The relationships between Gregoric cognitive styles with entrepreneurship characteristics of bachelor’s students in Payam Noor University

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Abstract

The aim of this study was to investigate the relationships between cognitive styles with entrepreneurship characteristics of bachelor’s students in Taft Payam Noor University. This describe-correlative research was based on the data collected through field methods. The statistical sample included 2496 bachelor’s students. A sample size of 352 individuals was determined by stratified random sampling method. Following data collection and analysis, models for path analysis were designed by the software LISREL to study the relationships between Gregoric cognitive styles with entrepreneurship characteristics. Results of the hypotheses showed that there were significant, direct, and positive relationships between three cognitive styles and entrepreneurship characteristics. The cognitive styles in order of concrete-sequential 45% (cs), abstract-sequential 29% (as), and abstract-random showed the highest and lowest significant positive relationship to the entrepreneurship characteristics. However, there was not a significantly direct correlation between the cognitive styles of objective-random 0.0% (cr) with the entrepreneurship characteristics. The results also show that the cognitive styles of objective-sequential, abstract-sequential, concrete-random, and abstract-random altogether could explain 75% of changes in the entrepreneurial characteristics.

Keyword: Entrepreneurial characteristics, Recognition styles, Concrete-sequential, Abstract, sequential, Concrete -random, Abstract- random.
1 Introduction
After the changes emerged in the methods for the study of psychology especially in the second half of the twentieth century, new approaches were introduced and cognition (rather than observable behavior) was of interest to researchers in this field. According to Atkinson et al. (1384), the new cognitive psychology is based on two general assumptions: a) only through the study of mental processes, which can completely realize what the organisms are doing; b) objective method may be used to review the mental processes and also to interpret those behaviors in terms of underlying mental processes.

The energetic model of Gregoric styles is the most important theory of cognitive styles. Cognitive learning styles are based on the way an individual understands the topics, memorizes the information, thinks about the subjects, and solves problems (Saif et al., 2005). The cognitive styles refer to the nature of people and their sustainable approach for organizing and processing information; they also deal with the knowledge on how the human brain organizes the perception, conception, and representation of its surrounding world. These styles influence the management policies and focus on an individual’s decision quality as well as the type of one’s reaction to the environmental stimuli (Riding, 2005). The study on entrepreneurship has become the most popular research field in management studies. It will not be an exaggeration to say that entrepreneurship has been one of the "hot topics" of discussion in the society, education and scientific research in recent decades (Landstrum, 2005). In developed countries, entrepreneurs have played the key roles in the economic and social development (Saidi Kia, 2006).

Also the holy Koran sometimes interprets the entrepreneurship and creativity to mean conquer: “God granted the natural phenomena such force that humans can seize and make any changes and construction by the use of his sovereignty and dominion” (Jasieh, Verse 13). Nowadays, due to the demand for the employment of job-seekers, in particular university graduates, the subject of entrepreneurship has gained a great importance as a motivation of economic development. In managerial approaches, the achievement of economic growth and development requires creative and innovative entrepreneurs. The encouragement of active entrepreneurs, and identification and upbringing of potential entrepreneurs account for the most important strategic action for the promotion of entrepreneurial activities and the development entrepreneurial culture at the university (Kurdnaejej et al., 2006). As Yamada (2004) noted, entrepreneurship leads to the creation of new values and provides new employment opportunities.

Research has shown a positive correlation of 70% between entrepreneurship and economic growth (Reynolds et al., 2000). In a general view, the characteristics of entrepreneurs are more distinguished than others. For this reason, one of the first and most important approach in entrepreneurial studies has been the personality characteristics method (Kurdnaejej, 2006). In the course of explaining the concept of entrepreneurship, a variety of characteristics, functions, and activities are attributed to an entrepreneur. Psychologists aiming at presenting theories on the distinction between entrepreneurs with non-entrepreneurs and managers, have investigated the psychological characteristics of entrepreneurs (Ahmad Pour Dariani, 2009).
**Problem statement**

An understanding of the cognitive style and the personalities of entrepreneurs makes it possible to improve education in individuals with potential entrepreneurship characteristics. Accordingly, the present research examined the relationship between cognitive styles with entrepreneurship characteristics of bachelor’s students in Payame Noor University and prepared the ground for the identification of entrepreneurs. This is because an entrepreneur student is a manager with initiative and intellection, who creates golden opportunities for others together with creativity, risk-taking and expanded perspective (Jahanban, 2012).

The study on entrepreneurship involves the vast fields of management, economics, sociology, and psychology with an interdisciplinary importance. Researchers at various fields of science have conducted relatively considerable studies in the field of entrepreneurship, but little research has been performed on the relationship of entrepreneurship with the personality characteristics. Because different personal aspects have noticeable impacts on the entrepreneurship, it seems necessary to consider the personalities of individuals and their relationships with entrepreneurship. According to Reiding (2005), identification of individuals’ cognitive styles helps the trainees to, with a knowledge of the type of their own strategies, learn the approaches by which they make use of maximum advantages of their own styles for learning (including learning entrepreneurship skills) and to minimize weaknesses.

The Gregoric defines a style as a level of behaviors and superficial, appearant, and artificial properties. His energetic model is based on two general rules: time and space. Meanwhile, space refers to perceptual classifications for the acquisition and expression of information, which is divided into objective (physical) and abstract (metaphorical). Time is divided into two different methods of regulating the facts and events: sequential (stepwise) and random (spiral) (Grigorenko & Sternberg, 1995). In the concrete perception, the learner prefers to process the physical aspects of information through the senses, but in spiritual understanding, one tends to process information through reasoning and intuition, which are not usually visible. Also in the sequential method, the learner prefers to organize the information linearly and step wisely, while in the random style one prefers to organize the information in a network and connect the data together via different methods (Pham, 2000).

Gregoric has raised four different styles that mediate the interaction of individuals with the environment and qualitatively differ (Zare, 1391). These four styles are:

1. Concrete-sequential (CS)
2. Abstract - random (AR)
3. Abstract-sequential (AS)
4. Concrete-random (CR)

The characteristics of individuals based on cognitive styles are (Grigorenko & Sternberg 1995):

**The concrete-sequential** refers to the discipline, practice and stability. These individuals tend to focus on objective facts and physical objects, and evaluate opinions by their senses.

**The abstract-sequential** points to the mental induction of the environment. These individuals tend to focus on the logical world having a combined rational thinking and evaluate the information with their personal rules.

**Abstract-random** denotes the physical and emotional freedom. Abstract-random individuals tend to focus on the world, feelings, and emotions, and evaluate the beliefs with the help of internal guidance.
Concrete-random describes the free environmental stimuli. Concrete-random individuals desire to intuitive thinking and rely on personal non-external reasons for the evaluation of beliefs.

The combination of two basic dimensions of space and time results in four different styles (concrete-sequential, abstract-random, abstract-sequential, concrete-random), which facilitate the interaction of individuals with the environment and qualitatively differ. It is worth noting that these four styles describe an individual’s thinking patterns, mental arrays and methods for the expression of feelings. Although a possibility exists that individuals obtain the same scores in each style, they usually tend to one or two styles, which best affect the way they interact with the environment (Grigorenko & Sternberg, 1995).

According to Kurdnaeej (2006), the theory of entrepreneurship can be assessed based on an approach with four perspectives of psychological, cultural-social, economic and communication networks, from which the psychological or entrepreneurial personality approach is discussed due to the related issues.

**Psychological or entrepreneurial personality approach.** Earlier entrepreneurial studies suggest that entrepreneurs are of special characteristics, some of which are psychological; such an approach that aims to explain the personalities is called "characteristics" or "personality" approach. The personality characteristics approach emphasizes the hypothesis that entrepreneurs have features, viewpoints, perspective, and values that provide them with a motivating force discriminating them out of others. The literature of entrepreneurship shows that the characteristics of personality approach is more common in comparison to other styles (Poorqaz et al., 2011). According to the psychological approach, certain personality characteristics make people capable of entrepreneurial. Commitment, responsibility, creativity, and competence etc. of an entrepreneur, form the basis of an entrepreneurial mission in order to create perspectives for new activities and to turn them into actions (Landstrum, 2005). Based on the theory of documents, attributing humans’ behavior to personality characteristics and lack of attention to environmental factors is a fundamental error. However, the personality characteristics and behavior of the entrepreneurs cannot be ignored as Kutel Nikov (2005) believes that the impacts of personality and environmental traits are at least fifty-fifty. During the last two decades of 20th century, most experts of entrepreneurship enumerated five important and principle capabilities of "creativity" (Galbrath, 2002), "risk-taking" (Olayitan & Ayobami, 2011), "intrinsic control" (Gatwood, Shavra, and Gartner, 1995; Hood and Yong, 1993), "progress motivation" (Bella and Sherman, 1995; Delmar, 1996, Miner, Smith, and Beraker, 1992), and "independence" of (Vesper, 1993; Poordariani, 2002). Based on the research conducted, raising the above characteristics in individuals renders the promotion of their entrepreneurship capabilities. The most important personality characteristics of entrepreneurs are (Kurdnaeej, 2006):

**Balanced risk-taking:** the acceptance of risks that can be controled through personal and intrinsic conflicts (Safai, 2009).

**Locus of Control:** Locus of control is one of the characteristics of personality studied in the field of organizational management that can affect many behavioral aspects of employee and managers (Kurdnaeej, 2006).

**Seeking achievement (need of achievement):** Those who have a motivation for progress trying to do things better. The entrepreneurs who are competitive and challenging with the help of their
incentive and internal motivation, feel some sort of achievement and being mentioned (Safai, 2009).

**Creativity:** creativity is the ability to create new ideas, which may lead to new products and includes the application of mental abilities for the creation of a new concept or idea (Safai, 2009).

Creativity is broken down into three elements namely **clearness of thought** (intellectual domain), **initiative** (practical territory), and **fantasy** (In the realm of imaginary) (Kurdnaeej, 2006).

**Tolerance for ambiguity:** To accept uncertainty as a part of life, a characteristics which seems to be far greater in entrepreneurs than other people (Safai, 2009).

**Seeking challenge (mental stimulation):** This ability is one of the components to recognize and grasp the opportunities as each opportunity is indeed a challenge. Entrepreneurs are able to work in an environment that can be challengeable (Kurdnaeej, 2006).

Heidari (2009) studied the relationship between the psychological characteristics and entrepreneurship and showed that there was a relationship between each component of psychological traits and entrepreneurship, through which entrepreneurship can be predicted. The findings of Salmanizadeh and Ansari (2009) on psychological characteristics of entrepreneurs in our country show that, overall, the entrepreneurial behavior of respondents and their psychological characteristics were significantly correlated.

Study of students’ entrepreneurship features was the research topic of Ahmadpoor Dariani et al. (2009) who concluded that there were significant relationships between variables such as tolerance of ambiguity, belief in internal control, the need of achievement, risk-taking, creativity, and independence with entrepreneurship.

Aqajani and Ganjehkhor (2010) clarified the role of psychological characteristics of entrepreneurs in the process of independent entrepreneurship and, using six psychological variables in a regression analysis model, explained the process of independent entrepreneurship, and reported that each variable affected entrepreneurship as direct and indirect interaction.

Hozoori et al (2011) studied the relationship between Gregoric cognitive styles with entrepreneurship characteristics of master's students in Payame Noor University and found significant positive relationships between the cognitive styles and entrepreneurship features with the concrete-successive style being of highest correlation among the variables.

O'Brien (1999) surveyed the relation of some characteristics of students with their preferred cognitive style and concluded that the cognitive styles were different among the boys and girls with the male students being mostly abstract-sequential whereas the females were mainly random-abstract.

Borumandnasab (2001) investigated the relationships of progress motivation, risk-taking, creativity and self-esteem in the students. Their results indicated that progress motivation, creativity, and entrepreneurship of the students were significantly correlated.

Hensmark (2003) demonstrated that most entrepreneurs have special psychological features such as seeking dependence, need of achievement, and inner control locus.

Al-Dabbagh and Alabaidi (2007) also detected that creativity levels were medium for the most members of study samples with similar cognition styles.
Ford et al. (2003) examined the role of cognitive styles among entrepreneurs and the effects of cognitive incentives on the tendency of individuals to new economic activities; they realized that strengthening the decision due to seeking perfection is particularly influenced by the adaptive cognition style.

Lee et al. (2007) raised the structure and process of entrepreneur identification, that is, the expansion of cognition using the processes of decision-making learning entrepreneurship.

Duel et al. (2007) in a research on entrepreneurs observed that individuals with greater levels of entrepreneurial tendencies mostly apply the intuition-oriented cognitive style compared with the analysis-oriented one; moreover, there were no differences between male and female entrepreneurs in terms of cognitive style and entrepreneurial tendencies.

A study by Hofstede (2005) in 53 countries indicates a low level of tolerance for ambiguity in the Iranian society as it is that the society does not accept a change nor wants to risk.

Jafarzadeh (1384) surveyed about entrepreneurship among university graduates and showed that the majority of graduates of Tehran University (97.7 percent) had high or very high needs for achievement. Another research on evaluating the characteristics of entrepreneurship among the students of Mazandaran University reported that 77.5 percent had achievement motivations (Zali, 2005). The results of Shekarshekan et al. (2002) showed a multiple correlation coefficient of 61 percent for motivation of achievement, creativity and self-esteem with entrepreneurship in Martyr Chamran University students. Studies by Mcland (2008) revealed the personality feature of success seeking in most entrepreneurs.

Vaissey and Karimizadeh (2008) a study on entrepreneurship, elements and strategies, stressed that entrepreneurship plays an important role in the organizational culture and labor efficiency.

Ehteshami et al. (2012) examined the factors influencing the development of entrepreneurship in women and girls students and suggested that the educational, cultural and economic parameters were effective on the development of entrepreneurship in women and girls students at higher levels than average, among which the economic and educational parameters, respectively, had the greatest and lowest contributions. Whereas the role of entrepreneurs cannot be denied in the economic development of countries, evidence available indicates that the educational programs offered in Iran have not been designed to foster the students' entrepreneurial personality traits (Faiz and Safaei, 2009).

2. Materials and Methods

Methodology: The study of evolution in the research methodology on entrepreneurship field suggests that such studies started with an exploratory approach and gradually moved toward an experimental one (Landstrum, 2005). In this research, the quadruple cognition methods based on the Grigoric model are the independent variables, and the octal personality characteristics of entrepreneurship are the dependent ones. With respect to methodology, this is a descriptive-correlational study, and a fundamental one in terms of the goal.

The study hypotheses
1. There is a significant relationship between the cognition style of concrete-sequential and the entrepreneurial characteristics of bachelor’s students in Taft Payame Noor University.
2. There is a significant relationship between the cognition style of abstract-sequential and the entrepreneurial characteristics of bachelor’s students in Taft Payame Noor University.

3. There is a significant relationship between the cognition style of concrete-random and the entrepreneurial characteristics of bachelor’s students in Taft Payame Noor University.

4. There is a significant relationship between the cognition style of concrete-random and the entrepreneurial characteristics of bachelor’s students in Taft Payame Noor University.

Methodology
The statistical sample (2496 individuals) of this research was the students in Taft Payame Noor University. A sample size of 352 was obtained using the stratified random sampling through the Kukran formula. After the distributed questionnaires (n=370) were collected, the tests were analyzed using data from a total of 352 questionnaires.

This study employed two standard questionnaires: a test of 95 questions as an assessment tool for the personality characteristics of entrepreneurs, and the other one of 40 questions as the Gregoric cognition styles.

Reliability and validity of the questionnaires: If a measuring tool is not valid enough, the implementation of an empirical research would be nonsense (Afrooz and Hooman, 1997). Hence, the reliability of the questionnaire for the personality characteristics of entrepreneurs calculated by the method of Cronbach’s Alpha was reported to be 0.88; the reliability of the other test for the questionnaire of Gregoric cognition styles using the calculation of Cronbach’s Alpha was equal to 0.79.

3 Results and discussion
a) Descriptive statistics of the respondents: Evaluation of the variables for the characteristics of entrepreneurship:

<table>
<thead>
<tr>
<th>Entrepreneurship</th>
<th>Abundance</th>
<th>Percentage</th>
<th>Valid percentage</th>
<th>The Cumulative percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very weak</td>
<td>1</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Weak</td>
<td>50</td>
<td>14.2</td>
<td>14.2</td>
<td>14.5</td>
</tr>
<tr>
<td>Strong</td>
<td>276</td>
<td>78.4</td>
<td>78.4</td>
<td>92.9</td>
</tr>
<tr>
<td>Very strong</td>
<td>25</td>
<td>7.1</td>
<td>7.1</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>352</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

According to Table 1, 7.1 percent (n = 25) are of very strong, 78.4 percent (n=276) strong, 14.2 percent (n= 50) weak, and 0.3 percent (n = 1) very weak entrepreneurship.

B) Inferential statistics. Initial solution (without turning): To answer the question of what factors constitute the entrepreneurship scale, the analysis of original components was used. Based on the results, apart from variable of tolerance for ambiguity for which only 1% of the variance is explained by other indices, other indices show relatively high contributions. The path
analysis test was used to assess the relationship between the cognitive styles and the entrepreneurship index. First all exogenous variables (cognitive styles) was evaluated directly in order to determine the variables related with entrepreneurship.

**The basic model.** In this study, the confirmatory factor analysis using path analysis was conducted to test significance of the factors.

**Inferential reliability analysis of the questionnaire**

The Cronbach’s Alpha was used to determine the inferential reliability analysis of the questionnaire. If the coefficient of Alpha is greater than 0.7, the questionnaire is of an acceptable reliability. Calculating the reliability of the questionnaires

<table>
<thead>
<tr>
<th>Table 2. Reliability of the questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s Alpha</td>
</tr>
<tr>
<td>0.787</td>
</tr>
<tr>
<td>0.883</td>
</tr>
</tbody>
</table>

Table 2 displays the Cronbach’s Alpha and the number of questions in each questionnaire. Since the value of Alpha of for all questionnaires is larger than 0.7, the test is of an acceptable reliability.

**Analysis of the data:** Data were analyzed using the software SPSS18. The relationships between the variables and parameters were evaluated through the confirmatory factor analysis and the structural equations technique using the software. LISREL 8.72, which is a well-known software to implement these models, and also to test the hypotheses aiming at assessing the simultaneous, direct/indirect relationships between variables.

**Confirmatory factor analysis:** In the confirmatory factor analysis, the software Lisrel is used for modeling. The aim of such models is to strengthen the relationships between latent and observed variables (Hoorman, 2005).

**Hypothesis test:** Statistical results in Table 3 show that the variables cs, ar, and as have direct and positive relationships with the entrepreneurial index. The variable cr was not correlated to the entrepreneurship index.

<table>
<thead>
<tr>
<th>Table 3. Status of the study hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis</td>
</tr>
<tr>
<td>1. There is a significant relationship between the cognition style concrete-sequential (cs) and the entrepreneurial</td>
</tr>
</tbody>
</table>
characteristics of bachelor’s students in Taft Payame Noor University.

2. There is a significant relationship between the cognition style abstract-sequential (as) and the entrepreneurial characteristics of bachelor’s students in Taft Payame Noor University. Yes 29% P <0.05 2/67 Confirmed

3. There is a significant relationship between the cognition style concrete-random (cr) and the entrepreneurial characteristics of bachelor’s students in Taft Payame Noor University. No 0.001% P <0.05 0.01 disapproval

4. There is a significant relationship between the cognition style abstract-random (ar) and the entrepreneurial characteristics of bachelor’s students in Taft Payame Noor University. Yes 23% P <0.05 2/27 Confirmed

In Table (2), the assumptions are shown. Therefore, the path analysis was performed again with entrepreneurial characteristics. In this situation, the entrepreneurial indices: a balanced risk-taking, locus of control, need of achievement, clearness of thought, pragmatism, tolerance of ambiguity, fantasy, and challengeability were considered as internal variables (dependent). The cognition styles: concrete-sequential, abstract- sequential, concrete-random, and abstract-random were taken as exogenous variables (independent). Also in this model, significant, direct and positive relationships of 45%, 29%, and 23% were found the variables CS, AS, and AR, respectively, with the characteristics of entrepreneurs. However, the variable CR showed no direct, significant relationships (0%) with none of the entrepreneurial characteristics. The AS, AR, and CS variables were considered as interdependent in this study.

Mode 1. The model in standard coefficients mode

Model 1 shows the standard mode. According to standard coefficients, the cognition styles of CS (0.45), AS (0.29), and CR (0.23), respectively, had the highest impacts on the characteristics of entrepreneurship, but the cognitive style CR did not affected those traits.

Table 4. Coefficients and values of t for the features of entrepreneurship index

<table>
<thead>
<tr>
<th>Items</th>
<th>Standard coefficient</th>
<th>t-statistics</th>
<th>Coefficient</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk-taking</td>
<td>BR</td>
<td>0.42</td>
<td>5.27</td>
<td>0.17</td>
</tr>
<tr>
<td>Locus of control</td>
<td>LC</td>
<td>0.69</td>
<td>7.17</td>
<td>0.48</td>
</tr>
<tr>
<td>Need of Achievement</td>
<td>ST</td>
<td>0.84</td>
<td>7.58</td>
<td>0.71</td>
</tr>
</tbody>
</table>
According to Table 4, all variables have a t-statistics value larger than 96.1. Their coefficients of determination were perfect, then none of the items are removed from the model and the work continued with all items (questions) to assess the model.

Based on the standard coefficients (factor loads), the index that has the highest factor load will have a greater contribution to the measurement of the relevant variable; the indicator with a smaller coefficient will play a smaller role in the measurement. The model in standard mode indicates the amount of the latent variable variance explained by the observed variable.

**Confirmatory factor analysis chart:**

Table 5 summarizes the standardized coefficients, coefficients of determination, t-statistics, and the results of hypotheses.

<table>
<thead>
<tr>
<th>The main hypotheses</th>
<th>Standard coefficient</th>
<th>t-statistics</th>
<th>The coefficient of determination</th>
<th>Research Results</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal electronic integration → Characteristics of entrepreneurship</td>
<td>0.45</td>
<td>2.32</td>
<td>0.75</td>
<td>Confirmed</td>
<td>(1)</td>
</tr>
<tr>
<td>Electronic integration of external → Characteristics of entrepreneurship</td>
<td>0.29</td>
<td>2.67</td>
<td>0.75</td>
<td>Confirmed</td>
<td>(2)</td>
</tr>
<tr>
<td>Absorption capacity → Characteristics of entrepreneurship</td>
<td>0.00</td>
<td>0.01</td>
<td>0.75</td>
<td>Rejection</td>
<td>(3)</td>
</tr>
<tr>
<td>Internal cost management → Characteristics of entrepreneurship</td>
<td>0.23</td>
<td>2.27</td>
<td>0.75</td>
<td>Confirmed</td>
<td>(4)</td>
</tr>
</tbody>
</table>

Table 5 shows an estimated value for the coefficient of determination of 0.75. In addition, it shows that the cognitive styles CS, AS, CR, and AR altogether could explain 0.75 of changes in the characteristics of entrepreneurship. Given the values of standard coefficients and t-statistics, it can be concluded that cognitive styles CS (0.45), AS (0.29) and AR (0.23), respectively,
exerted the highest impacts on the characteristics of entrepreneurship variable (the highest standardized path coefficient); the CR cognitive style had no significant effects on the variable of entrepreneurship traits.

**Testing research hypotheses:** After assessing and confirming the original model, the assumptions of the main model in this study were evaluated. In this section, the assumptions related to each test question were tested.

**Hypothesis (1):** There is a significant relationship between the cognitive style concrete-sequential and the entrepreneurial characteristics of bachelor’s students in Taft Payame Noor University.

Table 6. t-statistics for Hypothesis (1)

<table>
<thead>
<tr>
<th>t-statistics</th>
<th>Table value</th>
<th>Conclusion</th>
<th>Percentage of effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.32</td>
<td>1/96</td>
<td>Affects</td>
<td>0.45</td>
</tr>
</tbody>
</table>

According to Table 6, the absolute value of t-statistics (2.32) is greater than 1.96, which rejects the null hypothesis at 95% confidence level. This means that the CS cognitive style significantly impacts the entrepreneurship characteristics of bachelor’s students in Taft Payame Noor University with an effective, direct, and positive value of 0.45, which is consistent with the results of Hozoori (2011) and Kurdnaeej (2007).

**Hypothesis (2).** There is a significant relationship between the cognition style abstract-sequential and the entrepreneurial characteristics of bechelor’s students in Taft Payame Noor University.

Table 7. t-statistics for Hypothesis (2)

<table>
<thead>
<tr>
<th>t-statistics</th>
<th>Table value</th>
<th>Conclusion</th>
<th>Percentage of effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.67</td>
<td>1.96</td>
<td>Affects</td>
<td>0.29</td>
</tr>
</tbody>
</table>

According to Table 7, the absolute value of t-statistics (2.67) is greater than 1.96, which rejects the null hypothesis at 95% confidence level. This means that the AS cognitive style significantly impacts the entrepreneurship characteristics of bachelor’s students in Taft Payame Noor University with an effective, direct, and positive value of 0.29, which is consistent with the results of Hozoori (2011) and Kurdnaeej (2007).

**Hypothesis (3):** There is a significant relationship between the cognition style concrete-random and the entrepreneurial characteristics of bechelor’s students in Taft Payame Noor University.

Table 8. t-statistics for Hypothesis (3)

<table>
<thead>
<tr>
<th>t-statistics</th>
<th>Table value</th>
<th>Conclusion</th>
<th>Percentage of effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>1.96</td>
<td>No effect</td>
<td>0.00</td>
</tr>
</tbody>
</table>
According to Table 8, the absolute value of t-statistics (0.1) is greater than 1.96, which does not reject the null hypothesis at 95% confidence level. This means that the CR cognitive style does not significantly impact the entrepreneurship characteristics of bachelor’s students in Taft Payame Noor University, which is consistent with the results of Hozoori (2011) and Kurdnaeej (2007).

**Hypothesis (4): There is a significant relationship between the cognition style abstract-random and the entrepreneurial characteristics of bachelor’s students in Taft Payame Noor University.**

<table>
<thead>
<tr>
<th>Table 9. t-statistics for Hypothesis (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-statistics</td>
</tr>
<tr>
<td>2.27</td>
</tr>
</tbody>
</table>

According to Table 6, the absolute value of t-statistics (2.27) is greater than 1.96, which rejects the null hypothesis at 95% confidence level. This means that the AR cognitive style significantly impacts the entrepreneurship characteristics of bachelor’s students in Taft Payame Noor University with an effective, direct, and positive value of 0.23, which is consistent with the results of Hozoori (2011) and Kurdnaeej (2007).

**Conclusion:** It was observed in the path analysis model for the entrepreneurial index that the cognition styles CS, AS, and AR are statistically correlated with the characteristics of entrepreneurship. There was no significant relationship between the CR style and characteristics of entrepreneurs. The results of this study are in entire agreement with the results of Hozoori et al. (2011) as well as with Baron (2004) who emphasized the cognitive aspect of entrepreneurship. Our findings are also perfectly compatible with Ferse and Rech (2001) and Hsrych et al. (2007) who noted the role of personality factors in entrepreneurship. The results of this research further corroborate those reported by Al-Dabbagh and Al-Obeidi (2007), Lee et al. (2007), and Wendy and Fisher (2007). The present results also show that the cognitive style CS and entrepreneurial personality traits directly and positively related. The the highest to lowest impacts of cognitive styles on the following indicators were achievement-seeking (84%), pragmatism (70%), locus of control (69%), creativity (53%), challengeability (51%), risk-taking (42%), tolerance of ambiguity (37%), and independence (30%). The cognitive style CS and characteristics of entrepreneurs (except tolerance for ambiguity) obtained here agrees with Hofstede (2005), indicating a low mean tolerance of ambiguity. The ambiguity avoidance reflects the low level of tolerance of ambiguity in the Iranian society; it is a measure that shows the level of public anxiety about future events). All the relationships are positive and direct, and because CS individuals have a tendency to perfection, the greatest relationship between the CS style and entrepreneurial characteristics and particularly with the achievement seeking (84%) and pragmatism (70%) seems to be reasonable. Moreover, a direct and positive relationship (29%) was detected between cognitive style AS with the characteristics of entrepreneurs, which is preceded by the CS style with the highest
total effect on the entrepreneurial index. The AR cognitive style and features of entrepreneurs are positively and directly correlated (23%). And the styles all have direct and positive relationships with entrepreneurial indicators (except tolerance of ambiguity), which perfectly confirm Hozoori et al. (2011), Kurdnaeej et al. (2007), and Hofstede (2005).

On the other hand, there is no relationships between the cognitive style CR and characteristics of entrepreneurs which is quite similar to the results of Hozoori et al. (2011). This method is of lowest relationship with the characteristics of entrepreneurs among the cognitive styles.

Also according to the survey results, the cognitive styles showed the highest effects (84%) on the need of achievement index among the octal characteristics of entrepreneurship, which completely comply with the results of Jafarzadeh (2005), Zali (2005), Mcland (2008), and Salmanizadeh and Ansari (2009).
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