Thinking styles and conflict management: a gamified empirical study

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Abstract

Purpose – Individual differences cause many differences in human behaviour, and the first source of these differences is personality. In various organisations, employees are encouraged to manage conflict through conflict management styles. The way people think can be an essential factor in their ability to conflict management. Difficult employees are individuals who constantly use problematic communication styles to express their feelings and thoughts to direct the behaviour of others. This empirical study aims to investigate the effect of thinking styles on individuals' conflict management in dealing with difficult personalities.

Design/methodology/approach – To achieve the research purpose, a gamified situation was designed, and a survey was performed in laboratory settings and on an online platform. At first, participants' reactions were measured in the simulated conflict management situation dealing with difficult personalities; subsequently, the dominant thinking style of participants was measured by the rational-experiential inventory (REI) and the cognitive reflection test. At the end, participants answered a series of demographic questions.

Findings – The collected data were then analysed by regression analysis. Based on the findings of this study, the rational thinking measured by the REI40 has a significant and positive effect on the performance of individuals in conflict management with difficult personalities in an organisational context; in other words, rational thinking leads to better performance in conflict management than experiential thinking.

Originality/value – The value of this article lies in the direct study of the impact of thinking styles on conflict management, which was done by focusing on difficult organisational personalities. Also, using gamification in research design is another research initiative.

Keywords Difficult personalities, Dual processing models, REI40, Conflict management, Thinking styles, Gamification

Paper type Research paper

Introduction

Conflict is considered an inevitable and integral part of organisations (Afzalur Rahim, 2023). One of the factors affecting the conflict is the existence of different personality traits and behaviours between people in the organisation (Tehrani and Yamini, 2020). People are different in terms of talents, interests, abilities, and other personality characteristics. Individual differences cause many differences in human behaviour, and it can be stated that the first source of these differences is personality, because research shows that many communication problems may be related to personality factors (Wolf and Krause, 2014). In other words, these personality characteristics make people prone to performing different behaviours in different situations (Caputo *et al.*, 2019; Rashmi and Kataria, 2021). The nature of different characters with various personality traits, needs, beliefs, expectations and perceptions inevitably creates

conflict as a daily occurrence in the organisation. Considering that individuals have different ways of communicating, aspirations, political and religious views as well as different cultural backgrounds, the existence of such different social perceptions leads to conflict between individuals and groups (Robbins *et al.*, 2014).

Personality conflict is one type of conflict that has attracted attention among scholars (Afzalur Rahim, 2023). Therefore, it is necessary to develop strategies to manage it. Personality conflict usually occurs with normal stimuli.

Employees enter the workplace and interact with their unique personalities. Along with individual differences in the group process, conflict is an obvious coincidence. Different personalities can describe the difference between understanding conflict and how some people can manage conflict better than others (Ayub *et al.*, 2017). Many types of research have examined the relationship between personality and conflict in an organisational context (Barbuto *et al.*, 2010; Ghaderi and Mahdeyeh, 2016).

Increased administrative formalities, the pressure to achieve new results, and the diversification of the workforce have created special conditions in today's workplace. The conflict management approach suggests specific strategies for each behaviour that originates from a particular personality (Ristic *et al.*, 2020).

In various organisations, employees are sometimes encouraged to manage conflict through conflict management styles. These methods are avoidance – making a decision not to get involved in the conflict and deliberately avoiding conflict management; coercion – adopting aggressive and competitive tactics to manage conflict where people are focused only on their interests; and problem-solving – concerning collaborative participatory motivations, when people trying to balance their own interests with the interests of others (Caputo *et al.*, 2018).

Awareness of the personality differences of individuals in an organisation can help managers at all levels to solve many behavioural problems. When managers accept that humans are different in terms of innate and acquired abilities, they will not expect equal behaviour from all employees (Caputo *et al.*, 2019).

Given that one of the key roles of a manager is conflict management (Mintzberg, 1973), many studies have been conducted on how managers manage conflict and tensions, conflict management styles, and the relationship between managers' characteristics and their ability to handle conflict. Part of this research is devoted to the study of "difficult personalities" and the abilities needed to interact with these characters. In the definition, "difficult employees" are individuals who constantly use problematic communication styles such as shouting, moaning, complaining or taunting to express their feelings and thoughts and to direct the behaviour and attitudes of others or make them feel bad (Angelo, 2019). Conflict management with such employees is more important than with others and poses significant challenges to managers compared to common situations. To analyse and empower managers (especially in the human resource field), in this study, conflict management in dealing with difficult personalities has been studied.

Numerous researchers have addressed personality traits, organisational conflict, and conflict management strategy choices (Barbuto *et al.*, 2010; Chan *et al.*, 2014; Afzalur Rahim, 2023); However, fewer discussions have been held about the relationship between personality traits and the way people think and manage interpersonal conflict (Kaushal and Kwantes, 2006). Researchers have stated that a set of personality tendencies and characteristics play a key role in conflict events (Türk and Ceylan, 2020). For example, Baron (1989), in his study on the effect of individual inherent factors on conflict, has pointed out that personality characteristics cause special tendencies to resolve individual conflicts.

The way people think can also be an important factor in their ability to manage conflict with difficult personalities. Rational thinking helps individuals to make decisions based on a careful and informed analysis of the situation. On the contrary, experiential thinking causes individuals to make decisions based on impulsive and rapid judgments and to fall into the trap of decision-making errors (Hample and Richards, 2014). Rational thinking – compared with experiential thinking – helps people to analyse the conflict from different angles. This analytical approach, in turn, can have a positive impact on individual performance in conflict management, and it helps to reach better solutions.

Some previous empirical research has confirmed a positive relationship between rational thinking (as opposed to experiential thinking) and better decisions in conflict management-related situations, such as the rational persuasion technique (Curtis and Lee, 2013), and a limited number of studies have shown a positive relationship between experiential thinking and some organisational conflict management styles.

The purpose of this empirical study is to investigate the effect of thinking styles on individuals' conflict management in dealing with difficult personalities that require mature and constructive behaviour. This study may be one of the first studies, to the best of the authors' knowledge, to examine the impact of thinking styles on people's decisions in conflict management.

For this purpose, a gamified situation was designed, and a survey was performed in a controlled laboratory setting and an online platform. At first, participants' reactions were measured in a simulated conflict management situation dealing with difficult personalities. Subsequently, the dominant thinking style of participants was measured by rational-experiential thinking tests. At the end, participants answered a series of demographic questions.

Literature review

In this section, a review of the literature on the main study variables, including thinking style and conflict management, is explained.

Thinking styles

People perceive the world around them in different ways, judge it in different ways, and solve environmental behavioural challenges in different ways. Some people rely more on instincts and inner feelings, whereas others rely on the important aspects and main elements of problems and their consequences. In this regard, many researchers believe that there are two types of thinking or information processing styles in people. Such patterns are often called dual processing models. Hereof, Epstein *et al.* (1996) proposed the cognitive-experiential self-theory (CEST). According to this theory, individuals process information in their minds through two systems: rationality and experientiality. Rationality requires high levels of cognitive resources and is mostly verbal, analytical, conscious, and relatively slow because it operates through logical rules of inference. This system mediates behaviours through consciously evaluating events. In contrast, the style of empiricism is innate and adaptive, allowing people to learn from experience. The system of experientiality is unconscious, automatic, effortless, intuitive and relatively quick; it relates to interpersonal and emotional relationships and operates according to heuristic principles. Rational information processing is developed through an active search for knowledge, especially through formal education, whereas the process of experientiality (or intuitionism) is developed through life experiences (Epstein *et al.*, 1996). For example, a person in whom the experiential system of thinking is relatively dominant may make decisions and judgments based on a vibe or hunch that is strongly related to his or her feelings, whereas a person with

a more dominant rational system may use rules and careful analysis to reach a decision (Garrison and Handley, 2017; Hendijani *et al.*, 2023).

Although the presentation of dual processing theory dates back to the 90s, this theory is still considered in the latest organisational psychology studies (Bellini-Leite, 2022). Thinking styles have recently been of interest in the field of organisational behavioural studies. As an example, Styhre (2011) describes the nature of each practice (including organisational actions) as a combination of rational understanding through structured concepts and numerical representations and intuitive perception based on a fluid and fluent vision of the world, and it explains the connection between the nature of thinking and organisation theory.

There are various methods for measuring the use of rational and experiential thinking that have been discussed in the literature on thinking styles. One of these methods is the use of self-reported questionnaires, and the other method is manipulating the thinking style in the laboratory. The questionnaire method measures the internal and chronic condition of the individual in terms of rational or experiential thinking (Keaton, 2017). However, in the manipulation method, the thinking style of the individual is temporarily changed for a short time by the researcher to a rational or experiential state (Garrison and Handley, 2017). In the following, these two methods are explained.

Conflict management
In many organisations, conflict is a serious issue. This phenomenon may not have the power to dissolve the organisation everywhere, but there is no doubt that it can adversely affect the performance of the organisation or create a situation in which managers lose many of their efficient staff (Robbins *et al.*, 2014). Cohen (2004) considers organisational conflict the breakdown of cooperation or a threat to it and believes that conflict in organisations is both natural and expected in relationships.

Conflict is a situation in which interacting individuals differ from each other in terms of their main and secondary goals and values. Conflict management usually includes three strategies: non-confrontational strategy: methods of avoidance and adaptation or compromise; solution-oriented strategy: methods of cooperation and agreement; and control strategy, which is the same competitive method (De Dreu *et al.*, 2001).

Robbins *et al.* (2014) call any kind of opposition or hostile interaction conflict and consider its origin to be the scarcity of resources, the social status of power, or different value systems. It also states: "Conflict is a process in which one person's intentional attempt to thwart another person's efforts through some form of obstruction leads to his or her inability to achieve goals and interests". Although it should be noted that conflict in the workplace is not necessarily an obstacle that should be removed, many experts, including Van de Vliert *et al.* (1999), consider a part of organisational conflict to be constructive, useful and even necessary.

Conflict management is the management of dealing with differences and inconsistencies by managers and how to manage conflict with the three mentioned strategies. Learning conflict management to improve adaptation and take advantage of change is a vital capability for individual, group and organisational life (Tehrani and Yamini, 2020).

Good conflict management does not protect the organisation from change, and using it does not mean that this skill will always meet the demands of management; rather, it enables managers to become acquainted with new developments and to find appropriate solutions to deal with threats and seize opportunities (Chalkidou, 2011).

Conflict management is the identification and management of conflict in a reasonable and fair manner. To manage conflict, one must first identify the conflict, analyse the causes and ultimately select and use the appropriate style. Conflict can be managed using effective

communication skills, problem-solving skills and negotiation. The specific behavioural practices of managers in the face of conflict are called the conflict management style (Huber, 2013).

Van de Vliert and Kabanoff (1990) have been among the pioneers of conflict management research in organisations. In their famous study, they introduce the conceptual model of five conflict management strategies and validate it. Accordingly, competing, collaborating, compromising, accommodating and avoiding are the five main styles of conflict management that should be considered by managers.

Afzalur Rahim is also one of the first researchers to address the issue of conflict resolution with supervisors and managers. For example, in Afzalur Rahim *et al*. (2000) research, the relationship between perceived justice and "integrating" conflict resolution style has been studied in detail. The two-dimensional model of solving interpersonal conflicts based on concern for self or concern for others has also been presented by him (Afzalur Rahim, 1983). Further, in describing the relationship between personality traits and conflict management performance, Afzalur Rahim *et al*. (2002), in a study with more than 1000 management students, proved a positive and significant relationship between emotional intelligence and some conflict management strategies. Chen *et al*. (2019) also developed this study by investigating this issue in Chinese companies.

In this research, the meaning of "management situations" is "conflict management situations" and the conflict management performance of managers has been considered as one of their important management skills.

Conflict management with difficult personalities

Bramson (2012) is one of the first studies defining "difficult" personalities and their communication styles. For more than 25 years, he has observed, questioned, and listened to managers and other employees in more than 200 organisations. Bramson identified individuals who were noticed as the most difficult characters over time. Based on his information, he has identified 10 communication challenges and classified them into seven types: hostile/aggressive, complainer, unresponsive (in some references: silent), super-agreeable, negativist, know-it-all and indecisive. Other research has been done on this subject after Bramson's book; examples include books written by authors such as Keating (1984), Bernstein and Rozen (1993) and Brinkman and Kirschner (2006). These are very similar to Bramson's approach to difficult people. It is worth mentioning that several scientific articles have also referred to these works. As shown in Table 1, the main difference between these works is in the names intended for difficult characters.

In another study, Rezaeian (2016) proposed different strategies for dealing with difficult employees. These strategies express the common belief that non-difficult employees' perception of their difficult co-workers is essential for predicting behavioural and communication patterns so that they can better cope with difficult behavioural situations. Researchers such as Tuikka (2019), Angelo (2019) and Mohanty (2019) have also addressed the issue of difficulty, difficult personalities and negative communication challenges that cause organisational conflicts. The views of different researchers, while being in harmony, have different expressions. For instance, Tuikka (2019) states that difficult personalities do not exist by themselves, and an employee's personality is considered difficult only when his/her interaction in the organisation leads to such a perception. Table 2 shows a comparative overview of difficult personality types and the correct methods to interact with them, which adapts the labels given by different researchers.

Difficult personality	Bramson (2012)	Scholars Bernstein and Rozen (1993)	Brinkman and Kirschner (2006)
Hostile/aggressive	Tank	Competitor	Tank
	Sniper		Sniper
	Exploder		Grenade
Complainer	Complainer	Believer	Whiner
Unresponsive/silent	Clam	–	Nothing-person
Super-agreeable	Super-agreeable	Believer	Yes-person
Negativist	Negativist	–	No-person
Know-it-all	Bulldozer	Rebel	Know-it-all
(superiority)	Balloon		Think-they-know-it-all
Indecisive	Indecisive staller	–	Maybe-person

Source: Authors

Table 1.
Difficult personalities
metaphors

Thinking styles in conflict management

Numerous studies have recently linked information processing styles to important organisational behaviours such as leadership and conflict resolution styles. For example, Curtis and Lee (2013) examine the relationship between information processing styles in dual-processing theory and organisational influence tactics. In this study, behavioural coping in the rational information processing style had a positive relationship with the use of rationality as an effective tactic that was measured in the profile of organisational influence strategies. Behavioural coping and rational thinking had a positive relationship with influence tactics such as rational persuasion. According to the findings, confirmation tactics also have a positive correlation with rational thinking and behavioural coping.

Also, Curtis *et al.* (2017) in another study found a positive and direct correlation between the variables of thinking style, including rational thinking and behavioural coping with transformational leadership, in which leaders change their followers' attitudes and behaviours in favour of what they do.

The study of Fu and Kim (2019) uses CEST to examine how individuals differ in emotional tendencies (such as the need for diversity and interest in fashion) and logic-based tendencies (such as environmental awareness and social awareness). They concluded that this awareness could influence their information processing and decision-making in an environmental-friendly fashion context.

In their meta-analysis, Wang *et al.* (2017) studied two inconsistent perspectives on the relationship between intuition and logical analysis. The general findings of their study show that intuition and analysis, although independent structures, are not two poles of a contradictory spectrum. The meta-analysis of Phillips *et al.* (2016) has the same result.

Also, Cerni *et al.* (2014) examined the correlation between information processing systems and leadership styles, related tactics, conflict management, and organisational outcomes. The results show a strong relationship between the rational system and the constituent elements of the CEST with transformational leadership and conflict management styles. Preliminary evidence also shows that leaders with more rational and constructive thinking effectively manage conflict. In another study (Cerni *et al.*, 2012), these researchers studied the correlation between different conflict management styles and the rational and experiential thinking styles proposed in the theory of dual processing systems. According to the findings, rational systems, experiential systems and constructive thinking have a significant positive relationship with the conflict management styles of "integrating"

Table 2.
Difficult communication strategies

Difficult communication styles	Scholars				
	Bramson (2012)	Bernstein and Rozen (1993)	Brinkman and Kirschner (2006)	Angelo (2019)	Mohanty (2019)
Hostile/aggressive	Sherman tank • Stand in front of them • Let them empty themselves	Competitor • Give them teamwork practice	Tank • Ask for respect • Stop their attack • Be decisive	Vertical aggressive • State your expectations, such as "I'm sensing that you don't support some of the changes we need to make" • State that I'll be looking to you to follow policy so that others know it is the expectation	Psychopath • Your best recourse is to be clear about your boundaries • HR may consider suspending them
	Sniper • Get teamwork • If their opinion seemed rude • Ask them what they mean	—	Sniper • Get the word out of them • Be honest • Tell them that their opinion is unkind	Bully • Be prepared with clear examples of actions, as well as the impact these actions had • State how you expect things to change, and when you'll follow up	—
	Exploder • Let them empty themselves • Let them know that you take their concerns seriously	—	Grenade • Let them empty themselves • Let them know that you take their concerns seriously	Passive aggressive • State that you didn't express concerns to me • State that I expect that you communicate with me directly if you have a concern to bring forward	Passive aggressive • Avoid reciprocating passive-aggressive behaviours • Use tact and good conversation timing • Communicate the impact of their negative behaviours on you, your coworkers and the office environment

Difficult communication styles	Scholars				
	Bramson (2012)	Bernstein and Rozen (1993)	Brinkman and Kirschner (2006)	Angelo (2019)	Mohanty (2019)
Complainer	Complainer • Listen but do not agree • Change the flow of the conversation to solve the problem	Believer • Listen and focus on solving the problem	Whiner • Listen, but move on to solving the problem	Victim mentality • Remind them that personnel conversations are confidential • Remind them expectation was clear	Victim • Have patience • Point out evidence to the contrary when they begin complaining about it • Be careful not to support their tendency
Unresponsive/silent	Clam • Use open-ended questions to get the word out • Use patience and friendly silence for them to talk	–	Nothing-person • Use open-ended questions to get the word out	–	Quiet • Giving them more space and time than others to respond • Take time to get to know what makes him/her tick and show an interest in them as a person
Super-agreeable	Super-agreeable • Suppose this behaviour is an attempt to satisfy you • Let them know that you respect their honesty	Believer • Give honest feedback • Be honest and clear about priorities • Be clear about goals	Yes-person • Reassure them • Help them learn the plan	–	–

(continued)

Table 2.

Table 2.

Difficult communication styles	Scholars				
	Bramson (2012)	Bernstein and Rozen (1993)	Brinkman and Kirschner (2006)	Angelo (2019)	Mohanty (2019)
Negativist	Negativist • Do not get caught up in their words • Express your optimism • Do not tell them that they are wrong	–	No-person • Do not get caught up in their words • Use them as a resource	Defensiveness • Calmly redirect by stating that this conversation is focused on him/her • Remind him/her that you are invested in his/her success	The blamer • Redirect their attention away from blame towards verifiable facts
Know-it-all (superiority)	Bulldozer • Do not challenge their expertise • Acknowledge their competence	Rebel • Put them where they can do their best	Know-it-all • Be prepared and patient • Express your opinions indirectly	–	Flyer • Praise for the value they bring to the office before delivering any critiques • May be unable to change many of their behaviours but focus on your interests
Think-they-know-it-all (fake experts)	Balloon • State the facts and other options • Give them a way to maintain their dignity	–	Pretend know-it-all • Pay some attention to them • Clear their minds • Give them a way to maintain their dignity	Informer • Ask him/her to hold his or her peer accountable • Ask him/her to help with the team	Egomaniac • Be assertive • Deal with them in small amounts, then walk away

Difficult communication styles	Bramson (2012)	Bernstein and Rozen (1993)	Scholars Brinkman and Kirschner (2006)	Angelo (2019)	Mohanty (2019)
Indecisive	Indecisive staller • State the issue • Make sure they can make decisions or even make mistakes	–	Maybe-person • Make the options clear • Make sure they can make decisions or even make mistakes	–	–

Source: Authors

Table 2.

and "compromising". In addition, the rational system has a positive relationship with the "dominating" conflict resolution style, and the experiential and constructive thinking systems have a positive relationship with the "obliging" conflict resolution style. The rational system and constructive thinking have been negatively associated with the "avoiding" style of conflict resolution.

In his research, Karsai (2009) has studied the differences between rational and experiential thinking styles. Eight series of criteria and a rational-experiential questionnaire were used to determine the strengths and weaknesses of each style. According to their findings, rational style is related to academic activities, reasoning ability, self-control and creativity. The rational group had a better score than the experiential group in terms of academic practice and reasoning skills, and had a significant difference in terms of creativity. The experiential thinking style was positively related to social skills (including emotional support and conflict management). Karsai (2009) states that studies such as Pacini and Epstein (1999) confirm the positive relationship between experiential processing system with emotional support and conflict management.

In addition to the thinking styles introduced in the dual processing theory, other thinking types have been of interest to organisational psychologists. For example, Li *et al*. (2021) studied the relationship between critical thinking (which is usually associated with rational thinking) and conflict management styles in a healthcare context and found that there is a significant relationship between critical thinking and the integration style of conflict management.

In addition to the studies mentioned concerning conflict and its management in organisations, numerous studies have been published, some of which have pointed to difficult personalities and strategies for managing conflict with them. Table 3 summarises some of these articles and the main concepts they studied.

The design of gamification in the present study is based on the findings and outcomes of previous research.

According to what has been reviewed in the theoretical literature and research background, the innovation of the present research is to study the thinking style of managers and its effect on conflict management with difficult personalities. The use of gamification in the case of difficult characters and in a quasi-experimental design is another innovation in research methodology.

Hypothesis development
Although the accumulation of knowledge in the field of organisational conflict management styles is extensive, the study of the effect of thinking styles on successful conflict management has little background, which is considered a research gap that the present research seeks to contribute to. In research that studies individual aspects in the field of conflict management, individual traits have often been discussed. However, according to many studies, thinking styles are distinct from personality traits and not subordinate to them (Zhang, 2006). Furthermore, previous research in the field of connecting thinking styles to conflict management has often used survey and self-report methods to measure conflict management skills, while this research is one of the first, to the best of the authors' knowledge, to calculate the ability of conflict management through a gamified simulation, which can report the performance closer to reality.

Based on previous studies discussed in the previous sections, rational thinking helps a person to make an accurate and informed analysis of decision-making situation. In contrast, experiential thinking causes the individual to use instantaneous judgments in decision-making, thus increasing the likelihood that the individual will suffer from decision biases

No.	Source	Concepts studied
1	Dildar *et al.* (2021)	Personality traits, conflict resolution styles, unmarried and married individuals
2	Angelo (2019)	Negative behaviours: "defensiveness", "victim mentality", "passive aggressiveness", "vertical aggression", "bullying", "the informer" and conflict management behavioural tools
3	Agarwal (2019)	Supervisors' communication style: passive, aggressive and assertive, conflict avoidance and spoken and non-spoken messages
4	Caputo *et al.* (2018)	Conflict management styles: avoidance, coercion, problem-solving, conflict cycle, interpersonal conflict and the impact of cultural values and orientations on conflict management
5	Borţun and Matei (2017)	Types of patients and the need for different relationships with them, the need for control, perfection, support and attention, the characters of "grenade", "friendly sniper", "know-it-all", "yes-person", "maybe-person", "tank", "complainer" and "nothing-person"
6	Morgan (2016)	Dissatisfaction and complaints, organisational backgrounds, interpersonal conflict, complaining personality, complainer, difficult personalities
7	Erdenk and Altuntaş (2017)	Five-factor personality: extraversion, neuroticism, openness to experience, agreeableness and conscientiousness; five conflict management strategies: integration, compromise, domination, avoidance and obligation
8	Ann and Yang (2012)	Personality traits, emotional intelligence and conflict management styles (integrating, dominating and compromising)
9	Kaushal and Kwantes (2006)	Conflict management, resolution behaviours, vertical and horizontal individualism and culture
10	Antonioni (1998)	Personality factors (extroversion, openness, conscientiousness, agreeableness and neuroticism) Conflict management styles, interpersonal conflict

Source: Authors

Table 3.
Excerpts from related research and the concepts studied

and errors (Hample and Richards, 2014). According to previous research, rational thinking, compared to experiential thinking, helps a person to analyse the challenge of conflict management from different angles. This analytical approach to problem-solving, in turn, can have a positive impact on the performance of the individual in conflict resolution and help to reach better solutions (Curtis and Lee, 2013). This is especially important when dealing with difficult personalities that require deeper and more appropriate behaviour. Previous empirical studies also confirm this opinion (Cerni *et al.*, 2012; Cerni *et al.*, 2014). According to background research, rational thinking compared to experiential thinking has a positive effect on a variety of management decisions, including conflict management situations (Peñarroja *et al.*, 2017; Rafique *et al.*, 2019). Although in the research background, there are also supports regarding the significant positive relationship of intuitive thinking with some conflict management styles (Cerni, 2012; Karsai, 2009).

Figure 1 shows the conceptual model of the research, which schematically explains the relationship between main variables and concepts.

According to the mentioned points and summarising the background of the research, the following hypothesis is proposed:

H1. Rational thinking (compared with experiential thinking) has a positive effect on individual performance in conflict management with difficult organisational personalities.

Research methodology

Sample

The number of participants was 240, and all of them were bachelor, master, and doctoral students in management in various academic orientations, or they were managers in different organisations. A total of 132 participants participated in the study in groups of 12 in the laboratory using a personal computer. The remaining 108 participants participated in the research through the online platform because of the pandemic conditions. Data collection was performed in a period of about two years, from October 2018 to November 2020.

A total of 41.3% of participants are undergraduate students, 42.9% of them have masters or are masters' students and 15.8% of them have a PhD or are PhD students.

The mean of the participants' ages is 31.77 and the standard deviation of their ages is 9.25.

Of the participants, 132 (55%) had management experience and the rest had no management experience. Also, 117 of the participants (48.8%) were hired employees and 123 others (51.3%) were not employed in an organisation. In addition, 118 participants (49.2%) were married and the rest 122 (50.8%) were single.
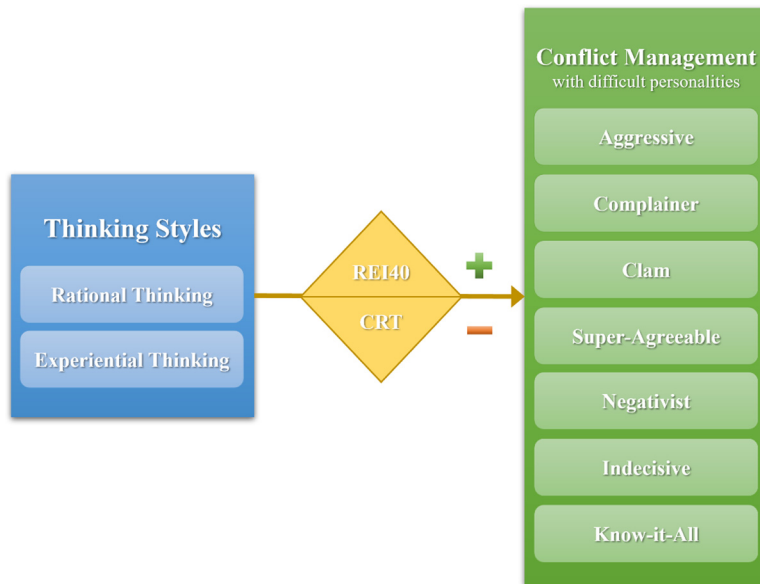

Figure 1.
Conceptual model of the research

Source: Authors

The mean of the participants' work experience is 8.89 and the standard deviation of the participants' work experience is 8.62.

The number of women in this study was 50 and the number of men was 190. The cause of inequality between men and women is the greater number of male managers in managerial positions and management schools.

Instruments

Gamification design. Concepts of gamification existed before this word became popular in global business literature. The "Game of Work" management consulting company was established in 1973 following the development of concepts related to gamifying jobs, and some scholars consider its founder to be the father of the gamification technique (Coonradt and Nelson, 2012).

Simulating work in the game can be considered an old concept that has recently been the subject of an academic and coherent approach. The basic aim of gamification is to use natural motivators to direct the participant, and because the fun of playing is one of the most attractive motivators for humans, this point can be considered as the foundation of the concept of gamification. In a definition, gamification means using game-like thinking to persuade participants to solve real problems, which can be considered non-fantasy playing (Zichermann and Cunningham, 2011). Another definition refers to the use of game stimuli and applying them in non-game contexts (Hamari and Koivisto, 2013; Ahmadi *et al.*, 2019).

Gamification is by no means limited to a specific area. Today, numerous applications designed by both the public and private sectors use gamification, including "wespire.com" in environmental protection, "centrical.com" in improving educational goals (lifelong learning), "healthsolutions.fitbit.com" in health-oriented behaviours (such as walking, running and proper nutrition), "spinify.com" in organisational resource management and many gamified projects in a socio-economic context such as fundraising (Stefanel and Goyal, 2018) and political participation (social development initiatives). In recent years, gamification topics have grown significantly in public debate in the context of the interpretation of new digital technologies, trending social media, and smart city planning (Vanolo, 2018).

Recently, several studies have addressed gamification models that describe the components, mechanisms and dynamics of gamification concerning the organisational context and audience (Ahmadi, 2020). The following model, which can be seen in Figure 2, entitled "A model for thinking about gamification", makes sense of this concept in four dimensions of mechanisms, measures, behaviours and incentives, and these dimensions are interpreted in the context of players, organisational requirements and the environment.

This model draws on real-world experience at Hewlett-Packard Technology Development Company to design gamified programs and activities.

Basically, gamification is the use of game elements in a non-game context. The effective use of gamification in solving many organisational problems, especially those related to behaviour adaptation, has been emphasised in many studies. In the field of organisational conflict management, studies such as Vegt *et al.* (2015), Rumsamrong and Chiou (2021), and Faregh *et al.* (2021) have reported the use of gamified tools to study, measure and improve teamwork, constructive behaviour, conflict management strategies and resolutions. While the circumstances of a conflict situation with difficult organisational personalities may be challenging for a manager and the consequences of his decision could be costly for the organisation, the use of gamification, in addition to providing benefits such as attractiveness and full engagement for participants, can simulate real conditions with negligible cost and risk.

The purpose of game design in gamification is to design a system in which game mechanics respond to game dynamics (basic human needs) and, at the same time, players'

Source: This redesigned model is inspired by a model designed by Charles E. Bess (2013), which was published in the Cutter IT Journal, available in full text at https://www.cutter.com/sites/default/files/itjournal/fulltext/2013/02/itj1302.pdf

behaviour is directed to achieve non-game goals. Also, the use of a set of game components such as graphics, sound, and decorations adds to the attractiveness of this system (Oliveira et al., 2023; Tavallaei et al., 2019). The game design in this research project started with scenario planning and the formulation of a critical situation for the manager of a hypothetical organisation. After that, the character of protesting employees was designed based on the literature on difficult personalities. Then, the portraits of the characters, their speech and tone, the manager's room, and the process of the steps were determined. The main mechanics used in this game included points, stages, competition, and storytelling. The main dynamics targeted in this game included the need for reward, challenge success, and self-expression.

The gamification designed for this research included the first part of the research question. The gamification design aimed to simulate the situation of a senior manager in the face of seven difficult personalities in an organisational crisis context. In these scenarios, while describing the conflict situation using scripted, graphic and audio elements, a question was asked about dealing with this character, which could be answered in three possible ways (right, half right and wrong). Thus, the conflict management score of each participant was the score earned in this section. Game design and results were based on the findings of Rezaeian (2016),

Bramson (2012), Bernstein and Rozen (1993), and Brinkman and Kirschner (2006). Table 2, which is the result of extensive studies and observations by previous researchers regarding difficult organisational personalities, clearly suggests behavioural guidance in interacting with these personalities: for instance, do this or don't do this. Given that the game design process requires multiple and separate details, this framework was used as a basis for designing answers. In this way, if the type of decision in the simulated situation is in line with the behavioural suggestion, a high score will be obtained; if the type of decision in the simulated situation is similar to the opposite behavioural recommendation (not doing that), no point is obtained; and if the type of decision is a combination of advised and wrong behaviour, a minimum point is obtained.

The total score of the questions in the simulated conflict management situation was 140; there were seven three-choice questions in which the correct choice had 20 points, the medium choice had 10 points and the incorrect choice had 0 points.

Some of the gamification images of this research can be seen in Appendix.

Thinking styles measurement. In this study, rational thinking style was measured with two instruments, including the rational dimension of REI measure and the cognitive reflection test (CRT). Below, an explanation of these two measures are provided.

Rational-experiential inventory. There are several questionnaires to measure thinking styles in the social psychology literature. These questionnaires usually have high internal validity and high reproducibility in various studies (Phillips *et al.*, 2016). Among these, the rational-experiential inventory (REI) questionnaire designed by Epstein *et al.* (1996) has been used in most studies in this field and has the highest level of validity compared to other questionnaires (Phillips, 2017). This questionnaire measures the abilities and preferences of individuals in two styles of logical and intuitive information processing. Studies conducted following this questionnaire have shown that both scales of this questionnaire have good internal consistency (alpha greater than 0.85) and a good retest scale (r greater than 0.76) (Toyosawa and Karasawa, 2004).

Pacini and Epstein (1999) have shown that people differ in their preferences for these two information processing systems. The results indicate that the preferential cognitive pattern of individuals is associated with readiness to make judgments in laboratory activities and decision-making in simulated life situations (Lieberman, 2002). The REI has been used as a valuable tool in research on adult decision-making in a wide range of activities, including organisational behaviour (Bartels, 2006).

The current format of this questionnaire, known as REI40, is an extended version of the REI provided by Pacini and Epstein (1999). The questionnaire consists of 40 self-reported questions that measure two independent dimensions of human information processing: rational and experiential. Each dimension is evaluated using two subscales, each consisting of 10 items: rational ability, rational engagement, experiential ability, and experiential engagement. This questionnaire is administered on paper or online. The assessment is done on a five-point scale divided from 1 (completely wrong about me) to 5 (completely true about me) (Keaton, 2017). This questionnaire has been used in many kinds of research around the world, and its reliability and validity have been tested (for example, Phillips, 2017; Björklund and Bäckström, 2008; Witteman *et al.*, 2009). In recent research, this questionnaire has been used to study self-efficacy (Ahmad and Sulaiman, 2022), ethics in the work environment (Elaad, 2022) and systems dynamics (Hendijani *et al.*, 2023). Also, the results of a meta-analysis conducted by Phillips *et al.* (2016) on various methods of measuring thinking styles show that this questionnaire is more commonly used than other questionnaires, and it is the most valid measure available to assess thinking styles. One of the main advantages of this questionnaire is that it measures rational and experiential

thinking in two separate and independent dimensions. Besides, each of these two dimensions, measures two sub-dimensions of ability and engagement. Thus, in total, this questionnaire assesses the four dimensions of ability and engagement for rational thinking and ability and engagement for experiential thinking.

Cognitive reflection test. The CRT is a three-question exercise that shows that predicting sensitivity to decision-making biases is better than common sense measures. This test is named cognitive reflection because it describes a metacognitive trait – the extent to which people prefer to react to responses rather than provide intuitive responses. In this test, people are asked to solve three simple math problems for which intuitive answers are wrong. This exercise was first proposed in 2005 by Shane Frederick (2005). Frederick (2005) describes CRT performance as reflecting a person's preference for using either "system 1" of processing and thinking (the experiential system) or "system 2" of processing and thinking (the rational system) (Stanovich and West, 2008). Considering the ease of checking the incorrectness of intuitive answers, the score of this test shows how much a person can reflect his/her answer – so to speak – instead of the intuitive answer (Welsh *et al.*, 2013).

The CRT has three questions, each of which has an obvious but incorrect answer, which system 1 tells. The correct answer requires the activation of system 2. For System 2 to be activated, a person must notice that his initial response is incorrect, which requires thinking about self-awareness. The CRT is an exercise designed to measure a person's willingness to ignore an incorrect sensory response and to engage in more thinking to find the correct response.

When answering CRT questions, most people exhibit a characteristic common to many fallacies of reasoning; in fact, they behave as "cognitive misers" (Stanovich, 2009). Usually, people give the first answer that comes to mind without giving it much thought and realising that this answer cannot be correct. Most people do not think deeply enough to realise their error, and cognitive ability is no guarantee against such an error. Frederick (2005) found that even large numbers of students at top universities were "cognitive misers" because they also gave incorrect answers to these questions (Toplak *et al.*, 2011). Frederick also showed that people who score high on the CRT are more patient and more willing to gamble across a range of interests. He also provided evidence that CRT scores are highly correlated with other analytical thinking tests. CRT has a moderately positive correlation with intelligence scales, like the IQ test, and is highly correlated with different scales of mental discoveries (Hoppe and Kusterer, 2011). Toplak *et al.* (2011) claim that CRT can be seen as a combination of cognitive capacity, willingness to judge and decision-making (Brañas-Garza *et al.*, 2015).

In organisational behaviour studies, an individual's thinking style helps organisational psychologists explain the reasons for individual differences in work performance. In the field of decision-making, which is the most important management task, the CRT can be related to several decision-making parameters, including temporal discounting, framing effect and risk preferences (Frederick, 2005). The CRT is also correlated with the self-report of the REI questionnaire (Pennycook *et al.*, 2012). Also, in the field of individual behavioural characteristics, the CRT has shown a significant relationship with heuristics and biases tasks (Toplak *et al.*, 2011), religious prejudice (Shenhav *et al.*, 2012), paranoia (Pennycook *et al.*, 2012) and political style (Deppe *et al.*, 2015). Moreover, this test has been used in recent research on performance potential (Burz and Duta, 2021) and moral reasoning (Proroković and Gregov, 2022).

Procedure
To test the research hypothesis, a survey method was used. However, data collection was performed in a laboratory setting to minimise the intervention of disturbing variables.

Survey studies are always important tools for understanding social behaviours and have wide applications in the field of management. In this method, statistical data are analysed after collection and refinement, and researchers infer from the results about the research hypothesis. Survey data is based on participants' answers to questionnaires.

Survey questions and measurement
Because the gamification used in this study was designed and used from the beginning in the management laboratory and the business research laboratory of two public universities, and its implementation required the use of laboratory computers, researchers tried to make the most of the laboratory conditions as laboratory settings can improve the accuracy of the answers and findings while controlling disturbing and intervening variables (Webster and Sell, 2014). After the COVID-19 pandemic, participants could not be physically present in the laboratory environment, and as a result, the gamification platform was updated from offline mode to online mode so that participants could participate in this research project from anywhere. Participants answered research questions on the online software platform. In the first part, conflict management gamification questions were presented to the participants. It should be noted that the order of the options appeared randomly. In the second part, participants answered the REI questionnaire in the form of 40 five-choice questions. Finally, a few questions were asked about demographic and personal characteristics, including age, education, job history and managerial background.

Research variables
Independent variables

- Rational thinking measured by REI40: This variable, which is named as "Total Rationality" in the statistical models, is the total score of 20 questions from the REI40, which itself consists of two parts of 10 questions that show the degree of rational ability and rational engagement. The maximum possible for this score is 100 and the minimum possible for it is 20, and the participants have registered their score through self-report.

- Experiential thinking measured by REI40: This variable, which is named as "Total Experientiality" in the statistical models, is the total score of 20 questions from the REI40, which itself consists of two parts of 10 questions that show the degree of experiential ability and experiential engagement. The maximum possible for this score is 100 and the minimum possible for it is 20, and the participants have registered their score through self-report.

- Rational thinking measured by CRT: This variable, which is named as "CRT Total" in the statistical models, is the total score of correct answers to three questions of the CRT. The maximum possible for this score is 3, and the minimum possible for it is 0.

Dependent variable. "Total Score": This variable is considered as the total score obtained from seven scenarios in the conflict management game.

Control variables. Demographic variables such as field of work, job position, age, marital status, degree, field and academic orientation, university, employment status, work experience and managerial records have also been questioned and registered as control variables in the form of text entries.

To exercise more control over the disturbing variables, the questionnaire was filled out in the form of a quasi-experimental design and laboratory settings of two management and

business laboratories. It took a maximum of about 60 min to answer the questions. During the study, environmental variables such as light, sound, temperature and other physical factors such as space comfort were controlled for all participants.

Statistical analysis and results

Because the purpose of data analysis in this study is to describe the relationship between the dependent variable (total score of conflict management) and independent variables (thinking styles measures) in the presence of some control variables (including age, education, married status and work experience), the regression method is very suitable for this study. Regression analysis (includes two simple and multiple types) creates a regression equation in which the coefficients represent the relationship between each of the independent variables and the dependent variable. This equation can be used to predict (Frost, 2017). In this study, the purpose of data analysis is to determine the coefficients and examine the relationship between dependent and independent variables, so regression analysis can well achieve this goal.

Descriptive statistics related to the variables are illustrated in Table 4.

To test the research hypothesis, regression models are used to test the effect of rational thinking style on performance in the conflict management game. In the first model, only total rationality (measured by REI40) was added to the model. In Model II, control variables (age and married as two examples) are also added. In Model III, total rationality and total experientiality (measured by REI40) were added to the model. Model IV contains total rationality and CRT total (total point of CRT) and the final model contains all the mentioned variables (β is reported as unstandardised coefficients). These models can be seen in Table 5.

Based on the results of the first model, total rationality ($\beta = 0.26$, $p < 0.01$) had a significant effect on performance in conflict management. In the second model, age (as a control variable) ($\beta = -0.17$, $p = 0.006$) did not have a significant effect on performance in conflict management; in contrast, married (as another control variable) had a significant effect on total score ($\beta = 7.16$, $p = 0.006$) and total rationality maintained its significant positive effect ($\beta = 0.24$, $p = 0.006$). Similarly, in Model III, total rationality had a significant effect on performance in conflict management again, but total experientiality ($\beta = -0.04$, $p = 0.04$) did not have this effect. In Model IV, CRT total was added to the model in the presence of total rationality, and in spite of the significant effect of total rationality, CRT total ($\beta = -0.50$, $p = 0.03$) also did not create a significant effect. Finally, in the last model, married and total rationality had a significant effect on performance in conflict management and the rest of the variables, including age, total experientiality and CRT total, did not have a significant effect.

Although rational thinking measured by CRT, as a measure of rational thinking style, did not show a significant effect on performance in conflict management, considering the

	Variable	Min	Max	Mean	SD	1	2	3	4	5
1	Total score	50	140	98.29	16.54	–				
2	Age	18	55	31.77	9.25	0.07*	–			
3	Married	0	1	0.49	0.50	0.16*	0.72**	–		
4	Total rationality (REI)	43	99	77.35	9.95	0.16*	0.10*	0.10*	–	
5	Total experientiality (REI)	30	86	62.51	9.16	−0.04	−0.13*	−0.06	−0.09	–
6	CRT total	0	3	1.50	1.21	−0.03	−0.13*	−0.14*	−0.00	0.06

Notes: *$p < 0.05$; **$p < 0.01$
Source: Authors

Table 4.
Descriptive statistics and correlations among variables

Variables/models	Model I		Model II		Model III		Model IV		Model V	
	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.
Constant value	77.69	0.00	81.36	0.00	80.95	0.00	78.48	0.00	85.11	0.000
Age	–	–	−0.17	0.29	–	–	–	–	−0.18	0.27
Married	–	–	7.16	0.01*	–	–	–	–	7.16	0.02*
Total rationality (REI)	0.26	0.01*	0.24	0.02*	0.26	0.01*	0.26	0.01*	0.24	0.02*
Total experientiality (REI)	–	–	–	–	−0.04	0.68	–	–	−0.04	0.70
CRT total	–	–	–	–	–	–	−0.50	0.56	−0.25	0.76
R^2 (%)	2.56		5.14		2.63		2.70		5.24	
Adjusted R^2	2.15		3.94		1.81		1.88		3.22	
F-statistic	6.27**		4.26**		3.20*		3.29*		2.59*	
p-statistic	0.01		0.006		0.04		0.03		0.02	
Sample size	239		239		239		239		239	

Notes: *$p < 0.05$; **$p < 0.01$
Source: Authors

Table 5.
Regression models

results, it can be concluded that the effect of total rationality measured by REI40 is positive and stable in all models. Thus, the research hypothesis is strongly confirmed.

Discussion and conclusions

People enter the workplace with their unique personality traits and interact with each other. In spite of individual differences, organisational conflict is inevitable. According to different approaches in human resource management, managers and employees try to manage conflict through conflict management styles and approaches (Ayub *et al.*, 2017).

In this study, the conflict management states of difficult personalities in the organisation (Rezaeian, 2016) were simulated using gamification technology. Also, in the present study, the innate thinking of individuals was assessed by the REI40 questionnaire and CRT.

Based on the findings of this study, the rational thinking measured by the REI40 has a significant and positive effect on the performance of individuals in conflict management with difficult personalities in an organisational context; in other words, rational thinking leads to better performance in conflict management. This result is consistent with the findings of researchers such as Cerni *et al.* (2012), Cerni *et al.* (2014), Peñarroja *et al.* (2017) and Rafique *et al.* (2019). Accordingly, it is recommended to human resource managers and experts in the field of organisational behaviour to emphasise training courses and exercises that strengthen the ability of rational analysis in employees to enhance conflict management capabilities. Relying on conflict management strategies that improve the rational and logical aspects of interpersonal attitudes and interpersonal interactions is also recommended to HR managers in conflict management with difficult personalities, such as problem-solving resolution and integration and compromise strategies (Rafique *et al.*, 2019).

It is possible that using manipulation methods of thinking styles, such as solving mathematical problems that stimulate the algorithmic mind and activate it (Stanovich, 2011), or other methods that stimulate the reflective mind, will have a greater impact on the performance of individuals in conflict management. Perhaps this is the reason why, in spite of the expectations in this research, the CRT score did not have a significant relationship with conflict management. Accordingly, and considering the positive role of rational thinking measured by REI40 on the performance of individuals in conflict management found in this study, in future studies it is suggested to use experimental methods to manipulate the thinking style and study their effectiveness in terms of impact on conflict

management. In addition, because of the sample size and the possibility of its impact on the results, researchers intend to re-examine the research results in the future by increasing the number of samples. Researchers in the fields of human resource management and organisational behaviour, especially those interested in conflict management topics, can examine the relationship between thinking styles and conflict management techniques in similar research.

It is worth mentioning that in this research, an attempt has been made to have as many managerial and professional backgrounds as possible among the research participants. However, conducting research at other universities or in laboratory environments increases the quality of the results.

The findings of this research have useful results for organisational and social applications. Therefore, practical suggestions are presented at the following three levels:

(1) Individual level: Because social life is always prone to individual conflicts in spite of the limitations of various resources, conflict management in personal life is an essential skill that cannot be avoided. Although the occurrence of difficult personality behaviour is defined in the organisational context, these personality types or similar ones may also choose a difficult path to express their view as a neighbour, friend or family member. In such a condition, maintaining a rational path in relationships and avoiding emotional encounters (even they are complex) will help to better resolve interpersonal conflicts.

(2) Group level: When tasks are divided and where the achievement of acceptable work depends on the completion of different tasks, the occurrence of job conflict is possible. In this case, while recognising the behavioural abnormalities of difficult characters, it is possible to depersonalise the issue, recognise the needs and concerns of these characters from a scientific point of view and avoid strategies that fuel the spread of counterproductive conflict. Undoubtedly, in such a condition, making sudden and emotional decisions, and generally relying on intuition, increases the risk of not succeeding in resolving the conflict peacefully.

(3) Organisational level: Finally, as a manager, the skill of conflict management (with employees, customers, etc.) is a vital skill. The more training and human resources development programs include exercises that strengthen logical thinking, problem-solving and systematic thinking among employees, the more it is expected that they will rely more on logical thinking methods in decision-making cases. As a result, when conflicts occur, more rational conflict management could occur. Also, organisational managers at any level should be ready to deal with different personality types (including difficult personalities). According to the results, it seems that relying on the accumulation of experiences in conflict management cases is not enough, and a rational analysis of the circumstances and making a logical decision will surely lead to more reliable decisions.

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Appendix

Figure A1.
Figures of designed
gamification for
conflict management
with difficult
personalities

Source: Authors