INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 16, Issue 3, (2026) E-ISSN: 2222-6990

A Moderated Mediation Model of Safety-Specific Transformational Leadership and Patient Safety Culture in UAE Healthcare

Muhammad Muddrik Anwar*
School of Management, Universiti Sains Malaysia, Penang, Malaysia
*Corresponding Author Email: muddrik@gmail.com

Noor Hazlina Ahmad
School of Management, Universiti Sains Malaysia, Penang, Malaysia
Email: hazlina@usm.my

DOI Link: http://dx.doi.org/10.6007/IJARBSS/v16-i3/27971

Published Date: 18 March 2026

Abstract

Purpose: The purpose of the current study is to investigate the antecedents of patient safety culture. Therefore, it is studied how safety-specific transformational leadership contributes to patient safety culture through role-breadth self-efficacy. This study also examines the employees' proactive personality as a boundary condition. **Methods:** Data were collected from 539 healthcare workers of the United Arab Emirates in 3-time lags with an interval of 15 days each. Hayes' process macros, Model 7 in SPSS, were employed to test the moderated mediation model. **Results:** The moderated mediation model was supported by the study results. Safety-specific transformational leadership through role-breadth self-efficacy, with the moderation of proactive personality, leads to patient safety culture. **Research implications:** This study provides a comprehensive framework for healthcare organizations to develop a patient safety culture. The current study extends the proactive motivation model to the safety literature in the healthcare sector. This study opens new avenues for researchers to explore the contextual, dispositional, and motivational factors in contributing to safety culture in healthcare organizations. **Practical implications:** This study offers significant implications for healthcare practitioners in developing a comprehensive framework for workplace safety. They can adopt a proactive motivational model for establishing a patient safety culture where employees learn from their mistakes and are confident in reporting near misses. **Originality/value:** This study adds to the literature by investigating the factors contributing to the establishment of patient safety culture. This study provides noteworthy implications for healthcare researchers, leaders, doctors, nurses, and other workers. The top management of healthcare may get insights from the findings of the current study by developing a broad framework for patient safety culture through the leadership style,

employees' personality, and motivational states in the provision of safe services to the patients in healthcare.

Keywords: Safety-Specific Transformational Leadership, Proactive Personality, Patient Safety Culture

Introduction

In the last two decades, healthcare has witnessed enormous changes worldwide. After COVID-19, the importance of the healthcare sector has also become more significant than it was before. The development in healthcare has led to an increase in life expectancy of humans (Beltrán-Sánchez et al., 2015). However, most of the advancement is related to technology and medicine, and less attention has been paid to workplace safety. Workplace safety is vital across sectors such as oil and gas, construction, scientific laboratories, textile, and healthcare (Bensonch et al., 2022; Júnior et al., 2021; Karanikas & Hasan, 2022; Nasrallah et al., 2022; Noor Arzahan et al., 2022). The performance of healthcare institutions is dependent on the quality of care and safe services they provide to patients, and these safety practices contributes to the quality of services. According to the definition of the Health Commission (1993), safety culture includes the perceptions, attitudes, values, behaviors, and competencies of groups and individuals that collectively contribute to the safety systems of an organization. The bedrocks of safety culture are based on shared expectations, mutual trust, and collective efficacy for proactive and preventive measures for effective functioning of the organization (Clarke, 1999; Curcuruto et al., 2016). Workplace safety can be promoted through a culture that has practices focusing on the communal efforts of all stakeholders. The literature on workplace safety culture is limited in healthcare, and also, these limited studies have paid little attention to patient safety culture (PSC; Hesgrove et al., 2024).

PSC refers to promoting safety culture through collective determination of individuals and groups through their values, attitudes, and behaviors for providing the best health and safety management practices in the healthcare institutions (Halligan & Zecevic, 2011). PSC guarantees the provision of quality healthcare services and results in several patient safety outcomes by assisting all the departments, wards, and units of hospitals in providing quality and safe care to the patients (Braithwaite et al., 2017; Hogden et al., 2017). The empirical studies on PSC are scarce and warrant the immediate attention of researchers and practitioners (Hesgrove et al., 2024). Therefore, PSC needs a comprehensive framework for safety practices that ultimately contribute to the quality of healthcare services.

The leadership plays an important part in establishing the structure and culture of the organization (Alvesson, 2011). The leader set the tone for others to behave in a specific way that is encouraged and appreciated. Several leadership styles in different contexts in relation to safety culture have been studied, e.g., inclusive leadership, ethical leadership, and transformational leadership (Brown, 2017; Hamdan et al., 2024; Khan et al., 2018). However, a more specific and recently emerged leadership style for a safe culture for all is safety-specific transformational leadership (SSTL) (Barling et al., 2002). The limited studies on SSTL state that such a leadership style is suitable for organizations where the chance of occupational hazards is high (Irshad et al., 2021; Smith et al., 2020). The specific and additional emphasis on workplace safety makes SSTL different from conventional leadership styles (Barling et al., 2002). SSTL is composed of four dimensions focusing on workplace safety (Barling et al., 2002). The encouragement and guiding of employees from leader to find out new ways for

workplace safety is *intellectual stimulation*, inspiring and motivating them to improve safety standards at work is *inspirational motivation,* promoting occupational safety by acting as role model and making it organizational core value is *idealized influence* and ensuring the care of mental and physical health of employee is *individualized consideration* component of SSTL (Barling et al., 2002; Irshad et al., 2021). The healthcare sector is more exposed to occupational hazards due to its work nature; hence, the role of SSTL is critical in developing PSC.

The fruitful outcomes of SSTL will be disseminated to the organizational culture in the form of PSC through employees. Several studies have highlighted that SSTL promotes individuals' safety by reducing the occupational hazards and focusing on their individual needs, thus effecting their perceptions (Conchie & Donald, 2009; Smith et al., 2020). The inspiration, motivation, stimulation, and consideration from the leaders enhance the employee's confidence in their ability and ignite their motivational states (Parker et al., 2010). Transformational leadership (TL) enhances the self-efficacy of employees by increasing their confidence level through motivation and consideration (Prochazka et al., 2017). Self-efficacy is an important motivational factor related to the decision of employees about their abilities to perform their work tasks (Bandura, 1986). However, for more proactive and complex tasks, role-breath self-efficacy (RBSE) is required (Parker, 1998). The current study proposes that RBSE will provide an underlying mechanism for explaining the complex relation between SSTL and PSC. RBSE refers to the confidence of employees about their performance capacity in a variety of more proactive and complex tasks than traditional tasks (Parker, 1998). We believe that SSTL will enhance the RBSE of employees, promoting PSC by fueling their creativity for workplace safety through inspiration, motivation, influence, and consideration for their individual needs (Barling et al., 2002).

It is argued in the current study that individual response in the form of RBSE to SSTL is dependent on the boundary condition of proactive personality. Contextual and dispositional factors collectively influence the motivational states of employees (Parker et al., 2010). The RBSE is "can do" motivational states that will be different for high and low proactive personalities. Proactive personality is a dispositional trait of employees to conduct or perform a wide series of activities and tasks in diverse situations by taking personal initiatives (Seibert et al., 2001). The situational factors have less effect on the proactive employees because they take personal initiative to bring positive change to the work environment (Bateman & Crant, 1993). Therefore, the interaction of SSTL with employees' proactive personality is supposed to enhance the RBSE of employees for promoting PSC in the healthcare institutions.
Based on the above discussion, this study addresses the following objectives;

- To study the relationship between SSTL and PSC.
- To investigate the mediating role of RBSE between SSTL and PSC.
- To study employees' proactive personality as a moderator between SSTL and RBSE.

Literature Review

The safety of patients is a potential indicator of performance for healthcare organizations worldwide because health is the utmost priority of all individuals (Ahmed et al., 2024). The primary responsibility of a healthcare provider is to provide treatment and patient safety (Botchwey et al., 2024). Apart from the treatment of diseases, it is crucial to ensure that patients are protected in medical institutions (O'Connor et al., 2023). The promotion of a safe

culture in medical institutions helps reduce medical errors and ensures that patients are safe from any type of harm (Botchwey et al., 2024). The role of leadership in the success of healthcare organizations has been highlighted by previous studies (Forbes & Arrieta, 2024).

Effective leadership is crucial for practicing a positive atmosphere in any institution (Idsøe-Jakobsen et al., 2024). In medical institutions, leadership is very important for motivating employees to implement a safety culture (Syabanasyah et al., 2023). Good leadership is the key not only to managing normal functions but also to motivating employees to provide a safe and healthy environment. Leadership ensures that every member is performing their duty and fulfilling the responsibility of maintaining and sustaining a safe and healthy environment for people. (Yusuf & Irwan, 2021). SSTL is effective and efficient for improving and developing medical institutions (Irshad et al., 2021). TL effectively and efficiently improves and develops medical institutions (Kwarteng et al., 2024). Through their productive leadership style, the employee feels positive, supported, and appreciated for doing good work and contributing to the good service of the people (Abolnasser et al., 2023). According to Rabiul et al. (2024), it promotes a psychologically secure atmosphere for the employees where employees can feel comfortable about safety precautions and measures for preventing safety incidents in society. The role of employee personality of healthcare workers, along with the healthcare leadership, is contributing significantly to the PSC. A personality with proactive traits indicates an individual's inclination to actively influence their external environment rather than being limited by situational factors (Yi-Feng et al., 2021). In contrast to those with passive personalities, proactive individuals often take initiative, seek opportunities, and adjust unfavorable conditions to achieve their goals (Albert & Highhouse, 2021; Belwalkar & Tobacyk, 2018). Numerous studies investigating the link between proactive personality and PSC have highlighted the effect of individual traits on organizational dynamics. Jia and Yuan (2025) reported that healthcare professionals with proactive dispositions often engage in actions that promote safety and contribute to a positive safety culture. The pivotal role of proactive individuals in shaping PSC and fostering a safer, more effective healthcare environment for patients is evident from these findings. Zhu and Li (2021) emphasized that a proactive personality is essential for cultivating a safety-focused culture, particularly through encouraging open communication, teamwork, and continuous improvement initiatives. Similarly, Belwalkar and Tobacyk (2018) observed that employees with proactive tendencies frequently take the lead in identifying safety concerns and suggesting actionable solutions within healthcare organizations.

The proactive motivation model lends support to the current study (Parker et al., 2010). The proactive motivation model states that contextual and dispositional factors collectively enhance the motivational states of employees, which further lead to proactive goal processes (Parker et al., 2010). In this study, SSTL is a contextual factor, and proactive personality is a dispositional factor; they collectively enhance the “can-do” motivational states of the employee, i.e., RBSE. The RBSE of individual results in a proactive goal process for the achievement of strategic fit, i.e., PSC. By summarizing, based on proactive motion theory, the aim of this is to investigate the role of SSTL in promoting PSC through employees' RBSE under the boundary condition of employees' proactively personality in healthcare institutions.

Hypotheses Development

SSTL and PSC

According to Barling et al. (2002), through SSTL, leaders can employ different tactics and approaches explicitly designed to emphasize workplace safety and motivate employees to embrace safety behavior to maintain a safety culture. SSTL supports their staff through motivation, encouragement, teamwork, and communication, provides them value, fostering a culture of innovation, encourages staff to bring innovative ideas and to report errors, and provides them with the necessary training to provide quality care to patients. SSTL enhances intrinsic motivation among staff to increase their job performance and satisfaction, which leads to an increase in PSC within that organization (Zohar & Luria, 2003).

The focus on preventing medical errors has led healthcare providers to increasingly support organizational cultures that promote patient safety, recognizing that a strong safety culture is a foundation for the effective implementation of safety practices (Shostek, 2007). Indeed, creating a safety culture that encourages health-care executives and managers to foster environments of trust and justice is essential (Albaalharith & A'aqoulah, 2023). The PSC involves cultivating a blame-free environment of reporting adverse events without fear, promoting transparency, and facilitating the identification of systemic issues.

The SSTL's strong emphasis on safety is critical for any organization to promote safe practices through employees' safety compliance (Barling et al., 2002). Workplace safety is the outcome of TL style of leadership in the organizations (Boamah et al., 2018; Muchiri et al., 2019). The creation of a conducive safety climate can be achieved through SSTL (He et al., 2024). SSTL is a leadership style specifically focusing on safety-related issues and employee compliance with safety standards (Irshad et al., 2021). Therefore, such leadership creates a culture that sows the seeds of continuous learning and open communication in the organization in order to promote organizational functioning and prevent occupational hazards (de Koster et al., 2011). SSTL plays a vital role in establishing PSC within healthcare organizations by fostering shared values, empowering staff, and promoting proactive problem-solving (Boamah et al., 2018; Chunmei & Zhang, 2018). SSTL goes beyond traditional hierarchical structures by focusing on the importance of inspiring and motivating healthcare professionals to prioritize safety in all aspects of their work (Al-Sawai, 2013). SSTL champions innovation, quality of care, and the utilization of technology to facilitate and strengthen patient safety, addressing critical issues in the contemporary healthcare environment (Tsapnidou et al., 2024). By creating a supportive and collaborative environment, SSTL promotes communication in the organization for making the employees comfortable in reporting workplace incidents, thus developing and encouraging a culture of continuous improvement and learning (Bass & Riggio, 2006). The proactive motivation model supports this relationship to understand the role of contextual factors in employees taking initiative and anticipating future challenges, enabling them to act in advance to prevent potential safety hazards (Parker et al., 2010). Furthermore, leaders who encourage and support error reporting are decisive in developing a safety culture (Irshad et al., 2021). Thus, below hypothesis is developed;

H1: *SSTL is positively related to the PSC of healthcare institutions.*

Mediating Role of RBSE

The pathway through which SSTL translates into a tangible PSC is complex, needs exploration of mediating mechanisms that amplify its impact on PSC. RBSE, an individual's perceived

capability to perform a variety of tasks within their role, thus a potential mediator in this relationship. The mediating role of RBSE for individual outcomes as a result of leadership style is also evident from previous literature (Kang et al., 2022). Therefore, it is argued that the effectiveness of SSTL in bolstering PSC is, in part, realized through its influence on employees' confidence in handling diverse safety-related tasks (Yuan et al., 2024). The SSTL, through all its components, boosts the confidence of employees, and they are sure about the work activities due to their knowledge and abilities (Irshad et al., 2021).

The concept of RBSE pertains to the employees' belief that they can effectively carry out a broad range of tasks and responsibilities related to their role. It acts as a psychological bridge, translating the broad directions of SSTL into tangible actions and behaviors that contribute to a stronger safety culture. The role of a leader in enhancing employee RBSE because they provide the confidence to the employees to do their work without leader interference (Kang et al., 2022). Employees with high RBSE are more likely to embrace safety initiatives, actively recognize and mitigate potential hazards, and confidently engage in problem-solving related to safety issues. RBSE helps employees to perform their work activities proactively and solve organizational problems by suggesting new ideas and taking corrective actions for organizational development (Sonnentag & Spychala, 2012). This heightened sense of competence empowers individuals to take the initiative and persist in the face of obstacles, driving them to exceed expectations in their contributions to safety-related activities.

The RBSE is employees' reciprocation to the SSTL; leaders who inspire and empower their followers cultivate a feeling of self-reliance in their ability to handle diverse tasks, including those related to safety. Leaders who exhibit transformational qualities may boost employees' engagement in safety practices (Clarke, 2013). This empowerment, in turn, enhances their RBSE, creating a positive feedback loop that reinforces both individual and collective contributions to patient safety. Lievens and Vlerick (2014) stated that SSTL enhances the knowledge of their employees and increases their safety performance as nurses. SSTL promotes a culture of learning that helps employees develop their work and safety-related knowledge for the betterment of individuals and organizations. This knowledge helps them in their confidence at work (Nguyen et al., 2023). The cultivation of psychological safety, organizational fairness, and robust learning systems by leaders further bolsters staff confidence in raising concerns and assuming responsibility for continuous improvement, thereby amplifying the impact of RBSE on PSC (Gibson et al., 2017). When leaders demonstrate inclusivity, employees view them as approachable and receptive to their ideas, fostering a sense of value and appreciation. Such employees show safety compliance with the standards and protocols of safety in the workplace and contribute to safety culture (Katz-Navon et al., 2007; Tangatarova & Gao, 2021). Thus, it is proposed;
H2: *RBSE of employees mediates the relation between SSTL and the PSC of the healthcare institutions.*

Proactive personality as moderator
A proactive personality is an employee's inclination to change the external factors in difficult situations rather than being restricted by the force of the situations (Yi-Feng Chen et al., 2021). They continue to push themselves forward and are not afraid of challenges. They always set their targets and keep focusing on them; no matter how many hurdles come in between, they only take things positively and bring solutions. SSTL is one of the leadership

styles that articulates a shared safety vision and motivates employees to use their abilities, energy, and skills for the shared vision of safety (Smith et al., 2020). This inspirational motivation encourages their team and builds self-efficacy among them (Burić & Moè, 2020), due to which they perform better, which leads to the achievement of organizational goals and an increase in employee performance (Kurtic & Tessier, 2019; Wu et al., 2023). RBSE is the employees' perception of their abilities to effectively carry out tasks beyond their responsibilities and duties (Jauhari et al., 2024).

Employees with a proactive personality bring positivity and innovation to their workplaces (Han & Roh, 2020). They take the lead in making things better, seek a solution for the problems (Bateman & Crant, 1993). This proactive personality will amplify the impact of SSTL on RBSE due to the engagement of proactive employees in an array of tasks in order to bring positive safety-related changes in the workplace. The proactive motivational perspective also supports the notion that proactive motivational states of employees are dependent on the combined effect of dispositional and contextual factors. Thus, it is hypothesized;
H3: *Proactive personality acts as a moderator between SSTL and RBSE of employees and enhances this relationship.*

Moderated mediation
SSTL typically results in the establishment of a PSC in the healthcare facilities (Nasim et al., 2023; Ugwu et al., 2020). The presence of RBSE facilitates this relationship. Moreover, if an employee exhibits a proactive personality, this trait can further strengthen the relationship between SSTL and RBSE, for a robust PSC (Saleem et al., 2022). When combined, these attributes can lead to a highly proactive approach to patient safety within the organization, creating a strong PSC. Proactive nurses are self-motivated and take initiative in identifying and addressing safety concerns, contributing to a PSC of improvement and continuous learning (Yang et al., 2024).

The literature on the impact of a proactive personality on patient safety outcomes is scarce (Kim & Oh, 2024; Noor Arzahan et al., 2022). Curcuruto et al. (2016) stated that proactive personality individuals were prone to identifying safety issues and exhibiting safety behavior in the workplace. Overall, the literature suggests that SSTL, RBSE, and a proactive personality are all important factors in promoting a positive PSC in healthcare organizations (Arboh et al., 2024; Dahlawi et al., 2021; Wang et al., 2024), while employees who have a proactive personality and RBSE feel empowered and actively contribute to patient safety initiatives (Hu et al., 2021). A proactive motivation theory also suggests that dispositional (PP) and contextual factors (SSTL) interact and result in motivational states (RBSE), and such motivation of employees helps in proactive goal processes (PSC) for improving the organizational culture. Thus, it is hypothesized;
H4: *Proactive personality acts as a moderator on the indirect effect of SSTL on PSC via RBSE.*

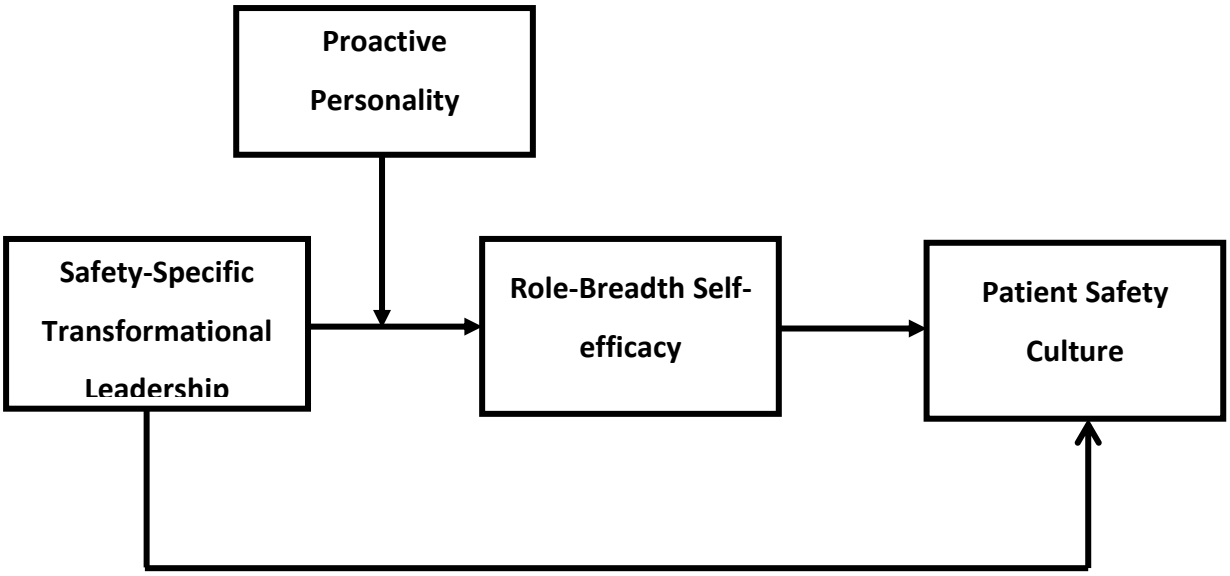

Figure 1: Theoretical Framework

Methods

The study is quantitative in nature. The employees working in the UAE healthcare sector were requested to participate in the survey. The variables were self-reported, which increases the chances of common method bias. However, in order to mitigate this risk, researchers had utilized the time-lagged design for data collection. As recommended by (Podsakoff et al., 2012). This study's data was collected in three lags, with a gap of 15 days in every exercise of data collection from respondents.

The researcher took the help of personal contacts to collect data from the healthcare employees through simple random sampling. The data from healthcare workers, including nurses, paramedics, and doctors, was collected. The formal consent was taken from the respondents before participation and highlighted that it is totally on a volunteer basis, and also discussed the reason for the conduct of the study. Moreover, it was also ensured that upon request of the respondents, the results of the surveys will be shared with them. For the successful completion of the survey and collection of data, researchers visited the hospitals. Due to the application of the time lag technique for the collection of the responses, the scales were presented to the respondents in sequence. During the collection of data and distributing the questionnaires, a unique identification number was allocated to every respondent, which is used to merge the responses after the collection of the results in 3-time spans. Initially, 850 questionnaires were distributed in the first time lag, and respondents were asked to provide data for demographics, SSTL, and proactive personality. 713 responded. At T2, the 713 respondents were contacted again to provide data for RBSE, and 629 responded. At T3, these 629 respondents of previous lags were contacted again to provide PSC data, and 553 respondents responded. After matching the time lags data and removing improperly filled questionnaires, a sample of 539 was considered for final analysis, and the response rate was recorded as 63.41 percent. The data confidentiality was kept as promised to the respondents and along with the ethical consideration.

For the sample adequacy, G-Power was utilized. This software was widely used for calculating sample and sample adequacy (Faul et al., 2009). The same parameters were kept as

recommended by Memon et al. (2020). A 119 sample size was recommended in an a priori analysis to test the hypothesized model. After data collection, for the 539 sample size, a post hoc analysis generates a high power of 1.00, higher than the recommended score of 0.80 (Cohen, 1992). After conducting both tests, it was confirmed that the sample size in the study was appropriate for further analysis and examination of the proposed model of the study.

Instruments

The questionnaires for this study were adapted and administered among respondents in English, considering that UAE respondents can understand and speak English. A Likert scale of five-points was employed for measuring all study variables. The items of the scale, along with their regression weights, have been added in *Appendix A.*

SSTL

Bass and Avolio's (1990) 10-item scale of SSTL was adapted for the current study. The same scale was used in several studies to measure SSTL (Irshad et al., 2021; Kelloway et al., 2006).

RBSE

A 10-item scale of RBSE from Parker (1998) was adapted. The same scale was used by Beltrán-Martín et al. (2017) to measure the RBSE of employees.

Proactive Personality

A 10-item scale of proactive personality from Seibert et al. (2001) was adapted to measure the proactive personality of employees.

PSC

The PSC scale was developed by Wu et al. (2023), comprising 22 items, was adapted for the current study. There were some reverse-coded questions, which were corrected before conducting the final analysis.

Respondents Characteristics

The frequency of distribution of gender reflects that out of 539 respondents, 215 were male and 324 were female. Many respondents were female staff, comprising 60.1% of the total sample. Many female staff in healthcare are evident throughout the world due to the caring nature of females in the healthcare profession. The UAE respondents in healthcare are not different from other countries on gender roles in the healthcare sector. The age-wise distribution of the respondents reflects that 49.7% of respondents have aged between 18-33 years, 33% aged between 34-41 years, and 17.3% were aged 42 and above years. Healthcare needs both energy and experience. Hence, most of the respondents belong to staff engaged with the patients directly, and they need energy to deal with the patient problems. The current study sample also represents this trend, and the majority of the respondents were young.

The experience-wise frequency distribution of the respondents shows that 9.3% have 0-3 years' experience, 30.4% have experience of 3-5 years, 10.8% have experience of 5-7 years, and 49.5% have 7 years or more work experience. The experience of the respondents for less than 7 years is 50.5% and more than 7 years is 49.5%, almost equally distributed. Experience is a vital factor in healthcare employees' performance. So far, the education of the

respondents was concerned, 3.2% have only a nursing diploma, 27.8% have a bachelor's degree in healthcare, 66.8% have a master's in healthcare, and 2.2% have a doctorate. As reflected in education, most of the respondents were well educated and had no issues in filling out the survey.

Results

Analytical Approach

The scales' reliability was tested in SPSS through Cronbach's alpha values. For calculating the standardized regression weights, validity analysis, and model fitness, AMOS was employed. For correlation analysis, SPSS was utilized. Finally, Model 7 from Hayes (2017) process macros was utilized in SPSS to examine the direct, mediation, moderation, and moderated mediation hypotheses. Hayes Model 7 is considered an effective tool and has been utilized in previous studies (Majeed et al., 2020; Zeng et al., 2020).

Reliability and Validity Analysis

Reliability and validity analysis results are presented in Table 1. This study scales were adapted from previous studies. For reliability, the Cronbach alpha's for SSTL were .91, RBSE was .88, PSC was .91, and proactive personality was .93, which is well above the acceptable threshold value of .70. CFA was conducted to analyze the validity, such as discriminant and convergent, along with model fitness. The standardized regression weights for SSTL range from .70 to .74, the standardized regression weights for proactive personality range from .71 to .79, the standardized regression weights for RBSE range from .72 to .78, and the standardized regression weights for PSC range from .71 to .79 (see *Appendix A*). Therefore, it reflects that all the items are loading greater than .50 on their respective factors, thus indicating the convergent validity (Hair et al., 2013). The Average Variance Extracted (AVE) score was recorded higher for all variables than the recommended values for convergent validity (AVE>.50), thus establishing the convergent validity of the scales adapted (*See table 1*). AVE scale for all variables was greater than the Maximum shared variance (MSV), thus fulfilling the criteria of discriminant validity (*See table 1*). Further, the correlation values between study variables were less than .60, thus indicating discriminant validity. Further, a four-factor model was compared with a one-factor model. The results show better model fit indices for the four-factor model, such as CFI, TLI, and IFI, higher than .95 than the one-factor model (*IFI = .49, TLI = .47, CFI = .49, and RMSEA = .09)* (Hu & Bentler, 1999).

Correlation Analysis

Table 1 represents the correlation between variables. Before correlation analysis, Analysis of variance was employed to determine the change caused in RBSE and PSC due to demographic variables. No demographic variables exhibited a significant association with any other outcome variable; thus, demographic variables were not included in further analysis due to their insignificant results. The independent variable SSTL is significantly correlated with PSC (*r=.40, p<.01*), RBSE (*r=.38, p<.01*), and Proactive (*r=.18, p<.01*). RBSE is significantly correlated PSC (*r=.50, p<.01*), and proactive personality (*r=.19, p<.01).* The correlation between PSC and proactive personality is also significant (*r=.18, p<.01*). All the correlation values support the hypothesized model.

Table 1
Reliability, Validity, and Correlation Analysis

S.NO	Variables	Mean	SD	AVE	MSV	α	1	2	3	4
1	SSTL	3.17	.93	.52	.19	.91	-			
2	RBSE	3.39	.86	.57	.32	.88	.38**			
3	PSC	3.18	.68	.58	.32	.91	.40**	.50**		
4	Proactive Personality	3.10	.92	.56	.05	.93	.18**	.19**	.18**	-

N= 539, P<.01=**, P<.05= *, α = Chronbach's Alpha

Findings

Table 2 shows the hypotheses results for this study. The results are in line with the hypotheses of the current study. SSTL was found in significant relation with PSC of healthcare institutions with (*β= .18, p<.01*). The bootstrapping results further confirm this relation with 95% confidence intervals for lower limit is .27 and upper limit is .39. The both positive value of confidence intervals, having no zero in between them reflect significance of the relationship; thus support hypothesis 1 of the study. The first objective of this study was to test the relation between SSTL and PSC. The results support the first hypothesis by showing that SSTL's strong emphasis on safety improves the safety culture of the organization. These results are consistent with the findings of previous studies that stated that SSTL is more helpful for those jobs where the safety incidents are more numerous (Barling et al., 2002). Healthcare is one of those sectors that has a high ratio of occupational hazards (Rai et al., 2021). SSTL has found a potential predictor in reducing these hazards and promoting PSC.

The direct effect of SSTL on RBSE (*β=.38, p<.01*) and the direct effect of RBSE on PSC (*β=.33, p<.01*) were significant. The indirect effect of SSTL on PSC through RBSE was found significant with (*Indirect effect= .12, 95% LLCI= .09 and 95% ULCI= .16*). The LLCI and ULCI are positive and in the same direction, having no zero between them; thus supporting the acceptance of H2. The second objective was about the mediation of RBSE. The results support this notion by showing that SSTL enhances the can-do motion of employees and develops their confidence in their abilities to take responsibilities for high-risk tasks proactively, thus shaping the culture of the organization to tackle safety-related issues proactively in healthcare. The previous literature also provides support for these results that leadership style is closely connected with the self-efficacy of employees and that transcends into positive work outcomes (Prochazka et al., 2017).

Table 2 also shows the interacting role of proactive personality with SSTL on RBSE. SSTL and proactive personality were mean-centered to test the moderation hypothesis. The combined effect of proactive personality and SSTL on RBSE was found significant with (*β= .20, p<.01, 95% LLCI= .12, ULCI= .29*). Additionally, mod-graph confirms that the relationship line of SSTL and RBSE for high proactive personality is stronger than low proactive personality (See Figure 2). Thus, hypothesis 3 is supported. Table 2 also provides the outcomes of the moderated mediation analysis. The indirect effect of SSTL on PSC through RBSE at low and high values of proactive personality was presented. The conditional indirect effect of SSTL on PSC is stronger for proactive personality (*β = .18, 95%CI LL= .14, UL = .25*), conditional indirect effect is weaker for low proactive personality (*β = .06, 95%CI LL= .03, UL= .11*). Furthermore, the index of moderated mediation was also significant (*Index = .07, 95% CI LL= .04, UL= .11*) indicating that the proactive personality significantly moderates the indirect effect of SSTL on PSC via RBSE.

This led to the acceptance of H4. The results support the interacting effect of proactive personality on the indirect effect of SSTL on PSC via RBSE. These results are consistent with the previous literature that states that proactive personality helps employees in taking charge of their behavior and personal initiative for the betterment of the organization (Crant et al., 2016). Proactive personality is a significant moderator for the outcomes of effective leadership styles in enhancing their work-related outcomes (Johari et al., 2022). The theory of proactive motivation also states that proactive personality interacts with leadership and develops employees' motivation to do work that further results in positive organizational changes (Parker et al., 2010).

Table 2
Moderated Mediation Analysis

			Proactive Personality	
	Unstandardized β	**S.E**	**LL95%CI**	**UL95% CI**
Mediating Variable Model				
SSTL→ RBSE	.38**	.04	.31	.45
PP → RBSE	.11**	.04	.04	.18
SSTL x PP → RBSE	.20**	.04	.12	.29
Dependent Variable Model				
SSTL→ PSC	.18**	.03	.27	.39
RBSE → PSC	.33**	.03	.13	.24
Indirect Effect				
SSTL→ RBSE → PSC	.12**	.02	.09	.16
Conditional indirect effect (s) of SSTL on PSC through RBSE at values of Proactive Personality Mean, ±1 SD				
Conditional Effects of Moderator at *M* ± 1 *SD* (Slope Test)	**Effect**	**Boot S.E**	**Boot LL95%CI**	**Boot UL95% CI**
PP Low -1 *SD* (-.91)	.06	.02	.03	.11
PP High +1 *SD (*.91)	.18	.03	.14	.25
Index of Moderated Mediation	**.07**	**.02**	**.04**	**.11**

Bootstrap = 5000, 95% confidence interval, PP= Proactive Personality, N = 539,., **p < 0.01, SE=standard error, UL=upper limit; LL=lower limit.

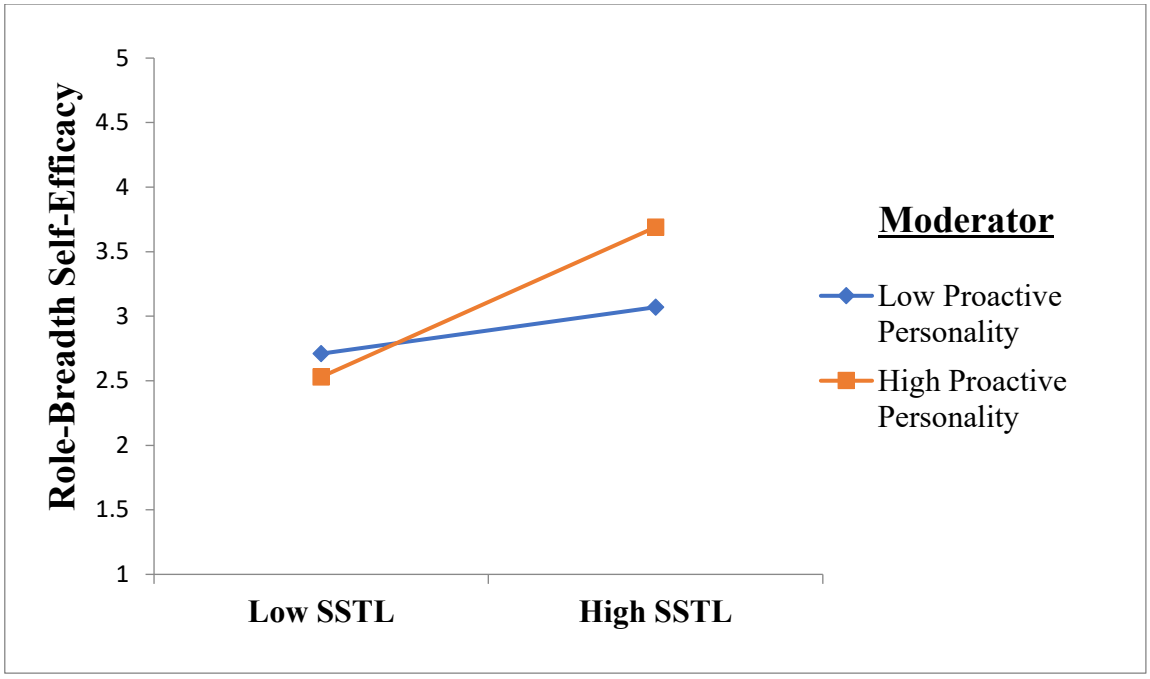

Figure 2: Mod Graph represents that Proactive Personality strengthens the positive relationship between SSTL and RBSE.

Discussion and Conclusion

Role-Breadth Self-Efficacy

Despite the vulnerability of healthcare to occupational hazards, limited research studies are available on the comprehensive framework for workplace safety. The world has witnessed advancement in the medical field and is still evolving at a rapid pace due to its importance for the well-being of humans (Reddy, 2023). However, the provision of safe services to patients is equally important for the quality of healthcare institutions. Safety is a critical factor, along with the technical expertise of medical staff in the healthcare institutions (Leape et al., 2002). The current study aimed to provide a comprehensive framework of PSC by including dispositional, contextual, and motivational factors of doctors, nurses, and other medical staff. Notwithstanding the potential benefit to patient safety for the healthcare institutions' performance and level of care they deliver to the concerned patients, the literature on establishing PSC is limited. Establishing a PSC is not easy to develop because it needs multi-faceted intervention from organizational employees and their leadership (Huang et al., 2024; Morello et al., 2013). The current study highlights the role of SSTL that is distinct from the traditional TL style by overemphasizing the safety-related outcomes. Further, the role of employee proactive personality is also proposed to enhance the patient safety outcomes. By taking support from the theory of proactive motivation, the current study provides a comprehensive model for establishing and promoting PSC in the healthcare organization by considering the employees' disposition and motivation along with the contextual factor of organizational leadership.

The success of healthcare systems worldwide is dependent quality of treatment provided to the patients. For this purpose, the healthcare providers are emphasizing the advancement of the infrastructure, machines, and expertise of healthcare professionals. However, it has been observed that the healthcare sector is exposed to safety-related occupational hazards. Although some efforts have been made in achieving this sacred cause. However, a

comprehensive PSC framework is required for the provision of healthcare services in a safe environment to the patients. The current study highlighted that the role of leadership (SSTL) is key to developing PSC through igniting the motivational states of employees to carry out a wide range of proactive tasks for the provision of high-quality and safe healthcare facilities. The role of employees' proactive personality is important for their response to the SSTL in performing innovative and proactive tasks for the establishment of PSC in healthcare organizations.

Implications

This study provides significant theoretical, practical, and social implications. The theorist may extend this model by studying the outcomes of PSC through the lens of proactive motivation theory. Further, they may add other contextual and dispositional factors for developing a more robust framework of PSC. The practitioners may get help from the current study in establishing a PSC in their organization by considering the leadership styles, employee personality, and motivational factors. This study has social implications for society by helping the healthcare provision of quality and safe healthcare services to the community.

Limitations and Suggestions for Future Research

The current study has certain limitations. First of all, data was collected from a single source, thus increasing the chance of common method bias. However, a time lag design was employed to reduce the chance of such bias. While conducting future research, data can be collected from multiple sources in order to explain these concepts in a more robust manner. Second, the current study has been carried out in the Healthcare sector of the UAE. Future studies can target a more diverse population and conduct cross-cultural and cross-hospital studies to further explain these concepts. The current study has provided SSTL with a potential leadership style for PSC. Future studies can conduct a comparative analysis of multiple other leadership styles and SSTL in order to find the best-suited style for PSC. Lastly, the current study is validated by the theory of proactive motivation by explaining the role of contextual and dispositional antecedents of PSC. Future studies may consider the outcome of PSC to extend the current study model.

Acknowledgements

We would like to thank all the leadership of (QUAD A) American Association for Accreditation of Ambulatory Surgery Facilities for their support in collecting the data from the respondents. We are also grateful to the administration and participants of the healthcare institutions of the UAE for providing data for the current study.

References

Abolnasser, M. S. A., Abdou, A. H., Hassan, T. H., & Salem, A. E. (2023). Transformational leadership, employee engagement, job satisfaction, and psychological well-being among hotel employees after the height of the COVID-19 pandemic: a serial mediation model. *International journal of environmental research and public health*, *20*(4), 3609.

Ahmed, S., Hawarna, S., Alqasmi, I., Mohiuddin, M., Rahman, M. K., & Ashrafi, D. M. (2024). Role of Lean Six Sigma approach for enhancing the patient safety and quality improvement in the hospitals. *International Journal of Healthcare Management, 17*(1), 52-62.

Albaalharith, T., & A'aqoulah, A. (2023). Level of Patient Safety Culture Awareness Among Healthcare Workers. *Journal of Multidisciplinary Healthcare*, *Volume 16*, 321–332. https://doi.org/10.2147/JMDH.S376623

Albert, M. A., & Highhouse, S. (2021). Perceived autonomy moderates the relation of proactive personality with job crafting. *Journal of Personnel Psychology*.

Al-Sawai, A. (2013). Leadership of Healthcare Professionals: Where Do We Stand? *Oman Medical Journal*, *28*(4), 285–287. https://doi.org/10.5001/omj.2013.79

Alvesson, M. (2011). Leadership and organizational culture. *The SAGE Handbook of Leadership*, 151–164.

Arboh, F., Dai, B., Quansah, P. E., Larnyo, wusu, Ebenezer, & Sackey, B. B. (2024). Rethinking frontline health workers' safety performance in times of pandemic: The role of spiritual leadership. *International Journal of Occupational Safety and Ergonomics*, *30*(2), 506–517.

Bandura, A. (1986). Social foundations of thought and action. *Englewood Cliffs, NJ*, *1986*(23–28), 2.

Barling, J., Loughlin, C., & Kelloway, E. K. (2002). Development and test of a model linking safety-specific transformational leadership and occupational safety. *Journal of Applied Psychology*, *87*(3), 488–496. https://doi.org/10.1037/0021-9010.87.3.488

Bass, B. M., & Avolio, B. J. (1990). *Transformational leadership development: Manual for the multifactor leadership questionnaire.* consulting psychologists press.

Bass, B. M., & Riggio, R. E. (2006). *Transformational Leadership* (2nd ed.). Psychology Press. https://doi.org/10.4324/9781410617095

Bateman, T. S., & Crant, J. M. (1993). The proactive component of organizational behavior: A measure and correlates. *Journal of Organizational Behavior*, *14*(2), 103–118. https://doi.org/10.1002/job.4030140202

Beltrán-Martín, I., Bou-Llusar, J. C., Roca-Puig, V., & Escrig-Tena, A. B. (2017). The relationship between high performance work systems and employee proactive behaviour: Role breadth self-efficacy and flexible role orientation as mediating mechanisms. *Human Resource Management Journal*, *27*(3), 403–422. https://doi.org/10.1111/1748-8583.12145

Beltrán-Sánchez, H., Soneji, S., & Crimmins, E. M. (2015). Past, Present, and Future of Healthy Life Expectancy. *Cold Spring Harbor Perspectives in Medicine*, *5*(11), a025957. https://doi.org/10.1101/cshperspect.a025957

Belwalkar, B. B., & Tobacyk, J. J. (2018). Toward a tripartite model and measurement of proactive personality. *Journal of Personality Assessment*, *100*(5), 529-538.

Bensonch, C., Argyropoulos, C. D., Dimopoulos, C., Varianou Mikellidou, C., & Boustras, G. (2022). Analysis of safety climate factors and safety compliance relationships in the oil

and gas industry. *Safety Science*, *151*, 105744. https://doi.org/10.1016/j.ssci.2022.105744

Boamah, S. A., Spence Laschinger, H. K., Wong, C., & Clarke, S. (2018). Effect of transformational leadership on job satisfaction and patient safety outcomes. *Nursing Outlook*, *66*(2), 180–189. https://doi.org/10.1016/j.outlook.2017.10.004

Botchwey, C. O. A., Boateng, A. A., Ahimah, P. O., Acquah, F., Adoma, P. O., Kumah, E., ... & Koomson, J. B. K. (2024). Patient safety culture and satisfaction in Ghana: a facility-based cross-sectional study. *BMJ open, 14*(1), e073190.

Braithwaite, J., Herkes, J., Ludlow, K., Testa, L., & Lamprell, G. (2017). Association between organisational and workplace cultures, and patient outcomes: Systematic review. *BMJ Open*, *7*(11), e017708.

Brown, B. K. (2017). Inclusive Leadership, Safety Climate and Safety Behaviour: A Proposed Framework. *International Journal of Academic Research in Business and Social Sciences*, *7*(2).

Burić, I., & Moè, A. (2020). What makes teachers enthusiastic: The interplay of positive affect, self-efficacy and job satisfaction. *Teaching and Teacher Education*, *89*, 103008. https://doi.org/10.1016/j.tate.2019.103008

Chunmei, L., & Zhang, L. (2018). How leadership within an organization influences a quality service. *MOJ Gerontology & Geriatrics*, *3*(2), 2574–8130.

Clarke, S. (1999). Perceptions of organizational safety: Implications for the development of safety culture. *Journal of Organizational Behavior*, *20*(2), 185–198. https://doi.org/10.1002/(SICI)1099-1379(199903)20:2%253C185::AID-JOB892%253E3.0.CO;2-C

Clarke, S. (2013). Safety leadership: A meta-analytic review of transformational and transactional leadership styles as antecedents of safety behaviours. *Journal of Occupational and Organizational Psychology*, *86*(1), 22–49. https://doi.org/10.1111/j.2044-8325.2012.02064.x

Cohen, J. (1992). Statistical Power Analysis. *Current Directions in Psychological Science*, *1*(3), 98–101. https://doi.org/10.1111/1467-8721.ep10768783

Conchie, S. M., & Donald, I. J. (2009). The moderating role of safety-specific trust on the relation between safety-specific leadership and safety citizenship behaviors. *Journal of Occupational Health Psychology*, *14*(2), 137–147. https://doi.org/10.1037/a0014247

Crant, J. M., Hu, J., & Jiang, K. (2016). Proactive Personality: A Twenty-Year Review. In *Proactivity at Work*. Routledge.

Curcuruto, M., Mearns, K. J., & Mariani, M. G. (2016). Proactive role-orientation toward workplace safety: Psychological dimensions, nomological network and external validity. *Safety Science*, *87*, 144–155. https://doi.org/10.1016/j.ssci.2016.03.007

Dahlawi, S., Menezes, R. G., Khan, M. A., Waris, A., Saifullah, & Naseer, M. M. (2021). Medical negligence in healthcare organizations and its impact on patient safety and public health: A bibliometric study. *F1000Research*, *10*, 174. https://doi.org/10.12688/f1000research.37448.1

de Koster, R. B. M., Stam, D., & Balk, B. M. (2011). Accidents happen: The influence of safety-specific transformational leadership, safety consciousness, and hazard reducing systems on warehouse accidents. *Journal of Operations Management*, *29*(7), 753–765. https://doi.org/10.1016/j.jom.2011.06.005

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Forbes, J., & Arrieta, A. (2024). Comparing hospital leadership and front-line workers' perceptions of patient safety culture: an unbalanced panel study. *BMJ leader*, leader-2023.

Gibson, R., Armstrong, A., Till, A., & McKimm, J. (2017). Learning from error: Leading a culture of safety. *British Journal of Hospital Medicine*, *78*(7), 402–406. https://doi.org/10.12968/hmed.2017.78.7.402

Halligan, M., & Zecevic, A. (2011). Safety culture in healthcare: A review of concepts, dimensions, measures and progress. *BMJ Quality & Safety*, *20*(4), 338–343.

Hamdan, M., Jaaffar, A., Khraisat, O., Issa, M., & Jarrar, M. (2024). The Association of Transformational Leadership on Safety Practices Among Nurses: The Mediating Role of Patient Safety Culture. *Risk Management and Healthcare Policy*, *Volume 17*, 1687–1700. https://doi.org/10.2147/RMHP.S458505

Han, J. H., & Roh, Y. S. (2020). Teamwork, psychological safety, and patient safety competency among emergency nurses. *International Emergency Nursing*, *51*, 100892.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.

He, Y., Sheng, Z., Griffin, M., & Yao, X. (2024). A multilevel model linking altruistic motivation to workplace safety: The role of servant leadership. *Journal of Organizational Behavior*, *45*(4), 497–517. https://doi.org/10.1002/job.2761

Health, & Commission, S. (1993). *ACSNI study group on human factors*. https://inis.iaea.org/records/fkshz-6mg06

Hesgrove, B., Zebrak, K., Yount, N., Sorra, J., & Ginsberg, C. (2024). Associations between patient safety culture and workplace safety culture in hospital settings. *BMC Health Services Research*, *24*(1), 568. https://doi.org/10.1186/s12913-024-10984-3

Hogden, A., Ellis, L., Churruca, K., & Bierbaum, M. (2017). *Safety culture assessment in health care: A review of the literature on safety culture assessment modes*. https://researchers.mq.edu.au/files/92136202/Publisher_version_open_access_.pdf

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Hu, X., Zhao, R., Gao, J., Li, J., Yan, P., Yan, X., Shao, S., Su, J., & Li, X. (2021). Relationship between proactive personality and job performance of Chinese nurses: The mediating role of competency and work engagement. *Frontiers in Psychology*, *12*, 533293.

Huang, C.-H., Wu, H.-H., Lee, Y.-C., & Li, X. (2024). The critical role of leadership in patient safety culture: A mediation analysis of management influence on safety factors. *Risk Management and Healthcare Policy*, 513–523.

Idsøe-Jakobsen, I., Dombestein, H., & Wiig, S. (2024). Exploring homecare leaders' risk perception and the link to resilience and adaptive capacity: a multiple case study. *BMC Health Services Research*, *24*(1), 340.

Irshad, M., Majeed, M., & Khattak, S. A. (2021). The combined effect of safety specific transformational leadership and safety consciousness on psychological well-being of healthcare workers. *Frontiers in Psychology*, *12*, 688463.

Jauhari, H., Kumar, M., & Pandey, J. (2024). Impact of transformational leadership on service delivery behaviours of frontline service employees. *Journal of Retailing and Consumer Services*, *79*, 103816.

Jia, Q., & Yuan, H. (2025). The impact of proactive personality and needs-supplies fit on the career success of pediatric healthcare workers. *BMC Health Services Research*, *25*(1), 345.

Johari, J., Shamsudin, F. M., Zainun, N. F. H., Yean, T. F., & Yahya, K. K. (2022). Institutional leadership competencies and job performance: The moderating role of proactive personality. *International Journal of Educational Management*, *36*(6), 1027–1045.

Júnior, G. G. S., Satyro, W. C., Bonilla, S. H., Contador, J. C., Barbosa, A. P., de Paula Monken, S. F., Martens, M. L., & Fragomeni, M. A. (2021). Construction 4.0: Industry 4.0 enabling technologies applied to improve workplace safety in construction. *Research, Society and Development*, *10*(12), e280101220280–e280101220280.

Kang, F., Li, J., Zhang, H., & Zhang, Y. (2022). Leader humor and newcomer adjustment: The mediating role of role breadth self-efficacy. *Leadership & Organization Development Journal*, *43*(8), 1201–1216.

Karanikas, N., & Hasan, S. M. T. (2022). Occupational Health & Safety and other worker wellbeing areas: Results from labour inspections in the Bangladesh textile industry. *Safety Science*, *146*, 105533.

Katz-Navon, T., Naveh, E., & Stern, Z. (2007). Safety self-efficacy and safety performance: Potential antecedents and the moderation effect of standardization. *International Journal of Health Care Quality Assurance*, *20*(7), 572–584. https://doi.org/10.1108/09526860710822716

Kelloway, E. K., Mullen, J., & Francis, L. (2006). Divergent effects of transformational and passive leadership on employee safety. *Journal of Occupational Health Psychology*, *11*(1), 76–86. https://doi.org/10.1037/1076-8998.11.1.76

Khan, N., Ahmad, I., & Ilyas, M. (2018). Impact of Ethical Leadership on Organizational Safety Performance: The Mediating Role of Safety Culture and Safety Consciousness. *Ethics & Behavior*, *28*(8), 628–643. https://doi.org/10.1080/10508422.2018.1427097

Kim, M., & Oh, J. (2024). Proactive personality and turnover intentions of nurses: The roles of professional recognition and their supervisor's proactive personality. *Career Development International*, *29*(1), 141–154.

Kurtic, G., & Tessier, A. (2019). Leadership Style for Various Industries with High Rate of Turnover. *IISE Annual Conference. Proceedings*, 200–206. https://www.researchgate.net/profile/Golshan-Madraki/publication/347355700_Leadership_Style_for_Various_Industries_with_High_Rate_of_Turnover/links/5fda1cb745851553a0bf1195/Leadership-Style-for-Various-Industries-with-High-Rate-of-Turnover.pdf

Kwarteng, S., Frimpong, S. O., Asare, R., & Wiredu, T. J. N. (2024). Effect of employee recognition, employee engagement on their productivity: the role of transformational leadership style at Ghana health service. *Current Psychology, 43*(6), 5502-5513.

Leape, L. L., Berwick, D. M., & Bates, D. W. (2002). What practices will most improve safety?: Evidence-based medicine meets patient safety. *Jama*, *288*(4), 501–507.

Lievens, I., & Vlerick, P. (2014). Transformational leadership and safety performance among nurses: The mediating role of knowledge-related job characteristics. *Journal of Advanced Nursing*, *70*(3), 651–661. https://doi.org/10.1111/jan.12229

Majeed, M., Irshad, M., Fatima, T., Khan, J., & Hassan, M. M. (2020). Relationship between problematic social media usage and employee depression: A moderated mediation model of mindfulness and fear of COVID-19. *Frontiers in psychology, 11*, 557987.

Memon, M. A., Ting, H., Cheah, J.-H., Thurasamy, R., Chuah, F., & Cham, T. H. (2020). Sample size for survey research: Review and recommendations. *Journal of Applied Structural Equation Modeling*, *4*(2), i–xx.

Morello, R. T., Lowthian, J. A., Barker, A. L., McGinnes, R., Dunt, D., & Brand, C. (2013). Strategies for improving patient safety culture in hospitals: A systematic review. *BMJ Quality & Safety*, *22*(1), 11–18.

Muchiri, M. K., McMurray, A. J., Nkhoma, M., & Pham, H. C. (2019). How transformational and empowering leader behaviors enhance workplace safety: A review and research agenda. *The Journal of Developing Areas*, *53*(1). https://muse.jhu.edu/pub/51/article/702375/summary

Nasim, M. A., Yadav, R. S., Dash, S. S., & Bamel, U. (2023). Leadership styles and safety culture–a meta-analytic study. *International Journal of Organizational Analysis*, *31*(7), 3233–3250.

Nasrallah, I. M., El Kak, A. K., Ismaiil, L. A., Nasr, R. R., & Bawab, W. T. (2022). Prevalence of accident occurrence among scientific laboratory workers of the public university in Lebanon and the impact of safety measures. *Safety and Health at Work*, *13*(2), 155–162.

Nguyen, V. Q., Turner, N., Barling, J., Axtell, C. M., & Davies, S. (2023). Reconciling general transformational leadership and safety-specific transformational leadership: A paradox perspective. *Journal of Safety Research*, *84*, 435–447.

Noor Arzahan, I. S., Ismail, Z., & Yasin, S. M. (2022). Safety culture, safety climate, and safety performance in healthcare facilities: A systematic review. *Safety Science*, *147*, 105624. https://doi.org/10.1016/j.ssci.2021.105624

O'Connor, P., O'malley, R., Oglesby, A. M., Lambe, K., & Lydon, S. (2023). Measurement and monitoring patient safety in prehospital care: a systematic review. *International Journal for Quality in Health Care, 33*(1), mzab013.

Parker, S. K. (1998). Enhancing role breadth self-efficacy: The roles of job enrichment and other organizational interventions. *Journal of Applied Psychology*, *83*(6), 835.

Parker, S. K., Bindl, U. K., & Strauss, K. (2010). Making Things Happen: A Model of Proactive Motivation. *Journal of Management*, *36*(4), 827–856. https://doi.org/10.1177/0149206310363732

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of Method Bias in Social Science Research and Recommendations on How to Control It. *Annual Review of Psychology*, *63*(1), 539–569. https://doi.org/10.1146/annurev-psych-120710-100452

Prochazka, J., Gilova, H., & Vaculik, M. (2017). The Relationship Between Transformational Leadership and Engagement: Self-Efficacy as a Mediator. *Journal of Leadership Studies*, *11*(2), 22–33. https://doi.org/10.1002/jls.21518

Rabiul, M. K., Rashed, K., & Rashid, H. O. (2024). Transformational leadership style and psychological safety to meaningful work: moderating role customer incivility. *Journal of Management Development, 43*(1), 49-67.

Rai, R., El-Zaemey, S., Dorji, N., Rai, B. D., & Fritschi, L. (2021). Exposure to occupational hazards among health care workers in low-and middle-income countries: A scoping review. *International Journal of Environmental Research and Public Health*, *18*(5), 2603.

Reddy, A. (2023). Advancements in Medical Science: Exploring Innovations, Challenges, and Frontiers. *Journal of American Medical Science and Research*, *2*(02), 08–11.

Saleem, M. S., Isha, A. S. N., Yusop, Y. M., Awan, M. I., & Naji, G. M. A. (2022). The role of psychological capital and work engagement in enhancing construction workers' safety behavior. *Frontiers in Public Health*, *10*, 810145.

Seibert, S. E., Kraimer, M. L., & Crant, J. M. (2001). What Do Proactive People Do? A Longitudinal Model Linking Proactive Personality and Career Success. *Personnel Psychology*, *54*(4), 845–874. https://doi.org/10.1111/j.1744-6570.2001.tb00234.x

Shostek, K. (2007). Developing a culture of safety in ambulatory care settings. *The Journal of Ambulatory Care Management*, *30*(2), 105–113.

Smith, T. D., DeJoy, D. M., & Dyal, M.-A. (2020). Safety specific transformational leadership, safety motivation and personal protective equipment use among firefighters. *Safety Science*, *131*, 104930.

Sonnentag, S., & Spychala, A. (2012). Job Control and Job Stressors as Predictors of Proactive Work Behavior: Is Role Breadth Self-Efficacy the Link? *Human Performance*, *25*(5), 412–431. https://doi.org/10.1080/08959285.2012.721830

Syabanasyah, I., Rachmawati, E., & Hartono, B. (2023). The influence of transformational leadership on patient safety efforts. *Jurnal Ilmu Dan Teknologi Kesehatan*, *10*(2), 150-161.

Tangatarova, S., & Gao, Y. (2021). Transformational leadership and patient safety in hospital: The roles of safety culture, decision-making capacity, and locus of control. *International Journal of Research in Business and Social Science*, *10*(2), 106–122.

Tsapnidou, E., Kelesi, M., Rovithis, M., Katharakis, G., Gerogianni, G., Dafogianni, C., Toylia, G., Fasoi, G., & Stavropoulou, A. (2024). Transformational Leadership—Quality Achievements and Benefits for the Healthcare Organizations: A Scoping Review. *Hospitals*, *1*(1), 87–103.

Ugwu, F. O., Idike, A. N., Ibiam, O. E., Akwara, F. A., & Okorie, C. O. (2020). Transformational leadership and management safety practices: Their role in the relationship between work pressure and compliance with safety work behaviour in a health-care sector industry. *Journal of Psychology in Africa*, *30*(1), 1–8. https://doi.org/10.1080/14330237.2020.1716551

Wang, C., Yao, J., & Gao, L. (2024). How do leaders' positive emotions improve employees' psychological safety in China? The moderating effect of leader-member exchange. *Heliyon*, *10*(3). https://www.cell.com/heliyon/fulltext/S2405-8440(24)01512-3

Wu, Y., Xu, Q., Jiang, J., Li, Y., Ji, M., & You, X. (2023). The influence of safety-specific transformational leadership on safety behavior among Chinese airline pilots: The role of harmonious safety passion and organizational identification. *Safety Science*, *166*, 106254.

Yang, C., Liu, P., Xu, S., Xie, X., Li, X., Bai, H., Ji, M., & You, X. (2024). Exploring positive psychological factor on safety behavior of Chinese aircraft maintenance technicians: The interplay of workplace well-being, work engagement, and leadership. *Safety Science*, *175*, 106523.

Yi-Feng Chen, N., Crant, J. M., Wang, N., Kou, Y., Qin, Y., Yu, J., & Sun, R. (2021). When there is a will there is a way: The role of proactive personality in combating COVID-19. *Journal of Applied Psychology*, *106*(2), 199.

Yuan, R., Chen, Y., & Zheng, Y. (2024). The impact of deep learning based-psychological capital with ideological and political education on entrepreneurial intentions. *Scientific Reports*, *14*(1), 18132.

Yusuf, Y., & Irwan, A. M. (2021). The influence of nurse leadership style on the culture of patient safety incident reporting: a systematic review. *British Journal of Healthcare Management*, *27*(6), 1-7.

Zeng, X., Zhang, X., Chen, M., Liu, J., & Wu, C. (2020). The Influence of Perceived Organizational Support on Police Job Burnout: A Moderated Mediation Model. *Frontiers in Psychology, 11.*

Zhu, Y., & Li, W. (2021). Proactive personality triggers employee resilience: A dual-pathway model. *Social Behavior and Personality: an international journal*, *49*(2), 1-11.

Zohar, D., & Luria, G. (2003). The use of supervisory practices as leverage to improve safety behavior: A cross-level intervention model. *Journal of Safety Research*, *34*(5), 567–577.