi.org/10.1126/sciadv.abn8616>
- Shokoohi-Yekta, M., & Malayeri, S. A. (2015). Effects of Advanced Parenting Training on Children's Behavioral Problems and Family Problem Solving. *Procedia-Social and Behavioral Sciences, 205*, 676-680.
- Wassing, R., Benjamins, J., Dekker, K., Moens, S., Spiegelhalder, K., Feige, B., ... & Someren, E. (2016). Slow dissolving of emotional distress contributes to hyperarousal. *Proceedings of the National Academy of Sciences, 113*(9), 2538-2543. <https://doi.org/10.1073/pnas.1522520113>