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Impact of Transformational Leadership on Work Engagement and Proactive, Adaptive and Proficient Performance in Healthcare Systems

Filipa Andreia Moita dos Santos

Master in Management

Supervisor:
PhD Ana Luísa Junça da Silva, Assistant Professor
Iscte – University Institute of Lisbon

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Departament of Marketing, Operation and Management

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Resumo

As organizações de saúde desempenham um papel vital na prestação de cuidados de saúde de qualidade e na promoção do bem-estar da comunidade. No ambiente dinâmico atual, enfrentam desafios complexos que exigem uma liderança forte para se adaptarem e melhorarem o desempenho dos seus trabalhadores. Embora os líderes transformacionais sejam considerados cruciais para diversos resultados dos seguidores, são escassos os estudos realizados no contexto da saúde. Propomos que a liderança transformacional está relacionada com o desempenho dos seguidores através do envolvimento no trabalho. Além disso, hipotetizamos que os comportamentos de liderança transacional irão moderar a relação indireta proposta entre liderança transformacional e desempenho dos seguidores através do envolvimento no trabalho. Para testar o modelo, 212 trabalhadores da saúde responderam a um questionário online. Os resultados mostraram que, quando os líderes utilizavam comportamentos de liderança transformacional, como estimulação intelectual e consideração individual, os seguidores eram mais propensos a tornarem-se vigorosos, dedicados e entusiastas em relação ao seu trabalho. Estas atitudes, por sua vez, influenciaram o desempenho. Além disso, o envolvimento no trabalho dos seguidores estava particularmente ligado ao desempenho quando os comportamentos transacionais, como recompensas contingentes, eram baixos em vez de altos. Discutimos como estas descobertas contribuem para a literatura sobre liderança em contextos de saúde, demonstrando como e quando os líderes inspiram os seus seguidores a liderarem-se a si mesmos e a promoverem o seu desempenho. Adicionalmente, elaboramos sobre as implicações práticas da formação em liderança no contexto da saúde.

Palavras-chave: saúde; liderança; liderança transformacional; liderança transacional; envolvimento no trabalho; desempenho proactivo; desempenho adaptativo; desempenho proficiente; COVID-19.

Abstract

Healthcare organizations play a vital role in providing quality healthcare and promoting community well-being. In today's dynamic environment, they face complex challenges that necessitate strong leadership to adapt and improve their workers' performance. Although transformational leaders are seen as crucial for diverse follower outcomes, studies conducted in the healthcare context are scarce. We propose that transformational leadership is related to follower performance through follower work engagement. Moreover, we hypothesize that transactional leadership behaviors will moderate the proposed indirect relationship between transformational leadership and follower performance through work engagement. To test the model, 212 healthcare workers completed an online survey. The results showed that when leaders used transformational leadership behaviors, such as intellectual stimulation and individual consideration, followers were more likely to become vigorous, dedicated and enthusiastic about their work. These attitudes, in turn, influenced performance. Furthermore, followers' work engagement was particularly linked to performance when their transactional behaviors, such as contingent rewards, were low rather than high. We discuss how these findings contribute to the leadership literature in healthcare settings by demonstrating how and when leaders inspire their followers to lead themselves and promote their performance. Additionally, we elaborate on the practical implications of leadership training in the healthcare context.

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Introduction

Leadership is a concept that is intrinsic to human history, going back to the dawn of civilization. Since ancient times, when societies began to form, leaders have emerged as those who played essential roles in guiding and organizing these communities. Whether they were kings who ruled empires, prophets who inspired followers, or priests who offered spiritual guidance, leaders' presence has always corroborated one of the world's oldest concerns. Nonetheless, even with decades of evolution and study, leadership remains a dynamic subject that continues to be actively discussed under the ever-changing demands of society and organizations.

The recent outbreak of the unexpected phenomenon of COVID-19 has triggered an urgent need for innovation, and adaptation on a global scale. The impact of the pandemic has transcended borders and sectors, profoundly affecting society, the economy, and everyday life, particularly for healthcare workers who were pushed to adapt to these challenging working conditions (Chemali et al., 2023). Beyond the direct implications for public health, the COVID-19 crisis has undeniably highlighted the critical importance of health systems worldwide (Chemali et al., 2023).

In this challenging and unpredictable context, health system leaders have emerged as central figures reacting and adapting to the COVID-19 pandemic (Ahenr, 2020). Specifically, transformational leadership behaviors emerged as factors that accounted for their followers' ability to adapt and react to unpredictable, uncertain and ambiguous conditions of the pandemic crisis (Bakker et al., 2023). Transformational leaders are individuals who provide personalized attention to their followers, inspiring them to perform at their highest potential and cultivate their own leadership abilities (Bass & Riggio, 2006). Leaders embracing a transformational paradigm not only act as motivators and sources of inspiration for their teams but also empower them to proficiently navigate evolving scenarios and confront intricate challenges with tenacity (Bader et al., 2023). This dynamic enhances healthcare professionals' proficiency and overall team effectiveness in uncertain environments where the ability to adapt is essential (Morf & Bakker, 2022).

In addition to navigating a complex and constantly evolving environment, transformational leaders were also tasked with leading teams of healthcare professionals who were working under extremely high-pressure conditions (Taskan et al., 2022) and

thereby were forced to systematically adapt (Junca-Silva & Caetano, 2024). This made adaptive performance essential for effectively navigating this turbulent landscape (Junca-Silva & Caetano, 2023). Adaptive performance refers to employees' ability to adjust to rapidly changing work conditions where uncertainty is a constant (Griffin & Hesketh, 2005). This dimension of performance significantly influences how employees handle emergencies, manage changes, and address unexpected challenges (Griffin et al., 2007). All in all, adaptive performance became an essential indicator for healthcare workers during and in the post-pandemic phase.

Understanding the influence of transformational leadership on healthcare workers' adaptive performance in the post-pandemic context holds paramount significance but has been underexplored (Junca-Silva & Caetano, 2024). Thus, this research aims to explore how and when transformational leadership influences followers' adaptive performance in the healthcare system. To do so, we employed the full-range leadership theory (Bass, 1985) and the job demands-resources (JD-R) theory (Bakker & Demerouti, 2018) to test the indirect effect of transformational leadership behaviors on followers' adaptive performance through their work engagement and the moderating role of transactional leadership in this indirect relationship.

Previous research has suggested that transformational leadership influences followers' attitudes and performance (Bader et al., 2023; Katou et al., 2022). In this study, we empirically demonstrate that transformational leaders influence their followers to engage in adaptive behaviors. According to JD-R theory, transformational leadership behaviors enable employees to generate job and personal resources, such as autonomy, skill variety, and self-efficacy (Bakker, 2017). These resources help manage job demands and indirectly enhance work engagement and adaptive performance (Bakker et al., 2023). Therefore, we propose that transformational leaders influence followers' work engagement — an affective motivational state marked by high levels of energy (vigor), enthusiasm for work (dedication), and complete immersion in work activities (absorption; Schaufeli & Bakker, 2010). When employees are engaged in their work, they excel in their areas of expertise and adopt an adaptive approach toward their work goals and tasks even in uncertain working conditions (Junça-Silva & Caetano, 2023).

Furthermore, according to Bass's (1985) full-range leadership model, transactional leaders lead through social exchange. For instance, they motivate and guide their followers by offering rewards and recognition (contingent rewards) in exchange for

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adaptive behaviours and productivity. Transactional leaders differ from transformational ones as these are more focused on showing individual consideration and inspiring followers to be at their best (Bass & Riggio, 2006), while transactional ones are more focused on rewarding their followers when they deserve it. We propose that transactional behaviors, such as contingent rewards, will act as a moderator in the indirect relationship between transformational leadership and adaptive performance through work engagement.

This study has theoretical and practical implications. First, we extend leadership and JD-R theories by examining the mechanisms and conditions through which transformational leadership influences adaptive performance in the post-Covid landscape. We contend that leadership characterized by idealized influence, inspirational motivation, intellectual stimulation, and individual consideration influence followers to become engaged with their work and improve their performance. By focusing on active follower attitudes behaviors, we also highlight the followers' role in the leadership process.

Second, we advance leadership theory by identifying transactional leadership as a moderating factor in this process. While previous research has primarily focused on the outcomes of transactional behaviors (Bakker & Van Woerkom, 2018), this study investigates how these behaviors influence followers' responses to transformational leadership in the healthcare context. By examining the interplay between transactional and transformational behaviors, we demonstrate when transformational leadership most effectively fosters work engagement and performance, thereby expanding the leadership literature. We propose that transformational leadership behaviors have a greater impact on followers' performance when leaders do not consistently employ transactional behaviors.

Thirdly, through examining transformational and transactional leadership in healthcare systems, researchers and organizations can provide specific instances of effective delegation and a comprehensive breakdown of the various tasks that make up a particular role. This study also aims to guide healthcare leaders in adopting transformational behaviors by providing evidence-based insights. It is important to note that there is a lack of research on the relationship between transformational leadership, work environment, and some outcomes in healthcare settings. Thus, this study aims to fill this critical gap in knowledge by examining the effectiveness of transformational

leadership and its potential impact on healthcare outcomes, such as workers' adaptive performance.

The timing of this study is especially propitious. The post-pandemic period offers a unique vantage point for assessing the influence of transformational and transactional leadership within healthcare. Lessons learned from the pandemic can provide valuable insights for healthcare organizations as they transition into a new phase, potentially dealing with lingering challenges and preparing for future crises. In addition, understanding the specific behaviors associated with transformational leadership in healthcare can guide the development of leadership training programs. This, in turn, benefits both current healthcare leaders and the emergence of future leaders, ultimately elevating the quality of healthcare management. To conclude, the study of transformational leadership in healthcare systems post-COVID-19 pandemic constitutes an academically significant, practically valuable, and globally relevant research topic for a dissertation.

Literature review

1.1. Transformational leadership

1.1.1. Historical development of the concept

In the field of leadership theory, James MacGregor Burns stood out as one of the pioneering figures for his meticulous definition and detailing of the concept of transformational leadership. The relevance and magnitude of his contribution remain widely recognized among researchers and practitioners in the field. Burns (1978) defined the concept of transforming leadership as a process where one or more individuals interact with others in a way that motivates and inspires them to reach higher levels of moral and motivational development. The leaders and followers work together to achieve a common goal, rather than engaging in a transactional relationship exchange where their goals are separate (Burns, 1978). The power bases in transforming leadership are not used as counterweights, but rather as mutual support for diverse shared goals.

Thus, Burns (1978) identified the concept of transformational leadership as a description of political leaders who transform the values of their followers, but Bass (1985, 1990) later expanded the scope to include leadership within organizational settings. Since then, transformational leadership has become one of the most widely studied leadership styles due to its emphasis on changing workplace norms and motivating employees to perform beyond their expectations (Yukl, 1989). Transformational leaders derive their actions and decisions from deeply ingrained personal value systems that encompass principles such as justice and integrity (Yukl, 1989). Burns (1978) characterize these values as end values, signifying that they are non-negotiable and immutable in interpersonal exchanges. By expressing these personal standards, transformational leaders not only foster unity among their followers but also possess the capacity to effect profound changes in their followers' aspirations and convictions (Bakker et al., 2023; Humphreys & Einstein, 2003).

1.1.2. Key theories and models of transformational leadership

Full-range model of leadership (Bass, 1985)

In his seminal work, Burns (1978) noted that despite the richness of literature on leadership, no central concept has emerged (Stewart, 2006). For Burns (1978), effective

leadership requires alignment with a shared purpose, and the evaluation of competent leaders should turn around their capacity to instigate societal transformations. In addition, Bass (1985) argued that existing leadership theories mainly focused on clarifying follower goals and roles, and how leaders should reward or sanction followers' behaviors. Then, in 1978, Burns proposes a conceptual fusion of the leader and follower roles, emphasizing that leadership unfolds through the dynamic interplay of conflict and power (Stewart, 2006) and categorizes leadership into two styles: transactional and transformational.

Based on Burn's work, Bass (1985) developed the Full Range Leadership Theory (FRLT) because most theories were focused on basic exchanges with followers (Bakker et al., 2023) – transactional leadership. Bass (1985) argued that a paradigm shift was necessary to understand how leaders could inspire followers to transcend their self-interest for the greater good of their units and organizations and that by applying the behavioral characteristics of transformational leadership, leaders could guide their followers toward performance beyond expectations (Bass, 1990). Bass's original FRLT theory included four transformational (idealized influence, inspirational motivation, intellectual stimulation, and individual consideration), and two transactional leadership factors (contingent reward, management by exception). Then, Bass and Avolio have expanded it and in its current form the FRLT comprises nine leadership dimensions, five related to transformational leadership, three related to the transactional style and another one referred to as Laissez-faire leadership.

Laissez-faire leadership represents the absence of a transaction of sorts concerning leadership in which the leader avoids making decisions, abdicates responsibility, and does not use their authority (Antonakis et al., 2003). More detailed, Laissez-faire leadership has been defined as the absence of leadership, the avoidance of intervention, or both (Bass and Avolio, 1990). Accordingly, a laissez-faire leadership style is not only a lack of presence, and therefore a type of zero leadership, but it involves not meeting the legitimate expectations of the subordinates and/or superiors concerned (Skogstad et al., 2007). Bass and Riggio argue "laissez-faire leadership … is, by definition, most inactive, as well most ineffective according to almost all research on the style …, represents a non-transaction.

On the opposite, according to the FRLT, transactional leaders lead through social exchange, such as by offering rewards and recognition in return for creative ideas and

productivity. It is an exchange process rooted in fulfilling contractual obligations and is often represented as the establishment of objectives and the subsequent monitoring and control of outcomes (Antonakis et al., 2003). Transactional leadership as a process typically involves the utilization of the leader's power to reward or punish individuals to meet specific requirements and goals (Bass & Riggio, 2006). However, as Rowold (2011) points out, these goals are typically set based on the organization's requirements rather than the individual employee's characteristics, lacking individualized considerations or fit with the individual's goals and preferences. Transactional leadership is conceptually structured with three primary first-order factors: (a) contingent reward leadership involves a leader's actions to clarify role and task requirements and reward their followers with material or psychological incentives dependent on their fulfillment of contractual obligations; (b) active management-by-exception refers to the active vigilance of a leader whose goal is to ensure that standards are met; and (c) passive management-by-exception leaders intervene only in the aftermath of noncompliance or when mistakes have already occurred (Antonakis et al., 2003).

In contrast, transformational leaders provide individualized consideration to followers, inspiring them to reach their full potential and develop their own leadership skills (Bass & Riggio, 2006). Accordingly, transformational leadership refers to the leader moving the follower beyond immediate self-interests through idealized influence (charisma), inspirational motivation, intellectual stimulation, and individualized consideration (Bass, 1999a).

Inspirational motivation refers to the ability of leaders to use encouraging appeals and emotional talks to stimulate follower enthusiasm and commitment (Bakker, 2023). This dimension revolves around leaders energizing followers by instilling optimism about the future, emphasizing ambitious goals, articulating an idealized vision, and fostering confidence in its attainability. Bass (1999) reinforced the significance of leadership traits, notably idealized influence (charisma) and inspirational motivation. This affirmation highlights the importance of a leader possessing a clear vision for a promising future, charting the course for its realization, embodying the values as a role model, setting lofty performance benchmarks, and projecting unwavering determination and confidence. This portrayal implies that vision and inspirational motivation could be merged into one unified concept. Nonetheless, some scholars argue that it is still advantageous to differentiate between vision and inspirational motivation.

Idealized influence refers both to the characteristics that followers attribute to the leader including admiration, as well as the set of behaviors exhibited by a leader that helps to provide a clear vision and purpose, serving as a positive role model for followers (Bakker, 2023). Indeed, idealized influence (attributed) centers on the leader's socialized charisma, encompassing perceptions of confidence, power, and a commitment to higher-order ideals and ethics. idealized influence (behavior) involves charismatic actions that intensely illustrate the leader's dedication to values, beliefs, and a shared mission. A leader with strong values, who also acts following these, would score highly on this dimension (Arnold, 2017). Such behaviors could involve displaying strong ethical principles and stressing group benefits over individual benefits (Bono & Judge, 2004). As highlighted by Bass (1985), charismatic leaders specifically employ this tactic to arouse follower motivations, prompting them to transcend self-interest for the team' benefit. Such leaders effectively communicate a compelling vision and instill a sense of purpose and passion among their followers. Followers consistently place an inordinate amount of confidence and trust in charismatic leaders (Howell and Avolio, 1992). This charismatic dimension of transformational leadership is characterized by providing vision and a sense of mission, instilling pride in the group, and promoting respect and trust (Humphreys & Einstein, 2003).

Intellectual stimulation embraces behaviors that encourage innovation and creativity, increase followers' interest in and awareness of problems, and develop their ability and propensity to think about challenges in new and creative ways (Bass, 1985). The effects of intellectual stimulation increase followers' abilities to conceptualize, comprehend, and analyze problems and improve the quality of generated solutions (Bass & Avolio, 1990). Transformational leaders create a culture of active thinking through intellectual stimulation, and this culture encourages followers to become more involved in the organization which improves performance (Tims et al., 2011).

Individualized consideration encompasses leader behaviors that amplify follower satisfaction through guidance, support, and attention to individual needs, ultimately nurturing follower development and self-actualization (Antonakis et al., 2003). It involves treating each follower as an individual with his/her own unique needs and attending to these needs appropriately (Bakker, 2023). This can be demonstrated by supporting followers and coaching them to promote growing through the use of their strengths (Bakker, 2023). Leaders can also leverage delegation to provide their followers

with opportunities for skill enhancement and professional development which is crucial for performance (Bader et al., 2023).

These four components work together to create a leadership style that focuses on creating positive change, motivating and empowering followers, and fostering a shared vision and common purpose (Bakker et al., 2023). Such a leadership approach has gained significance in promoting follower job satisfaction by emphasizing autonomy and stimulating tasks (Katou et al., 2022). Moreover, this leadership style enhances the follower's maturity and values, which fosters a desire for achievement and self-actualization, (Bass, 1999a) which in turn leads to higher levels of performance among followers (Bass, 1990). Several empirical studies have shown that leaders who present these behaviors can shift their followers' values and standards, drive individual and organizational transformations, and assist followers in exceeding their primary performance expectations (Bass, 1985; Katou et al., 2022) because all these behaviors promote work engagement (Bakker et al., 2023).

1.2. Work engagement

Over the past decade, research into the area of work engagement has gained increasing interest in the fields of human resource development (HRD) and organizational behavior (Shuck & Wollard, 2010).

Work engagement is defined as a positive, fulfilling, work-related psychological state that stems from the combination of three interrelated dimensions, namely vigor, dedication, and absorption (Schaufeli & Bakker, 2004). In essence, vigor compresses high levels of energy and resilience. At the same time, dedication to work encompasses a profound sense of purpose, pride, and the willingness to tackle challenges inherent in one's tasks. Absorption denotes the state where employees are fully immersed in their work-related activities, experiencing deep concentration and contentment such that time seems to pass swiftly, making it difficult for them to detach from their tasks (Mazzetti et al., 2023). Some researchers have suggested that experiencing absorption bears similarities to the concept of flow (González-Roma et al., 2006). Flow pertains to a state of mind where individuals are deeply engrossed in a task to the extent that nothing else seems to matter; furthermore, the experience is so enjoyable that individuals engage in it purely for the sake of doing so (Mauno et al., 2007).

Research has shown that work engagement has a positive effect on a variety of not only the employee but also organizational outcomes (Wood et al., 2020a), such as job satisfaction, organizational commitment, job performance, financial returns, and customer loyalty (Albdour & Altarawneh, 2014; Bakker et al., 2012; Salanova et al., 2005; Yan et al., 2017). For instance, using a meta-analytic approach, Halbesleben (2010) found that work engagement is positively related to employees' organizational commitment and performance (Wood et al., 2020a).

1.3. Performance

The conceptualization of individual job performance, as defined by Campbell and Wiernik (2015), encompasses the actions that individuals undertake, which contribute to the organization's goals. Consequently, Carpini, Parker, and Griffin (2017) incorporate constructs such as organizational citizenship behaviors, adaptive performance, and proactive performance within their framework (Carpini, Parker & Griffin, 2017). This study will be focused on adaptive performance as it is one of the main performance dimensions for healthcare settings (Chemali et al., 2022). Furthermore, adaptive performance based on organizations' demands is meant to increase organizational effectiveness and improve change management. Because it significantly affects how employees handle emergencies, manage changes, and address unexpected challenges (Griffin et al., 2007).

Adaptive performance is reflected in an individual's proactive behavior toward various changing workplace situations (Neil & Hesketh, 1999). It is defined as employees' ability to adjust to rapidly changing work conditions where uncertainty is a constant factor (Griffin & Hesketh, 2005). Adaptive performance emerges as a critical aspect for effectively navigating this turbulent landscape (Junça-Silva & Caetano, 2024).

Some studies have investigated the relationship between transformational leadership and job performance considering work engagement as a potential mechanism (Hawkes et al., 2017). For instance, in a South Korean cross-sectional study, work engagement mediated the relationship between transformational leadership and organizational knowledge creation (Song, Kolb, Lee, & Kim, 2012). Work engagement has also been found to mediate the relationship between transformational leadership and proactive performance (Schmitt et al., 2016). In their diary studies, Tims et al. (2011) and

Breevaart et al. (2014) found a positive relationship between daily fluctuations in transformational leadership and employees' daily work engagement. Similarly, Ghadi et al. (2013) and Kopperud et al. (2014) confirmed that transformational leadership positively influenced the level of employees' work engagement. Such longitudinal studies offered sound evidence for transformational leadership being an effective antecedent of engagement (Hawkes et al., 2017).

The Job Demands-Resources model (JD-R model; Schaufeli & Taris, 2014), was a prominent model used to explore the nomological network of work engagement and how transformational leadership could improve it. According to the JD-R model, employee work engagement is influenced by various job characteristics grouped into two main categories: job demands and resources. Job demands encompass aspects that require effort and are associated with physical and psychological costs. On the other hand, job resources are defined as job-related aspects that enable employees to cope with the demanding aspects of their jobs and stimulate their learning and development (Bakker & Demerouti, 2007). Bakker (2017) states that when employees possess resources they will likely generate other job and personal resources, such as transformational leader' behaviors; these resources can be used to deal with job demands and will indirectly contribute to work engagement and performance (Bakker, 2023).

According to the motivational process of the JD-R model, resources have a twofold role (Mazzetti et al., 2023). They are intrinsically motivating, given their capacity to promote employees' knowledge and mastery by fulfilling basic human needs (i.e., autonomy, belongingness, and competence). The motivational process hypothesizes that job resources may foster employees' level of work engagement with subsequent positive outcomes, such as improved job performance (Taris, 2017). Indeed, job resources have been consistently identified as the strongest predictors of work engagement, given their potential to enable employees to tackle job demands and to trigger a process of personal growth and learning (e.g., Bailey et al., 2017; Mazzetti et al., 2023). Moreover, they have an extrinsic motivational potential that turns into instrumental help that allows employees to successfully meet work goals (Bakker & Demerouti, 2017). In short, the theory explains how job demands and resources influence job performance through employee work engagement and how employees use adaptive work behaviors to influence job demands and resources (Bakker & Demerouti 2017).

Transformational leadership is intricately linked to the JD-R model due to its significant impact on employee motivation and resource facilitation (Bakker & Demerouti, 2017). Transformational leaders, with their inspirational vision and personalized consideration, nurture environments where employees' basic psychological needs, such as autonomy, belongingness, and competence, are met (Bakker & Demerouti, 2017). Furthermore, they motivate followers to proactively generate their job challenges and job resources, which are the most important predictors of work engagement (Bakker & Demerouti, 2017). By fostering a culture of trust and empowerment, these leaders enable individuals to thrive, encouraging them to leverage resources effectively to achieve organizational goals and improve performance (Bakker, 2023). Moreover, transformational leaders actively identify and provide relevant resources for job performance, including training, mentorship, and emotional support, aligning with the instrumental role of resources in the JD-R model (Bakker & Demerouti, 2017). This dynamic leadership style not only enhances intrinsic motivation by instilling a sense of purpose but also augments extrinsic motivation through the provision of tangible assistance and guidance (Bakker & Demerouti, 2017); thus, it explains how this leadership style may influence follower performance.

Therefore, transformational leadership effectively recognizes and capitalizes on the strengths of its followers by setting high standards and exemplifying positive role models (i.e., projecting inspirational motivation and idealized influence). Leaders who employ this method challenge traditional workflows, thereby promoting intellectual stimulation that encourages followers to innovate and apply their strengths in adaptive ways (Bakker et al., 2023). This strategy not only aligns with the followers' authentic selves - reflecting their values, preferences, and needs - but also significantly enhances work engagement (Bakker, 2023). Additionally, the application of personal strengths under transformational leadership correlates with increased feelings of mastery and self-efficacy, further boosting work engagement and performance (Bakker & Van Woerkom, 2018). Transformational leaders, as previously mentioned, inspire employees to surpass their self-interest and exceed performance expectations (i.e., inspirational motivation). Furthermore, they encourage followers to be autonomous (Bass & Avolio, 1990) and foster adaptive behavior by empowering them and making them more engaged with their work (Bakker, 2023).

Building on JD-R theory and exploring previous research linking JD-R and leadership, the following hypothesis was formulated:

H1: Work engagement mediates the relationship between transformational leadership and adaptive performance.

The moderating role of transactional leadership

Burns (1978) originally introduced the term "transactional leadership" in his seminal work, proposing that leadership dynamics consist of a mutual exchange of power and benefits between leaders and employees. The main contributions of existing research on transactional leaders include the characteristics and influencing factors of transactional leader behavior, such as focusing on employee performance and using external incentives and punishments for management (Dong, 2023; Howell & Avolio, 1993).

Transactional leaders approach followers with the purpose of exchanging one thing for another (Stewart, 2006). According to Burns transactional leadership occurs when one person takes the initiative in making contact with others for an exchange of valued things (Stewart, 2006). Moreover, both parties acknowledge the power relationships of the other and maintain to pursue their respective purposes – social exchange process (Stewart, 2006).

The key findings concerning the impact of transactional leaders on organizational performance are: firstly, transactional leaders can create conditions, for instance through contingent reward, that positively influence job performance and drive adaptive behaviors (Junça-Silva & Caetano, 2024); and transactional leader behaviors can be seen as job resources that shape the path from transformational leadership to adaptive performance via work engagement (Dong, 2023). This is supported by the JD-R; which argues that some resources may pose conditions that shape how employees deal with other resources and job demands (Bakker et al., 2023). We thereby argue that transactional leadership, specifically contingent reward will moderate the relationship between work engagement and adaptive performance.

Hence, is possible to postulate:

H2: Transactional leadership moderates the positive relationship between work engagement and adaptive performance.

Transactional leaders have behaviors, such as rewards and punishments, that may be seen as resources because they can motivate followers to perform better – the motivational process argued by the JD-R – and may contribute to generating other resources. This approach is based on social exchange processes (Blau, 1964) that view the relationship between leaders and followers as a social exchange in which each part behaves in such a way as to receive benefits (intrinsic or extrinsic) (Cropanzano et al., 2017). Contingent rewards, used by transactional leaders, are a job resource that may shape how followers adapt to different demands or daily hassles (Bakker et al., 2022). Hence, transactional leadership may moderate the indirect relationship between transformational leadership and adaptive performance through work engagement (Restivo et al., 2022) for the following reasons.

Transactional leadership may hinder health institutions from becoming too risk-averse to pursue innovation and limit employees' adaptation. Transactional leaders set clear goals for their followers, actively monitor their actions (Bass et al., 2003), and require them to adhere strictly to the organization's rules and regulations which limit innovation and adaptation. Behaviors that are not in line with the rules or expectations are punished, often affecting compensation (Pillai et al., 1999). Given that transactional leaders tend to avoid risk and inhibit unpredictable actions (Jansen et al., 2009), this style encourages followers to follow step-by-step instructions to avoid mistakes and negative consequences, making them less likely to engage in new or adaptive behaviors (Berraies & Bchini, 2019). Since adaptation involves novelty and changes, it is evident that transactional leadership may inhibit the generation and exchange of disruptive ideas necessary for such adaptation (McCleskey, 2014).

Moreover, transactional leadership hinders interaction and information exchange among followers. This leadership style emphasizes the exchange relationship between leaders and followers, where rewards are given based on task performance. As a task-oriented approach, it drives followers to focus on completing assigned tasks on time to earn incentives, resulting in a low-autonomy work environment, and scarce efforts to engage in adaptive behaviors. Additionally, according to LMX theory, task-oriented leadership affects the trust level between leaders and followers (Spender, 1996),

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discouraging knowledge exchange within and outside the organization that also harm the level of individual and team adaptivity (Griffin et al., 2007). For adaptation, leaders need to provide followers with greater autonomy to share and exchange their diverse knowledge. Under transactional leadership, followers are less likely to engage in knowledge exchange, leading to misunderstandings and doubts when the context is turbulent and demands adaptability (Duan et al., 2022). Consequently, health institutions may lack innovation and effectiveness, facing severe resource constraints for adaptability (Phene et al., 2012).

Therefore, we argue that transformational leadership will positively influence adaptive performance through increases in followers' work engagement; however, this relationship will become stronger when transactional behaviors (contingent reward) are fewer (compared to more frequent rewards). The following hypothesis was defined as follows:

H3: Transactional leadership moderates the indirect effect of transformational leadership on adaptive performance through work engagement such that the relationship will become stronger for those who have higher transactional leaders.

Applications of transformational leadership in healthcare systems

Transformational leadership has a crucial role in improving organizational performance and patient outcomes in healthcare. The leaders achieve this by inspiring a shared vision and communicating a clear and persuasive image of the organization's future. This helps to establish a sense of direction and purpose, bringing the healthcare team together towards a common goal.

Healthcare systems**,** which encompass the organization of people, institutions, and resources to deliver healthcare services, vary widely in their structures and efficiency. These systems aim to improve health outcomes, provide financial protection, and enhance responsiveness to the population's needs. Effective leadership is vital for navigating the complexities of healthcare systems, which often include hospitals, primary care services, public health initiatives, and specialized medical services. According to Moon et al. (2019), the integration of transformational leadership within healthcare systems is

essential for fostering a culture that supports quality improvement and patient-centered care.

Additionally, transformational leaders prioritize the promotion of team collaboration and empowerment. They create an inclusive work environment where each healthcare professional feels valued, contributing to a strong sense of teamwork and collective responsibility. Open communication and trust are nurtured, enhancing the overall effectiveness of healthcare delivery.

Transformational leaders actively support the adoption of new technologies, evidence-based practices, and process enhancements to foster innovation and continuous improvement, creating a culture of adaptability that contributes to the ongoing enhancement of healthcare services.

Furthermore, individualized consideration and professional development are integral aspects of transformational leadership in healthcare. Leaders recognize the unique strengths and potential of each team member, providing mentorship, coaching, and opportunities for growth. This personalized approach contributes to the satisfaction and development of healthcare professionals.

Lastly, transformational leaders play a crucial role in building resilience and adaptability within healthcare organizations. Given the dynamic nature of the healthcare industry, leaders guide their teams through change, emphasizing a positive response to challenges. The promotion of a culture that embraces continuous learning and adaptation strengthens the overall resilience of the healthcare system.

Collectively, these applications underscore the transformative impact of leadership on healthcare organizations, fostering a culture of excellence, adaptability, and continuous improvement.

Methodology and sample analysis

2.1. Sample and procedure

The present dissertation employs correlational research, utilizing a quantitative method to test the hypotheses proposed. The instrument chosen for data collection is a quantitative survey. The correlational study was conducted employing an online questionnaire administered through Google Forms, and data were collected between October and November of 2023.

The research was intended for a representative population of healthcare professionals. The inclusion criterion for participation in this study was being employed in a healthcare facility, whether it could be public or private, ensuring the representation and diversity of experiences within the context of healthcare systems. This included doctors, nurses, health technicians, pharmacists, and physiotherapists, among other professionals who worked directly or indirectly in patient care in health systems.

Initially, the sampling technique employed was a non-probability sampling method known as convenience sampling, wherein direct contact was established with healthcare professionals deemed eligible to participate. Subsequently, another non-probability sampling technique, named snowball sampling, was utilized. In this method, initial participants were recruited and then asked to identify other members of the population who met the inclusion criteria.

The collected data has been processed in the context of the dissertation, and there will never be the possibility of identifying the participant, as the questionnaires were anonymous and did not collect any personal identifying data, therefore complying with the Data Protection Regulation. The respondents were informed about the study's goals and were clarified that their participation was voluntary. Furthermore, they were ensured that their data was confidential and would be used only for this study's purpose. They signed an informed consent before starting the online survey.

The sample consisted of a total of 212 participants of which 41.5% (n=88) were male and 58.5% (n=124) female. A total of 65.9% (n=139) were aged less than 35, 28.4% (n=60) were less than 25 years old and the mean age was 33.14. The average weekly working hours was 41.04 hours, with 9.7% (n=21) working a total of 60 or more hours per week. On average, participants had been working for 11.28 years, and 63.55% (n=85)

had been working for 10 or more years. Regarding the work schedule, 50.5% (N=108) were working on a rotating basis, while 35% (n=75) had fixed schedules. Moreover, 10.7% (n=23) occupied managerial roles.

2.2. Instruments

The data was collected using a quantitative methodology through a questionnaire composed of scales already validated.

To measure **transformational leadership**, the Global Transformational Leadership (GTL) scale developed by Carless et al. (2000) was used. The survey included seven items related to the participant's supervisor: "Communicates a clear and positive vision of the future."; "Treats employees as individuals, supporting and encouraging their development."; "Encourages and recognizes employees."; "Fosters trust, engagement, and cooperation among team members."; "Encourages thinking about problems in new ways and questions assumptions."; "Is clear about their values and practices what they preach."; "Inspires pride and respect in others and inspires me by being highly competent.". Participants were instructed to respond on a five-point Likert scale, ranging from "1: totally disagree" to "5: totally agree". The scale exhibited a Cronbach's alpha of 0.81.

To evaluate **transactional leadership,** the Multifactor Leadership Questionnaire (MLQ) 5X developed by Avolio, Bass, and Jung (2010) was used. We only used four items to assess Contingent Reward ("Clarifies rewards"; "Helps based on individual effort"; "Rewards performance"; "Acknowledges achievements"). Participants answered on a five-point Likert scale, ranging from "1: not at all" to "5: almost always/always". The scale exhibited a Cronbach's alpha of 0.96.

To measure adaptive performance, we utilized the Individual Adaptive Performance Scale developed by Griffin (2007). The **adaptive performance** section of the survey comprised three items: "I adapt well to changes in primary tasks."; "I have acquired new skills that help me adapt to changes in primary tasks."; and "I manage well with changes in how I should perform my primary tasks.". Participants were required to respond on a five-point Likert scale ("1: barely" to "5: very much"). The scale exhibited a Cronbach's alpha of 0.67.

To assess **work engagement**, we employed the Ultra-Short Measure of Work Engagement developed by Schaufeli et al. (2017). This measure consisted of three items: "At my work, I feel bursting with energy."; "I am enthusiastic about my job."; and "I am immersed in my work.". Participants responded on a five-point Likert scale, ranging from "1: barely" to "5: very much". The scale exhibited a Cronbach's alpha of 0.94.

Control variables

Sex and age of the participants were used as control variables. Sex was used as a control because some studies have shown that women tend to be more engaged than men (Diener et al., 2020); therefore, differences between men and women could influence the criterion variables (i.e., work engagement). Additionally, age may also be responsible for influences on work engagement and performance, as differences have been identified in how older and younger individuals experience professional life and their levels of performance (Livingstone & Isaacowitz, 2018).

Data analysis

First, the internal consistencies and descriptive analyses of the variables under study, as well as their correlations, were analyzed. Subsequently, to test hypothesis 1, model 4 of the PROCESS macro in SPSS (Hayes, 2018) was used. This macro is particularly relevant for estimating indirect effects as it uses the bootstrapping method (5000 times), which allows for the obtaining of confidence intervals (CI). To test hypothesis 2, model 1 (also from PROCESS) was used, and to test hypothesis 3, that is, moderated mediation, model 14 of PROCESS (Hayes, 2018) was used. The products (moderations) were centered on their mean value, and the bootstrapping method (5000 times) was used to calculate the CI.

Results

Common method bias and multicollinearity issues

Although we implemented several recommended procedures to minimize potential common method bias—such as incorporating closed-ended questions within the survey (e.g., "I like pets") and using previously validated surveys to assess the variables under study—it cannot be entirely eliminated (Podsakoff et al., 2003). Therefore, to gauge its presence in the study, we adhered to specific recommendations from Podsakoff et al. (2003).

First, we conducted Harman's single-factor test to check for common method bias. The results indicated that the first factor accounted for only 34.36% of the total explained variance, suggesting that common method bias was not a significant issue. Second, following Kock's (2015) recommendation, we performed a full collinearity assessment to identify potential common method bias. The results showed that all variance inflation factor (VIF) values ranged from 1.31 to 2.47; since these values were below the cutoff point of 3.33, multicollinearity was not a major concern in this study.

Lastly, we conducted four confirmatory factor analyses (CFA) to confirm the independence of the variables under study. To assess the model's adequacy and compare it with other reasonable alternative models, we analyzed various fit indices (Hair et al., 2010), namely CFI, TLI, SRMR, and RMSEA. Model 1 was the hypothesized four-factor model, comprising separate scales for transformational leadership, work engagement, transactional leadership and adaptive performance. Model 2 was a three-factor model, combining work engagement and performance into one factor, another factor for transformational leadership, and a third factor for transactional leadership. Model 3 was a two-factor model, combining work engagement and performance into a single factor and another factor combining transformational and transactional leadership. Model 4 was a one-factor solution in which all items were loaded onto a single factor.

Table 1 shows that the four-factor model (Model 1) provided the best fit for the data (χ^2/df = 2.04, p < 0.001, CFI = 0.98, TLI = 0.98, SRMR = 0.08, and RMSEA = 0.05 CI 95% [0.03, 0.07]) (see Figure 2), while all other alternative models showed a poorer fit. These results, along with Cronbach's alpha reliability scores across all measurement

scales, demonstrated the discriminant and convergent validity of the study. Consequently, we proceeded with testing the hypotheses.
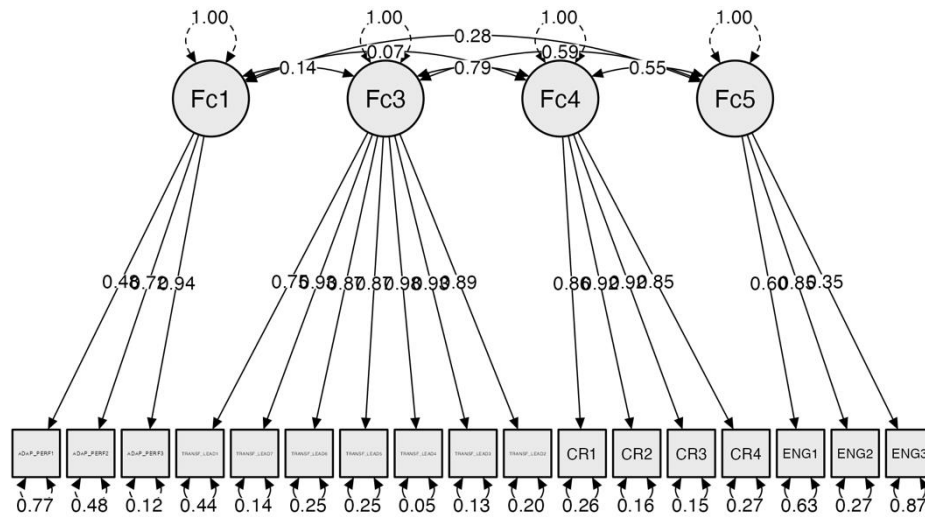
Table 1.

Table 1 – Confirmatory factor analysis results.

Models	χ2	df	CFI	TLI	RMSEA	SRMR
Model 1	493.949	242	0.98	0.98	0.05	0.08
Model 2	536.103	186	0.91	0.90	0.10	0.11
Model 3	370.924	118	0.91	0.89	0.11	0.11
Model 4	399.166	119	0.90	0.88	0.12	0.12

Figure 1.

Figure 1 – Confirmatory factor analysis results.

3.1. Descriptive statistics

Table 2 illustrates the descriptive statistics, along with the corrections and internal consistency indices of the variables present in the model. As suggested by Field (2009), the relatively small standard deviations compared to the means of the variables indicated

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that the means represented the observed data well. The results also showed that all variables were significantly correlated with each other, in the expected direction.

As shown in Table 2, the reliability of the study variables exceeded the recommended threshold of 0.70, consistent with Fornell and Larcker (1981). The result for convergent validity, which measures how well the indicators correlate with the latent construct, revealed that the Average Variance Extracted (AVE) values for all latent constructs in the study were above 0.5. Additionally, the AVE for each construct was compared to its correlation with other constructs, and the AVE value was found to be greater than the construct's correlation with other constructs, thereby supporting convergent validity.

Regarding discriminant validity, which demonstrates the uniqueness of the indicators for each latent variable, the square roots of the AVE, as indicated by the diagonal values for each latent variable, were all greater than the correlations between each variable (Hair et al., 2010). Furthermore, the Maximum Shared Variance (MSV) was also analyzed; the results showed that the MSV was lower than the AVE for all constructs. Thus, discriminant validity was supported.

All in all, the reliability, convergent validity, and discriminant validity of the study were confirmed. Based on the validity of the study instrument, we proceeded with the test of the study's hypotheses.

Table 2.

Table 2 – Mean, standard deviation, correlations and internal consistency indices of variables.

Variables	M	SD	CR	AVE	MSV	1	2	3	4	5
1. Transformational Leadership[1]	3.08	1.03	0.95	0.87	0.56	(0.93)	[0.81]			
2. Engagement[1]	3.41	0.63	0.81	0.59	0.18	0.47**	(0.76)	[0.94]		
3. Adaptive Performance[1]	3.99	0.44	0.80	0.57	0.05	0.06	0.23**	(0.75)	[0.67]	
4. Transactional Leadership[1]	2.56	1.00	0.95	0.86	0.56	0.75**	0.42**	0.03	(0.92)	[0.96]
5. Age	33.14	11.90	-	-	-	-0.05	0.20**	-0.08	-0.05	-
6. Gender[2]	-	-	-	-	-	0.09	0.02	0.01	-0.01	-0.05

Note: $N= 212$; $*p > 0.05$ $**p > 0.001$.

[1]Scale 1 to 5.

[2]Gender: 1- male; 2- female.

The square roots of the Average Variance Extracted (AVE) are in parentheses. M = Mean; SD = Standard Deviation; AVE = Average Variance Extracted; MSV = Maximum Shared Variance; CR = Composite Reliability. Cronbach's alphas are in brackets [ ].

Hypothesis testing

Hypothesis 1

A mediation analysis (Model 4) was conducted using the PROCESS macro in SPSS version 29 (Hayes, 2022) to test the first hypothesis. Mediation is significant when the predictor variable (X = transformational leadership) influences the criterion variable (Y = adaptive performance) through the mediator variable (M = work engagement). The total effect of X on Y is denoted as c. The direct effect of X on Y, accounting for the mediator (M), is denoted as c'. The effect of X on M is denoted as a, and the effect of M on Y (controlling for X) is denoted as b. The indirect effect of X on Y through the mediator is represented by ab. Typically, the indirect effect (ab) is the difference between c and c'. Therefore, the total effect (c) can be obtained as the sum of c' and ab. Partial mediation

occurs when the indirect effect (ab) is smaller than the total effect (c) and maintains the same sign.

Hypothesis 1 assumed that work engagement would mediate the relationship between transformational leadership and adaptive performance. According to the results, the indirect effect of transformational leadership on adaptive performance through work engagement was 0.05, with a 95% CI [0.01, 0.10] that did not include zero, indicating a statistically significant indirect effect. The model explained 5% ($R^2 = 0.05$, $p < 0.05$) of the variance in adaptive performance. The relationship between transformational leadership and work engagement (a; $B = 0.29$, $p < 0.001$) was significant. The relationship between work engagement and adaptive performance (b; $B = 0.18$, $p < 0.01$) was significant. After introducing work engagement into the equation, the effect of transformational leadership on adaptive performance was no longer statistically significant (c'; $B = 0.03$, $p > 0.05$), indicating full mediation. Thus, hypothesis 1 was supported by the data.

Table 3.

Table 3 – Hypothesis testing: results of indirect effects.

	Model 1		Model 2	
	Work Engagement		Adaptive Performance	
	b	SE	*B*	SE
Intercept	2.55***	0.12	3.47	0.18
Transformational Leadership	0.29***	0.04	-0.03	0.04
Work Engagement	–	–	0.18	0.06
Gender [a]	-0.50*	0.28	-0.01	0.12
Age	0.01	0.01	0.01	0.01
F	52.85		4.70	
R^2	0.23		0.05	
**D*f*	1, 178		2, 177	
Direct effect [b]	0.29***	0.04	-0.03	0.04
Indirect effect [c]			0.05**	0.02
CI 95% indirect effect			[0.01, 0.10]	

n = 212. Unstandardized regression coefficients. CI = Confidence Interval.
[a] Gender: 1- male; 2- female.
[b] Direct effect of transformational leadership on work engagement and performance.
[c] Indirect effect of transformational leadership on performance through work engagement.
*$p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Hypothesis 2

Hypothesis 2 postulated that transactional leadership would moderate the relationship between work engagement and adaptive performance. To test this hypothesis, PROCESS Model 1 (Hayes, 2022) was used. The results revealed a significant interaction effect between work engagement and transactional leadership on adaptive performance (B = -0.13, SE = 0.05, ΔR^2 = 0.03, $F_{(1, 179)}$ = 6.43, $p < 0.05$). Therefore, hypothesis 2 was supported by the data.

Hypothesis 3

The third hypothesis expected that transactional leadership would moderate the indirect effect of transformational leadership on adaptive performance through work engagement such that the relationship would become stronger for those who experience fewer transactional leaders. This hypothesis was tested with model 14 from the PROCESS in SPSS.

The results showed that transactional leadership moderated the indirect effect of transformational leadership on adaptive performance through work engagement (β = -0.04, SE = 0.02, CI [-0.08, -0.01]). This model explained 0.09% of the variance in adaptive performance (R^2 = 0.09, $p < 0.01$).

The significant interaction showed that the indirect effect varied across different levels of the moderating variable, in this case, transactional leadership. Analyzing the simple slopes, as suggested by Dawson and Richter (2006), it was concluded that the indirect effect was significant and stronger when transactional leadership was lower (- 1 SD: B = 0.09, SE = 0.03, $p < 0.01$, 95% CI [0.04, 0.16]), and it diminished as transactional leadership became neutral (M: B = 0.05, SE = 0.02, $p < 0.05$, 95% CI [0.01, 0.10]). The indirect effect ceased to be significant when individuals had more frequent transactional leaders (+1 SD: B = 0.01, SE = 0.03, $p > 0.05$, 95% CI [-0.05, 0.07]) (see Figure 3). Thus, Hypothesis 3 was supported by the data.

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Figure 2.

Figure 2 – Interaction between work engagement and adaptive performance, moderated by transactional leadership
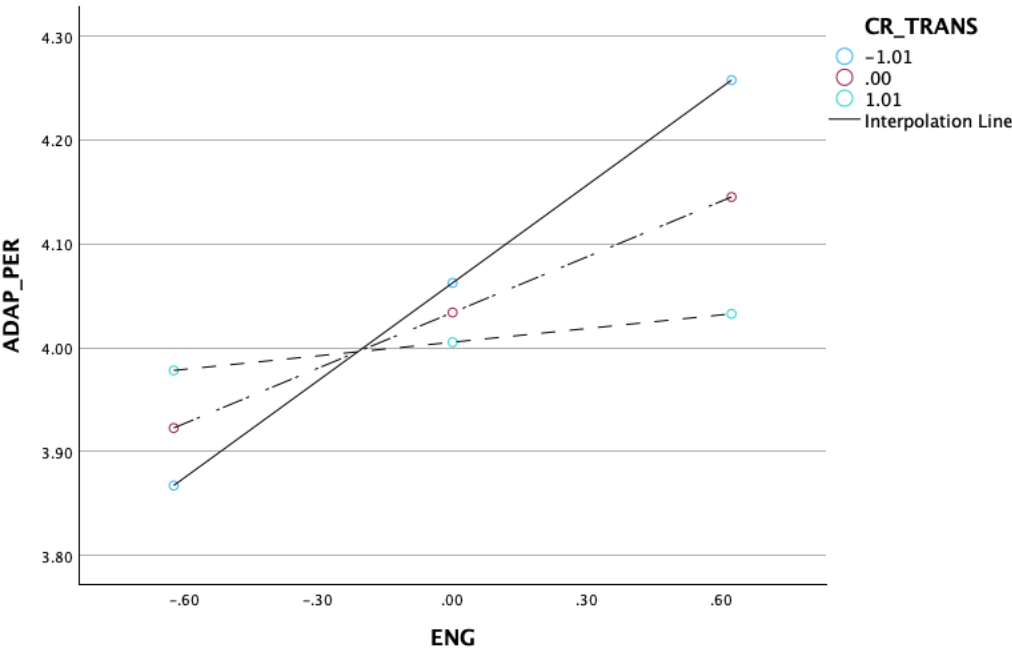
Conclusion

This study utilized the Full Range Leadership Theory (FRLT) and the Job Demands-Resources (JD-R) model to examine how and when transformational leadership affects adaptive performance in healthcare systems. It is proposed that work engagement mediates the relationship between transformational leadership and adaptive performance, while transactional leadership moderates this relationship.

Exploring these relationships is crucial for comprehending how leadership practices influence the ability of healthcare systems to deliver effective care through adaptive responses. Through evidence-based findings, this research seeks to guide healthcare leaders in fostering positive work environments, enhancing staff work engagement and adaptive behaviors, and ultimately improving the quality of care provided to patients. In conclusion, the limited research on the interplay between leadership styles, performance outcomes, and work engagement in healthcare underscores the necessity of this study, aiming to fill a critical gap in knowledge and contribute to the advancement of leadership practices within the healthcare sector.

The findings underscore the importance of transformational leadership behaviors, such as intellectual stimulation, in fostering a more engaged workforce (Bauwens et al., 2024). Work engagement, characterized by vigor, dedication, and absorption, positively influences adaptive responses among healthcare workers. However, this indirect relationship is moderated by transactional leadership behaviors, particularly contingent rewards. Employees with more transactional leaders benefit more from transformational leadership, resulting in greater work engagement and higher adaptive performance.

4.1. Theoretical contributions

This study contributes to the leadership literature, particularly within the framework of the Full Range Leadership Theory (FRLT). Firstly, the findings reveal a positive relationship between transformational leadership and adaptive performance, mediated by a positive affective motivational attitude — work engagement. This result suggests that when employees have transformational leaders they likely become engaged with their work, thereby taking initiative and seeking adaptive ways to improve their work. This result aligns with existing literature suggesting that transformational leaders effectively

inspire and motivate their teams, leading to enhanced job performance (Bakker et al., 2023). For instance, Bakker and colleagues showed that when leaders employed transformational leadership behaviors such as intellectual stimulation and individual consideration, followers were more inclined to leverage their strengths and show initiative. These behaviors subsequently predicted work engagement and job performance the following day. In addition, Bader et al. (2023) evidenced that experiencing episodes of transformational leadership was associated with basic need fulfilment influencing work engagement. Similarly, Tims et al. (2011) found a positive relationship between transformational leadership, daily work engagement, and proactive and adaptive behavior. This occurs because transformational leadership significantly boosts work engagement (Katou et al., 2022; Morf & Bakker, 2022). This effect is attributed to transformational leaders creating a work environment where employees feel valued and motivated to contribute to organizational goals, thereby fostering stronger connections and engagement with their work (Bader et al., 2023). According to Bakker et al. (2022), leaders who provide an inspirational vision, intellectual stimulation, and individualized consideration tend to increase employees' vigor, dedication, and immersion in their work, which can translate into higher performance levels. Thus, transformational leadership has the potential to influence work engagement that in turn positively influences adaptive performance.

The significance of this research lies in its potential to illuminate a promising approach to address critical aspects within healthcare settings - specifically, the impact of leadership style on adaptive performance. By examining the dynamics between leadership and performance outcomes among healthcare professionals, including work engagement levels, this study aims to provide valuable insights. In such dynamic environments, where uncertainty and volatility are persistent challenges, continual changes and adaptations demand an adaptive mindset from every worker (Chemali et al., 2022). Leaders who articulate a clear vision and offer individualized support play a crucial role in assisting their followers to navigate these challenges effectively. This underscores that transformational leaders foster an engaged workforce and enhance their followers' ability to meet established expectations and requirements efficiently and accurately, even amidst demands for adaptability (Taskan et al., 2022).

On the other hand, this study advances the understanding of leadership's impact on performance by examining the moderating effect of transactional leadership. Previous

research has highlighted the significant role of transactional leadership in adaptive performance (e.g., Duan et al., 2022). However, transactional leadership is typically considered a primary variable in theoretical research, with few studies exploring its role as a moderating factor in the relationship between other leadership styles (e.g., transformational) and performance. To address this gap, we focused on transformational leadership and its relationship with adaptive performance and incorporated transactional leadership into the research framework, considering the FRLT. This approach deepens the study of leadership and underscores its critical role in healthcare management and adaptability.

The findings indicated that transactional leadership moderates the relationship between work engagement and performance. Specifically, contingent rewards diminished the link between work engagement and adaptive performance. This suggests that the positive influence of work engagement on employees' performance diminishes in the absence of leader rewards. Duan et al. (2022) found similar findings; they evidenced that transactional leadership negatively moderated the relationship between knowledge redundancy and exploratory and exploitative innovation.

Furthermore, the results highlight the moderating role of transactional leadership in the indirect relationship between transformational leadership and adaptive performance, mediated by work engagement. Specifically, this indirect relationship is stronger when transactional leadership behaviors, such as contingent rewards, are less prevalent. In other words, employees who are not frequently subjected to transactional leadership behaviors rely more on transformational leadership to become engaged in their work, thereby enhancing their ability to adapt. Transactional leadership, thus, buffers the influence of transformational leadership on adaptive performance through work engagement. When a leadership style is predominantly transactional, employees tend to be more conservative, adhering strictly to their job descriptions and fearing punishment for mistakes (Duan et al., 2022). This conservatism reduces their willingness to engage in adaptive behaviors, even when they are engaged with their work. Additionally, transactional leaders base compensation on the quantity of contributions, emphasizing a reciprocal exchange of benefits (Bass, 1985). Consequently, employees are less likely to pursue adaptive behaviors, which may yield lower immediate returns, even in a transformational leadership environment. Therefore, transformational leadership yields

more benefits for followers' work engagement and adaptive performance when transactional behaviors are minimized.

These results align with the literature suggesting that a blend of leadership styles can be advantageous in complex organizational contexts, such as healthcare institutions (Buil et al., 2019). In summary, transformational leadership positively influences followers' work engagement which in turn improves their adaptive performance; however, this is shaped by the existence of transactional leadership behaviors in such a way that more transactional behaviors will buffer the beneficial effects of transformational leadership on adaptive performance through work engagement.

4.2. Limitations and suggestions for future investigations

The study, despite its positive aspects, has certain limitations. Firstly, the small sample size may result in less reliable findings requiring caution when extrapolating the results to a larger population. Furthermore, the study's cross-sectional design implies that the data were collected at a single point in time, making it challenging to comprehend long-term effects and potentially introducing common method bias (Fuller et al., 2016). Even though measures such as reliability and factor analyses were employed to mitigate this bias, this limitation still holds considerable significance. Future research could benefit from larger samples and longitudinal designs to better understand the temporal dynamics of leadership and its impacts.

It is important to analyze emerging trends and identify future research needs. Doing so will guide the direction of research and signal promising paths for leaders, researchers, and health professionals in search of innovative and effective practices. The healthcare sector continues to be one of the most rapidly evolving fields, necessitating ongoing research to optimize leadership strategies and improve care delivery. Digitalized healthcare environments are a relatively recent topic, demanding further research. It would be interesting to investigate how transformational leadership can be effectively applied in these settings, considering the unique challenges and opportunities presented by technology in healthcare delivery. Future research could include case studies of hospitals and clinics with advanced technologies like electronic health records and telemedicine. This would help identify effective transformational leadership practices for

managing digital health technologies, motivating teams to adopt new technologies, and overcoming leadership challenges in digitalized healthcare environments.

Additionally, exploring how transformational leadership influences the adoption and implementation of value-based healthcare models, which focus on patient outcomes and organizational efficiency, is crucial. Future research could examine successful organizations through case studies and comparative analyses and conduct interviews with leaders and healthcare professionals. Analyzing performance data and patient outcomes would assess the impact of transformational leadership. Understanding how leaders can drive cultural shifts towards value-based care, implement patient-centered practices, and foster interprofessional collaboration would be valuable.

4.3. Practical implications

The practical implications of this study are significant for managers and leaders in healthcare systems. Promoting transformational leadership practices can not only increase employee engagement and performance but also improve their ability to adapt to new demands and challenges. Additionally, integrating transactional leadership practices can reinforce these positive effects, creating a work environment where employees feel supported and rewarded for their efforts.

To further enhance work engagement and adaptive performance, it is crucial to invest in leadership training programs that focus on transformational leadership. Such training can equip leaders with the necessary skills to inspire and motivate their teams, fostering a culture of continuous improvement and resilience (Bass & Riggio, 2006; Avolio & Yammarino, 2013).

Raising awareness about the importance of transformational leadership in healthcare institutions is equally important. Leaders who adopt transformational practices can significantly influence organizational culture, leading to improved patient outcomes and employee satisfaction (Northouse, 2018). Healthcare systems should prioritize this leadership style to navigate the complex and ever-evolving healthcare environment effectively.

In settings where rewards and incentives are limited, such as in the public sector, transformational leadership assumes a critical and decisive role in driving adaptive

performance. Without the tangible rewards that typically accompany transactional leadership, transformational leaders must rely on their ability to connect with employees on a personal level, articulate a compelling vision, and foster an environment of trust and support (Judge & Piccolo, 2004). This approach is essential for maintaining high performance and adaptability, as evidenced by practical studies such as the one conducted by Nielsen, Yarker, Randall, and Munir (2009), which found that transformational leadership behaviors were positively associated with employee well-being and performance, particularly in resource-constrained environments.

Conclusion

Overall, transformational leadership positively influences followers' work engagement, which in turn enhances their adaptive performance. However, this relationship is moderated by the presence of transactional leadership behaviors. Specifically, an increase in transactional behaviors diminishes the beneficial effects of transformational leadership on adaptive performance through work engagement.

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Appendix

The attached document contains the relevant questionnaire necessary for the execution of the current study. It is important to note that the questionnaire was administered in Portuguese, aligning with the demographic composition of the sample from Portugal, which primarily consisted of Portuguese workers.

Appendix A

G. Continuando a pensar na liderança da sua chefia direta, indique a frequência * dos seguintes comportamentos.

	De modo nenhum	Poucas vezes	Às vezes	Muitas vezes	Quase sempre/ sempre
Individualiza a atenção	○	○	○	○	○
Concentra os seus pontos fortes	○	○	○	○	○
Ensina e treina	○	○	○	○	○
Diferencia os trabalhadores	○	○	○	○	○
Esclarece recompensas	○	○	○	○	○
Ajuda com base no esforço de cada um	○	○	○	○	○
Recompensa o seu desempenho	○	○	○	○	○
Reconhece o que vai atingindo	○	○	○	○	○

Appendix B

A. Pense na forma como costuma realizar o seu trabalho e indique em que medida as seguintes afirmações correspondem ao que costuma fazer. *

	Muito pouco	Pouco	Nem muito, nem pouco	Muito	Muitíssimo
Adapto-me bem a mudanças nas tarefas principais	○	○	○	○	○
Tenho aprendido novas competências que me ajudam a adaptar a mudanças nas tarefas principais	○	○	○	○	○
Tenho lidado bem com mudanças na forma como devo realizar as minhas tarefas principais	○	○	○	○	○
Executo bem as partes principais do meu trabalho	○	○	○	○	○
Concluo bem as minhas tarefas principais usando os procedimentos padrão	○	○	○	○	○
Garanto que as minhas tarefas são concluídas corretamente	○	○	○	○	○
Iniciei melhores maneiras de realizar as minhas tarefas principais	○	○	○	○	○

Appendix C

C. Pensando nas suas últimas quatro semanas, indique com que frequência se sentiu: *

	Nunca/ Quase nunca	Raramente	Algumas vezes	Frequentemente	Sempre/ Quase sempre
Cansado/a?	○	○	○	○	○
Feliz?	○	○	○	○	○
Cheio/a de vida?	○	○	○	○	○
Muito nervoso/a?	○	○	○	○	○
Relaxado/a?	○	○	○	○	○
Esgotado/a?	○	○	○	○	○
Cheio/a de energia?	○	○	○	○	○
Entusiasmado/a com o meu trabalho?	○	○	○	○	○
Envolvido/a com o trabalho que faço?	○	○	○	○	○

Appendix D

F. Pense agora na sua chefia e indique em que medida concorda/discorda com as seguintes afirmações:

	Discordo totalmente	Discordo	Não concordo, nem discordo	Concordo	Concordo totalmente
Comunica uma visão dura e positiva do futuro	◯	◯	◯	◯	◯
Trata os funcionários como indivíduos, apoia e incentiva o seu desenvolvimento	◯	◯	◯	◯	◯
Incentiva e reconhece os funcionários	◯	◯	◯	◯	◯
Promove a confiança, o envolvimento e a cooperação entre os membros da equipa	◯	◯	◯	◯	◯
Incentiva a pensar sobre os problemas de novas maneiras e questiona suposições	◯	◯	◯	◯	◯
É claro sobre seus valores e pratica o que prega	◯	◯	◯	◯	◯
Inspira orgulho e respeito nos outros e me inspira por ser altamente competente	◯	◯	◯	◯	◯