

# Presenting a Conceptual Model Based on Cognitive Components and Personality Traits Affecting Entrepreneurial Competence through Document Analysis

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## ABSTRACT

**Objective:** Following the publication of a report on sustainable development issues, the United Nations identified creativity, innovation, and entrepreneurship as key elements to address sustainable development challenges. The primary objective of this study was to present an appropriate conceptual model for entrepreneurial competence based on cognitive components and personality traits with an emphasis on creativity. In this context, to achieve a comprehensive and hypothetical understanding of the psychological factors' impact on entrepreneurship, an integration of both the creativity and entrepreneurship domains was utilized.

**Methods and Materials:** This study employed a qualitative meta-synthesis approach. According to the qualitative meta-synthesis method, the research population included all Persian and English scientific documents (research articles, theses, and books) published in the field of entrepreneurship from 2010 to 2022. To assess the quality of the found articles, the impact factor of a scientific journal was examined, and 90 articles were approved. Then, the relevant data from each article were extracted and entered into MAXQDA software. After reaching saturation, content analysis in this software was a systematic and continuous process of data comparison, conducted in three stages: open coding, axial coding, and selective coding, based on Strauss and Corbin's approach.

**Findings:** The results showed that the conceptual model of entrepreneurial competence based on cognitive components and personality traits with regard to creativity includes the following: Personality traits (dynamism and restlessness, lively interaction and humor combined with personal discipline, thoughtful extraversion, ambition with altruism, simultaneous femininity and masculinity, rebellious and independent, passionate yet realistic and goal-oriented, suffering

and pain along with much pleasure, determined and serious yet flexible, internal control source, openness and the expansiveness of fantasy rooted in realities, emotional stability with emotional steadiness, hardworking and perseverance combined with responsibility). Cognitive components (intelligence quotient above 120, active memory, attention and concentration, convergent and divergent thinking), Contextual conditions (planning ability, organizational ability, time management and control, reasoning power, judgment ability, decision-making power, problem-solving ability, impulse control), Intermediate conditions (cognitive flexibility, ambiguity and conditions of uncertainty and certainty, being active, experience-seeking and risk-taking).

**Conclusion:** It can be concluded that a multidimensional empirical approach of cognitive components and personality traits provides more information.

**Keywords:** *Entrepreneurship, Creativity, Cognitive Components, Personality Traits.*

## 1. Introduction

Given that entrepreneurship has played a role in the competencies and business model strategies in the economic, social, political, and environmental dimensions of sustainable development, it is thus studied across many scientific fields (Purbasari et al., 2023; Silva et al., 2023). Opportunity and creativity are principal elements in the entrepreneurship literature. The integration of these two concepts can provide insights into entrepreneurial processes (Kumar & Shukla, 2022).

Creativity is the interaction between talent, process, and an environment that enables an individual or group to produce a tangible product; a product that is both novel and useful, and is definable (Puryear et al., 2017; Snyder et al., 2019). In this definition, creativity is considered within the context of an individual and the surrounding environment that directs the individual towards creative behavior. Creativity is defined as the ability to develop new ideas and find new ways to create opportunities. In business, creativity can assist the entrepreneur to think outside the box, seek opportunities, and have innovative ideas to grow their business. Entrepreneurs must be active and dynamic to implement their innovative idea before others do (Kumar & Shukla, 2022; Rezaei et al., 2019).

Ardichvili et al. (2003) describe one of the most prominent examples related to creativity as a characteristic of entrepreneurs, suggesting that they identify opportunities more often. In their model, creativity is one of the two personality traits "associated with the successful identification of opportunities." They also state that high levels of creativity are associated with high levels of entrepreneurial alertness and optimism or self-efficacy (Ardichvili et al., 2003). In another example, Miller (2007) identifies creativity in the opportunity discovery process as a "personal aspect" and as a fundamental component in

identifying opportunities. Opportunity is often mentioned as central to understanding entrepreneurship (Miller, 2007).

Zhu et al. (2018) examined the influence of personality on entrepreneurial intention and success. In their model, entrepreneurship is a process where, at every stage, entrepreneurs must perform different actions. The entrepreneurial intention phase is characterized by personality traits such as high work conscience, high openness to experience, and low satisfaction; while entrepreneurial success is manifested by personality traits like high openness to experience (Zhou et al., 2019).

Conscientiousness, openness to experience, and extraversion are more related to business startup. Positive affect has positive impacts on cognitive performance, perceptual accuracy, task motivation, and self-regulation; and negative affect may have a positive performance in entrepreneurship. Entrepreneurs need a high need for achievement, internal control source, willingness to take risks, and a more active personality. Extroverted individuals are more likely to turn to innovative jobs. Work environment, workload, work-family conflict, and financial risk can create high physical and psychological stress; therefore, entrepreneurs are expected to have high emotional stability. Agreeableness evaluates interpersonal orientation, collaborative values, and preference for interpersonal relationships. Conscientiousness, with the two factors of achievement motivation and reliability, indicates hard work, success orientation, and perseverance in pursuing goals. Entrepreneurs, with openness to experience in terms of intellectual curiosity, are curious and receptive to new ideas and experiences. They are distinguished as creative, innovative, thoughtful, broad-minded, and original in starting a new investment (Espíritu-Olmos & Sastre-Castillo, 2015; Rashid et al., 2020; Şahin et al., 2019).

Veinikainen et al. (2017) showed that entrepreneurs with a Type A personality discover and exploit opportunities.

Entrepreneurs perform their job tasks with quick decision-making, considering features such as uncertainty, hard work, striving to achieve goals, and willingness to take risks. Other traits such as the need for achievement and autonomy, innovation, an active personality, tolerance for psychological pressure, and an internal control source, high need for achievement, high energy level, can lead to better entrepreneurial performance (high job involvement and the ability to manage multiple projects simultaneously) (Viinikainen et al., 2017).

Obschonka and Stuetzer (2017) integrated existing psychological approaches in entrepreneurship and presented a new, individual-centered model of entrepreneurship known as the Entrepreneurial Personality System (EPS), bridging between two streams of personality, one being broad personality traits like the Big Five, and the other being specific traits like risk-taking, self-efficacy, and internal control source. Often, cognitive patterns and behavioral styles (such as creativity, personal initiative, leadership, competition, innovation) can be considered as a kind of mental subject by entrepreneurs in decisions, thoughts, feelings, and personal activities (Obschonka & Stuetzer, 2017).

A set of studies has focused on personality traits and attributes such as internal locus of control, self-reliance, competitive aggression, autonomy, innovation, predictability, risk-taking, orientation towards success, and the five personality traits proposed in the NEO focused and concluded that entrepreneurs have a high need for achievement, along with a moderate need for power. Willingness to take risks, tolerance for ambiguity, and having an internal control source are personality traits found among individuals who identify, launch, and manage successful businesses (Ardichvili et al., 2003; Cuesta et al., 2018; Espiritu-Olmos & Sastre-Castillo, 2015; Fuller et al., 2018; Furnham & Niderstrom, 2010; Hensel & Visser, 2020; Kerr et al., 2018; Munir et al., 2019; Obschonka & Stuetzer, 2017; Şahin et al., 2019; Viinikainen et al., 2017; Zhou et al., 2019). On the other hand, cognition (such as counterfactual thinking, problem-solving, and planning) focuses on knowledge structures that individuals use for evaluating, judging, or decision-making related to opportunity, creation, and growth of investment (Ardichvili et al., 2003; Fuller et al., 2018; Hansen et al., 2011; Kerr et al., 2018; Miller, 2007; Obschonka et al., 2018; Omoredede et al., 2015; Roebbers, 2017; Ward, 2004; Zhou et al., 2019). Espiritu-Olmos and Sastre-Castillo (2015) identified traits that positively affect entrepreneurial intention. Four main

characteristics such as personal values (based on the theory of values), personality traits (based on trait theory), socio-demographic characteristics (based on role and encapsulation theories), and education (based on institutional theory) together lead to entrepreneurial intention (Espiritu-Olmos & Sastre-Castillo, 2015).

Considering two fundamental points that researchers have gathered from numerous studies in the field regarding the role of creativity, personality components, and cognitive features effective in entrepreneurship, many of the personality and cognitive traits discussed in creative individuals and the creativity process have a high overlap and uniformity with the results obtained from the personality and cognitive traits of entrepreneurial individuals and the entrepreneurship process. Also, many researchers have considered creativity a fundamental and necessary condition for entrepreneurship; hence, researchers, by integrating many effective factors in both domains of creativity and entrepreneurship, have sought to present a conceptual model of entrepreneurial competency based on cognitive components and personality traits with attention to creativity.

## 2. Methods and Materials

### 2.1. Study Design

In this study, a qualitative meta-synthesis approach was used. Similar to meta-analysis, meta-synthesis is conducted for integrating several studies to create comprehensive and interpretative findings. Generally, meta-synthesis claims to be a qualitative study utilizing information and findings derived from other studies with related and similar topics. Based on the qualitative meta-synthesis method, the research population included all Persian and English scientific documents (research articles, theses, and books) published in the field of entrepreneurship from the years 2010 to 2022. For article selection, a reputable online database was used, considered as one of the main scientific citation platforms for comprehensive research data studies. Web of Science enabled the researcher to find relevant articles using a specific phrase or word; in this study, searches were conducted with keywords related to entrepreneurship. Terms such as entrepreneurship and personality, entrepreneurship and cognitive features, and entrepreneurship and creativity in both English and Persian were saved after reviewing the subject and abstract of each suitable article.

## 2.2. Data analysis

To evaluate the quality of the found articles, the impact factor of a scientific journal was examined, and 90 articles were approved. Then, the relevant data from each article were extracted and entered into MAXQDA software. After saturation was reached, content analysis in this software was a systematic and continuous process of data comparison, conducted in three stages: open coding, axial coding, and selective coding based on Strauss and Corbin's approach (Strauss & Corbin, 1998). Initially, specific points and cases of interest were manually entered into the software. For open coding, the input material was read several times, and the main concepts were extracted and registered as codes. Then, similar codes were categorized. In axial coding, each category was related to its axial categories to provide more precise and complete explanations of the phenomenon. Axial coding grouped the primary categories formed during open coding around a common axis. Finally, in selective coding, integration and refinement of categories were conducted, and ultimately, a category was chosen as the core category, and the desired model was designed around the core category.

## 3. Findings and Results

After the processes of open and axial coding, concepts and categories were extracted. Then, selective coding was performed, and subsequently, the relationships between these categories were identified in the form of a paradigmatic model based on grounded theory; shown in Figure 1 as the conceptual model based on cognitive components and personality traits affecting entrepreneurial competence with regard to creativity.

### A. Causal Conditions

In the present research, two main groups of factors were described under a) personality traits and b) cognitive features, resulting in creativity.

**Creativity:** A thorough review of articles and books in the field of entrepreneurship revealed that creativity is the most fundamental and key element in entrepreneurship, affecting not only problem-solving but also problem-finding. Furthermore, by examining personality and cognitive traits in entrepreneurship, researchers concluded that individuals with specific personality and cognitive traits are first defined as creative individuals and, in later stages, with other personality and cognitive traits, proceed towards seizing entrepreneurial opportunities and becoming entrepreneurs.

**Dynamism and Restlessness:** Dynamism refers to a strong sense of vigor accompanied by enthusiasm and active pursuit of a grand, novel, and exciting idea. "Restlessness" broadly means intense contemplation, activity, and mental dialogue related to intellectual issues, leading to internal struggle, preoccupation, and continuous and persistent restlessness accompanied by confusion and a complete loss of certainty.

**Liveliness and Humor Combined with Personal Discipline:** There is no doubt that an easy-going and playful attitude is a characteristic of creative people. This frolicsome behavior accompanies the movement towards the discovery of ideas. However, to complete an innovative idea, this playfulness requires order, a methodically controlled approach, personal discipline, an exact and direct style to achieve goals. In other words, strict and orderly discipline, to not hinder creative thinking, requires cheerfulness and humor.

**Openness and Expansiveness of Fantasy Rooted in Reality:** Creative individuals are at one end between imagination and fantasy and at the other, possess a deeply rooted sense of reality. Creative people dislike performing repetitive and ordinary tasks. They detach from the present without losing connection with the past and have a vision for the future. The essence of creativity is going beyond what one deems real. In other words, recreating a product that comes with utility, originality, and novelty.

**Thoughtful Extraversion:** Such individuals also display shades of both extraversion and introversion. In other words, creative individuals demonstrate decisiveness and dominance in their social relationships, while a significant part of their creative achievements requires individual effort and often solitary work.

**Ambition Coupled with Altruism (Humility):** They usually focus so much on future plans and current challenges that their past achievements, however prominent, no longer appeal to them. Another way to express this duality is as a conflict between ambition and altruism, or competition and collaboration. Creative people are ambitious and aggressive, but at the same time, they want to consider the well-being and advancement of their employees and community in their success plan.

**Simultaneous Femininity and Masculinity:** Psychological androgyny is a broad concept that, regardless of gender, involves simultaneously being aggressive, emotional; dominant, and submissive. Creative individuals often not only have their own gender strengths but also possess strengths of the opposite gender.

Rebellious and Independent while being Agreeable: Individualism is actually autonomy or independence, which serves as a significant motivator for creative individuals. Self-efficacy is defined as a broad and relatively stable confidence in one's ability to face various situations. On the other hand, creative individuals are altruistic, reliable, adaptable, warm, caring towards others, and have collaborative values.

Passionate yet Realistic and Goal-Oriented: Most creative individuals are very passionate about their work but can be very objective about it. To maintain interest in a difficult task, enthusiasm is necessary, but without objectivity and goal orientation, the work may lack credibility and fail to find sufficient audience.

Suffering and Pain Along with Much Pleasure: The openness and sensitivity of creative individuals often expose them to much suffering and pain, while also experiencing great pleasure. Understanding suffering is easy for them because they find meaning and benefit from it. Perhaps the most important feature of creative individuals is the ability to enjoy the creation process for its own sake. That is why they forgo more lucrative job opportunities to remain focused on work they love.

Determined and Serious yet Flexible: Persistence and the desire to continue despite adversities, along with the flexibility to shift between different topics without losing focus on important things. In other words, continuing an action despite failures and unwillingness to accept that the desired goal cannot be achieved, and if necessary, changing their efforts.

Internal Control Source: Creatives mostly have internal control. They believe they are responsible and can significantly influence their beliefs, have faith in themselves, do not attribute success and failure to fate, luck, and similar forces, and assign responsibility for performance to themselves.

Emotional with Emotional Stability: Emotional stability is especially valuable in a highly stressful environment. Creative individuals have higher levels of originality and have more confidence when facing threatening problems; positive emotions lead to optimistic choices and judgments.

Hardworking and Perseverance Combined with Responsibility: Conscientiousness in creative individuals indicates a tendency towards self-control, organization, hard work, perseverance, and active planning. They are reliable in carrying out their responsibilities and tasks. They like to set challenging goals and strive to achieve them through their efforts.

Intelligence Quotient above 120: Intelligence has been shown as a necessary but not sufficient condition for creativity, operationally defined as the "threshold hypothesis". Thus, a minimum score on intelligence tests for creativity is considered to be 120. Intelligence is a potential ability in a person for learning, coping, and adapting to the surrounding environment to solve problems encountered throughout life.

Active Memory: The ability to retain information in the mind while performing complex tasks, the ability to use past experiences for current success, and the use of problem-solving strategies for the future are also related to active memory or active memory is a mental construct responsible for the temporary storage and processing of information for performing a series of complex cognitive tasks.

Attention and Concentration: Taking control of the mind in a clear and vivid manner, the ability to maintain attention on a situation or task despite distractions, fatigue, or boredom. This skill is complex and focusing on one of the objects or a chain of thoughts among several simultaneously might lead to the neglect of some other things.

Convergent and Divergent Thinking: Convergent thinking involves solving well-defined, logical problems that have one correct answer, and divergent thinking leads to disagreement over solutions and involves the ability to generate a large number of ideas; that is, purposeful preparation stages at the beginning and critical affirmation stages at the end of the creativity process.

#### B. Moderating Factors (Contextual)

Planning Ability: The ability to create a roadmap for achieving a specific goal or completing a task. Planning involves forecasting future events, situations, and objectives and including appropriate steps beyond the present time to perform a task or action.

Organizational Ability: Refers to the ability to arrange or place components according to specific, predetermined principles, which leads to stability and maintains order in activity and daily planning, also reducing memory load in an organized manner.

Time Management and Control Power: The ability to estimate the amount of time one has, how to allocate this time to different tasks, and how to adhere to time constraints and deadlines.

Reasoning Power: The ability to solve problems and identify relationships using deductive, inductive, and analogical reasoning.

Judgment Power: The capacity to understand relationships, draw conclusions from evidence, and make

significant evaluations of events and individuals. The ability to determine the presence or relative magnitude of a stimulus.

**Decision-Making Power:** Choosing the best solution from available options. The method of determining causative actions for a specific goal and then selecting a tool to achieve this goal.

**Problem-Solving Ability:** Involves making a unique decision using initiative and creativity and includes discovering, analyzing, and solving problems.

**Impulse Control Power:** Inhibition, the ability to stop a dominant, automatic, or active response. In addition, inhibition involves having control over interference, emotional control, and motor control. It also refers to an individual's ability to halt a behavior at an appropriate time, including stopping actions and thoughts.

**C. Mediating Factors (Intermediate)**

**Cognitive Flexibility:** Diverse representations of knowledge, information, sets of rules, and behavioral patterns in one's cognitive repertoire, and thinking through multiple options or from several perspectives of a concept.

**Ambiguity and Conditions of Uncertainty and Certainty:** The ability to continue life with incomplete knowledge about the environment and the willingness to start independent activities without knowing whether one will succeed or not.

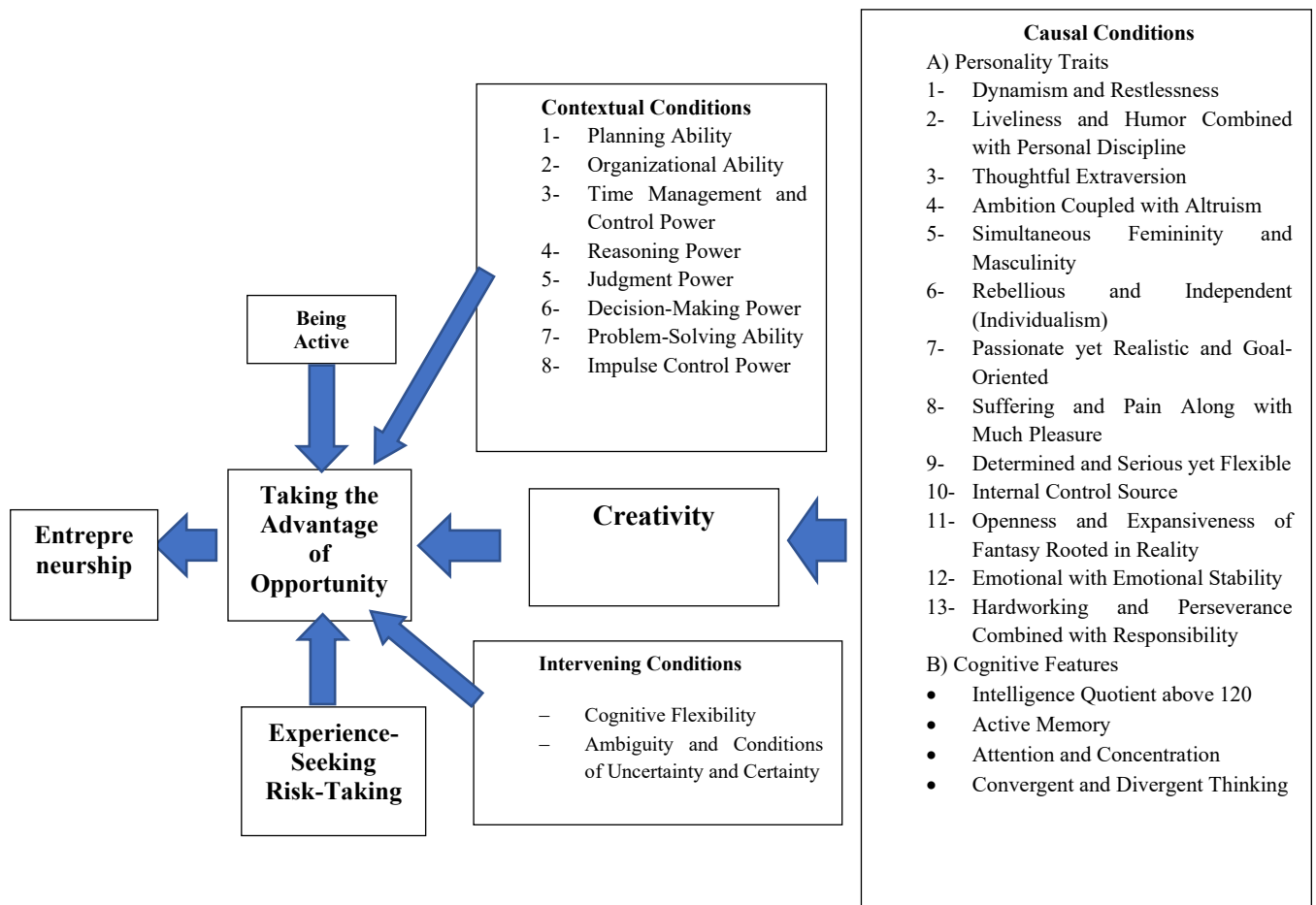
**Being Active:** A preference for personal initiative and actively impacting one's environment in various situations. Being in search of new opportunities.

**Experience-seeking:** Taking action and executing to advance projects and perform work with great energy.

**Risk-Taking:** Accepting moderate hazards and calculated risks that can be managed through personal efforts. Facing challenges and taking risks.

**Figure 1**

*Conceptual Model*



#### 4. Discussion and Conclusion

The primary goal of this study is to present an appropriate conceptual model for entrepreneurial competence based on cognitive components and personality traits with attention to creativity. Researchers found that entrepreneurship is one of the most attractive and practical fields where its analysis contributes to understanding cognitive processes, the impact of characteristics and personality traits, and behavioral choices and performances in humans and finding solutions to economic, social, political, and cultural problems.

Based on the conducted reviews of models and tools developed in the field of entrepreneurship, researchers have found that first, cognitive and personality indicators in an entrepreneurial individual have been studied in two categories. The general category includes scales of neuroticism, extraversion, openness (flexibility), agreeableness, and conscientiousness, and the other includes other specific traits such as risk-taking, uncertainty avoidance, power-seeking, need for achievement, innovation and creativity, internal control, self-confidence and autonomy, independence, intelligence, resilience, executive functions, and activity (Cuesta et al., 2018).

Regarding the general trait, it can be referred that in recent years, the Big Five personality model has been recognized as a popular and powerful approach for studying personality traits and effects (Hensel & Visser, 2020). According to this model, it has been specified that Big-5 traits influence job choice and work performance. Personality traits are highly likely to relate to entering and exiting entrepreneurship and also with various actions as a successful entrepreneur (including creating investment, investment growth, and long-term investment survival) (Zhou et al., 2019). However, our study showed that these traits are sometimes seen in creative individuals as a continuum from both ends of the spectrum.

Another influential factor in entrepreneurship is cognition. Cognition is defined as "all processes by which sensory inputs are transformed, reduced, elaborated, stored, retrieved, and used" (Roebbers, 2017). Simply put, it demonstrates a different pattern of thinking from others. Life and work today are constantly complex and uncertain, therefore decision-making is becoming increasingly complicated and challenging. The topic of decision-making falls under the broad category of executive functions, which is a term for cognitive processes that regulate, control, and manage other cognitive processes. Executive functions can have a major impact on an individual's ability to perform

tasks such as planning, prioritizing, organizing, paying attention, remembering details, managing time, active memory, and inhibition (Swami, 2013). In the modeling of this article, some subsets of executive functions have entered as causal, intermediary, and contextual variables.

Another notable point is that opportunities and creativity are primary elements in entrepreneurship literature. Opportunity is often cited as a fundamental principle for understanding entrepreneurship, and creativity is often a characteristic of entrepreneurs. Societies not only identify their problems through creativity but also seek solutions to these issues through creativity (Rezaei et al., 2019) and entrepreneurship is the process of creating something new and valuable with a lot of time and effort and accepting various financial, psychological, and social risks to gain personal satisfaction, independence, and financial resources. Researchers in this article believe that creativity should be considered as an inherent and multidimensional basis of the entrepreneurial opportunity identification process. In other words, the enduring and intuitive concept of entrepreneurship is that recognizing opportunities is inherently a creative process.

What distinguishes creative individuals from others is complexity. They display intellectual and practical tendencies that are usually separated in most people. Having a complex personality means that an individual can display a full range of potential human characteristics, meaning a creative individual can move well from one side of the spectrum to the other depending on the situation. This model was inspired by the theories of Mihaly and the Theory of Flow in terms of the personality characteristics of creative individuals, showing a complex and contradictory combination of creative individual traits at both ends of the spectrum (Kumar & Shukla, 2022; Snyder et al., 2019). Creative individuals, possessing cognitive factors in the realm of executive functions and certain personality traits in the process of creating opportunity, succeed and then other characteristics such as risk-taking, being active, experiencedness, and tolerance of ambiguity and uncertainty ultimately lead them to entrepreneurial opportunity (Fuller et al., 2018; Furnham & Niderstrom, 2010).

Most models show entrepreneurship as a complex process that includes many dimensions. The results of this study indicate that a multidimensional empirical approach from cognitive components and personality traits provides more information. Researchers have proposed a specific multidimensional model based on creativity literature. Researchers found clear evidence that, as Eysenck suggested

almost half a century ago, personality traits are significantly related to the performance and structure of different areas of the brain and limbic system. Researchers suggest that studies should be conducted based on the relationship between personality traits and cognitive components with the structure of the brain and the nervous system.

## 5. Limitations & Suggestions

This study, while comprehensive, has several limitations. First, the qualitative meta-synthesis approach, although beneficial for integrating diverse sources, might limit the generalizability of the findings across different cultural and economic contexts. Second, the reliance on published scientific documents in English and Persian may lead to language bias, omitting significant studies in other languages. Third, the study predominantly focuses on cognitive components and personality traits, potentially overlooking other crucial factors such as socio-economic status, education, and environmental conditions that can influence entrepreneurial competence. Additionally, the use of software for data analysis could introduce bias if the coding process was not sufficiently rigorous or if the software's algorithms did not capture the nuances of the data accurately.

Future research should aim to address the limitations identified in this study. Expanding the research to include studies in additional languages and from diverse cultural backgrounds could enhance the generalizability and inclusiveness of the findings. Future studies could also employ a mixed-methods approach, combining qualitative and quantitative data, to provide a more holistic understanding of the factors influencing entrepreneurial competence. Investigating the impact of external factors such as economic conditions, legal frameworks, and support systems on entrepreneurship could provide a more comprehensive view. Additionally, longitudinal studies could help in understanding the dynamic nature of entrepreneurship and how cognitive and personality traits influence entrepreneurial success over time.

The findings of this study have important implications for educators, policymakers, and entrepreneurial support organizations. Educational programs focused on entrepreneurship should consider integrating modules that enhance cognitive abilities and nurture favorable personality traits. Policymakers could use the insights from this study to design support systems that cater to the psychological and cognitive needs of aspiring entrepreneurs. Entrepreneurial

support organizations could develop targeted interventions and training programs that address the specific cognitive and personality traits that contribute to entrepreneurial success. Additionally, understanding the importance of cognitive flexibility and risk-taking can help in designing better entrepreneurial curricula and support structures that foster innovation and resilience among upcoming entrepreneurs.

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## Declaration of Interest

The authors of this article declared no conflict of interest.

## Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

## Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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## Authors' Contributions

All authors contributed equally.

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