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Transformational Leadership and Safety Behavior: The Power of Motivation and Training

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ABSTRACT

This study examines the impact of safety-specific transformational leadership (SSTL) on the safety behavior of employees, considering the mediating role of safety motivation and the moderating effect of safety training. A quantitative research method was employed, and data were gathered through an online survey targeting hospital employees in Rawalpindi and Islamabad. A convenience sampling technique ensured diverse representation, yielding 303 valid responses for analysis. To test the hypothesized relationships, various statistical techniques were applied using SPSS. Reliability analysis confirmed the measurement scales' internal consistency, ensuring construct reliability. Correlation analysis illustrates a significant positive relationship between SSTL and safety behavior (SB). Mediation analysis confirmed that safety motivation acts as a key mechanism through which SSTL impacts the adoption of safety behavior. This study uses Social Learning Theory, employees observe role models, their leaders, and thus adopt their actions and behaviors. The findings underscore the critical role of leadership, motivation, and structured training programs in promoting a proactive safety culture among hospital staff. As the results confirm, the hypothesized relationships were supported, indicating a significant positive link between SSTL and SB. The study presents practical implications for hospital management, emphasizing the require for leadership development, motivational approaches, and structured safety training to encourage a positive safety culture and improve safety outcomes within healthcare organizations.

Keywords: Safety-Specific Transformational leadership, Safety Behavior, Safety Motivation, Safety Training

INTRODUCTION

This research is conducted on safety-specific transformational leadership and safety behavior. The mediating role of safety motivation. This study fills the gap by investigating the relationship between safety motivation and safety behavior. So, this dynamic organization can improve strategies and focus on safety behavior and this research helps to develop strategies and create a healthy safe environment by boosting employee well-being and success. The safety of employees at work constitutes a fundamental requirement which takes precedence throughout all professional environments, including business organizations along with other industries. Workplace-related accidents occur when organizations suffer from a decrease in productivity and destroy the industry's reputation (Kurniawan *et al.*, 2019). In high-risk industries safety is necessary to avoid accidents, death and injuries. Safety outcomes are influenced by general leadership since supervisors and leaders usually handle various performance areas, including employee safety compliance and promotion. Safety-specific leadership introduces distinct safety-related planning components in leader actions that measure the extent leaders integrate safety beliefs into their operational conduct. Supposing safety-specific leadership constitutes deeper safety value understanding and application among individuals, may lead to greater safety promotion consequences. Studies document the safety outcome's predictive ability of safety-specific transformational leadership delivery beyond general transformational leadership approaches (McPhee *et al.*, 2022). Adopt safety procedures while performing the task. For example, wearing personal protective equipment to reduce the injuries rates and participating in safety-oriented roles and tactics (Ohanu *et al.*, 2025). Additionally, it encourages the business to continue operating efficiently to become a sustainable business. So, this is the way companies grow more rapidly and implement safety procedures.

Moreover, companies struggle to prevent incident rates. Sudden emergencies cause severe harm to people and must receive timely, effective actions to reduce their impact (International Labor, 2020). Leadership has emerged as a crucial factor in shaping safety outcomes (Sankar *et al.*, 2024). Transformational leadership approaches are promising in fostering a culture that prioritizes safety (Hamdan *et al.*, 2024). Transformational leadership that is focused on safety has been connected to better safety practices among workers (Omidi *et al.*, 2025). Leadership is essential in shaping safety outcomes (Mullen *et al.*, 2024). Transformational leadership with a focus on worker safety. A leadership methodology that expands upon the ideas of transformational leadership (Yu *et al.*, 2022). Leading by example, inspiring staff to put safety first, offering tailored support, and promoting creative safety solutions are all examples of this safety-focused leadership approach (Fadhel *et al.*, 2025). By adopting this approach, leaders can inspire and establish a culture of safety among employees, ultimately driving improved safety performance and outcomes. To promote workplace safety, safety-specific leadership entails a deeper level of internalization and involvement with safety ideals, which may indicate higher levels

of planning. This study investigates the relationship between SSTL and safety behavior. The safety training plays the moderating role, and the intervening role is safety motivation. Specifically, we propose that SSTL will positively influence safety behavior, and this relationship will be moderated by safety training and mediated by safety motivation.

Employee safety behavior is essential to prevent mishaps and injuries, particularly when the safety atmosphere is seen favorably. The capacity of workers to recognise important environmental elements and respond appropriately when a threat arises is known as a responsible safety practice (Shi, 2020). Making sure employees behave safely is essential to avoiding accidents and fatalities, especially if individuals have a positive opinion of the safety environment. Employee awareness of important surroundings and adequate action regarding possible risks are essential components for efficient safety measures. Safety motivation, which may be viewed as a general attitude toward safety. The inclination of employees to carry out their work in a safe manner and the valence associated with those activities (Zhou et al., 2025). Safety knowledge, skills, and motivation are seen as factors of job performance in Campbell's (1993) model of job performance. A key safety management strategy that can impact high safety performance outcomes throughout an organization is safety training (Nguyen *et al.*, 2025). Specifically, safety training is described as the process of transferring knowledge that is related to safety, as well as how this knowledge can be gained to enable workers to perform their jobs in a manner that is as safe as possible and without putting their health at risk (Besnson *et al.*, 2024). Because workplace safety has an uninterrupted effect on employees' health, job fulfillment, and productivity, employers everywhere must give it top priority. Inadequate safety rules can have disastrous results, including mishaps, fatalities, and significant financial losses (Huang *et al.*, 2021). Globally, there were approximately 2.3 million work-related fatalities and 374 million non-fatal injuries in 2019, according to the International Labor Organization (2020).

Organizational safety is a major theme for concern in today's organizations since it affects the health of employees and productivity (Fiegler *et al.*, 2025). Although leadership plays a crucial role in developing safe production climates, broad leadership solutions may not sufficiently address the kind of behaviors needed to encourage safety in the workforce population (Sankar et al., 2024). The SSTL focuses on improving safety as a specific construct and includes elements of the promotion of safe behavior, especially regarding the identification of potential safety issues, organizational communication and modelling (Team SSTL research, 2023). Therefore, additional investigation is mandatory to determine the ways and mechanisms by which SSTL stimulates employees' safety behavior. The mediating role of safety motivation in the relationship between leadership and enhanced safety behaviors has not been sufficiently clarified by most previous studies (Li et al., 2023). It is vital to improve safety endeavors at work to comprehend how motivated employees translate leadership instructions into promoting safety practices and guarantee long-term adherence to safety behaviors. Lastly, the effect of safety

training as a moderating variable has received little attention. It is crucial to provide comprehensive training to strengthen the leadership direction and to make employees understand how to use relevant safety measures to encourage safety consciousness (Alzubi et al., 2025).

So, this dynamic organization can improve strategies and focus on safety behavior and this research helps to develop strategies and create a healthy safe environment by boosting employee well-being and success. Thus, the moderating link between SSTL and safety behavior that is intervened by safety motivation and modified by safety training will be evaluated in this proposed study. By analyzing these dynamics, the research aims to lay the foundation for leadership approaches that would contribute to safety behavior, engagement, and the overall safety climate within the organization. This research investigates the impact of safety-specific transformational leadership on safety behavior and examines how safety motivation acts as a mediator and moderator in the context of safety training, to improve workplace safety performance (Hamdan *et al.*, 2024). This study has significant consequences for businesses, allowing them to create focused plans that strengthen leadership growth, minimize accident rates, and maintain a strong safety culture. This research makes a substantial and useful contribution to the area by clarifying the connection between safety behavior, enthusiasm, and leadership. It also improves worker participation, which contributes to the formulation of policies. This research targets the examination of how safety-specific transformational leadership (SSTL) affects employee safety behavior in the healthcare sector. In greater detail, the research examines the influence of SSTL on safety behavior, consider the role of safety motivation as a mediator, and assess how safety training moderates this relationship. Recent research among them (Slil *et al.*, 2025) underscores the critical importance of leadership strategies for enhancing safety outcomes and employee morale in high-risk settings such as hospitals.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Idealized influence, inspirational motivation, intellectual stimulation, and personalized consideration are just a few of the characteristics that make up transformational leadership. (Bello et al., 2025). Transformational leaders first substitute a safety-focused culture by modelling safety behaviors, promoting shared responsibility, and inspiring collective well-being through motivation. Second, transformational leaders stimulate critical thinking by encouraging open communication, innovative ideas, and collaborative problem-solving, encouraging self-directed work to tackle safety challenges (Larsman et al., 2024). They also set up genuine care for each team member's safety, growth, and well-being, fostering a collective responsibility and assurance to safety. A transformational leadership approach inspires employees by providing vision while motivating them and giving individual attention thereby turning safety into an essential organizational core value (Larsman et al., 2024; Mitra et al., 2022). Research evidence shows that SSTL generates substantial employee participation in safety practices since it enhances

both protocol compliance and risk detection (Innes *et al.*, 2023). In this multi-pronged approach, transformational leaders consistently increase employee engagement in safety programs, highlighting their critical role in influential a preemptive safety culture (Gill, 2024). Transformational leadership is a strong indicator of safety concerns. Leaders with this quality contribute to the officialdom's accomplishment. Leaders who exhibit safety-specific transformational leadership mirror the collaborations between leaders and subordinates on safety-related concerns to promote the safety advancement platform that the organization needs. A leader who assembles an instance and commits to safety fosters an affirmative safety climate and culture. This approach is predominantly relevant in safety-focused organizations and is closely tied to safety-specific transformational leadership. Additionally, this study emphasis on safety leaders actively promoting improved safety outcomes within their organizations. This maintains alignment with the original rephrasing, emphasizes the role of leaders in enhancing safety through a focus on safety-specific transformational leadership (Johnson, 2019). Studies show that safety values expressed through SSTL practices lead workers to adopt safe principles and show accountable conduct (Liu *et al.*, 2022). Leadership demonstrating transformational abilities create environments where employees feel safe to reveal hazards while actively taking part in safety enhancement projects (Katz- Navon *et al.*, 2021).

Hypothesis Development:

Safety-specific transformational leadership into safety behavior.

The most essential challenge for administrators and leaders in the healthcare sector is how to manage healthcare enterprises and organizations, such as hospitals, to improve safety because safety is so critical to industry. Leadership is essential to the performance of an organization, it will inevitably be mentioned while discussing management (Wu, 2023). Good leadership companies could thrive, in terms of leadership style, transformational leadership there is a need to say this type of effective leadership. SSTL is applied in different fields such as manufacturing companies and the healthcare industry which could lead to work safety (Fischer, 2023). Safety behaviors have two components, safety compliance and participation. Safety compliance refers to preventing incidents, injuries and following established safety instructions and guidelines. Workers appropriately use personal protective equipment. Safety participation refers to active involvement, voluntary safety activities, and helping employees to cope with incidents and aims to improve workplace safety (Omidi *et al.*, 2024).

Safety-Specific Transformational Leadership (SSTL) uses the transformational leadership framework to concentrate exclusively on safety actions between workers (Pasparakis, 2024). Safety- Specific Transformational Leadership (SSTL) motivates employees to follow safety regulations together with taking part in safety-related programs through hazard reporting and suggestion making and safety training (Waltz *et al.*, 2022). Practitioners of SSTL establish safety climates which motivate workers to take safety responsibility beyond task responsibilities, thus creating a

workplace safety culture (Rizky *et al.*, 2025). SSTL succeeds in healthcare institutions by focusing on essential safety components, which include safety compliance and safety participation (Jamil *et al.*, 2024). Safety compliance describes the active adherence to already established safety procedures and protocols that incorporate personal protective equipment (PPE) usage along with policy guidelines made to eliminate accidents (Vetterick *et al.*, 2022). Safety compliance occurs when staff members use rule adherence to avoid negative results such as physical harm or sickness. Therefore, the hypothesis is anticipated:

H1: Safety-specific transformational leadership will be positively associated with safety behavior.

Safety Motivation as a Mediator Between SSTL and Safety Behavior.

Safety motivation can be understood as the psychological construct of an employee to (1) make an effort to act in a safe manner as far as safety compliance is concerned and (2) be actively invested in safe work practices (Lu *et al.*, 2020). Studies conducted empirically support the notion that this intrinsic motivation has a direct impact on the implementation of safety behaviors thus mitigating avoidable rates of workplace incidents (Kartiko & Sirojuddin, 2020; Neal *et al.*, 2022). Their findings (Griffin and Neal, 2000) considered that the motivation to be safe is the most proximal factor influencing safety performance that is proximate since a safety motivation concept is predictive of a behavior change in an individual (Chopra, 2019; Rybnicek *et al.*, 2019). According to Campbell's (1993) motivation, safety knowledge and skills are key factors in achieving job success. However, possessing knowledge and skills alone cannot guarantee safe behavior, as motivation plays a crucial role in adopting and practicing safe habits (Ford & Tetrick, 2008).

For this reason, safety motivation is crucial to enhancing safety performance and lowering coincidence quantities. Recently, safety motivation has been the subject of numerous studies. Therefore, this study hypothesizes that the connection between safety transformational leadership and safety behavior may be mediated by safety motivation. To be more precise, a transformational leader with the safety orientation would emphasize the importance of stairway safety to the group through the idealized influence, inspirational attitude, individualized considerations, and intellectual stimulations (Kelloway, 2023). Building on the points above and utilizing Griffin and Neal's (2006) definition of safety motivation, this study broadens the concept by defining safety motivation as the collective drive of team members to perform tasks safely. Furthermore, safety motivation goes beyond the modest sum of specific inspirations; it represents an integrated effort of team members' commitment to safe work practices, which can surpass the motivation of individual employees. This highlights the authority of group norms and provides employees with larger control and regulation over their actions. As a result, the following hypothesis is proposed:

H:2 Safety motivation mediates the relationship between safety-specific transformational leadership and safety behavior.

The Role of Safety Motivation in Shaping Safety Behavior

Safety motivation is an individual's determination to practice safety behaviors

and the importance they place on them (Pordanjani *et al.*, 2015). The decision to adopt safe practices by an employee is influenced by safety motivation (Kadher *et al.*, 2024). This indicating that motivated workers are more likely to comprehend the value of safety and make it conducted regularly. Additionally, motivation affects willingness to go above and beyond the call of duty (participation), such as proactively identifying safety hazards or development a culture-safe environment within the team and the readiness to comply with regulations. Research demonstrates that employees are involved in safety behavior activities such as safety rules, processes, and the use of personal protective equipment. Through SSTL practices leaders provide distinct support to their workers according to individual needs that assist safety- specific obstacles. Employees develop both a sense of belonging and increased personal safety responsibility because of receiving personalized attention from their leaders (Zhang *et al.*, 2023). Safety motivation goes afar the simple sum of distinct stimuluses; it represents an integrated effort of group members' commitment to safe effort follows, which can exceed the motivation of individual employees. The relationship between safety motivation and safety behavior is deeply rooted in social learning theory, in which individuals learn behavior by observing their leaders, peers and subordinates (Wang, 2023). Leaders who confront work- related concerns of employees while providing custom safety instructions generate greater employee motivation towards safe practices. Overall safety performance receives significant impact from collective motivation because teams develop established norms along with mutual support structures for safe conduct (Zhang *et al.*, 2023). So following hypothesis proposed:

H:3 Safety Motivation will positively influence safety behavior. Supporting Theory

Safety-specific transformational leadership (SSTL) affects employee safety behavior according to the Social Learning Theory established by Bandura (1977). Individuals develop behaviors through direct observation as well as imitation activities reinforced by their social group environment. Workplace safety performance depends on employee observation and the behavioral adoption of leaders who support safe working practices. Evidence shows that Social Learning Theory confirms leaders with transformative qualities function as role models which drive employees to adopt safety behaviors by observing consistent leader adherence to safe work practices (Zohar, 2010). Safety- specific transformational leaders use their motivational skills to express the need for safety in inspiring ways which leads employees to develop positive safety attitudes. Leaders build safety motivation in employees by providing positive reinforcement and constructive feedback together with encouragement thus improving both their safety initiative compliance and participation (Fugas *et al.*, 2022). Safety motivation serves as a team-level factor according to (Liu *et al* 2022).

The moderating role of safety training

Safety training is defined as the transfer of knowledge related to safety, focusing on imparting skills and information that enable workers to perform their tasks in a manner that minimizes risk to their well-being and ensures a safe working

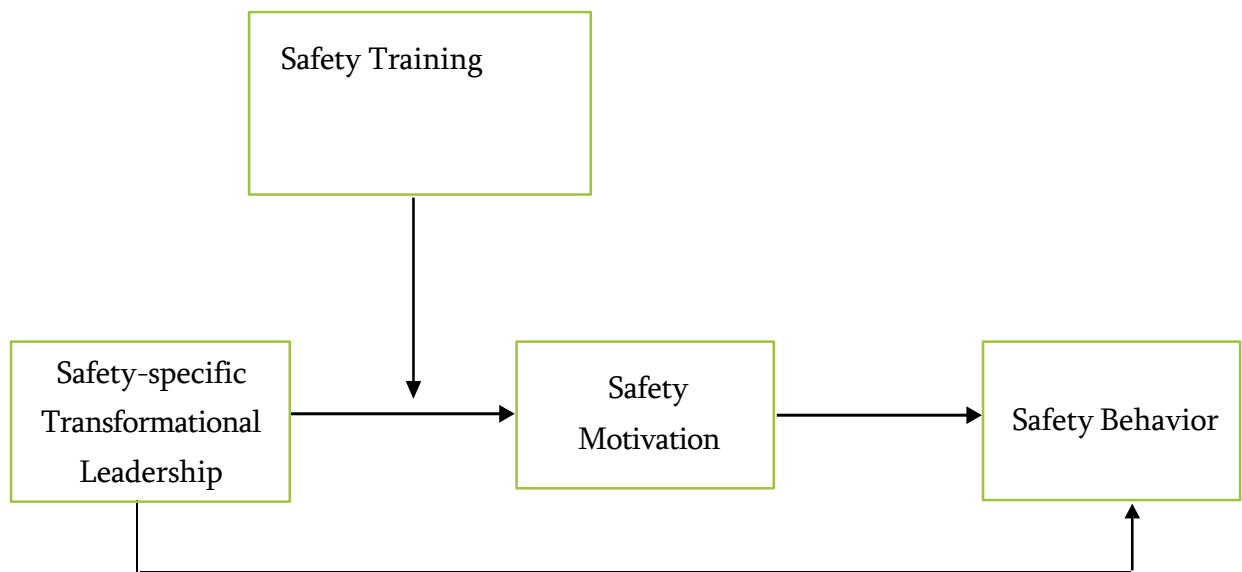
environment (Law *et al.*, 2006). It gives information about how they must effectively handle dangers, adhere to security regulations, and promote an environment of safety. Companies that invest in strong safety training programs see better safety results. Moreover, research indicates that safety training helps reduce workplace incidents and builds long-term behavioral change (Aderamo *et al.*, 2024). The efficacy of safety leadership increases through safety training by fostering a safe environment and internalized safety regulations and practices. Employees are more likely to internalize safety objectives and exhibit safety compliance (such as following regulations) and safety involvement (such as taking personal protective equipment) when safety training is provided in conjunction with transformational leadership (Burke *et al.* 2006). The encouragement of transformational leadership is focused on safety on encouraging safe performances is greater. The correct safety training results in increased employee participation in safety-related work activities. Correct safety training increases worker awareness about safety behaviors thus allowing them to exhibit better compliance levels while actively involving with safety programs. Employee participation forms an essential element for developing a safety culture in which staff members actively protect both themselves and their colleagues' safety (Zohar, 2010). Employees may deficit the awareness and useful skills needed to convert leadership directives into practical safety procedures if they do not receive sufficient safety training. Additionally, regular training programs in the hospital enhance the relationship between safety behavior and leadership. Workers with safety-relevant situation management training are more equipped to understand and implement transformational leaders' vision. (Mullen & Kelloway, 200).

H4: Safety training strengthens the relationship between safety-specific transformational leadership and safety behavior such that the relationship will be stronger when safety training is high.

This connection implies that safety training serves as a lever to increase the inspiration of leadership on worker safety results. Studies show that safety training acts as a moderator by improving workers' comprehension and application of transformational leaders' recommended safety practices (Kapp, 2012). Safety training helps minimise the gap between leadership measures and safety performance. Research demonstrates that safety training improves employee understanding and practice of safety measures recommended by leadership, especially through transformational styles (Kapp, 2012).

Leaders who focus on safety practice as a role for their employees shape their attitudes toward safety outcomes. Safety motivation exists both as a unique feature of individuals and as a combined group performance. The training enhances worker safety behavior understanding so employees can better carry out the safety objectives set by transformational leaders. Organisations which help safety training their workforce to identify dangerous situations more effectively which allows staff to maintain safety protocols and select choices that buttress security, thus creating safer working conditions.

Research Framework



METHODOLOGY

Design of this study is vital as it defines the parameters and scope of the investigation, facilitating the formulation and testing of hypotheses to achieve the research objectives. This research examines the relationship between safety-specific transformational leadership (SSTL) and safety behavior, considering the intervening role of safety motivation and the moderating role of safety training. A survey-based, cross-sectional approach was employed, utilizing structured questionnaires to collect quantitative data from hospital employees. The data analysis revealed statistically significant interrelationships among the four variables, underscoring their critical connections and associations. This methodological framework, supported by quantitative statistical analysis, comprehensively explores the proposed relationships within the study. This study aims to examine the relationship between Safety-Specific Transformational Leadership (SSTL) and safety behavior (SB) among hospital employees. In addition, it investigates how safety motivation (SM) mediates and safety training (ST) moderates these relationships. By adopting a cross-sectional, survey-based methodology, this study quantitatively explores the associations between these key variables, intending to offer valuable insights to enhance workplace safety in healthcare settings. The study was conducted in hospital settings, where ensuring safety behaviors is critical due to the high-risk environment inherent to healthcare operations. The hospitals represent diverse organizational structures and safety practices, providing a broad perspective on the investigated variables. The study is confined to Rawalpindi and Islamabad; hospitals are considered. Rawalpindi and Islamabad have a variety of public and private hospitals operating within the city. The target population comprises hospital employees, including medical and non-medical staff, who are directly or indirectly involved in maintaining workplace safety. A Convenience sampling technique was employed to select

participants actively engaged in safety practices and to ensure a diverse sample. The final sample size consisted of 303 respondents, deemed sufficient for robust statistical analysis and hypothesis testing.

Data collection focused on ensuring a representative sample in terms of roles, experience, and demographic diversity within the healthcare setting. Due to limitations in time and resources, a particular technique was used in this study. Every member of the population who participates in a project or organization is referred to as a unit and is used as a unit of analysis. This study employed a convenience sampling method to select hospital employees from 04 hospitals in Rawalpindi and Islamabad. Data were collected through a structured online survey disseminated via Google Forms, which ensured broad reach and ease of participation. A variety of sources and modified questionnaires were used to collect the data. We assume that the information gathered by the community accurately represents the Pakistani employees of the hospitals of Islamabad and Rawalpindi. The survey link was shared through email, internal communication channels, or other means, inviting employees from diverse roles and departments to participate.

The final sample size consisted of 303 respondents, deemed sufficient for robust statistical analysis and hypothesis testing. In this study, demographics, safety-specific transformational leadership, safety behavior, Safety motivation, and safety training scale items were employed as assessment instruments. These tools are employed to gather data; hence, our questionnaire has three sections. The parts include tools for measuring demographics, safety-specific transformational leadership, safety behavior, Safety motivation, and safety training. All evaluations were conducted using a 5- point Likert scale (1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, and 5 = strongly agree).

Demographic Analysis:

Table 1: Age

Age	N	%
20-25 years		5217.2%
26-30 years	102	33.7%
31-35 years		6621.8%
36-40 years		5016.5%
Above		3310.9%

The demographic analysis indicates that 33.7% of respondents are in the 26-30 years' age group, making it the largest segment in the sample. This is monitored by the 31-35 years' age group, which interpretations for 21.8% of the participants. The 20-25 years' age group represents 17.2%, capturing younger or early-career individuals. The 36-40 years' age group constitutes 16.5% of the sample, while the smallest proportion of respondents, 10.9%, are aged above 40 years. This breakdown highlights a diverse age distribution, with a notable focus on participants in the rapid to mid-career stages.

This study offers a complete comprehension and conception of the results obtained after using methodological parameters. The quantitative and statistical analysis was performed using SPSS. It begins with a demographic overview of participants, followed by descriptive statistics that identify trends and potential areas for improvement. The reliability of the measures is confirmed, and correlation, mediation, and moderation analyses are used to explore the interconnections between variables. Key findings highlight SSTL's impact on safety motivation and behavior, the mediating role of safety motivation, and the moderating effects of demographic factors like gender.

Reliability Analysis

Table: 2: Reliability Analysis

S. No	Variable Name	No of Items	Cronbach's Alpha
1	Safety-specific transformational leadership	10	.933
2	Safety Motivation	03	.813
3	Safety Training	06	.820
4	Safety Behavior	11	.929

The reliability analysis indicates strong internal consistency across all variables. Safety- Specific Transformational Leadership (SSTL), with 10 items, achieved a Cronbach's Alpha of 0.933, demonstrating excellent reliability. The items chosen to measure this concept consistently demonstrate how leaders engage with safety transformation. Safety Motivation (SM), comprising 3 items, indicated good reliability with a Cronbach's Alpha of 0.813. Similarly, Safety Training (ST), with 6 items, had a Cronbach's Alpha of 0.820, indicating good consistency. Safety Behavior (SB), containing 11 items, also demonstrated excellent reliability with a Cronbach's Alpha of 0.929. These consequences confirm that the scales used are reliable and consistent in measuring their respective constructs.

Correlation Analysis

Table: 3 Correlation

		SSTL	SM	ST
	Pearson Correlation	.497**		
SM	Sig. (2-tailed)	<.001		
	N	303		
	Pearson Correlation	.640**	.506**	
ST	Sig. (2-tailed)	<.001	<.001	
	N	303	303	

	Pearson Correlation	.516**	.390**	.548**
SB	Sig. (2-tailed)	<.001	<.001	<.001
	N	303	303	303
<i>Correlation is significant at the 0.01 level (2-tailed).</i>				

The correlation analysis discloses significant positive relationships among the variables. Safety- Specific Transformational Leadership (SSTL) strongly correlates with Safety Training (ST) ($r=.640$, $p < .001$) and moderately with Safety Motivation (SM) ($r = .497$, $p < .001$) and Safety Behavior (SB) ($r = .516$, $p < .001$). Safety Motivation (SM) moderately correlates with both Safety Training (ST) ($r = .506$, $p < .001$) and Safety Behavior (SB) ($r = .390$, $p < .001$). Safety Training (ST) shows a strong correlation with Safety Behavior (SB) ($r = .548$, $p < .001$). These findings emphasize the critical role of SSTL and ST in improving safety outcomes.

Mediation Analysis

Table: 4 Mediation Analysis

	SM			SB		
	Coeff.	SE	p	Coeff.	SE	p
SSTL (X)	0.499	0.048	0.000 a	0.370	0.053	0.000
SM (M)	-	-	-	0.172	0.055	0.000 b

	Coeff.	SE	t	P	LLCI	ULCI
Total effect of X on Y	.456	.046	9.945	.000	.366	.547
Direct effect of X on Y	.370	.053	7.018	.000	.267	.474
Indirect effect of X on Y	.086	.035	4.070	.000	.020	.157

LLCI = Lower Limit Confidence Interval, ULCL = Upper Limit Confidence Interval

The mediation analysis examines the indirect effect of SSTL (X) on SB (Y) through the mediating variable SM (M). The first regression model shows that SSTL has a significant positive effect on SM ($\beta = 0.499$, $SE = 0.048$, $p = 0.000$), indicating that an increase in SSTL leads to a corresponding increase in SM. In the second model, both SSTL ($\beta = 0.370$, $SE = 0.053$, $p = 0.000$) and SM ($\beta = 0.172$, $SE = 0.055$, $p = 0.000$) significantly predict SB, suggesting that the mediator plays a crucial role in the relationship. The total effect of SSTL on SB is $\beta = 0.456$ ($SE = 0.046$, $t = 9.945$, $p = 0.000$), demonstrating a strong direct association. However, when controlling for SM, the direct effect reduces to $\beta = 0.370$ ($SE = 0.053$, $t = 7.018$, $p = 0.000$), while the indirect effect through SM is $\beta = 0.086$ ($SE = 0.035$, $t = 4.070$, $p = 0.000$). The confidence intervals (LLCI = 0.020, ULCI = 0.157) confirm that the indirect effect is statistically significant, as the interval does not include zero. These findings indicate that SM partially mediates the relationship between SSTL and SB, meaning that while

SSTL has a direct effect on SB, a portion of this effect is transmitted through SM. The significance of the indirect path suggests that interventions targeting SM could enhance the impact of SSTL on SB. The mediation analysis indicates that Safety Motivation (SM) positively mediates the relationship between Safety-Specific Transformational Leadership (SSTL) and Safety Behavior (SB). SSTL positively impacts SM ($a = 0.499$), and SM positively influences SB ($b = 0.172$). Despite this, SSTL's direct effect on SB is positive and significant ($c' = 0.370$), and the total effect of SSTL on SB remains positive ($c = 0.456$). These findings suggest that SSTL directly enhances safety behavior, but its indirect effect through SM is counterproductive, highlighting complex dynamics in the role of motivation.

Moderation Analysis:

Table: 5 Moderation Analysis

	B	Std. E	T	p	LLCI	ULCI
SSTL impact on SM	.733	.223	3.292	.001	.295	1.171
ST impact on SM	.820	.218	3.755	.000	.390	1.249
Moderating effect on SM (moderation ST)	.115	.054	2.152	.032	.024	.953

β = Beta, LLCI = Lower Limit Confidence Interval, UL = Upper Limit Confidence Interval

The moderation analysis examines the impact of SSTL (X) on SM (Y) while considering the moderating role of ST (Moderator). The results indicate that SSTL has a significant positive impact on SM ($\beta = 0.733$, $SE = 0.223$, $t = 3.292$, $p = 0.001$), with a confidence interval (LLCI = 0.295, ULCI = 1.171) that does not include zero, confirming the significance of this effect. Similarly, ST also has a significant positive effect on SM ($\beta = 0.820$, $SE = 0.218$, $t = 3.755$, $p = 0.000$), indicating that an increase in ST contributes to a higher level of SM. The confidence interval (LLCI = 0.390, ULCI = 1.249) further supports this result. The key finding in this analysis is the moderating effect of ST on the SSTL-SM relationship ($\beta = 0.115$, $SE = 0.054$, $t = 2.152$, $p = 0.032$). Since the confidence interval (LLCI = 0.024, ULCI = 0.953) does not contain zero, the moderating effect is statistically significant. This suggests that ST strengthens the relationship between SSTL and SM, meaning that the impact of SSTL on SM is more pronounced when ST is higher. In conclusion, these findings confirm that ST acts as a significant moderator, enhancing the positive effect of SSTL on SM. This highlights the importance of considering ST when evaluating the influence of SSTL on SM, as its presence amplifies the relationship.

DISCUSSION AND CONCLUSIONS

This section pertains to the thorough review of the hypothesis developed, considering the theory and empirical data using literature and the interpretation of

the results. This part of the study summarises the research study, findings, its implications, premises and recommendations for future research. The study developed four hypotheses, each supported by empirical and theoretical findings. The current study supports the hypothesis one stated that safety-specific transformational leadership (SSTL) positively influences safety behavior. This result proves that proactive safety behaviors are encouraged by leaders who exhibit SSTL traits, such as establishing clear safety goals, inspiring a common vision for safety, and serving as role models. Healthcare professionals play an important role in managing workplace safety. According to earlier studies, transformational leadership has a crucial role in creating a positive safety culture and guaranteeing that safety procedures are followed. The investigation of leadership impact on workplace safety received major academic focus during the previous ten years through numerous studies examining safety performance, together with employee involvement and organizational effectiveness. The influence of safety-specific transformational leadership (SSTL) on safety behavior within hospital staff at Pakistani healthcare facilities remains a topic with limited research. Healthcare safety demands immediate attention because hospital workers constantly face intense work demands as well as occupational risk factors, together with high performance standards for patient care. Employee safety performance remains crucial despite weak leadership backing and a lack of safety motivation or inadequate training, which causes both safety protocol violations and occupational incidents (Liu *et al.*, 2022). The understanding of Safety Science, Social Learning theory as it relates to safety behavior development is essential for hospital safety improvement and accident prevention and better hospital staff safety commitment.

Transformational leaders play a vital role, directly enhancing employees' assurance to maintaining safe workplace practices, decreasing incidents and improving overall organizational safety results. The second hypothesis stated that safety motivation mediates the relationship between safety-specific transformational leadership and safety behavior. The second hypothesis proves that the safety motivation acts as a mediator between SSTL and safety behavior. Leaders who emphasize the value of safety and offer support help their staff develop a feeling of personal accountability and safety. Motivated workers are more likely to follow safety conventions and protection practices and take preventative action to guarantee a secure workplace. Motivation's mediating function emphasizes how crucial it is for converting leadership influence into significant safety measures. The third hypothesis stated that safety motivation positively influences safety behavior. This study confirmed that motivation directly enhances employees' safety behavior. When employees are motivated, they demonstrate greater compliance with safety protocols, are supplementary likely to report prospective hazards and engage in proactive safety measures. These findings are consistent with motivational theories suggesting that higher motivation levels result in more positive behavioral outcomes. The positive effect ostensible in this study suggests that fostering an environment that supports and rewards safety motivation is crucial for enhancing workplace safety.

The influence of funding leadership development on positive SSTL on safety behavior can result in benefits. They should develop leaders who can develop a common safety vision, talk about particular safety goals, and indeed make up safety leaders by acting to exemplify safe behavior. It will motivate the executives to work as initiative takers to push forward their workload and identify possible risks to safety that can be resolved along with the staff workers. Safety leadership as a fundamental skill in performance reviews and as part of organizational growth plans. Safety training's important moderating effect to stress the need for ongoing, organized, hands-on safety training.

An effective training program should ideally: Pour away the use of theoretical drills or simulations, instead focus on real-world applications. Include cooperative training exercises with emergency services so that healthcare personnel can be better prepared for unanticipated safety concerns. From which you can be updated frequently to account for new safety risks, technological change, and changes to medical procedures. Include regular assessments to find out how well staff members grasp and remember safety procedures. The mediating function of safety motivation highlights the company's requirement to motivate employees to follow safety procedures through their intrinsic motivation. This study will be conducted among the employees in hospitals of Rawalpindi and Islamabad. It has a few possible limitations. The result of the study cannot be generalized to all the twin cities of the hospitals since this study only covers hospitals. However, the outcomes can be cast off as a parameter for other healthcare organization. The respondents on transformational leadership, safety behavior, safety motivation and safety training in other locations may be different. This will allow comparison across different locations for future study. The study largely ignored other outside variables that can affect safety behavior, such organizational policy, job stress, or resource.

CONCLUSION

This study explored the moderating role of safety training and the mediating role of safety motivation in relation to safety behavior in healthcare and safety-specific transformational leadership (SSTL). Those results supported the claim that SSTL was beneficial to safety behavior through engaged employees displaying higher compliance and proactive safety actions. This relationship was further reinforced with safety training highlighted as a necessity for converting leadership objectives to efficient safety procedures. Healthcare organizations achieve maximum benefits when they concentrate on developing safety-specific transformational leadership within their safety culture and simultaneously invest in training programs that assist leadership initiatives. The establishment of a motivated workforce through appropriate training allows organizations to achieve better safety outcomes and an improved work environment safety. The research offers insight for safety enhancements and leadership tactics, which restrictions of the research the cross-sectional design suggest additional research is needed to verify and develop the findings.

Future Recommendations

Future studies can extend to longitudinal designs to investigate how the relationships across the constructs safety behavior, motivation, and leadership change over time. This would lead to clearer causal inferences and provide exposure to the long-term impact. Future research should include objective safety performance metrics like incident reports, safety audits, or third party observations to reduce the response bias. This would also increase the validity of the results by adding to self-reported data. The extensibility of the research to other domains beyond healthcare, such as manufacturing, construction, and transportation, would provide a more comprehensive understanding of how safety-specific transformational leadership (SSTL) affects safety behavior in innumerable frameworks. An analysis of how various other leadership philosophies, like transactional, servant, or authentic leadership, stack up (or fall down) is also beneficial to make available a more global picture of the role of leadership in workplace safety, to compare safety-specific transformational leadership to influence safety behavior.

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