



## Modeling the effect of temperament characteristics on employees' satisfaction with life perceptions with the individual innovativeness

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Article Info	ABSTRACT
<div style="background-color: #f0f0f0; padding: 2px; margin-bottom: 5px;">Article History</div> <p>Received: 7 March 2025 Revised: 9 April 2025 Accepted: 25 June 2025</p> <div style="background-color: #f0f0f0; padding: 2px; margin-bottom: 5px;">Key Words</div> <p>Temperament, satisfaction with life perceptions, individual innovativeness</p> <div style="background-color: #f0f0f0; padding: 2px; margin-bottom: 5px;">Corr. Author Email</div> <p>m_akhavan@sbu.ac.ir</p>	<p>The existing study aimed to analyze the effect of the four temperaments on individual innovativeness and satisfaction with life perceptions. In this study, library and field were used for data collection. First, the problem and area were fully introduced through library studies. Then the questionnaires were distributed among the sample members, and the relevant data were collected in the field section. The sample size in this study covered 3410 employees of Bank Melli Iran. The structural equation technique was used to check the hypotheses. The findings show that the diversity of the four temperaments significantly affects employees' satisfaction with life perceptions. The effects of phlegmatic, melancholic, and sanguine temperaments were positive, and the effect of choleric temperament was negative. The individuals with phlegmatic temperament had the most satisfaction, and those with choleric temperament had the least satisfaction with life perceptions. In addition, the significant relationship between the four temperaments and individual innovativeness was confirmed. The effect of sanguine, phlegmatic, and melancholic temperaments on individual innovativeness was positive, while the effect of choleric temperament was negative. In other words, the individuals with sanguine temperament had the most individual innovativeness, while those with choleric temperament had the least individual innovativeness.</p>

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## 1. Introduction

It is advocated by studies that higher satisfaction with life is associated with higher resilience, self-esteem (Lee et al., 2016; Martínez-Martí & Ruch, 2017), presence of partnership and earnings, while lower satisfaction with life is related with higher strain (Lee, Kim & Wachholtz, 2016), tension, melancholy, unemployment (Beutel et al., 2010), and fear of happiness (Yildirim & Aziz, 2017). Many authors have argued that dissatisfaction with life is associated with internal troubles including depression, anxiety, and low self-esteem (Cava et al., 2007; Chico, 2006; Diener et al., 1998; Valle et al., 2006). MacDonald et al. (2005) confirmed that satisfaction with life is associated with youths' lesser involvement in violent behaviors and vice versa. Based on studies (Beutell, 2006), satisfaction with life perceptions is connected to better physical and intellectual health, longer life span, and other consequences which are regarded as positive. Satisfaction with life perceptions has significant social consequences apart from personal effects. For instance, such a feeling can guarantee the individual's and society's health. In addition, it can explain the development process by creating hope and optimism and eliminating the feeling of powerlessness.

Furthermore, such a feeling guarantees the survival of society by creating a sense of belonging and social commitment. Satisfaction means how well a person performs in life and work and is a comprehensive criterion of a person's progress that is more associated with a variety of positive subjective and objective results in different fields (Amdurer et al., 2014; Judge et al., 2017). Respecting work environments, satisfied individuals typically enjoy their tasks and have higher motivation for working and learning in the relevant environments (Lubinski et al. 2000), which is one of the indicators of employee welfare. Physical and intellectual conditions, depending on different indicators, including earnings, housing, relationships with others, education, health, quality of the environment, trust in others, services provided, safety, and life balance, are used for recruiting employees. (Demiral, 2018). Further, these conditions can affect employees' overall performance and dedication (Erdogan et al., 2012) and sometimes refer to human behavior's final driver (Kwan et al., 1997). In general, the content mentioned above can be considered synonymous with high-quality intellectual health (Diener, 2000), whilst the low degrees of satisfaction with life perceptions are connected with mental states such as melancholy and interpersonal issues (Diener et al., 1999; Fergusson et al., 2015).

Human resources are one of the central and fundamental elements in every organization. It is not easy to achieve the organization's goals without considering the dimensions, motivations, and internal desires of the people in the organization. Since the current century promises changes and evolutions, complexity and competition are very high, and every organization needs continuous or fundamental improvements to achieve growth and competitive advantage. Thus, the leaders of today's organizations should institutionalize innovativeness such as quality and productivity as strategic principles throughout an organization. Some studies have indicated that innovativeness in organizations is one of the main drivers of competitiveness and national development (Kesavayuth et al., 2015).

It has been suggested that innovativeness contributes to business performance (Deshpandé et al., 1993; Hult et al., 2004; Hurley, 1995; Tajeddini et al., 2006). Innovativeness plays a key role in the formation of business strategies, and this is because of its potential impact on business profitability and differentiation (Tajeddini, 2010). The propensities of customers to adopt novel products can play

a critical role in the theories of brand loyalty, decision making, preference, and communiqué (Hirschman, 1980). Innovativeness and creativity are the driving forces for success in some professions like engineering, education, business, management, politics, economics, art, etc. The training for those positions needs to promote the improvement of innovative abilities and attributes (Wolniak & Grebski, 2018).

Business leaders have realized that continuous innovativeness is essential for the survival of a corporation. Human resources sectors are responsible for creating a culture of innovativeness, and organizations recognize the value of innovativeness in creating and preserving competitive advantage. (Pasher & Ronen, 2011).

Some organizations fail to train and engage employees appropriately for using and adopting innovativeness. When innovativeness is not a priority, it results in a lack of systematic and greater employee participation (Bondarouk et al. 2005). As mentioned above, few research studies have been conducted on the effect of personality characteristics on individual innovativeness and satisfaction with life perceptions, but some researchers have evaluated the effect of personality characteristics (Donnellan et al., 2006; Leszko et al., 2016; Westerhof et al., 2015) .

In addition, some have examined satisfaction with life perceptions (Diener et al., 1985; Sirin et al., 2017; Dosiymaz et al., 2021; Celik et al., 2018). Many studies have been conducted on innovativeness, including (Subramanian, 1996; Aldahdouh et al., 2018; Ribeiro Soriano et al., 2018). However, no study has been carried out to analyze the impact of the four temperaments on satisfaction with life perceptions and individual innovativeness. For this reason, the present study aims to evaluate the four temperaments. This is considered the research innovation since the four temperaments are easily recognizable. In hiring or recruiting individuals, the performance of employees in the relevant activity can be easily recognized according to their temperamental characteristics.

## 2. Literature review

Review of literature. The term "temperament" was first proposed in Greece to describe how a person reacts to the world to maintain mental balance (i.e., the same feelings and reactions). Temperament is a psychological characteristic to which a person responds while facing stimuli, opportunities, and external factors and changes the environmental effects (Escribano et al. 2016). In other words, temperament is a well-known style of behavior in which all kinds of behaviors manifest themselves since temperament has formal characteristics and features. According to other experimental studies, temperament is the origin of some behaviors and reactions of individuals, and the environment can have an effect on it because temperament is a kind of trait that appears in all types of behaviors and essential characteristics. All discussions result in temperament interpretation through behavior (Jiang et al., 2018; Müller et al., 2014). Temperament directs the behavior of individuals (Melegari et al., 2015). It seems that a person's behavioral tendency is associated with temperament appears through the characteristics of individuals' temperament by which their behavioral, emotional, and social differences can be explained (Chen, 2018). In addition, temperaments can be used as an approach to studying the individual innovativeness of employees. Today, there are well-documented relationships between temperament and a wide range of important life outcomes, including relationships, academic fulfillment, health, and psychopathology (Zentner & Shiner, 2012). Improving satisfaction with life perceptions and individual innovativeness is highly critical. Some studies have consistently indicated that individual innovativeness is a critical element in initiative success (Gokcearslan et al., 2017; Hong et al., 2013; Jin, 2013; Park et al., 2010; Si & Wei, 2012). Innovativeness predicts technology use (Gokcearslan et al., 2017; Hong et al., 2013; Jin, 2013; Park et al., 2010), affects ICT implementation (Drent et al. 2008), and is associated with e-learning skills (Loogma et al. 2012) and

educational as well as technical skills (Cuhadar et al. 2013). Furthermore, it is positively associated with psychological adjustment (Diener et al. 1998) and negatively associated with depression (Pavot & Diener, 1993), as well as suicidal thoughts and intentions (Haight et al. 1998). Other studies have referred to the possible function of satisfaction with life perceptions as a barrier to the negative effects of stress and the development of psychopathological behavior (Suldo & Huebner, 2004).

Many factors, such as personality characteristics, improve satisfaction with life perceptions and individual innovativeness. Personal characteristics, namely extraversion, conscientiousness, and openness to experience, are positively associated with an entrepreneur's innovativeness, but negatively accompanied with his neuroticism (Nguyen et al. 2021). Baks (2007) argues that the most decisive predictors of innovative behavior are both high levels of openness to experience and low levels of neuroticism. Based on Zimmerman and Williams (1971), innovators are significantly more imaginative, more assertive, more venturesome, and less tense than non-innovators. They found that there is a positive relationship between innovative personality trait and characteristics such as extraversion, docility, self-control / responsibility, emotional balance and openness to development (Tura & Turanlı, 2020). In the top-down theory, life satisfaction is largely influenced by a person's predisposition, such as personality traits (Diener 1984). One of the strongest and most consistent predictors of subjective well-being is personality (Diener & Lucas, 1999; Ferrer-i-Carbonell & Frijters, 2004; Lykken & Tellegen, 1996). General life satisfaction is a premise of domain satisfaction and is influenced by personality traits (Headey, 2014). One important finding in the subjective well-being literature i.e., that high subjective well-being implies a happy life with many pleasant and few unpleasant experiences and high life satisfaction (Schinmack et al. 2004) has demonstrated that subjective well-being is moderately stable over time and influenced by personality traits (Diener & Lucas, 1999). On the other hand, personal general innovativeness affects personal information technology, entrepreneurial satisfaction, and life satisfaction (Lian & Yen, 2017). The results of an analysis showed that there is positive correlation between creativity and life satisfaction. This means that students with a high level of creativity experience more satisfaction in their lives (Bhatti, 2021). Most studies find entrepreneurs to be more satisfied with life than people who are employees (Millán et al., 2013; Schjoedt, 2009). Since the four temperaments are considered as a type of psychological and personality characteristics (Okal et al., 2012; Ekstrand, 2015; Grasten, 2010), identifying these characteristics is effective in improving satisfaction with life perceptions and individual innovativeness.

Four temperaments: Temperament can be described with reference to character variations in perception-based habits and skills, which are regulated by the amygdala, hypothalamus, striatum, and other parts of the limbic system (Cloninger, 1993). In other words, temperament is one of the physiological characteristics of humans that respond to the characteristics of the surrounding environment (Chen et al., 2015). It is a fundamental and relatively inherent tendency of individuals which is regarded as the foundation and regulator of their behavior and has a natural basis (Hudson et al. 2011). Psychosocial researchers typically define temperament as the group of personality components that are inheritable, developmentally stable, based on emotions, and not affected by social and cultural learning (Goldsmith et al. 1987). A general explanation of human temperament or personality is that we are all born with genetic and inherited behavioral tendencies which are part of our DNA, such as our hair color (Ekstrand, 2015). The four temperaments include sanguine, phlegmatic, melancholic, and choleric (Steiner, 1985).

In the past, four important thinkers defined the four temperaments. Two Greek physicians, Hippocrates and Galen, distinguished personalities based on the predominant body fluid. In choleric temperament, the dominant color of bile is yellow, so the reactions are fast. In melancholic temperament, the dominant bile is black. In the sanguine temperament, blood is dominant and reacts

as a floating type. The phlegmatic temperament has phlegm and acts as a slow type (Vorkapic et al., 2011). Individuals with melancholic temperaments are characterized by weak excitatory and inhibitory processes and a narrower range of action. According to Pavlov, such people do not have compatible temperaments. Choleric individuals are characterized by strong stimulation and inhibition processes and unbalanced excitement and dominance. The most adaptable temperaments are considered sanguine and phlegmatic (Pavlov, 1951-1952).

Introverts have melancholic and phlegmatic temperaments, the former with a higher level of anxiety and the latter with a lower level of anxiety or more balance of emotions. On the other hand, extroverts can be distinguished as choleric and sanguine temperaments, the former with a higher level of nervousness and the latter with more balance of emotions. Thus, unstable introverts, specifically melancholics, are defined as moody, anxious, inflexible, alert, pessimistic, conservative, unsocial, and quiet. Choleric people (unstable extroverts) are restless, aggressive, excitable, changeable, impulsive, energetic, and optimistic. Sanguine individuals (stable extroverts) are known as sociable, energetic, reckless, leaders, talkative, responsive, and easy-going, while phlegmatic individuals (stable introverts) are passive, precise, thoughtful, peaceful, controlled, trustworthy, monotonous, and calm (Revelle et al. 2011).

In terms of rational division with a general and absolute attitude without attribution and comparison with creatures, there are two types of temperament: A moderate temperament is the same and equal in the number of opposite qualities, but such a temperament does not exist in the world. In contrast, an immoderate temperament is not torn between the opposite qualities. Instead, this temperament has a greater tendency to choose one of the two sides or one of the qualities of warmth, coldness, wetness, and dryness, or two of the above-mentioned qualities (Lin & Lo, 2016). Compared to men, women's temperament is cold and wet. That is why their animal and sensual strength is less than that of men. Their veins are narrower, their pores are more closed, and the flesh of their organs is thinner, resulting in the accumulation of raw and waste materials in their bodies; however, men have more animal and sensual powers, their veins are more comprehensive, and their bodies are more complex because their temperament is hotter and drier (Xiao et al. 2013). There is increasing evidence that indicates how differences in temperament may affect health status and the development of healthy or risky behaviors, and it is directly related to the onset and development of relevant disorders and diseases (Halisch et al., 2012; Magee et al., 2013; Westerhof et al., 2015). Based on the studies conducted so far, the relationship of the four temperaments as an internal factor on individual innovativeness has not been studied. To this aim, the present study is designed to evaluate the role of the four temperaments in individual innovativeness. Figure 1 compares the different characteristics of the four temperaments based on the studies conducted by Naseri (2009).

Table 1. Characteristics and comparison of four temperaments

Temperaments Characteristics	Choleric	Phlegmatic	Sanguine	Melancholic
Face Color	Dark	White	Red	Yellow
Eye color	Dark	White and dim	Red	Yellow
Behavioral	Slow, quiet, low-	Very slow, calm, low-	Energetic,	Energetic, erratic, agile

Temperaments Characteristics	Choleric	Phlegmatic	Sanguine	Melancholic
action	energy and disciplined, taciturn, serious, aloof, dry, anxious, leading, emotionless, focused, independent, hardworking, moody, impatient, strong-willed	energy and coherent, passive, precise, thoughtful, peaceful, cautious, reliable, good-natured, compassionate, kind, witty, patient	unorganized, social, charismatic, friendly, talkative, responsive, carefree, leader, straightforward, mood swings	and fast, lively, cheerful and dynamic, quick decision-making and not hesitating in decisions, active, optimistic, irritable, adaptable, excitable, sensitive, sympathetic, isolated, loyal
Thoughtful action	Obsessive, procrastinating, negative, skeptical, introverted, sensitive, cautious, single-minded and inflexible, ambitious, logical	Introverted, realistic, sensitive, cautious, judgmental, stable mood, worried, hesitant, flexible	Optimistic, funny, warm-hearted, bold, exciting, luxury-loving, fun-loving, sympathetic, prone to smoking and consuming alcohol and drugs and gambling, extroverted, lack initiative, flexible	Smart, ready to answer, daring, sudden anger, stubborn and one-toothed, good faith, hope, chivalry and zeal, thinker, perfectionist, introvert, stable mood, prone to depression
The taste of the mouth	Sour or salty	Salty or sour	Bland or sweet	Bitter
Compatibility with foods	Warm	Warm	Cold	Cold
Appetite	Abundant false appetite with early satiety, picky eating	Great appetite without resistance	Great appetite with resistance	Low
Desire for water	Low	Low (desire for hot drinks)	Relative thirst	Great thirst
The effect of the seasons	Interested in spring and summer	A lousy mood in spring and winter	Interest in autumn and winter	Interested in autumn and winter
Region and climate	Mountainous	Forest and northern beaches	South Coast	Desert

Theoretical framework. Satisfaction with life perceptions is defined as a cognitive component of mental well-being and an emotional state resulting from comparing what an individual has obtained from life and what he expects from it (Sirin et al., 2017). The person is the most significant element of happiness (Diener et al. 1985). The professional life that people prefer becomes a phenomenon that includes their goals, expectations, and abilities and becomes a significant factor in guaranteeing satisfaction with their life perceptions (Dosyilmaz et al., 2021). Several studies have been conducted on the factors which affect the level of individuals. Environmental and individual factors were recognized as the most significant factors (Celik et al., 2018). Diener (1985) lists three main determinants as follows. The first is that satisfaction is mental, meaning that the experience of satisfaction is a person's perception. In the second one, mental satisfaction has positive criteria, and the third factor states that mental satisfaction is a complete evaluation of all parameters of a person's life. Although it is always relatively stable, stressful events such as job loss or change, divorce or

marriage, etc., can profoundly affect the long-term level of mental well-being (Lucas et al. 2004).

**Innovativeness:** Today, innovativeness is among the most significant elements in people's lives. Organizations attempt to be innovative, and individuals attempt to provide innovative behaviors to increase effectiveness and benefit (Yuan et al. 2010). The rapid changes in business environments cause some problems managers have not encountered. The methods of dealing with new problems can fail. The need for creative problem-solving techniques to overcome such problems is significant (Proctor, 1991). Nowadays, innovativeness is everywhere. A common misunderstanding in some organizations is that innovativeness should have a completely new and radical nature. Successful organizations know that innovativeness ranges from incremental changes to major innovativeness. Innovativeness is introducing something new or suggesting a new idea, approach or device (Merriam-Webster, 2017). Based on behaviorism, innovativeness is the degree to which a person or a unit acts earlier than the other system members in accepting new ideas (Rogers, 2003). The overall approach regards innovativeness as a psychological structure or individual characteristic which shapes a person's tendency toward novelty irrespective of its type (Aldahdouh et al., 2018). Innovativeness is one of the pillars of entrepreneurship (Ribeiro Soriano et al. 2018), which is considered in commercial, social, and political perspectives (Park et al. 2016). Porter argued that companies require innovativeness to gain a competitive advantage, and innovativeness is a form of new technology or new solutions for business. In addition, innovativeness is the most important element in the success of organizations. Further, it is one of the organization's most significant and complex issues today. Finally, it is the key to the success of organizations (Tohidi et al. 2012).

**The relationship between temperament and individual innovativeness.** Based on the previous studies, there may be much empirical evidence for the relationship between temperament and innovativeness (Claridge & Blakey, 2009; Strong et al., 2007). The claimed relationship between temperament and innovativeness has been strong among geniuses and people with mental or emotional disorders (Andreasen et al., 1988; Akiskal, 2007; Ghadirian et al., 2009). Temperament and personality characteristics form the learned and innate characteristics, which are the most basic elements for producing a creative product (Yeh & Li, 2008). According to the model (Feist, 1998), temperament acts as a basis for personality characteristics and appears in three cognitive, motivational, and emotional domains. Ultimately, such personality characteristics affect behavior, including creative activity. Temperament contributes to different aspects of psychometric creativity. In addition, it acts as a basis for developing and expressing a person's creative potential. Since no study has been conducted in regard to the effect of the four temperaments on innovativeness, and since the four temperaments are a type of personality typology and temperament, it is possible to generalize the effect of personality types and temperament on innovativeness to the effect of the four temperaments and the hypothesis is that the four temperaments are effective on employees' innovativeness.

**The relationship between the four temperaments and satisfaction with life perceptions.** Based on the study (Kim et al., 2013), satisfaction with life perceptions is affected by melancholy, self-esteem, mood, and personality. The findings of the previous studies indicated that it is necessary to prevent and treat depression to improve satisfaction with life perceptions and to identify psychological characteristics, including temperament and personality characteristics (Brendan et al. 2010). They stated that the factors such as a person's previous status in a field, his expectations for the future, and mood-based reaction to positive and negative events might moderate the effect of specific experiences on the satisfaction with his life perceptions. Satisfaction with life perceptions is highly related to life events, as well as personality and mood variables among adults and adolescents (Diener et al., 2003; Proctor et al., 2009; Gilman et al., 2006). Several studies revealed that mood and life conditions affect satisfaction with life perceptions (Diener et al. 1999). Since the four temperaments are regarded as a

kind of mood and psychological characteristic, the hypothesis is that the temperaments affect employees' satisfaction with life perceptions.

The relationship between individual innovativeness and satisfaction with life perceptions. Grolleau et al. (2022) stated that the personnel of corporates that take part in innovative activities are more likely to increase their job satisfaction. In addition, Tan et al. (2021) emphasized a positive relationship between creativity and mental well-being. The findings clarify the facilitating impact of creativity on mental well-being and highlight the need to consider the mutual relationship between the two factors in future studies. In addition, Niknam et al. (2019) reported that the educational program of creative problem-solving increases students' creativity and their satisfaction with life perceptions. Shi et al. (2017) concluded that wisdom and creativity are two paths to more satisfaction in old age.

Further, Jensen et al. (2017) argued that innovativeness benefits job satisfaction, the balance between work and family, and satisfaction with life perceptions among entrepreneurs worldwide. In this regard, Kocak et al. (2012) indicated a significant relationship between the lower dimension of emotional intelligence, the level of creativity among the students, and the level of satisfaction with life perceptions. Finally, Nimrod (2008) argued that innovators are significantly more satisfied with life perceptions than non-innovators, but the number of new activities cannot explain this difference. Based on the results of these studies, it is hypothesized that individual innovativeness affects employees' satisfaction with life perceptions. The three proposed hypotheses in the theoretical framework can indicate the conceptual model of the research, as shown in Figure 2.

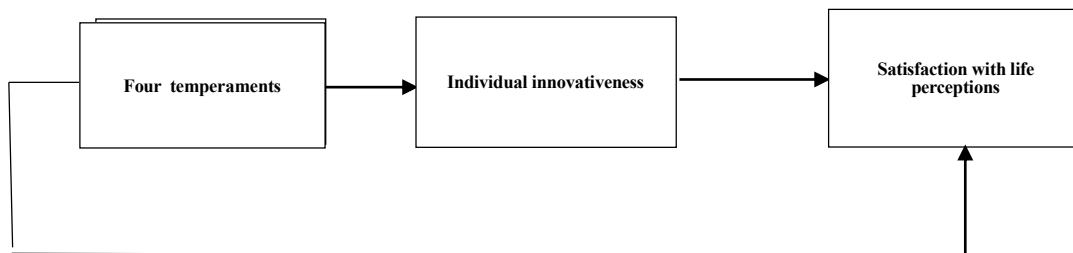


Figure 2. Conceptual model of research

## 1 Four Temperaments

### o Sanguine Characteristics

- Sociability:** The degree of social interaction and comfort in group settings.
- Optimism:** The tendency to expect positive outcomes and exhibit a positive outlook on life.

### o Phlegmatic Characteristics

- Stability:** The ability to remain calm and steady in various situations.
- Trustworthiness:** The degree to which a person is perceived as reliable and dependable.

### o Choleric Characteristics

- Leadership:** The ability to take charge and lead teams or initiatives.
- Assertiveness:** The tendency to express opinions and desires confidently.

### o Melancholic Characteristics

- **Sensitivity:** The ability to feel deeply and be attuned to others' emotions.
- **Analytical Thinking:** The tendency to analyze situations thoroughly and critically.

**2 Individual Innovativeness**

- o **Creativity:** The ability to generate original ideas and solutions.
- o **Risk-Taking:** The willingness to engage in activities that involve uncertainty.
- o **Adaptability:** The ability to adjust to new conditions and challenges.

**3 Satisfaction with Life Perceptions**

- o **Emotional Well-Being:** The overall emotional state and happiness of an individual.
- o **Job Satisfaction:** The contentment one feels regarding their job role and responsibilities.
- o **Work-Life Balance:** The degree to which an individual feels balanced between work and personal life.

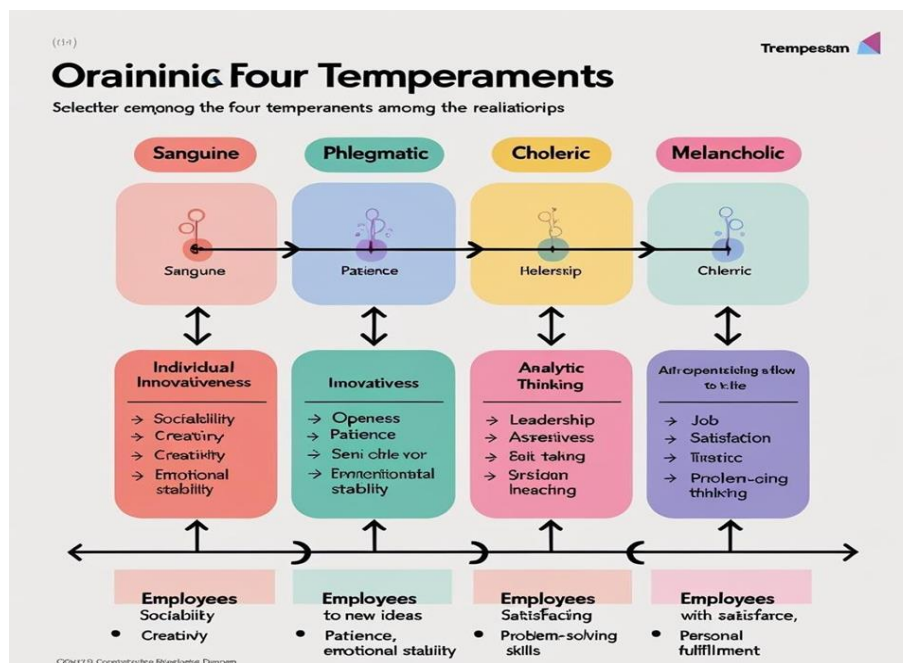


Figure 3. Conceptual model of research

As showed in figure 3, The conclusions are as follow:

**Temperament Characteristics:** The four temperaments influence individual behaviors and traits (as shown in the sub-variables). Each temperament is associated with specific characteristics that can impact innovativeness and satisfaction levels.

**Individual Innovativeness:** This mediates the relationship between temperament and satisfaction with life perceptions. The sub-variables of innovativeness represent different dimensions that can affect how temperament leads to innovative behaviors.

**Satisfaction with Life Perceptions:** This is the outcome variable influenced by both temperament and individual innovativeness.

### 3. Research Methodology

This study seeks to evaluate the effect of the four temperaments on individual innovativeness and employees' satisfaction with life perceptions. In this study, library and field studies were used to collect data. In the first step, the problem and its field were studied thoroughly through library studies, and then in the field section, the questionnaires were distributed among the samples (Bank Melli staff), and relevant data were collected. In order to measure the research variables in the questionnaires on satisfaction with life perceptions and innovativeness, the questionnaires of Diener et al. (1985) and Hart et al. (2013) were used. In addition, the 32-item questionnaire in the form of the triple spectrum "completely wrong," "moderately," and "completely true " was used to measure the research variables. In other words, the questionnaire of Naseri's (2008) temperament test created in the form of questions was used for measuring each of the qualities of warmth, coldness, wetness, and dryness.

Based on the options "completely wrong," "moderately," and "completely true " with scores of 2, 1, and zero, the questions related to skin condition, hair color, shoulder condition, the way of doing things, speaking, nerve control and behavioral style were marked in the respective position. Then, the scores of each case were applied separately, and finally, the difference between each of the four temperaments was calculated (Naseri et al., 2009)

### 4. Data analysis

Description of demographic variables. Table 1 indicates the demographic information of the participants.

Table 1. Demographic characteristics of the participants

Item	Total (%)	(%)
<b>Gender</b>		
Male	1840	54
Female	1570	46
<b>Education</b>		
Bachelor's Degree	1980	58
Master's Degree	1150	34
Doctoral Degree	280	8
<b>Work Experience</b>		
3-5 Years	1150	34
5-10 Years	1700	50
< 10 Years	560	16

Answers to the research hypotheses

For testing the hypotheses and research model, this study used structural equation modeling. The

partial least squares technique is a variance-based structural equation modeling. This approach is focused on maximizing the variance of the dependent variables, which are predicted by the independent variables. 3410 questionnaires were correctly extracted from 3500 questionnaires. This study used the CVR and CVI content validity indexes to identify the research items. Table 2 describes the questions asked in the questionnaire and the output of structural equation modeling

Table 2: The questions asked in the questionnaire and the output of structural equation modeling

Construct	Items	Cronbach's alpha	T value	Load Factor
Satisfaction with life perceptions	1. In most ways, my life is close to my ideals.	0.84	11.677	0.732
	2. The conditions of my life are excellent.		7.826	0.739
	3. I am satisfied with my life.		7.516	0.713
	4. So far, I have gotten the important things I want in life.		10.555	0.623
	5. If I could live my life over, I would change almost nothing.		7.647	0.640
Individual innovativeness	1. My colleagues often seek guidance and advice from me.	0.91	5.763	0.457
	2. I enjoy trying new ideas.		9.653	0.649
	3. I am looking for new ways to do things.		11.116	0.683
	4. I am usually cautious about accepting new ideas.		21.213	0.741
	5. When there is no clear answer, I often invent methods to solve the problem.		19.248	0.746
	6. I am cautious about innovativeness and new methods.		12.636	0.699
	7. I rarely trust new ideas until I see their acceptance by most people around me.		15.522	0.781
	8. I feel that I am an influential person among my colleagues.		18.976	0.761
	9. I believe that I am a creative and innovative person.		6.931	0.549

Construct	Items	Cronbach's alpha	T value	Load Factor
	10. I believe I am the last person among my colleagues to accept a new idea or plan.		7.133	0.619
	11. I am an innovative and creative person.		11.274	0.884
	12 . I enjoy participating in the leadership responsibilities of the groups I belong to.		14.935	0.733
	13. I do not tend to use new ideas until others have approved them.		10.835	0.672
	14. Being original and unique in my thinking and behavior is amazing.		10.350	0.635
	15. I believe that past solutions are unique in life.		5.070	0.596
	16.Aambiguities and unresolved problems challenge me.		6.092	0.554
	17. I need to see the use of new ideas by others to be convinced.		30.736	0.855
	18. I am open to new ideas.		15.238	0.735
	19. Unanswered and ambiguous questions challenge me.		5.255	0.479
20. I am often pessimistic about new ideas.	8.886	0.590		
<i>The Four temperaments</i>	1. My skin is warm, and I feel warm	0.75	13.922	0.834
	2. I enjoy the cold weather and winter season.		12.636	0.883
	3. My hair color is black.		15.532	0.828
	4. I have broad shoulders and a broad chest.		18.975	0.736
	5. I do things quickly		6.931	0.641
	6. I speak fast, and I am a talkative person.		7.312	0.688
	7. I get angry easily.		11.274	0.899

Construct	Items	Cronbach's alpha	T value	Load Factor
	8. I am a courageous person.		14.935	0.783
	9. My skin is cold, and I feel cold.		10.350	0.530
	10. I enjoy warm weather and the summer season.		10.835	0.781
	11. My hair color is white or blonde.		5.070	0.783
	12. I have narrow shoulders and a small chest.		6.092	0.719
	13. I do things slowly and without haste.		30.736	0.844
	14. I speak slowly, and I am not talkative.		15.238	0.898
	15. I hardly get angry.		5.255	0.828
	16. I am a cautious and timid person.		8.886	0.654
	17. My skin is soft.		21.213	0.844
	18. I enjoy dry air without humidity.		11.116	0.998
	19. I am fat		13.123	0.838
	20. My hair is soft and straight.		14.235	0.654
	21. I am very sleepy.		17.579	0.645
	22. I have a poor memory, and I forget things.		7.139	0.734
	23. If I get angry, I calm down quickly.		7.313	0.899
	24. I am flexible, and I am not strict.		10.426	0.543
	25. My skin is dry.		13.824	0.667
	26. I enjoy humid weather.		9.242	0.454
	27. I am thin.		9.724	0.647
	28. My hair is dry but not straight.		14.227	0.644
	29. sleep a little.		20.102	0.743

Construct	Items	Cronbach's alpha	T value	Load Factor
	30. I have a good memory, and I remember things quickly.		10.542	0.715
	31. If I get angry, I calm down slowly.		13.343	0.690
	32 . I am not flexible; I am strict		10.049	0.731

Table 3. Confirming/rejecting hypotheses

Research hypotheses	T- coefficient	Path coefficient	Result
Main hypothesis 1: the temperament affects employees' innovativeness.	13.902	0.946	Confirmed
Main hypothesis 2: The temperament affects employees' satisfaction with life perceptions.	2.218	0.252	Confirmed
Main hypothesis 3: Innovativeness affects employees' satisfaction with life perceptions.	3.636	0.806	Confirmed
Sub-hypothesis 1: The sanguine temperament affects individual innovativeness.	8.014	0.317	Confirmed
Sub-hypothesis 2: The phlegmatic temperament affects individual innovativeness.	5.35	0.254	Confirmed
Sub-hypothesis 3: The choleric temperament affects individual innovativeness.	4.61	-0.265	Confirmed
Sub-hypothesis 4: The melancholic temperament affects employees' innovativeness	3.564	0.173	Confirmed
Sub-hypothesis 5: The sanguine temperament affects employees' satisfaction with life perceptions.	5.34	0.316	Confirmed
Sub-hypothesis 6: The phlegmatic temperament affects employees' satisfaction with life perceptions.	3.154	0.362	Confirmed
Sub-hypothesis 7: The choleric temperament affects employees' satisfaction with life perceptions.	2.711	-0.195	Confirmed
Sub-hypothesis 8: The melancholic temperament affects employees' satisfaction with life perceptions.	2.397	0.438	Confirmed

The mediating role of individual innovativeness in the effect of temperament on employees' satisfaction with life perceptions. To check the importance of a mediating variable, there is a widely used test known as the Sobel test, which is used for the significance of the mediating effect of a variable in the relationship between two other variables. In the Sobel test, Z-value is calculated, and the significance of the mediating role in the relationship between two variables is accepted if the value is more than 1.96. To calculate the value, the simultaneous significance of the relationship between temperament and individual innovativeness and the relationship between individual innovativeness and employees' satisfaction with life perceptions should be studied, as confirmed in the second and third hypotheses.

Table 3. Regression coefficients to evaluate the mediating role of individual innovativeness

Independent variable	Dependent variable	Path coefficient (B)	T-statistics	Determination of coefficient	Result
Temperament	Individual innovativeness	0.946	13.902	0.895	Confirmed
Individual innovativeness	Satisfaction with life perceptions	0.806	3.636	0.573	Confirmed

To calculate the Sobel statistic, Z-value is used through the following formula. If this value is more than 1.96, it can be confirmed that the mediating effect of a variable is significant at the 95% level.

Table 4. The required values of the Sobel test to study the mediating role of individual innovativeness

The statistical symbol in the formula	Statistical concept	The value of statistics in the study
A	The value of the path coefficient between the independent and mediator variables	0.946
B	The value of the path coefficient between the dependent and mediator variables	0.806
Sa	The standard error related to the path between the independent and the mediator variables	0.009
Sb	The standard error related to the path between the dependent variable and the mediator variable	0.238

Therefore, the z coefficient is as follows. = 3.384

As observed, the test statistic is 3.384, and the mediating role of individual innovativeness in the effect of temperament on employees' satisfaction with life perceptions can be confirmed since this value is more than 1.96.

Table 5. Path analysis results for the mediating variable of individual innovativeness

Independent variable	Mediating variable	Dependent variable	Path coefficient
Personality characteristics	Individual innovativeness	Employees' satisfaction with life perceptions	$(0.806 \times 0.946) = 0.762$

Since the indirect path coefficient is (0.762), the indirect effect of temperament on employees' satisfaction with life perceptions through individual innovativeness is 0.762. However, the most significant factor which should be studied is the ratio of the indirect effect to the total effect. If this index is less than 0.2, the role of mediation is rejected, while it is partial if it is between 0.2 and 0.8, and it is complete if it is more than 0.8.

$$VAF = \frac{a \times b}{a \times b + c}$$

c: Direct path or direct effect.

$a \times b$ : Indirect path or indirect effect.

+ c)  $a \times b$  : Total path or total effect.

Therefore, the VAF index or explained variance is as follows.

Since the VAF index (0.75) is in the range of 0.2 and 0.8, the mediation of individual innovativeness in the effect of temperament on employees' satisfaction with life perceptions is partial.

Path analysis (examining the direct and indirect effect of variables on each other). Path analysis examines the effect of all the variables in the structural equation model on each other.

Table 6. Path analysis based on the structural equation modeling

Independent variable	Dependent variable	Direct effect	Indirect effect	Total effects
Temperament	Individual innovativeness	0.946	-	0.946
	Satisfaction with life perceptions	0.252	$(0.946 \times 0.252) = 0.238$	0.49
Individual innovativeness	Satisfaction with life perceptions	0.806	-	0.806

Prioritizing the effect of variable dimensions on each other present in table 7.

Table 7. Prioritizing the effect of variables on each other

Priority number	Independent variable	Dependent variable	Effect size
1	Phlegmatic	Satisfaction with life perceptions	0.438
2	Sanguine		0.362
3	Melancholic		0.351
4	Choleric		-0.195
5	Sanguine	Individual innovativeness	0.317
6	Melancholic		0.316
7	Choleric		-0.265
8	Phlegmatic		0.254

## 5. Discussion and conclusion

The present study aimed to see what effect the four temperaments have on individual innovativeness and employees' satisfaction with life perceptions. The sample included 3410 employees of Bank Melli Iran, who were selected by stratified random sampling. After collecting the questionnaire results, the data were analyzed using descriptive and inferential statistics. The results indicated that the four temperaments had the most significant effects on employees' innovativeness. As one of the human beings' most critical psychological aspects, the four temperaments can affect employees' tendencies towards certain behaviors.

A significant relationship was observed between individual innovativeness and temperaments, indicating that the individuals with a sanguine temperament had the most individual innovativeness and the individuals with a choleric temperament had the least individual innovativeness. A relationship between the four temperaments and individual innovativeness is related to the fact that the four temperaments are among the personality characteristics of each person, which are affected by genetic factors. Thus, like other personality characteristics, the four temperaments affect the level of people's innovativeness. The results are consistent with those of (Claridge & Blakey, 2009) and (Strong et al. 2007) to confirm the effect of the four temperaments on individual innovativeness. In addition, the results of (Andreasen et al., 1988; Akiskal, 2010; Ghadirian et al., 2000) indicated a significant relationship between individuals with different temperaments and the level of individual innovativeness. Other researchers referred to the role of the four temperaments in individual innovativeness (Yeh & Li, 2008; Feist, 1998). In addition, a significant relationship was observed between satisfaction with life perceptions and four temperaments, indicating that the individuals with phlegmatic temperament had the most satisfaction with life perceptions and the individuals with choleric temperament had the least satisfaction with life perceptions. Psychological characteristics, including the four temperaments, form people's opinions and expectations of future events, which affect the satisfaction with perceptions of life. Kim et al. (2013) and Brendan et al. (2010) focused on a relationship between temperamental characteristics and satisfaction with life perceptions.

Furthermore, the results of the present study are in line with those of (Diener et al., 2003; Proctor et al., 2009; Gilman et al., 2006) in favor of confirming the existence of a significant relationship between the four temperaments. Diener et al. (1999) reported the presence of this relationship. Based

on the results, a significant relationship was observed between satisfaction with life perceptions and individual innovativeness. As stated by (Hong et al., 2021; Jensen et al., 2017; Nimrod, 2008), individual innovativeness as a personality characteristic involves a growth mechanism with the potential to increase satisfaction with life perceptions. Among entrepreneurs worldwide, individual innovativeness benefits job satisfaction, the balance between work and family, and satisfaction with life perceptions.

**Managerial requirements.** Today, all organizations and managers seek to find methods to increase the productivity of employees and the overall productivity and profitability. Employee productivity is affected by innovativeness and satisfaction with life and job perceptions. The present study examined the effect of the four temperaments on individual innovativeness and satisfaction with life perceptions. Considering the results of the present study, innovativeness and satisfaction with life perceptions can be increased. As a result, voluntary relocation and absenteeism of employees can be reduced to prevent the loss of capital and reduction of profitability in organizations. Managers attempt to find methods for turning innovativeness into the new norm in the organization and tell their workforce how much they value their ideas. By improving organizational innovativeness, one can expect improvement and job satisfaction. The more the managers acknowledge the diversity and standpoints of their employees, the more creativity and innovativeness in employees will appear. In order to facilitate innovativeness and change, mitigate their barriers, and facilitate the process of change, we should pay attention to the recognition of temperament by selecting the appropriate employees and placing them in the positions related to the characteristics of temperament according to the mission and strategy of organizations in order to have the best performance in the field of innovativeness.

Moreover, people typically look for situations that reflect their temperamental characteristics, and such situations affect them. Accordingly, it is suggested training workshops and seminars should be held for employees and managers to know better the characteristics of their own and others' temperaments and be aware of the types and role of temperament characteristics. As a result of applying the characteristics of temperament and characteristics of each temperament, it can be expected that the overall satisfaction with perceptions of life in society, organization, and family will increase.

**Social requirements.** The present study results are useful for companies, public and private organizations, and educational centers that aim to increase innovativeness among their employees. In addition, the research results can be applied in counseling and therapy work to improve the quality of life. Furthermore, the managers of different centers can monitor the temperamental characteristics of individuals while hiring employees. As a result, the managers can choose the most appropriate person for a job position, effectively increasing individual and organizational innovativeness and satisfaction with life perceptions.

**Limitations of the study and suggestions for future studies.** The first limitation is in reference to the research tool. This study was conducted using a quantitative tool, namely a questionnaire. Thus, it is suggested future studies should be conducted using qualitative tools such as observation, interview, or a combination of quantitative and qualitative methods to achieve better results. On the other hand, such methods can somehow reduce the errors caused by questionnaire biases. The second is related to the factors affecting individual innovativeness and satisfaction with life perceptions, which were impossible to investigate in the present study due to the lack of time, and only the the four temperaments were evaluated. Therefore, it is suggested other influencing factors be evaluated in future studies. The third is regarding the generalization of research results. In the present study,

only the banking industry employees were studied. As a result, it is suggested these concepts be considered in public and private organizations, especially in industries where individual innovativeness is a critical factor for employees, so that more confidence and trust can be obtained in the application of the results by comparing the results of different studies in this field.

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