

**How the psychological safety of healthcare teams
relates to team performance, specifically patient
outcomes in an acute private hospital in Mpumalanga,
South Africa**

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A research project submitted to the Gordon Institute of Business Science,
University of Pretoria, in partial fulfilment of the requirements for the degree of
Master of Business Administration.

01 Decemcer 2025

Plagiarism Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Abstract

The primary purpose of this study was to investigate the influence of psychological safety on patient safety performance within an acute private hospital in Mpumalanga, South Africa. In the context of a resource-constrained and hierarchical healthcare environment, the study sought to identify the specific mechanisms that translate interpersonal safety into clinical excellence. A quantitative, cross-sectional design was employed, utilising a structured survey administered to 75 healthcare professionals, including nurses, doctors, and allied staff. Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to test the hypothesised relationships.

The findings revealed that inclusive leadership is a robust predictor of psychological safety ($\beta=0.750$), confirming that safety is a "top-down" permission structure in this context. Contrary to initial assumptions, psychological safety did not have a significant direct effect on patient safety performance. Instead, the relationship was fully mediated by team learning behaviours. This indicates that psychological safety improves patient outcomes only when it activates learning processes such as error reporting and reflection.

While traditional literature often positions PS as a direct predictor of performance, this study reveals more complex realities within the South African context. Findings indicate that PS alone does not improve patient outcomes; rather, it acts as a catalyst for team learning behaviours.

Based on these findings, it is recommended that hospital management shift focus from generic safety culture campaigns to specific inclusive leadership training and the institutionalisation of routine shift debriefs. Future research should employ longitudinal designs to measure the long-term impact of these interventions on objective clinical outcomes. The study is limited by its cross-sectional nature and sample size, though statistical power remained high.

Keywords: Adverse events, healthcare, inclusive leadership, mediation, near-misses, patient safety, South Africa, supportive leadership, team learning, voice behaviour

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List of Acronyms

AVE	Average Variance Extracted
CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
CMV	Common Method Variance
CPR	Cardiopulmonary Resuscitation
d_G	geodesic distance
d_ULS	squared Euclidean distance
HIV	Human Immunodeficiency Virus
HPWS	High-Performance Work Systems
HTMT	Heterotrait-Monotrait ratio
IOM	Institute of Medicine
MAE	Mean Absolute Error
NFI	Normed Fit Index
PLS-SEM	Partial Least Squares Structural Equation Modelling
PS	Psychological Safety
RMSE	Root Mean Square Error
SET	Social Exchange Theory
SPSS	Statistical Package for the Social Sciences
SRMR	Standardised Root Mean Square Residual
TPS	Team Psychological Safety
VIF	Variance Inflation Factor

Chapter 1: Introduction to the Research

1.1 Background

Performance and patient outcomes refer to the clinical outcomes of patients, which can be evaluated at the treatment level and the accuracy of patient records. Both these levels are critical for patient safety during treatment and after. Poor treatment processes pose current patient safety risks through adverse events, and inaccurate patient records pose future risks for subsequent treatments.

The Institute of Medicine has defined patient safety as preventing harm to patients, particularly as a result of errors (National Library of Medicine, 2019). In the healthcare industry, this harm to patients is often termed adverse events, consisting of preventable events resulting from errors, negligent events resulting from substandard care, and ameliorable events where harm could have been minimised (Patient Safety Network, 2024). This definition can therefore be interpreted to imply that the prevention of adverse events is a critical outcome of healthcare teams' performance. This team performance is reliant on the team dynamics and engagement levels informed by the levels of PS that exist within the team and in individuals.

Preventing harm to patients is such an important principle in healthcare that it is at the core of the 2500-year-old Hippocratic Oath, which states that physicians should not harm patients (Askitopoulou, 2024). The Hippocratic Oath is an ethical oath that outlines the importance of ethical conduct and professional standards in healthcare. This oath is named after a Greek physician, Hippocrates, who was regarded as the "father of western medicine" (News Medical, 2021). The Hippocratic Oath, referring to "no harm", emphasises the importance of patient safety as a performance outcome in healthcare.

The World Health Organisation (2021) reported that ten percent of patients admitted experience adverse events or harm during their hospital stay in high-income countries. The organisation further reported that 134 million adverse patient incidents

were reported in low and middle-income countries such as South Africa, and these contribute to an estimated 2.6 million patient deaths annually because of poor safety culture and medical errors (World Health Organisation, 2021). The Institute of Medicine (IOM) Committee on Quality of Health Care in the US defined a medical error as "the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim" (National Library of Medicine, 2024). In the United States, medical errors have been reported to be the third leading cause of death. Medical errors include elements such as medication errors, surgical errors, hospital-acquired infections, equipment failures, patient falls and more (National Library of Medicine, 2024). All these elements are critical reporting requirements in healthcare and give an indication of operational performance for healthcare facilities.

Medical errors globally cost the healthcare industry over \$20 billion annually and also have a negative psychological impact on clinicians, particularly with errors that could have been avoided (National Library of Medicine, 2024). The World Health Organisation (2023) also adds that adverse events in patients slow down global economic growth by 0.07%, making patient safety a worldwide concern and priority in healthcare, highlighting the importance of healthcare teams' performance.

The healthcare industry has stringent professional qualification and professional skills requirements for healthcare practitioners and AIMS Education (2024) lists a few of these soft and hard skills. Among the soft skills listed, a few notable ones include empathy, communication, work ethic and teamwork. These skills put together portray the ideal healthcare professional as one who is concerned with the well-being of the patient and is also committed to a high-performance work environment. The most basic hard skills for healthcare professionals are knowledge and training in life-saving interventions such as Cardiopulmonary resuscitation (CPR), which is vital for the resuscitation of patients. Knowledge and training in vital signs are also vital as they are the first indicators of a patient's condition.

1.2 Context

It is evident that a shortage of these skills could be detrimental to the performance of healthcare professionals and teams, and ultimately detrimental to patient outcomes. This notion is supported by Fransen et al. (2020), who state that professional skills alone cannot yield excellent performance; there are behavioural aspects to be

considered that affect efficacy, and they further state that psychological safety mediates between performance and behaviour. The World Health Organisation (2023) identified organisational factors and human and behavioural factors as some of the causes of patient harm. Organisational factors refer to the operational structures and practices in healthcare facilities, and behavioural factors refer to the earlier-mentioned team engagements and dynamics, which involve interpersonal risk-taking and voice behaviour and whether they are conducive to creating a learning and high-performance environment. These behavioural aspects are mediated by the levels of PS in individuals within teams.

With this premise, the influence of PS on teams must be explored to understand its potential to enhance performance in work environments (Kim et al., 2020). This is even more crucial for critical work environments such as healthcare. Enhancing performance in healthcare is about achieving positive patient outcomes, which makes cultivating high PS in individuals and within teams even more important in volatile environments such as healthcare, where communication and error reporting directly influence patient safety and the quality of care (O'Donovan et al., 2020). Communication or voice behaviour, whether it be silence or speaking, was identified as a characteristic or element of PS, especially in healthcare teams and involves patient advocacy in the form of voicing concerns, identifying mistakes to be addressed, and providing input for quality control improvements (O'Donovan & McAuliffe, 2020). Communication was earlier identified by AIMS Education (2024) as a crucial soft skill for healthcare professionals.

Poor or lacking communication amongst clinicians and other healthcare professionals in the healthcare industry has been reported as a key driver of medical malpractice claims in the United States, accounting for 37% of adverse incidents involving serious injury (Grailey et al., 2021). These astounding numbers observed from studies in other countries signal a need to better understand PS within a local healthcare context. Many of the studies reviewed revealed that limitations of their scope of understanding were around the studies having been conducted as case studies within certain hospitals within specific geographies (O'Donovan & McAuliffe, 2020).

Edmondson and Bransby (2023) identified that levels of interpersonal risk-taking determined the degree of performance of individuals or teams. This notion implies

that team engagement and dynamics are indicators of the performance level of teams and individuals within a team. These team dynamics and engagement rely heavily on the psychological safety (PS) levels of individuals within teams. Kim et al. (2020) highlighted interpersonal risk-taking as an indicator of PS and its influence on performance, defining PS as the comfort level in interpersonal risk-taking within teams. Kim et al. (2020) further describe high levels of PS as a core element for improved performance. Voice behaviour and error reporting form part of interpersonal risk-taking, which is informed by the levels of PS individuals have. Positive or open voice behaviour and error reporting are crucial for a positive learning environment within the healthcare industry.

In the healthcare industry, performance primarily focuses on patient outcomes, where voice behaviour and error reporting can impact the quality of care and ultimately patient safety (O'Donovan et al., 2020). While medical errors are the visible symptom of healthcare dysfunction, this study posits that the underlying cause is silent behaviour. In the hierarchical context of South African health care, highlighting that the problem is not merely that errors occur but that the interpersonal risk of speaking up prevents the social learning required to fix them.

1.3 Significance of the Study

Significance in Business

Low PS observed in the healthcare industry threatens team performance and patient safety outcomes (O'Donovan & McAuliffe, 2020). The severity and urgency of this problem have even necessitated the World Health Organisation's development of a Global Patient Safety Action Plan to guide the elimination of avoidable harm, as various factors contribute to it (World Health Organisation, 2021).

Grailey et al. (2021) in their study found that PS improves working environments; there was no significant relationship between low PS and adverse patient outcomes, and these findings suggest limited empirical evidence directly linking PS levels to measurable patient outcomes. These findings by Grailey et al. (2021) suggest that psychologically safe teams often report more errors and adverse events because of inherent behaviour such as honesty rather than because they feel psychologically

safe in that environment, making the correlation between the two constructs often insignificant or even negative.

Theoretical Significance

Recently, Montgomery et al. (2025) also found that the link between psychological safety and patient safety remains uncertain, as feelings of safety are often more a result of learning behaviours than just PS.

There is, however, a strong belief that the two indeed influence each other, which presents a gap in the literature and an opportunity for further research. Grailey et al. (2021). Given that healthcare is a high-risk environment, the purpose of this study is to explore further the relationship between clinicians' PS, how low or high levels of it influence team performance, and how patient outcomes, particularly patient safety, are affected (O'Donovan et al., 2020). Also, in the context of this study (South Africa, Mpumalanga, private hospital), which is heavily influenced by high power distance, hierarchies in the healthcare industry often lead to silent voice behaviours. This context highlights the importance of inclusive, supportive leadership to break down these hierarchies and enable clinicians to speak up. Lee and Dahinten (2021) reiterate this stance specifically in the South African context, stating that, in the absence of inclusive leadership, silent behaviour becomes a norm in South African hospitals.

1.4 Purpose Statement

While PS has been shown to enhance a safety environment by fostering open communication and error reporting, its direct influence on patient outcomes remains underexplored, particularly in the South African context (Grailey et al., 2021). Grailey et al. (2021) further reiterate this, revealing that factors that affect PS and, therefore, patient safety differ from team to team depending on the personalities at play and the immediate environment.

Understanding the immediate environment of the healthcare industry in South Africa to be one that is highly under-resourced with shortages in medical personnel, medication, infrastructure and overwhelmed by a high burden of disease with diseases such as HIV and tuberculosis is imperative in achieving team efficacy within South African healthcare facilities (South African Medical Research Council, 2024).

The unique South African healthcare industry context, as described by the South African Medical Research Council (2024), requires expanding the literature to include an exploration of PS and, particularly, its influence on performance in the local South African context. As Lee and Dahinten (2021) note, the South African private healthcare industry is characterised by a historically steep hierarchy that often creates a culture of defensive silence, in which junior staff are afraid to voice concerns to senior staff, such as matrons and doctors. Therefore, the problem being explored in this study is not merely the occurrence of errors and adverse events, but the silent behaviour that enables them to perpetuate. The study seeks to determine whether PS can break this silence through team learning and inclusive leadership to improve patient outcomes. Addressing this context expands research on PS and team performance.

The purpose of this research is therefore to evaluate the levels of PS safety of individuals within healthcare teams and how those levels translate into the interpersonal risk-taking, voice behaviour and ultimately the performance of those teams.

1.5 Delimitations

The parameters of this study are defined by the nature of a case study within one institution. The institution is an acute private hospital in Mpumalanga Province, South Africa. Within this institution, the study will evaluate feedback from the following teams: nursing, doctors, pharmacy and allied workers.

1.6 Definition of Terms

Psychological safety (PS), as defined by Edmondson (1999), is the strong sense of security individuals experience, enabling them to express themselves fully without fear of judgment and to take interpersonal risks. Individuals with high levels of PS will be willing to contribute their knowledge, especially at critical moments. As per Edmondson and Bransby (2023), this definition can be extended to apply to error and near-miss reporting in healthcare.

Findings within organisational behaviour studies suggest that PS relies on three levels to be effective: the individual level, which is at a personal perspective level, the team level, which addresses group settings or interactions, and the organisational level, which refers to the tone of the overall organisation (Kolbe et al., 2020).

1.7 Assumptions

For this study, performance is defined as patient outcomes, including the entire patient journey from admission to after discharge, when patients' medical aid funds have evaluated the hospital's electronic file submissions and approved the claim.

1.8 Outline of the Research Report

Chapter 1 is the introduction to the research

Chapter 2 is the literature review

Chapter 3 presents the research hypothesis

Chapter 4 is the research methodology

Chapter 5 details the results of the study

Chapter 6 is the discussion of the results

Chapter 7 is the conclusion and recommendations

1.9 Chapter Summary

Given the impact of medical errors on global economic growth, the adverse effects on clinicians, and the increasing number of adverse events, the PS levels of healthcare teams are a crucial area for study in efforts to reduce medical errors and promote patient safety. The remainder of this paper will first break down the definition

and origins of PS, as well as its importance as a construct for performance in the healthcare field. Then, the relationship between PS and patient outcomes was explored, using literature and other secondary data, at a global level and in a South African context. Based on the literature and secondary data reviewed, the research questions to be investigated were formulated, serving as the basis for the research direction.

Chapter 2: Literature Review

2.1 Introduction

This chapter will review relevant literature on PS and build on the research and problem statement, with a particular focus on its theoretical basis, origins and evolution, its significance as a construct within organisations, and its importance as a key lever for performance in the healthcare industry. We first define PS, explore its evolution over the years, and finally highlight its importance in relation to our problem statement. This section will shape the research questions to be addressed in response to the problem statement.

2.2 Theoretical Underpinning of this Study

This section of Chapter Two outlines three theories widely recognised to underpin PS. The three theories selected are relevant to the research problem identified. We examine social identity theory, social learning theory, and supportive leadership theory.

2.2.1 Social Exchange Theory

Ahmad et al. (2023) describe SET as the gold standard to understand behaviour within organisations. Originating from the 1920s in fields such as psychology and sociology, it was a concept introduced into literature in 1958 by Homans (1958). SET focuses on interpersonal interactions and how they are influenced by the perceived risks or benefits of engaging (Braithewait & Schrod, 2021). Nickerson (2022) reiterates this further in saying human behaviour can be explained with a cost-benefit analysis where the benefits can be tangible or abstract in nature, and withholding these rewards or punishments can create negative behaviour. These rewards in a work context include incentives and bonuses linked to performance, whilst punishments can be perceived as disciplinary actions and even dismissals.

Social Exchange Theory (SET) has been widely recognised as a useful tool in organisational behaviour (Cropanzano & Mitchell, 2005). This theory then becomes an important basis in understanding behaviour in the workplace by individuals and teams. The main principle of SET is that in the natural progression of relationships, trust, respect, and loyalty develop over time, and it's these aspects that then contribute to how individuals conduct themselves around their peers in society, organisations and work teams (Cropanzano & Mitchell, 2005).

The theory's main constructs of trust and reciprocity shape interpersonal behaviour. When looking at reciprocity in terms of interdependent exchanges, we find that the actions of one party lead to a response from another party; this exchange is not bargained for and is the basis for the initial formation of a relationship (Cropanzano & Mitchell, 2005). Cropanzano et al.(2017) describe social exchanges as starting with the actor (initiator) and the target (recipient). The initiated action of the actor can either be positive or negative; positive actions are associated with organisational support, while negative ones may be bullying or abusive supervision (Ahmad et al., 2023).

These exchanges amongst individuals can be described as active exchanges, which are visible, or inactive exchanges, which are less visible and are often referred to as psychological exchanges (Ahmad et al., 2023). The quality of exchanges then relies on the relationship between the parties. The quality of the relationship, in turn, relies on the PS of the parties, and if they feel safe engaging and taking interpersonal risks in such engagement. What the target perceives as benefits or risks that may flow after engaging has a large impact on the decision to engage and how to do so. What has often been observed is that inactive exchanges are commonly associated with negative behaviour and tend to be destructive rather than constructive (Ahmad et al., 2023). These exchange dynamics make it so much more important to better understand the PS of individuals within teams and organisations, especially where inactive exchanges are prevalent.

This theory relates to psychological safety because of the cost-benefit element that shapes the behaviour, where individuals fearing rewards being withheld or even being punished may affect their interpersonal risk-taking abilities to engage. Human beings have behavioural differences because of individual and cultural differences, making relationships and exchanges amongst people quite complex (Ahmad et al.,

2023). These exchanges can be that much more complex in working environments amongst co-workers and even more so between leaders and subordinates. Nickerson (2022) affirms this by adding that relationships are made up of specific power dynamics that may create negative impressions and behaviour, such as when an employer has the power to punish or reward, which ultimately influences performance.

In the healthcare industry context of psychological safety and performance, this theory lays the foundation for understanding behaviour in the workplace, especially where it involves inactive exchanges. The importance of exploring this understanding is also emphasised by Cropanzano and Mitchell (2005) as they highlight the need for further research on exploring the impact of social exchanges in teams and organisations. Inactive exchanges in healthcare can hinder performance and pose a risk to patient safety, making it imperative to understand this behaviour from a psychological safety angle to ascertain the degree to which error reporting and team learning may or may not happen because of negative cost-benefit analysis in exchanges.

2.2.2 Supportive Leadership Theory

The evolution of leadership theory has come a long way, with early perceptions being that leadership styles are situational and depend on the situation the leader finds himself in, and this perception later led to the birth of transactional leadership and transformational leadership (Khalid et al., 2012). This evolution eventually led to the path-goal theory, which highlights four leadership styles: directive, participative, achievement-oriented, and supportive leadership that can be applied in different situations (Khalid et al., 2012).

Supportive leadership is defined as when leaders prioritise the satisfaction and well-being of their subordinates by creating a psychologically safe working environment (Kim et al., 2021). Supportive leaders prioritise the preferences of their subordinates and seek to build psychologically safe organisations (Khalid et al., 2012). A supportive leader also influences how individuals within teams interact with each other; the interaction dynamic of a team is associated with the team's performance outcomes (Kim et al., 2021).

Khalid et al., like many other authors, recognise that workplace stress affects performance outcomes. Psychological safety of employees then becomes an integral part of leadership and ultimately for organisational performance. Organisational performance has been associated with employee voice behaviour many times. Jabbar et al. (2023) reiterate this sentiment, further stating that high-performance work systems (HPWS) indirectly affect voice behaviour, necessitating the need for supportive leadership as a moderator. This relationship is better illustrated by the theoretical model below in Figure 2.1 Jabbar et al. (2023).

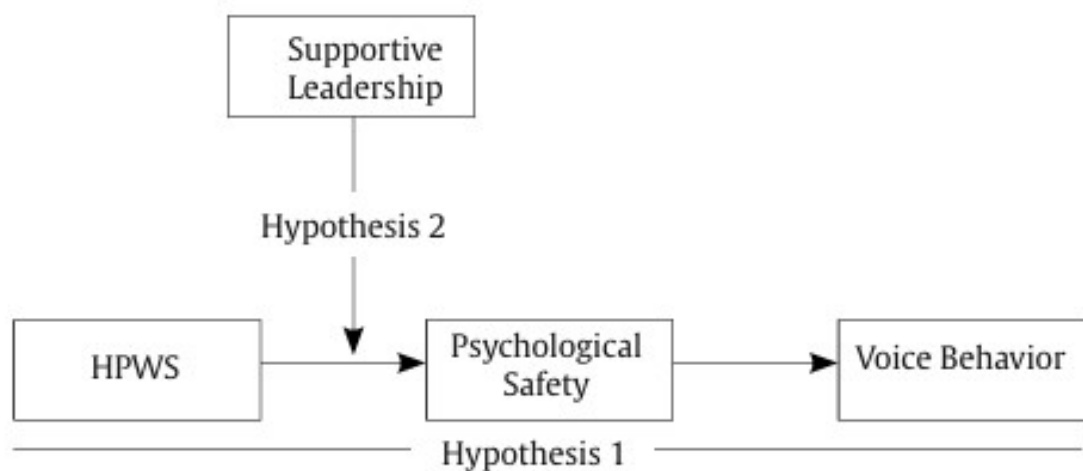


Figure 2.1: Theoretical Model

Source: Jabbar et al. (2023, p. x).

High-performance work systems tend to develop perceived psychological safety in organisations, and this is because employees view the use of these systems by the organisation as an active act to enhance psychological safety (Jabbar et al., 2023). High work performance systems that employees look out for are mainly human resource-related, anything from recruitment and selection policies to remuneration, rewards, job design, training and development and conflict resolution policies. Jabbar et al. (2023) argue that the presence of such systems creates a trust environment and thus positively influences voice behaviour.

Voice behaviour, particularly active voice behaviour, is widely recognised as positive employee engagement and is perpetuated by positive social exchanges within organisations, which are underpinned by social exchange theory (Jabbar et al., 2023). These positive social exchanges, as discussed under the SET section, rely

on trust relationships developed through leaders. Just as in the SET discussion, the leaders are a critical aspect in setting the tone. Grailey et al. (2021) elaborate further on this in the context of the healthcare industry, stating that the hierarchical leadership structures in the industry lead to low (PS), resulting in silent behaviour from junior clinicians.

By creating a supportive climate, leaders can encourage high-quality engagement within teams (Kim et al., 2021). Team engagement is crucial for team learning and ultimately enhances performance outcomes. Edmondson and Bransby (2023) reiterate this, stating that when PS is low, team members avoid risk-taking through challenging processes, leading to missed learning opportunities for the team. To this end, Andersson (2020) describes a positive relationship between team learning and PS.

2.2.3 Team Learning Theory

Schumutz et al. (2019) describe a team as a social work unit of two or more members who have unique characteristics such as shared values, interdependencies, defined roles and may be multidisciplinary. Edmondson and Harvey (2025) conceptualise team learning as a process rather than an outcome. They define it as a series of activities teams use to develop and process knowledge and enable problem-solving (Edmondson & Harvey, 2025).

There is also a distinction that can be drawn from where team learning occurs; team learning can either be internal or external, where internal team learning refers to the learnings that come from interactions between team members within the team, while external team learning refers to team members' interactions with non-team members or between the team and the environment (Edmondson and Harvey, 2025). Team learning as a process can then be linked to what Schumutz et al (2019) describe as teamwork being a process made up of processes among team members that involve integrating diverse resources to tackle tasks. We can therefore say that team learning is the team's activities and interactions (teamwork) that are engaged in order to complete tasks and problem solve, thus leading to team performance outcomes.

Team efficacy is believed by other researchers to be determined by organisational or structural features such as well-constituted or well-designed teams and availability of required resources (Edmondson, 1999). This definition of team performance is

anchored on external inputs that are made available to the team to enable performance. In contrast, other researchers focus on individuals' beliefs and their interpersonal interactions and how those influence learning behaviour (Edmondson, 1999).

In today's dynamic business environment, teamwork and collaboration in the workplace are crucial for building thriving organisations. This also applies to organisations with segmented operations, as even in such organisations, there are smaller working teams and some levels of integration with other operational teams. This is particularly important in healthcare, where teams must work across and integrate multi-disciplinary teams, where each professional's individual skills and knowledge are critical for performance.

Sharing information amongst team members or across teams broadens knowledge, facilitates skill transfer, and fosters not only a problem-solving environment but also an innovative environment where new ideas flow (Erdogan et al., 2020). Patil et al. (2023) highlight that, for teamwork and collaboration to thrive in the workplace, employees must feel safe to communicate their ideas and take risks, fostering a learning environment through engagement. Psychological safety is a critical factor in increasing team learning.

Leaders play a crucial role in information sharing and, ultimately, in the team learning that happens in the teams they manage. Just as in the SET and supportive leadership discussion, team learning theory draws from a leader's qualities and abilities to create enabling environments where problems are easily identified through high awareness and can be solved through team engagement (Erdogan et al., 2020). Weller et al. (2014) reiterate this by stating that hierarchical structures in healthcare, in particular, tend to be a psychological barrier to effective communication.

Communication is an integral aspect of team learning; interactions within teams cannot be effective without communication (voice behaviour). In healthcare, communication failures amongst and between teams are often linked to adverse events (Hwang & Ahn, 2015). This supports earlier assertions that team efficacy, which stems from team learning, is often supported by the organisational structures. From the literature reviewed, there is a clear relationship between teamwork and team learning, and Edmondson and Harvey (2025) support this by stating that team

learning involves an integration and iterative process of knowledge sharing by teams in order to achieve performance goals.

Team learning, therefore, relies on well-established teams that are in an environment where leaders enable freedom for interpersonal risk-taking and voice behavioural activities that foster positive interactions in teams for knowledge sharing. Linking team learning back to psychological safety, as defined by Kim et al. (2020), as interpersonal risk-taking within teams and its influence on performance. Psychological safety has become a part of an organisational culture that encourages individuals to learn and innovate and has become a building block of organisational and team learning (Weiner et al., 2020).

2.3 Key Themes

In this section of the chapter, we identify and highlight the study's key themes and how they interlink to provide a cohesive understanding.

2.3.1 What is Psychological Safety?

Edmondson (1999) defined PS as the ability to speak up and engage in effective communication without fear or prejudice. This definition highlights a critical construct of PS: communication or voice behaviour. It is the feeling of being comfortable expressing oneself and freely advocating one's concerns and mistakes, without shame, ridicule, or judgment (Torralba et al., 2020). Psychological safety focuses on an individual's behaviour in relation to others and sets the tone for the quality of interactions between that individual and others within the team. Again, it is essential to note that PS differs from team cohesion; PS encourages differences of opinion within teams to foster team learning and is not solely focused on unity, whereas team cohesion is about the team being in unison and agreement (Fransen et al., 2020). Kim et al. (2020) describe PS as the core driver of performance, not just an enabler.

Over time, the concept of PS within team settings gives rise to team psychological safety (TPS), which is then further defined in the context of teams. Schumutz et al. (2019) define a team as a social work unit comprising two or more individuals. A shared sentiment in team settings is that team settings safely allow interpersonal risk-taking and foster cause-and-effect learning behaviour and performance (Kim et

al., 2020). Edmondson (2003) recently described PS as the degree to which employees perceive their working environment as conducive to taking risks.

Psychological safety is now further described as a dynamic team-level phenomenon characterised by mutual feelings of safety within the team, allowing team members to take interpersonal risks (O'Donovan et al., 2020). As found by Kolbe et al. (2020), organisational behaviour research indicates that PS operates at three levels: individuals, teams or groups, and the organisation, as shown in Figure 2.2. Figure 2.2 below is a layered representation where PS culture at the organisational level sets the tone as an overarching structure, the next level represents teams and groups within the organisation influencing team member interactions, and the final layer is the individual experience of PS within the team and the organisation at large (Kolbe et al., 2020).



Figure 2.2: Antecedents of Psychological Safety

Source: Kolbe et al., (2020)

Teams with a high level of PS have effective processes driven by mutual performance monitoring, trust, decision-making, and team cohesion (O'Donovan et al., 2020). However, PS differs from team cohesion, which is defined as a process or situation where individuals in groups pursue goals in unity, where there may be tendencies to conform and exhibit groupthink, which contrasts with teamwork within a high PS context, where teams encourage interpersonal risk-taking and even disagreements (Fransen et al., 2020). What today's ever-changing business environment requires for thriving workplaces is innovation, and this innovation flows from new ideas and perspectives from all. In an organisation with PS, this is present through positive voice behaviour and engagement.

Psychological safety has a few constructs, one of which is interpersonal trust, which is generally associated with trust and giving others the benefit of the doubt, while interpersonal trust within PS understanding is a feeling of perceived trust received (Fransen et al., 2020). The key difference is the direction of the construct, whether it is given to others as referred in general terms or as per the PS definition, is perceived to be received from others (Fransen et al., 2020).

O'Donovan and McAuliffe (2020) note that the opposite of an environment with high PS levels is one in which low PS levels hinder the ability and courage to voice or engage, resulting in silent behaviour. The implication is that low levels of PS create an environment in which individuals may choose silence rather than voice their concerns (McAuliffe, 2020). It is with that premise that O'Donovan and McAuliffe (2020) focused their study on educational interventions to encourage PS within voice behaviour or engagement, as an important construct of PS.

The concept of PS emerged about 50 years ago in the organisational science field, and recently, empirical research has advanced the understanding of PS (Kim et al., 2020). In the 1990s, there was a renewed interest in PS research, driven by the recognition of the challenges posed by uncertainty and environmental change (Edmondson & Bransby, 2023).

In 1990, William Kahn brought PS to the modern era by studying a summer camp and an architecture firm to ascertain the connection between psychological safety and engagement. From that study, Kahn argued that PS helps individuals express themselves physically and emotionally, and engage cognitively, rather than withdrawing (Edmondson & Bransby, 2023). From these early studies of PS, the

concept evolved into a part of organisational culture that encourages individuals to learn and innovate and has become a building block of organisational learning (Weiner et al., 2020). Edmondson and Bransby (2023) reiterate this by stating that organisational behaviour is linked to organisational change and that PS is important for creating security and capabilities that enable change.

2.3.2 Psychological Safety in Healthcare Teams

This section examines several factors and events that make PS a crucial construct in healthcare. We first examine the recent COVID-19 Pandemic and its lingering effects on the healthcare industry. We also look at teamwork and performance amongst healthcare teams, then explore voice behaviour and error reporting, and the role of leaders and hierarchical structures in organisations. These themes will shape the components explored in the field, helping to develop and answer the research questions posed and contribute to solving PS as a business problem in healthcare and its impact on team performance and patient safety. Research on PS has focused chiefly on learning behaviour, satisfaction, leadership, and performance behaviour within workplaces, and in this study, we highlight each of these aspects and their linkages (Lee, 2021).

2.3.2.1 COVID–19 Effects on Healthcare Workers

The COVID-19 pandemic was an unprecedented disruption to the entire world, affecting every country and going beyond being a biological crisis. Due to its lasting effects and containment measures, it threatened the psychological well-being of many, especially healthcare workers (Ornell et al., 2020). As frontline workers, healthcare personnel were at the forefront of the devastation caused by the pandemic, making them vulnerable not only to contracting the virus but also to the emotional and mental strain of handling patients affected. Unexpected crises and workplace changes can affect employees' emotional behaviour and responses due to uncertainty. Work teams and organisations have to ensure the right processes are in place to mitigate the unknown. Interpersonal trust and communication, however, encourage a sense of stability and a safety net (Lee, 2021).

Pandemics are generally followed by psychosocial impacts, resulting in anxiety, stress and depression (Ornell et al., 2020). These changes in behaviour affect the PS of individuals, creating concerns as PS is an important factor in work teams and in organisations, especially post-pandemic, as they navigate a new dynamic environment (Edmondson & Bransby, 2023)

With the recent COVID-19 pandemic, healthcare workers globally have experienced significant additional emotional strain associated with unclear treatment protocols, a rise in medication errors, and other serious incidents that affect patient safety (Rangachari & Woods, 2020). The uncertainty presented by COVID-19 has affected the PS of healthcare personnel. During these periods of crisis and uncertainty, such as the pandemic, PS is vital as an enabler for individuals in organisations to learn and adapt (Weiner et al., 2020). Increased stress affects employees' turnover intentions, and this feeling can be managed through tools that enable employee expression and engagement, thereby creating a psychologically safe environment (Sobaih et al., 2022). The pandemic has highlighted the need for healthcare organisations to prioritise PS for healthcare professionals now more than ever, not only for their own sake but for the patients they serve. Psychological safety, as observed in the studies, has since 2021 served as a buffer against burnout, especially in resource-constrained contexts such as South Africa.

2.3.2.2 Teamwork, Performance and Error Reporting

Teamwork is described by Schumutz et al. (2019) as the process by which team members interact to bring their skills and resources together to complete tasks. They go further to say that teamwork should not be confused with taskwork, which refers to what a team is doing and focuses on the nature of the work. In contrast, teamwork refers to how team members perform the work and focuses on their interactions with one another in carrying out a task (Schumutz et al., 2019).

O'Donovan and McAuliffe (2020), using surveys, interviews, and observations of different healthcare teams, found that not only did the levels of PS differ from team to team, but also within the same teams; the results varied depending on the methods used. What was observed and what was questioned in interviews regarding voice behaviour differed. There was difficulty in ascertaining the reasons why some

individuals exhibited silent behaviour in team meetings (O'Donovan & McAuliffe, 2020). Voice behaviour among healthcare workers is an indicator of whether critical reporting is occurring. In studies conducted in the United States to identify barriers and facilitators of PS, it was found that low PS manifested as possible clinician silence regarding adverse incident reporting (Remtulla et al., 2021). Jamal et al. (2023) further reiterated that PS is the basis of ensuring patient safety and implementing quality improvement.

The nature of healthcare makes it an environment that will always involve human error as an inherent risk; however, a PS environment that encourages shared learning through discussion can mitigate this risk (Jamal et al., 2023). Grailey et al. (2021) used various methods such as semi-structured interviews, surveys, observations, simulations and focus groups to assess the presence of low or high PS within healthcare teams (Grailey et al., 2021).

These studies yielded varying results, with some indicating a high presence of PS and others showing low levels. In the various studies by Grailey et al. (2021), 10 found that clinicians' low PS adversely affected patient safety, and nine reported a significant relationship between low PS of teams and their outcomes. These results align with those of O'Donovan and McAuliffe (2020) and Jamal et al. (2023), which suggest that healthcare teams exhibit PS levels that appear to have an adverse influence on team outcomes.

Edmondson and Bransby (2023) identified that levels of interpersonal risk-taking determine the degree of learning, innovation, and efficacy. As teamwork concerns how tasks are performed through interactions among team members, it therefore serves as an indicator of the quality of work output: the greater the quality of teamwork, the higher the quality of the work or performance. This notion re-emphasises the importance of relationships amongst team members and the interactions that flow from those relationships. These relationships and interactions tend to be challenging to manage, especially in multi-disciplinary team environments such as healthcare. Hwang and Ahn (2014) reiterate this, stating that perceptions of teamwork in the healthcare industry indicate that levels of teamwork vary across organisations and even within teams.

The outcomes or performance of teamwork in the healthcare industry can be seen in the patient outcomes. Poor teamwork in healthcare has been identified as a

common cause of clinical errors, and other researchers have suggested that effective teamwork positively influences healthcare teams' performance with regard to patient outcomes and patient safety (Hwang & Ahn, 2014).

The patient outcomes we focus on in this study are clinical errors and other adverse events that may cause patient harm. Clinical errors can either be the commission of certain acts that lead to harm or the omission of tasks that would have prevented harm or enhanced patient outcomes (Hwang & Ahn, 2014). Garrouste-Orgeas (2012) further elaborates on this explanation of clinical errors, adding that clinical errors, whether omission or commission, are unintentional and can occur at any stage of the patient's journey, meaning they are not the result of criminal intent to cause harm. Clinical errors and adverse events differ in that a clinical error may or may not lead to an adverse event, such as a wrong diagnosis or a medication error (Garrouste-Orgeas, 2012). Adverse events are injuries resulting from medical interventions. They can consist of death, disability, prolonged length of stay, other life-threatening conditions and even near misses where adverse events are neutralised or mitigated before they occur (Garrouste-Orgeas, 2012).

So the performance of a healthcare team will depend on patient outcomes with minimal medical errors or adverse events. The challenge in measuring this performance is presented by the likelihood or intent to report these adverse events and errors. There are many mechanisms to detect medical errors and adverse events. However, voluntary reporting is often relied upon, while omission-related errors are best detected by observation at a patient's bedside and can mostly be mitigated as near misses rather than actual errors (Garrouste-Orgeas, 2012).

Voluntary reporting of medical errors and adverse events relies on healthcare staff's freedom to communicate and their voice-behaviour. Nurses, as the clinicians who spend the most time with patients, play a critical role in reporting medical errors, whether procedural or human; however, over time, nurses have been observed to avoid reporting these occurrences (Chatziioannou et al., 2025). Voicing suggestions and concerns is an important component of teamwork, especially in high-stakes, volatile environments. Environments like healthcare, where 80% of reported medical errors and adverse events are due to poor communication (Weiss et al., 2016).

Silence in the context of patient safety is defined as intentionally not verbalising information or opinions that could enhance patient safety (Chatziioannou et al.,

2025). Silence among healthcare workers is counterproductive, undermines the patient care process, and can lead to medical errors and adverse events (Chatziioannou et al., 2025). Chatziioannou et al. (2025) go further to identify several factors for being the root of the silence, such as lack of confidence, not feeling safe to do so, available resources to effect change, actions or lack thereof of supervisors with previously reported occurrences. Weis et al. (2016) identify the reasons for this silence among healthcare workers as fear of breaking relationships, lack of assertiveness, and lowered PS.

Speaking up and voice behaviour are interpersonal risks that PS enables. When individuals within teams feel psychologically safe, they are more likely to take interpersonal risks to engage in positive voice behaviour (O'Donovan & McAuliffe, 2020). Speaking up by healthcare professionals means raising concerns about patient safety when identifying risky actions of others, such as errors and poor clinical judgments, but unfortunately, research has found that in healthcare, those who speak up are often ignored, or others do not speak up at all (Okuyama et al., 2014).

In the absence of voluntary reporting from healthcare professionals, whistleblowing by others becomes the next viable measure to detect medical errors and adverse events. An environment that is perceived as safe for whistleblowing heavily relies on leadership behaviour, and to this end, Chatziioannou et al. (2025) believe that certain leadership styles can mitigate silence behaviour. Empowering leadership where power is shared with and sometimes transferred to subordinates helps junior employees to perceive the work they contribute as meaningful (Chatziioannou et al., 2025). When employees have this perception of their work environment, it enables expression, which can come in the form of error reporting or whistleblowing.

Different team contexts across various sectors have proven that individuals in teams, regardless of the level of speciality or expertise, need more than their professional skills to create an effective team; more was required from a behavioural perspective (Fransen et al., 2020). This highlights the importance of PS, as part of behavioural sciences, and it focuses on human behaviour and how it impacts performance and natural responses to everyday problems (Kim et al., 2020). Kim et al. (2020) further reinforce the relation between interpersonal risk-taking as an indicator of PS and its influence on performance in their definition of PS as a feeling of safety to take interpersonal risks in team engagements when problem-solving.

High levels of PS enable teamwork by facilitating ease of communication, allowing team members to voice their contributions and concerns, thereby promoting team learning and performance (Torralba et al., 2020). Teams have been found to have better performance outputs than individuals, making teamwork within organisations critical for high performance and creating a sustainable competitive advantage (Kim et al., 2020).

In environments with high levels of PS, team members share a mutual interest and respect for each other's skills and capabilities, and this sentiment remains unchanged even when mistakes are made (Fransen et al., 2020). These environments echo what Torralba et al. (2020) refer to as team learning, where teams learn from both their skills and their mistakes. Studies have also asserted a high likelihood that safety climates within organisations and organisational performance are linked, illuminating the advantages of PS and its influence on work engagement and performance (Kim et al., 2020).

Self-Determination Theory states that people have three inherent needs that must be met for them to exhibit high-quality performance behaviours: competence, relatedness, and autonomy (Chatziioannou et al., 2025). These needs align with the definition of PS as an enabler of interpersonal risk-taking and of individuals feeling safe and comfortable to engage (Edmondson, 2019). Chatziioannou et al. (2025) support this notion by reporting that psychological empowerment mitigates work behaviours, and leaders help cultivate a culture of openness that encourages engagement, allowing team members to learn from one another.

There is a positive relationship between PS and learning behaviour, and how it influences innovation and knowledge for individuals and teams (Andersson, 2020). That means where PS is present, learning and knowledge sharing are present. Students, as they familiarise themselves with their new work environments as new professionals, not only acquire their skills and knowledge from the formal prescripts of their professional training and experience but also from what is called a 'hidden curriculum'. The hidden curriculum comprises the behaviour and language of their superiors, guided by the norms and values within that environment (Torralba et al., 2020). These norms and values shape organisational behaviour and the PS of teams and individuals, confirming the results of Kolbe et al. (2020), who found that PS manifests at three levels of influence: individuals, teams, and the organisation. The

hidden curriculum is moulded by organisational culture, leadership, and team dynamics, and by whether they create a conducive environment for learning.

Regardless of the level of expertise, professionals require more than just their hard professional skills to achieve efficacy; a behavioural perspective is also crucial for development and performance (Fransen et al., 2020). Learning relies on behavioural aspects of individuals and determines whether an individual's interpersonal risk-taking will allow them to share knowledge when they are the ones who have it or allow them to probe and ask superiors or team members when they are unsure. These behavioural aspects are linked to PS, which can influence behavioural outcomes such as a team's creativity and individual and team learning (Kim et al., 2020). Psychological safety also precedes voice behaviour and likely impacts error reporting and ultimately performance (Lee & Dahinten, 2021). Psychological safety mediates this relationship between behaviour and team performance (Fransen et al., 2020). We can therefore say that through PS, voice behaviour lays the foundation for team learning.

When PS is low or absent, individuals tend to avoid risk-taking engagement initiatives, such as speaking up and challenging different perspectives, thereby missing learning opportunities. With PS, outcomes such as error reporting can be predicted (Edmondson & Bransby, 2023). Given what has been observed over time, a culture of low PS leads clinicians to work in fear. They are unable to engage vocally, thereby limiting learning opportunities that can improve quality and ensure patient safety (O'Donovan & McAuliffe, 2020). O'Donovan et al. (2020) add that voice behaviour supports a learning environment for clinicians.

2.3.3 Patient Safety as a Performance Measure

Complexity in the healthcare industry, as well as the fact that a large number of patients are harmed each year during their hospital stays due to medical errors and adverse events (Edmondson et al., 2016). Over the past years, patient safety has increasingly emerged as a significant quality improvement target (Garrouste-Orgeas et al., 2012). Quality improvement targets are often translated into healthcare processes, which are then used as performance measures. There is a difference of perspectives when it comes to the relationship between quality and safety, but the

Institute of Medicine in the United States of America suggests that safety is crucial in delivering quality care (Jha et al., 2010)

Even with known targets, identifying appropriate measures to demonstrate quality of care is a challenge, particularly given the nature of the healthcare field, where individuals from a range of disciplines work together (Donnelly et al., 2019). The concept of safety in healthcare encompasses the care given to patients, patient satisfaction, clinician reactivity, and efficiency (Garrouste-Orgeas et al., 2012).

2.3.4 Organisational and Leadership Factors

Leaders, with their policies and procedures, are critical in developing cultures of high performance (Adair et al., 2022). PS exists in every organisation at varying levels, from individuals to teams, and many can be attributed to leadership behaviour, necessitating that leadership be trained and sensitised to PS (Edmondson & Bransby, 2023).

Healthcare working environments often have very defined hierarchical structures, which can contribute to communication breakdown within and between multidisciplinary teams (Grailey et al., 2021). Healthcare environments are now more than ever plagued with low PS amongst individuals and teams, which often results in silence from specific individuals who no longer voice concerns or contribute to solutions (O'Donovan & McAuliffe, 2020).

Often, due to the low PS levels caused by the hierarchical structures of the healthcare industry, junior professionals are not at ease communicating concerns or contributing innovative solutions to patient safety concerns (Grailey et al., 2021). Remtulla et al. (2021) reiterate the impact of healthcare workplace dynamics, adding that perceived power distance poses a barrier to effective communication, contributing to low PS and increased risk of non-reporting of incidents that, in turn, ultimately endanger patients.

Good leaders are able to foster team cultures where members tend to prioritise the team's best interests over their own, while maintaining an environment that is safe for engagement and the expression of personal opinions (Fransen et al., 2020). Healthcare workers sometimes engage in particular unprofessional behaviours,

aside from those of vocal behaviour noted by O'Donovan and McAuliffe (2020), that directly affect the teams and individuals' PS and present a risk to patient safety; these behaviours include actions that sometimes specifically affect team members emotionally. Intimidation, humiliation, shouting, lack of trust, and insubordination are some behaviours that disrupt teams, causing low PS and may adversely affect patient outcomes (Jamal et al., 2023).

2.3.5 Linking Psychological Safety to Patient Safety

Psychological safety is often assumed to be the key to improving patient safety outcomes; however, recent literature warns of a safety paradox. This paradox can be observed in that psychologically safe teams report more errors than teams that are not psychologically safe, often because psychologically safe teams have a higher reporting probability, not because they commit more errors. Consequently, as noted by Montgomery et al. (2025), the correlation between PS and patient safety performance can sometimes be weak, suggesting that the true value of PS lies in the team's ability to learn from errors rather than in their absence; this is the mediating factor this study seeks to explore.

2.4 Chapter Summary

From a review of these studies on PS levels in healthcare teams, it is apparent that there may be a link between low levels of this PS and adverse patient outcomes. This link flows from the interconnectedness of the four themes or constructs, which can be depicted in the model shown in Figure 2.3 below.

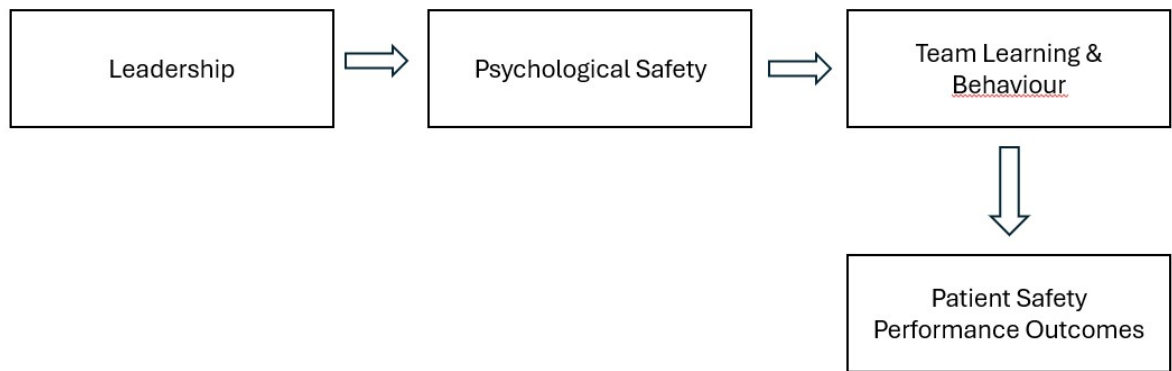


Figure 2.3: Model on the Psychological Safety Impact on Patient Outcomes and Patient Safety

Source: Author's own.

The model depicts how certain leadership styles should create and foster a psychologically safe environment that then leads to improved individual and team behaviour that enables team learning. In a team-learning environment within the healthcare industry, what is expected to flow from it in terms of performance is better patient outcomes, increased patient safety, and a reduction in adverse events.

Chapter 3: Research Questions and Hypotheses

3.1 Introduction

In this chapter, we outline the propositions that emerge from our formulated model, which draws on our review of the relevant literature. The model presents four elements from which the four propositions flow.

Based on the literature review and the model, the following four propositions emerged as critical to the purpose statement and the research problem identified in the study's title.

3.2 Study Propositions

This study aimed to explore the following propositions:

- P1. Inclusive leadership and supportive leadership practices positively influence psychological safety within healthcare teams.
- P2. Psychological safety positively influences team learning behaviours in healthcare teams.
- P3. Team learning behaviours positively influence patient safety performance outcomes.
- P4. Psychological safety positively influences patient safety performance.
- P5. Team learning behaviours mediate the relationship between psychological safety and patient safety outcomes.

The core constructs identified are as follows:

- Leadership is the antecedent.
- Psychological safety is the core variable.
- Team learning behaviours is the mediator.

- Patient safety as a performance measure is the outcome.

The propositions can be linked to the study's key theoretical basis. Table 3.1 is a graphical summary of those links together with key literature references that support the identified constructs that make up our conceptual model.

Table 3.1: Linking the Propositions to the Theoretical Base

Proposition	Key References	Theoretical Base
P1 Leadership and Psychological Safety	Cropanzano et al. (2017) & Cropanzano & Mitchell (2005)	Social Exchange Theory and Team Learning Theory
P2 Psychological Safety and team learning	Kim et al. (2021) & Edmondson (1999)	Team Learning Theory
P3 Team learning and patient safety	Kim et al. (2021) & Kim et al. (2020)	Team Learning Theory
P4 Psychological safety and patient safety	Jabbar et al. (2023) & O'Donovan and McAuliffe (2020)	Team relationships and safety behaviour
P5 Team learning behaviour mediating the relationship between psychological safety and patient safety	Edmondson (1999)	Team Learning Theory

Source: Author's own.

The independent variable, psychological safety, is made up of a belief that individuals in teams feel safe to take interpersonal risks, which is to speak up and engage, as learned from Team Learning Theory. The mediating variable was identified as team learning behaviour, which focuses on openness to communication, reporting errors, problem-solving through collaboration, and learning from near-miss discussions. The moderating variable is the leadership inclusiveness or hierarchical structures. This study examines the strength of the relationship between psychological safety and team learning behaviour, suggesting that when leaders demonstrate openness and promote autonomy, team members are more likely to act on psychological safety by engaging in learning behaviours.

Propositions express the theoretically expected relationships between constructs based on the conceptual framework. However, to empirically test relationships, we must operationalise the propositions into testable measures by deriving hypotheses from each.

3.3 Study Hypotheses

The hypotheses to be tested for this study are therefore as follows:

H1: Leadership inclusiveness is positively associated with psychological safety.

H2: Psychological safety is positively associated with team learning behaviours.

H3: Team learning behaviours are positively associated with patient safety performance.

H4: Psychological safety is positively associated with patient safety performance.

H5 (Exploratory): Team learning behaviours mediate the relationship between psychological safety and patient safety performance.

3.4 Chapter Summary

These propositions will provide insight into the possible relationship between PS and performance, particularly regarding patient outcomes and patient safety. This will guide future development of industry-specific interventions that address the research problem stated in the chapter.

Chapter 4: Research Methodology

4.1 introduction

The research design section of this paper outlines the direction of the research, first examining the research paradigm by looking at the design adopted, the philosophy followed, the approach selected, the methodological choice, the strategy to be employed, and the timing of the research data collection. This chapter goes further to define the population we focused on, the units of analysis, the sampling method and sample size, the measuring instrument used on the population, how the data were gathered, and how the quality of the collected data was assured. Based on the testing results, we provide feedback on the study's limitations to guide future research.

4.2 Purpose of Research Design

The research design was explanatory. Explanatory research seeks to further explore and explain causal relationships by assessing a problem alongside variables that may be associated (Saunders & Lewis, 2012). This study sought to examine and explain the causal relationships among leadership inclusiveness, psychological safety, team learning behaviours, and patient safety performance, consistent with Saunders and Lewis's (2012) prescriptions for explanatory studies.

In this study, the PS of clinicians was explored and evaluated against patient outcomes at varying levels of clinician PS. Explanatory research was appropriate because it goes beyond mere description and aims to understand the causal mechanisms involved (Saunders & Lewis, 2012). Grailey et al. (2021) established, through a review of 62 studies on PS and teamwork in healthcare from around the world, that there is an inferred correlation between low PS and the likelihood of patient harm, using semi-structured interviews and questionnaires. This inference, drawn from these studies, further underscores the importance of evaluating PS among healthcare workers, given the critical implications for patient outcomes (Grailey et al., 2021).

Given the limitations noted in the reviewed literature owing to case study strategies, as well as the unique healthcare environment in South Africa (O'Donovan & McAuliffe, 2020), it was necessary to further explore these inferences within a South African, and more specifically, a peri-urban context. As reiterated by the World Health Organisation, 2.6 million patient deaths in low-income countries annually are attributable to adverse events that could have been avoided (World Health Organisation, 2021). Further research into the inferred causal association of patient harm due to PS is important.

4.2.1 Research Philosophy

A research philosophy refers to the beliefs and assumptions researchers draw on in their endeavour to develop or further knowledge in their chosen field (Saunders & Lewis, 2012). There are three main category assumptions described by Saunders & Lewis (2012) that will influence how a researcher structures their study, namely ontological, epistemological, and axiological assumptions. Ontological assumptions influence your perceptions of your study objects or subjects; epistemological assumptions are rooted in proven knowledge and in what the researcher perceives as credible knowledge; and axiological assumptions refer to values and ethics that researchers employ throughout the research process (Saunders & Lewis, 2012).

This study adopted a positivist philosophy, aiming to establish a structured, objective understanding of the PS of healthcare professionals and its impact on patient outcomes. Positivism was appropriate for this research because it involves measurable constructs, such as the number of reported adverse incidents and levels of PS, which can be analysed systematically (Creswell & Creswell, 2023). This is the best philosophy for research studies that seek to measure the relationship between variable objectivity, as it assumes that reality is stable, observable and measurable through empirical methods. A positivist approach allows for the use of standardised instruments, statistical analysis and hypothesis testing. The constructs identified in this study aligned with this approach, as PS, team learning behaviours, leadership inclusiveness, and patient safety are all quantifiable. This research philosophy is also supported by empirical studies in healthcare safety and organisational behaviour, some of which were explored in the literature review as they employ the use of survey

methodologies and inferential statistics to establish causal or correlational relationships.

4.2.2 Research Approach Selected

For this research, a deductive approach was used. A deductive approach to theory development was used to explain the causal relationship between PS and its impact on patient outcomes. The deductive approach is a top-down approach in which a researcher starts their study with an established theory and seeks to test hypotheses using appropriate research strategies (Saunders & Lewis, 2012). The study began with established theory and sought to test hypothesised relationships using empirical data.

The research was built on existing theoretical frameworks, including Team Learning Theory and Social Exchange Theory, from which a conceptual model and hypotheses were developed. In line with the deductive approach, data were collected using structured, quantitative instruments to test the hypotheses and to confirm, refine, or challenge existing theoretical relationships within the context of healthcare teams and patient safety performance. The literature reviewed also revealed an inferred association between low PS and adverse patient outcomes that affect patient safety (Grailey et al., 2021). O'Donovan and McAuliffe (2020) also observed that low PS in healthcare teams led to silent behaviour that hindered shared learning and increased the risk to patient safety, a notion in line with the Team Learning Theory.

The propositions were derived from the model developed after review of existing theory (Saunders & Lewis, 2012). In this study, the propositions were derived from established theories of low PS's influence on patient outcomes by Grailey et al. (2021) and O'Donovan and McAuliffe (2020), as well as from the model derived from those theories and the literature reviewed. Secondly, because propositions express the theoretically expected or perceived relationships between constructs, to empirically test these relationships within a positivist, explanatory research design, the propositions were operationalised as hypotheses for statistical testing with measurable variables (Saunders & Lewis, 2012).

Deductive research uses structured quantitative data collection from validated scales, survey-based research and statistical testing such as correlations, regression, mediation and moderation. Saunders and Lewis emphasise that the deductive approach aligns with structured questionnaires, quantitative measurement and statistical analysis.

Data was collected from the operationalised propositions that led us to hypotheses using the chosen research strategy, then analysed to determine a causal relationship (Saunders & Lewis, 2012).

The research methodological choice is dependent on the stage the research is in; in this instance, the study was deductive in nature, drawing from established theory, and it also depends on the research questions, which indicate what is being explored (Saunders & Lewis, 2009). The methodological choice that was followed was mono, meaning one method was used, and it was quantitative data collection, which is the data collection using surveys and analysed with quantitative software or Microsoft Excel. O'Donovan et al. (2020), in a study measuring PS, using observations and an adapted survey (that was developed together with healthcare workers), found that the adapted survey component of the data collection was valid as it was more relevant and accurate.

According to the deductive approach, as outlined by Saunders and Lewis (2009), a quantitative data collection method, such as surveys or questionnaires, is more effective for exploring and testing causal relationships. This adapted survey, a quantitative method, can be replicated for other healthcare teams outside the Netherlands and Ireland in future studies and can address limitations in sample size (O'Donovan et al., 2020). This quantitative method was relevant for measuring levels of PS in peri-urban South Africa, as levels differ across teams and environments, as reiterated by Grailey et al. (2021).

4.2.3 Research Strategy

A case study strategy will be used, focusing on an acute private hospital in Mpumalanga, South Africa, in the peri-urban town of Mbombela. Case studies enable a comprehensive analysis of PS in a real-world setting, where triangulation of data

sources can enhance the reliability of the research (Yin, 2018). Case study strategy is ideal for answering research questions that ask 'What?' or 'How?', which align with an explanatory research design (Saunders & Lewis, 2012). Triangulation is the use of two or more data sources to confirm data collected and thereby increase the reliability and credibility of the results (Saunders & Lewis, 2009). In this study, data triangulation was used by collecting data from multidisciplinary professionals across different hospital units or wards and during different shifts.

Case studies are ideal for studies seeking to understand certain social behaviours within specific contexts (Saunders & Lewis, 2012). This reiterates the appropriateness of using this method to address the study's purpose and research questions, which are specific to a South African peri-urban hospital context.

4.2.4 Time Horizon

The time horizon of the research refers to the period during which the study was conducted, whether over a set period or a specific time (Saunders & Lewis, 2012). The study was cross-sectional, as data were collected at a single point in time, allowing data to be collected from multiple groups (Saunders & Lewis, 2012). This approach was appropriate for assessing the current state of PS and its effects on patient safety outcomes, as documented in adverse event or incident reports, in a South African peri-urban hospital. Observing changes over time (longitudinal) was not within the scope of this study, as no interventions were put in place or tested to assess their influence on the variables, PS of healthcare workers, and patient safety.

4.3 Population

Population relates to an entire group from which a relevant sample is then derived (Saunders & Lewis, 2012). The target population for this study was all healthcare staff and professionals within a private hospital in the Mpumalanga province of South Africa, a peri-urban town. Healthcare staff and professionals in this study included clinicians with a direct impact on patient outcomes, specifically nursing staff, pharmacy dispensing staff, doctors, and allied professionals such as dietitians and physiotherapists. These healthcare workers constituted the targeted population, a

more defined subpopulation within the larger population of healthcare workers, both clinical and non-clinical, from which the sample was extracted (Saunders & Lewis, 2012). Grailey et al. (2021) also used healthcare as a first criterion for PS studies worldwide, rejecting any studies that did not meet that criterion (O'Donovan & McAuliffe, 2020).

This population was suitable as it also resembled that of a study on PS in healthcare conducted in hospitals with healthcare teams in the Netherlands and Ireland by O'Donovan et al. (2020). In this study, the target population is the healthcare workers, specifically clinicians, who are employees of the hospital in the case of nursing and pharmacy staff, and non-employees in the case of doctors and allied professionals who hold admission and practice rights at the case study Hospital.

4.4 Unit of Analysis

The unit of analysis within the case study organisation was the various clinicians. Saunders & Lewis (2009) describe these units of analysis as logical sub-units and state that various such units can be used within case study strategy research. These units included healthcare workers directly involved in caring for patients across various nursing wards, pharmacists dispensing prescribed medications, and doctors and allied health professionals. The unit of analysis was a case study of an acute private hospital operating in Mpumalanga province, South Africa. This unit of analysis was again appropriate, as it resembles that of a study of PS in healthcare conducted in hospital teams in the Netherlands and Ireland, where multidisciplinary clinical and management teams and unidisciplinary nursing teams were used (O'Donovan et al., 2020).

4.5 Sampling Method and Size

Probability sampling was used in his study. Probability sampling is applicable when a researcher can obtain a complete list of the target population and thereby randomly select a sample from that list (Saunders & Lewis, 2012). Although a probability sampling strategy was initially considered to ensure proportional representation across professional groups, it was not feasible given the practical and ethical requirements for anonymous, voluntary participation. Instead, non-probability

sampling was used, with clinical staff and professionals at the selected study hospital invited to participate. This aligns with Saunders and Lewis (2012) as they note that when participation is voluntary and anonymous, researchers cannot control the probability of selection even if the entire population was invited. The anonymous online survey was distributed through the hospital's internal communication channels to all eligible personnel.

The sample comprised 75 healthcare workers across different professions and hospital departments, of whom one respondent chose not to continue with the questionnaire. The 75 represents the number of clinicians who chose to participate during the data collection period. The sample size of 75 was drawn from an average population of 166, yielding a response rate of approximately 45%. Even though this may constitute a substantial proportion of the hospital's healthcare staff and professionals, statistical power is determined primarily by the absolute sample size rather than the percentage of the population who responded to the survey. While the sample size of 75 is relatively low compared to the total population, the adequacy of the sample for the statistical model used (PLS-SEM) was tested (Kock & Hadaya, 2018). Post-hoc power analysis in chapter five yielded a statistical power of 0.998, which is well above the 0.080 recommended by Jhantasana (2023). This statistical power confirms that the sample size, though small, is sufficient to detect the effects within the structural model without Type II errors.

According to Cohen (1988), detecting medium-sized correlations with 80% power at a 5% significance level typically requires samples of approximately 85 respondents. With a sample size of 75, the study retains acceptable power to detect medium-to-large effects, although its ability to detect minor effects is limited. This sample size is also suitable for multiple regression analysis involving a small number of predictors. The mediation and moderation analyses, however, require larger samples due to the complexity of indirect effects. Monte Carlo simulations by Frits and Mackinnon (2007) indicate that detecting medium-sized mediation pathways typically requires 78-116 cases, while Aguinis et al. (2005) demonstrated that moderation effects often require larger samples. While mediation and moderation analyses were still conducted, those results are treated as exploratory. Figure 4.1 below shows the flow of the sampling process.

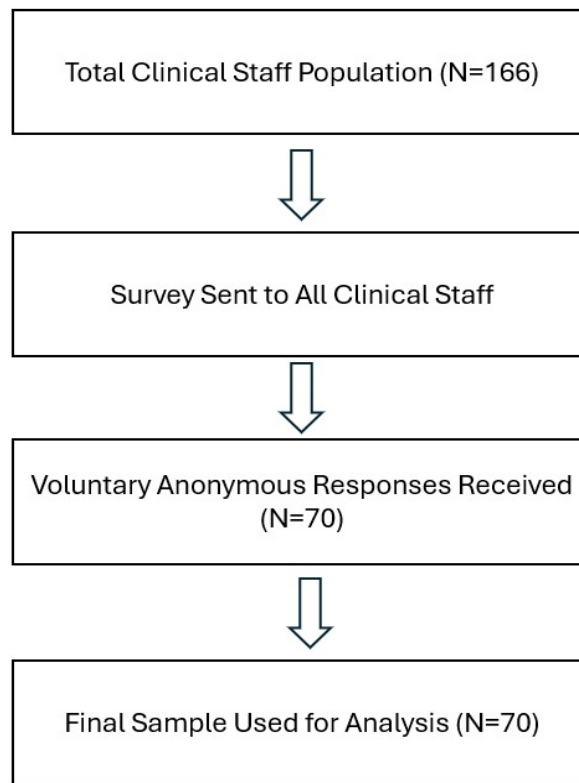


Figure 4.1: Flow of the Sampling Process

Source: Author's own.

4.6 Measurement Instrument

The study used a structured, self-administered questionnaire designed to assess psychological safety, team learning behaviours, perceptions of leadership support and team performance within a healthcare team context. The instrument was developed by adapting items from established psychological safety and team learning literature, particularly from Edmondson (1999), who developed the 7-Item Psychological Safety Scale, and tailoring them for this study. The questionnaire was administered as an anonymous online Google survey and sent as a link to all clinical personnel. The questionnaire consisted of closed-ended Likert-scale questions and one open-ended question. All close-ended questions used a five-point Likert response format (strongly disagree, disagree, neutral, agree and strongly agree).

The instrument consisted of six sections, the first was the professional grouping, which was one question asking respondents to indicate their professional category

as nursing staff, doctor, allied professional or pharmacy staff. The second section was about psychological safety and included multiple items assessing respondents' sense of safety, speaking up, asking questions, raising concerns, reporting errors, and feeling valued as part of a team. Several questions in the psychological safety section were also negatively worded to ensure respondents' answers were legitimate. Section three was about team learning and improvement, including information sharing, team reflections, and seeking new information. Section four was about leadership support questions, consisting of one question probing the role of team leaders in supporting learning and development. Section five was about team performance and outcome perceptions, with questions about the team's perceived quality and performance outcomes, including error frequency and meeting expectations. Section six was the open-ended question inviting further comments from respondents. A full copy of the questionnaire has been included in Appendix D.

4.7 Data Gathering Process

Since 2010, patient safety officers worldwide have used safety culture surveys to assess quality improvement (Adair et al., 2022). Anonymous online surveys were distributed individually to healthcare workers as a link within the case study hospital to assess their perceptions of PS. Surveys were conducted electronically, and links will be sent to relevant staff via SMS, email, and WhatsApp groups after an official memo is sent to all staff to sensitise them to the process. After opening, the survey first asked for voluntary consent to participate, stated the number of survey questions and the estimated time to complete the survey, explained the scale used to provide answers, and included a free-text question at the end.

4.8 Data Analysis Approach

Survey Data will be analysed quantitatively using descriptive and inferential statistics to explore a causal relationship (Saunders & Lewis, 2009). Survey data can be analysed using programs such as Microsoft Excel or statistical analysis software such as SPSS (Saunders & Lewis, 2012).

4.9 Data Assurance

4.9.1 Validity

When considering content validity, the survey questions were developed from and aligned with key dimensions of psychological safety, team learning, and team performance described in the literature, especially in Edmondson (1999). The questions capture core constructs such as voice behaviour in the sense of speaking up, asking for help, discussing mistakes, reflecting on work and perceived performance. The questions were written in clear business language used by the hospital and explicitly refer to everyday team interactions and work processes. This made the instrument understandable to clinical staff from diverse disciplines and backgrounds, thereby supporting its face validity.

When considering construct validity, the questionnaire is an adapted composite instrument rather than a direct application of a single validated scale, so construct validity was examined empirically by grouping items into conceptual subscales based on the theory and literature review (psychological safety and team learning behaviours; team performance perceptions). It was also examined by assessing internal consistency reliability (Cronbach's Alpha) for each subscale and finally by examining intercorrelation between subscales to ensure they related in theoretically expected directions, for example, higher psychological safety being associated with higher team learning and performance.

4.9.2 Reliability

Reliability was evaluated using Cronbach's Alpha for each of the three subscales: psychological safety, team learning and team performance. Alpha values of 0.70 or higher were considered acceptable for research purposes (Hair et al., 2021). The reliability coefficients will be reported in the results chapter.

4.9.3 Quality Controls

Triangulation was used to validate results. As stated by Yin (2018), triangulation in case studies strengthens the reliability of the research, especially in evaluating causal relationships. Reliability Testing was performed to ensure that the survey tools maintained internal consistency (Cronbach's $\alpha > 0.7$). Data was stored on a Google Drive cloud folder for any future reference.

4.10 Biases and Limitations

Biases and limitations in the sampling approach, given that they were based on voluntary participation, are:

- Self-selection bias: Respondents who chose to respond may differ in attitudes and experiences compared to those who did not respond.
- Non-response bias: Certain professional categories may have been over- or underrepresented.
- Lack of control on selection: Anonymity prevented tracking or stratifying responses by department or role beyond self-reported data.
- Common method bias: All data were self-reported in a single questionnaire; this may have inflated associations between variables. The inclusion of both positively and negatively worded questions helped to reduce respondents agreeing to everything.

Case study research methodology also presents limitations, as results may not be generalised beyond the selected case study hospital, as in O'Donovan and McAuliffe (2020), where mixed methods were used to explore PS to develop interventions. Yin (2003) also recommends using multiple case studies rather than a single case study to address this limitation. However, the time horizon for this study does not allow for expanding beyond the selected hospital. In case studies, time limitations and cross-sectional constraints become evident, making it difficult to establish long-term cause-and-effect relationships, as would be possible in longitudinal studies, as stated by O'Donovan et al. (2020).

4.11 Ethical Considerations

Ethical clearance for this study was obtained from the University of Pretoria's Ethics Committee prior to data collection.

Informed Consent – Participation in the study was voluntary. An electronic informed consent page was included at the beginning of the online survey, detailing the purpose of the study, the nature of participation, the expected time to complete the survey, and the right to decline participation even after opening the link. Consent was obtained when respondents selected “Agree” before proceeding to the questionnaire; no respondents were coerced or incentivised to participate.

Anonymity and Confidentiality – The survey was administered anonymously. No identifying information, such as employee numbers, email addresses or ward staff, was collected or stored. Responses could not be tracked back to individual staff members or units. All data were stored in encrypted, password-protected digital files accessible only to the researcher. Results were reported in aggregated form to ensure confidentiality.

Voluntary Participation and the Right to Withdraw – Respondents were informed that participation is entirely voluntary and that they could withdraw at any time before submitting the survey without penalty. Because the survey was anonymous, once submitted, individual responses could not be withdrawn.

Minimising Harm and Psychological Safety – The study posed minimal risk to respondents; however, some survey questions asked about workplace experiences, safety concerns and team dynamics, which may have evoked discomfort.

Protection of Vulnerable Groups – Clinical staff may be considered as a vulnerable group, so to mitigate this, the survey link was distributed via general communication channels rather than through the line managers. Therefore, managers do not know who participated.

Permission to Access the Research Site – Formal institutional permission was obtained from the CEO to conduct the study in the hospital. The researcher

complied with all facility-level protocols governing research involving staff and workplace processes.

Data storage, Management and Security – All electronic data was stored in secure, password-protected files. No paper copies were generated. Data will be retained for 10 years, as required by the Ethics Committee.

Ethical Use of Adapted Research Instruments – As the survey included adapted items from existing psychological safety and team learning literature, ethical responsibility was taken to ensure the instrument was appropriate, respectful and relevant to the clinical context. Questions were reviewed to ensure they do not include harmful, discriminatory, or invasive content. The instrument's adapted nature was also disclosed in this methodology chapter.

Avoiding Researcher Bias and Power Imbalance – The researcher did not hold a supervisory or managerial role over the respondents, reducing the risk of perceived power imbalance. The research design avoided direct contact between the researcher and respondents during data collection to maintain neutrality and minimise response bias.

4.12 Chapter Summary

The research methodology is appropriate to answer the identified research questions adequately for the context being focused on, as well as for the aim of research expansion in the field to assist in better understanding PS as a mediator for team performance and particularly patient outcomes in the healthcare field.

Chapter 5: Results of the Study

5.1 Introduction

This quantitative study examined how psychological safety in healthcare teams relates to team performance. This involves understanding the impact of leadership on psychological safety, which, in turn, affects team learning and behaviour, ultimately influencing team performance and patient outcomes in the health context. The analysis was conducted using 75 staff responses from an acute private hospital in Mpumalanga, South Africa. Initially, the data were analysed for missing values, and none were found (Appendix F). This was followed by an analysis of extreme outliers using a boxplot. Only one variable, VAR16, had three extreme outliers, which were removed. All box plots were acceptable, with values below 3 times the interquartile range (Appendix G). This led to the analysis of the standard method variance. A Harman's single-factor test was conducted to examine the potential for common method bias. An unrotated principal component analysis revealed one factor with an eigenvalue greater than 1. The first factor explained 40.39% of the total variance, which is below the recommended 50% threshold, suggesting that standard-method variance is unlikely to be a serious concern (Podsakoff et al., 2003). These data-quality analyses confirmed that the data were suitable for testing the hypotheses.

This chapter presents the analysis, starting with the demographic information of the sample, followed by the descriptive statistics, then the structural equation model with partial least squares (PLS-SEM) analysis, the confirmatory factor analysis with measurement model, and then testing the hypotheses as stated in Chapter 3, using outcomes of the structural model. These hypotheses can be recapped as follows:

H1: Leadership inclusiveness is positively associated with psychological safety.

H2: Psychological safety is positively associated with team learning behaviours.

H3: Team learning behaviours are positively associated with patient safety performance.

H4: Psychological safety is positively associated with patient safety performance.

H5: (Exploratory): Team learning behaviours mediate the relationship between psychological safety and patient safety performance.

This chapter closes with a summary of the results, which are discussed in the following chapter.

5.2 Demographic Information

The responses comprised four professional groups from the hospital as displayed in Figure 5.1. The majority of respondents were nursing staff (66.67%). Allied health professionals comprised 18.67% of respondents, followed by pharmacy staff (10.67%) and doctors (4.00%).

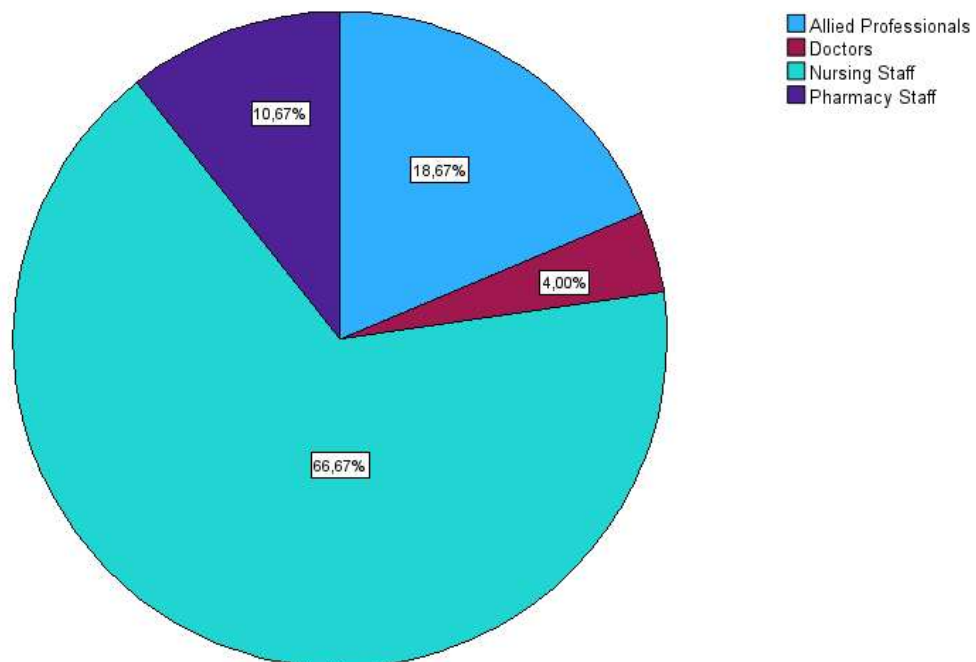


Figure 5.1: Demographic Information

Source: Author's own.

5.3 Descriptive Statistics

In the study, responses were collected using a five-point Likert scale. The scale ranged from 1 = Strongly Disagree to 5 = Strongly Agree, allowing respondents to indicate the extent to which they agreed with each statement. Descriptive statistics were used to summarise and interpret the dataset's characteristics (Field, 2020). There were 26 variables, of which 6 had negative values. These were VAR5, VAR9, VAR13, VAR15, VAR20, VAR220. Reverse scoring is an important technique used in survey research to ensure the accuracy, reliability, and validity of measurement instruments.

These statistics analysed the central tendencies using the mean and median as well as the variability and distribution of responses, which were measured with standard deviation, skewness, and kurtosis as displayed in Table 5.1. To assess the overall normality of the dataset, skewness and kurtosis values were examined for each item. Skewness values indicate the symmetry of the distribution, whereas kurtosis describes the extent to which the distribution is peaked relative to a standard curve (Field, 2020).

Table 5.1: Descriptive Statistics

Statement	Var#	Mean	Median	Std. Deviation	Skewness	Kurtosis
If I have a question or am unsure of something in relation to my role at work, I can ask my peers or team leader.	VAR2	4.27	4.00	0.949	-1.831	3.943
I can communicate my opinions about work issues with my peers or the team leader.	VAR3	4.01	4.00	1.033	-1.538	2.295

Statement	Var#	Mean	Median	Std. Deviation	Skewness	Kurtosis
I feel safe speaking up to my peers and the team leader when I make a mistake.	VAR4	3.75	4.00	1.067	-1.050	0.671
I can NOT propose new project ideas or procedural changes to my peers or team leader.	VAR5	2.51	2.00	1.190	0.503	-0.653
I feel safe speaking up about personal problems or disagreements with my peers or the team leader.	VAR6	2.80	3.00	1.208	0.208	-1.075
It is safe to take a risk on this team.	VAR7	3.03	3.00	1.078	-0.254	-0.735
I am confident my peers and team leader will value my opinions.	VAR8	3.52	4.00	1.143	-0.747	-0.124
It is difficult to ask other members of this team for help.	VAR9	2.44	2.00	1.244	0.574	-0.791
Team leaders encourage and support taking on new tasks or learning how to do things that have never been done before.	VAR10	3.52	4.00	1.178	-0.813	-0.341

Statement	Var#	Mean	Median	Std. Deviation	Skewness	Kurtosis
If I have a problem in this company, I can depend on my peers to be my advocates.	VAR11	2.99	3.00	1.236	-0.151	-1.065
If I don't understand something about my job or have a question, it's easy for me to ask for help.	VAR12	3.91	4.00	1.055	-1.158	0.924
If I see a colleague making a mistake, I DON'T feel safe speaking to them about it.	VAR13	2.51	2.00	1.057	0.334	-0.923
My team regularly takes time to find ways to improve work processes.	VAR14	3.55	4.00	1.211	-0.698	-0.478
I can NOT communicate my opinions about work issues with my peers.	VAR15	2.28	2.00	1.047	0.789	-0.060
I can make recommendations for new projects or changes in procedures to my peers.	VAR16	3.64	4.00	0.939	-1.413	1.857
I feel safe acknowledging when I've made a mistake.	VAR17	3.64	4.00	1.035	-1.025	0.605

Statement	Var#	Mean	Median	Std. Deviation	Skewness	Kurtosis
Someone in the team will ensure that we stop to reflect on the team's work process.	VAR18	2.84	3.00	1.151	0.104	-0.955
If I see a colleague making a mistake, I feel safe addressing it with them.	VAR19	3.44	4.00	1.130	-0.540	-0.652
My peers do NOT value my input.	VAR20	2.32	2.00	1.092	0.924	0.474
My team makes a concerted effort to share information.	VAR21	3.71	4.00	0.912	-1.024	1.578
In my team, mistakes are often held against you.	VAR22	2.48	2.00	1.201	0.529	-0.661
My team feels comfortable raising problems and tough issues.	VAR23	3.63	4.00	1.112	-0.843	-0.069
My team values and uses my unique skills and talents.	VAR24	3.65	4.00	0.979	-0.843	0.643
My team frequently seeks new information that leads us to make important changes.	VAR25	3.63	4.00	1.112	-0.722	-0.127

Statement	Var#	Mean	Median	Std. Deviation	Skewness	Kurtosis
The quality of my team's work is improving over time.	VAR26	3.65	4.00	1.059	-0.872	0.367
My team meets or exceeds its customers' expectations.	VAR27	3.75	4.00	1.015	-1.141	1.193

Source: Author's own.

The highest-rated item was VAR2, *"If I have a question or am unsure of something in relation to my role at work, I can ask my peers or team leader"* (M = 4.27, SD = 0.95; Median = 4.0). The distribution was negatively skewed (skewness = -1.83) with high kurtosis (kurtosis = 3.94). The second-highest score was VAR3, *"I can communicate my opinions about work issues with my peers or team leader"* (M = 4.01, SD = 1.03; Median = 4). Responses were negatively skewed (skewness = -1.54) and showed kurtosis (kurtosis = 2.30). The third-ranked item, VAR12, *"If I don't understand something about my job... it's easy for me to ask for help"*, showed M = 3.91 (SD = 1.06; Median = 4), with negative skewness (skewness = -1.16) and moderate kurtosis (kurtosis = 0.92). The fourth-ranked item was VAR4, *"I feel safe speaking up to my peers and the team leader when I make a mistake"* (M = 3.75, SD = 1.07; Median = 4), showing moderate negative skewness (skewness = -1.05) and low positive kurtosis (kurtosis = 0.67). The fifth-ranked was VAR27, *"My team meets or exceeds its customers' expectations,"* had M = 3.75 (SD = 1.02; Median = 4). Responses were negatively skewed (skewness = -1.14) with kurtosis (kurtosis = 1.19).

The lowest-rated mean was VAR15, *"I can NOT communicate my opinions about work issues with my peers"* (M = 2.28, SD = 1.05; Median = 2). The distribution showed positive skewness (skewness = 0.79) and near-normal kurtosis (kurtosis = -0.06), suggesting most respondents disagreed with this negative statement. The second lowest was VAR9, *"It is difficult to ask other members of this team for help"* (M = 2.44, SD = 1.24; Median = 2), with positive skewness (skewness = 0.57) and moderate negative kurtosis (kurtosis = -0.79). The third-lowest, VAR22, *"In my team, mistakes are often held against you"*, recorded M = 2.48 (SD = 1.20; Median = 2)

with positive skewness (skewness = 0.53) and slightly negative kurtosis (kurtosis = -0.66), again reflecting disagreement.

The fourth-lowest was VAR13, *"If I see a colleague making a mistake, I DON'T feel safe speaking to them about it"*, with M = 2.51 (SD = 1.06; Median = 2), showing positive skewness (skewness = 0.33) and negative kurtosis (kurtosis = -0.92), consistent with disagreement. The fifth-lowest, VAR5, *"I can NOT propose new project ideas or procedural changes..."*, had M = 2.51 (SD = 1.19; Median = 2). In general, skewness within ± 2 and kurtosis within ± 5 are considered acceptable indicators of normality (Field, 2020; Hair et al., 2021). In this dataset, the skewness and kurtosis values were within an acceptable range, suggesting that the data are normally or near-normally distributed.

5.4 Reliability of the instrument

Internal consistency reliability was examined using Cronbach's alpha for the full 26-item scale as displayed in Table 5.2. The scale demonstrated excellent reliability, with an overall Cronbach's alpha value above the commonly accepted threshold of .70 (George & Mallery, 2021).

Table 5.2: Reliability of the Instrument

Var#	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR2	87,8333	289,127	,489	,934
VAR3	88,0833	283,430	,611	,933
VAR4	88,3611	280,037	,694	,931
RVAR5	88,6111	293,058	,279	,937
VAR6	89,2361	284,972	,472	,935
VAR7	89,0278	286,394	,525	,934

Var#	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR8	88,5833	275,908	,751	,930
RVAR9	88,5000	288,113	,395	,936
VAR10	88,5556	281,039	,597	,933
VAR11	89,1111	278,100	,644	,932
VAR12	88,1667	280,028	,716	,931
RVAR13	88,5833	285,655	,542	,933
VAR14	88,5139	283,577	,525	,934
RVAR15	88,3333	281,099	,706	,931
VAR16	88,4306	287,122	,564	,933
VAR17	88,4028	286,159	,551	,933
VAR18	89,2639	294,310	,266	,937
VAR19	88,6111	282,156	,604	,933
RVAR20	88,3889	282,410	,597	,933
VAR21	88,4028	284,751	,668	,932
RVAR22	88,5833	280,444	,600	,933
VAR23	88,4583	279,379	,693	,931
VAR24	88,4583	283,632	,653	,932
VAR25	88,4583	280,449	,663	,932
VAR26	88,4444	278,814	,739	,931

Var#	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR27	88,3333	283,493	,642	,932

Source: Author's own.

The "*Cronbach's Alpha if Item Deleted*" values ranged from .930 to .937, indicating that removal of any single item would not substantially improve the reliability of the scale. Therefore, all items appear to contribute meaningfully to the overall internal consistency of the instrument. Corrected item–total correlations ranged from .266 to .751, demonstrating generally good levels of item correlation. Overall, results show good Cronbach's alpha values and strong item-total correlations.

5.5 Measurement Model

A confirmation factor analysis (CFA) was performed to evaluate the measurement model as displayed in Figure 5.2. All factor loadings were statistically significant and showed acceptable to strong standardised values, ranging from 0.638 to 0.928, as the individual was more than 0.60 and on average within a construct 0.70, indicating that each indicator reflected its respective latent construct well (Hair et al., 2021). The leadership items showed strong loadings (0.766 – 0.852), as did Team Learning and Behaviour items (0.679 – 0.852) and the team performance items (0.843 – 0.928). Psychological safety elements also demonstrated acceptable loadings (0.638 – 0.843).

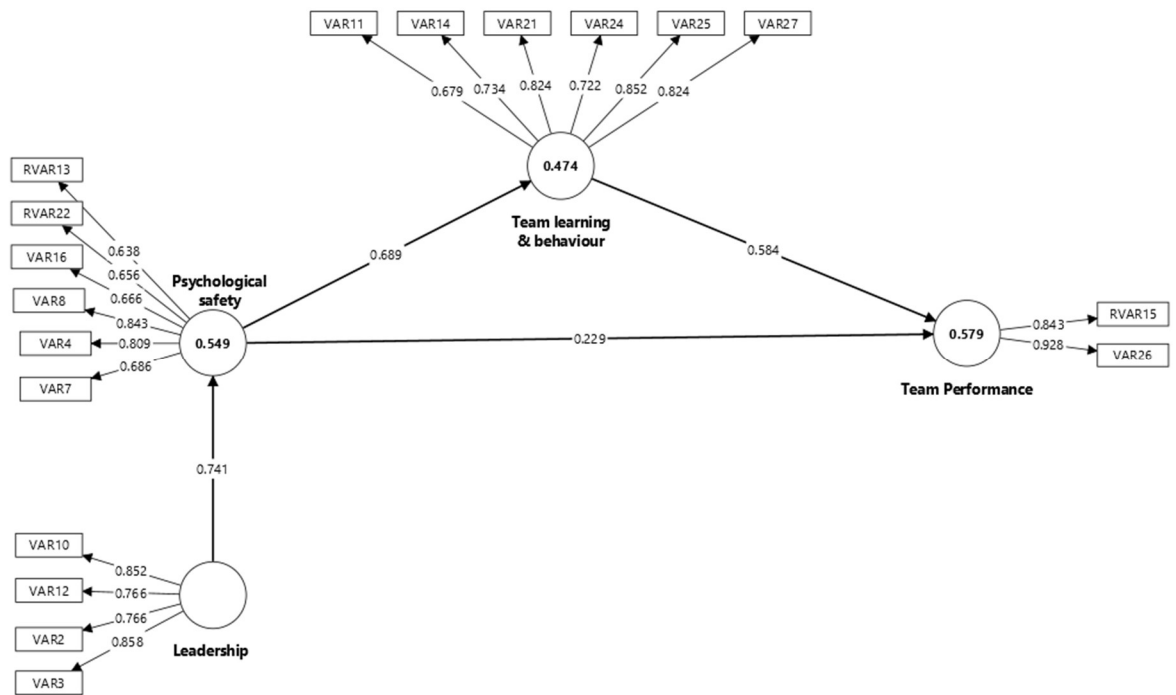


Figure 5.2: Measurement Model

Source: Author's own.

The standardised root mean square residual (SRMR = .106) was only slightly above the recommended cutoff point of .10 for acceptable fit in PLS-SEM applications (Hair et al., 2021; Henseler et al., 2014), suggesting an adequate level of fit as displayed in Table 5.3. The similarity between the saturated and estimated values of d_{ULS} (1.801 vs. 1.910) and d_G (0.645 vs. 0.659) suggests overall stability of the model estimation.

Table 5.3: Model Fit

	Saturated model	Estimated model
SRMR	0.103	0.106
d_{ULS}	1.801	1.910
d_G	0.645	0.659
Chi-square	259.992	261.743
NFI	0.690	0.688

Source: Author's own.

Internal consistency, reliability and convergent validity were assessed using Cronbach's alpha, composite reliability (ρ_a and ρ_c) and convergent validity with extracted average variance (AVE) (Table 5.4). All constructs demonstrated acceptable to strong reliability. Cronbach's alpha values ranged from 0.735 to 0.865, exceeding the recommended minimum threshold of 0.70 for acceptable reliability (Hair et al., 2021). Composite reliability estimates (ρ_c), which provide a more accurate measure of scale reliability, ranged from 0.865 to 0.900, which was better than the recommended cutoff of 0.70 and indicated strong internal consistency across all constructs.

Table 5.4: Reliability and Convergence Validity

Construct	Cronbach's alpha	Composite reliability (ρ_a)	Composite reliability (ρ_c)	Average variance extracted (AVE)
Leadership	0.827	0.835	0.885	0.659
Psychological safety	0.814	0.837	0.865	0.519
Team Performance	0.735	0.804	0.880	0.786
Team Learning and Behaviour	0.865	0.868	0.900	0.601

Source: Author's own.

The leadership demonstrated high reliability ($\alpha = 0.827$; $\rho_A = 0.835$; $\rho_c = 0.885$) and satisfactory convergence validity (AVE = .659), indicating that the construct explained more than 65% of the variance in the indicators. Psychological safety showed acceptable reliability ($\alpha = .814$; $\rho_A = 0.837$; $\rho_c = 0.865$) and an AVE of 0.519, which meets the recommended 0.50 threshold for convergent validity (Hair et al., 2021). Team performance demonstrated strong reliability ($\alpha = 0.735$; $\rho_a = 0.804$; $\rho_c = 0.880$) and excellent convergent validity (AVE = 0.786), indicating that the construct accounted for more than 78% of the variance. Team

Learning and Behaviour also demonstrated strong reliability ($\alpha = .865$; $\rho_a = 0.868$; $\rho_c = 0.900$) and acceptable convergent validity ($AVE = 0.601$).

Discriminant validity was assessed using the correlations heterotrait-monotrait ratio (HTMT), which is recognised as a more reliable criterion than the Fornell–Larcker method (Henseler et al., 2015). Table 5.5 shows that all HTMT values were below the cutoff threshold 0.90 ($HTMT_{.90}$) recommended for conceptually distinct constructs, indicating satisfactory discriminant validity (Hair et al., 2021; Henseler et al., 2014). The HTMT values ranged from 0.701 to 0.898, with the highest value occurring between Team Learning and Behaviour and Team Performance ($HTMT_{.90} = .898$). Leadership demonstrated moderate to strong relationships with psychological safety ($HTMT = 0.867$), Team Learning and Behaviour ($HTMT = 0.724$), and team performance ($HTMT = 0.701$). Psychological safety also showed strong but acceptable discriminant separation from Team Learning and Behaviour (0.796) and Team Performance (0.774). All values fall within acceptable limits, and as such, the discriminant validity is confirmed.

Table 5.5: Heterotrait–monotrait Ratio of Correlations (HTMT) Matrix for Discriminant Validity

Construct	Leadership	Psychological safety	Team Performance	Team learning and behaviour
Leadership				
Psychological safety	0.867			
Team Performance	0.701	0.774		
Team Learning and Behaviour	0.724	0.796	0.898	

Source: Author's own.

5.6 Explanatory Power and Predictive Relevance of the Model

The standard method variance (CMV) was assessed using the full collinearity approach recommended by Kock (2015). According to this method, values of the variance inflation factor (VIF) greater than 3.3 indicate potential standard method bias. Table 5.6 shows that all indicator-level VIF values ranged from 1.375 to 2.874, which is below the recommended threshold of 3.3 (Kock, 2015), indicating that multicollinearity is not a concern and that CMV is unlikely to distort model estimates. Furthermore, the values fall well below the stricter traditional VIF threshold of 5.0 (Hair et al., 2021), providing further evidence of acceptable collinearity levels.

Table 5.6: Common-Method Variance and Multicollinearity with VIF

Variable	VIF
RVAR13	1.426
RVAR15	1.511
RVAR22	1.375
VAR10	2.085
VAR11	1.490
VAR12	1.567
VAR14	1.743
VAR16	1.460
VAR2	2.029
VAR21	2.156
VAR24	1.574
VAR25	2.874

Variable	VIF
VAR26	1.511
VAR27	2.700
VAR3	2.263
VAR4	1.806
VAR7	1.718
VAR8	2.248

Source: Author's own.

The model demonstrated moderate to substantial explanatory power based on R^2 values, consistent with the guidelines provided by Hair et al. (2021). The model explained 54.9% of the variance in psychological safety ($R^2 = 0.549$), 57.9% of the variance in team performance ($R^2 = 0.579$), and 47.4% of the variance in Team Learning and Behaviour ($R^2 = 0.474$), indicating a good overall explanatory capacity (Table 5.7). The adjusted R^2 values were only marginally lower (ranging from 0.467 to 0.567), suggesting that the model does not have issues related to overfitting.

Table 5.7: Explanatory Power of the Model with R-square

Construct	R-square	R-square adjusted
Psychological safety	0.549	0.543
Team Performance	0.579	0.567
Team Learning and Behaviour	0.474	0.467

Source: Author's own.

Predictive relevance was assessed using Stone-Geisser Q^2 , using PLSpredict procedures (Table 5.8). All Q^2 values were above zero, indicating significant predictive relevance for endogenous constructs (Hair et al., 2021). Psychological safety demonstrated high predictive relevance ($Q^2 = .520$), while Team Learning and Behaviour ($Q^2 = .348$) and behaviour ($Q^2 = .348$) and team performance ($Q^2 = 0.287$)

demonstrated moderate predictive relevance. The predictive errors (RMSE and MAE values) were within acceptable ranges, supporting the model's ability to predict observations.

Table 5.8: Predictive Relevance with Stone-Geisser Q^2

	Q^2_{predict}	RMSE	MAE
Psychological safety	0.520	0.721	0.559
Team Performance	0.287	0.883	0.671
Team Learning and Behaviour	0.348	0.845	0.650

Source: Author's own.

Effect size values (f^2) were examined to determine the magnitude of the contribution of each predictor variable within the structural model (Table 5.9). According to Cohen (1988), f^2 values of 0.02, 0.15, and 0.35 are interpreted as small, medium, and large effects, respectively. The results indicate that Leadership had a large effect on Psychological Safety, $f^2 = 1.217$. In addition, Psychological Safety showed a large effect on Team Learning and Behaviour, $f^2 = 0.902$. For Team Performance, two predictors were evaluated. Team Learning and Behaviour demonstrated a large effect on Team Performance, $f^2 = 0.426$, indicating meaningful predictive power. However, Psychological Safety had only a small effect on Team Performance, $f^2 = 0.066$.

Table 5.9: Effect Size

Construct	Leadership	Psychological safety	Team Performance	Team Learning and Behaviour
Leadership		1.217		
Psychological safety			0.066	0.902

Construct	Leadership	Psychological safety	Team Performance	Team Learning and Behaviour
Team Performance				
Team Learning and Behaviour			0.426	

Source: Author's own.

5.7 Structural Model and Hypothesis Testing

5.7.1 Correlation Analysis

A Pearson correlation analysis was conducted to examine the relationships among team performance, team learning and behaviour, psychological safety, and leadership (Table 5.10). The results indicated several statistically significant positive correlations between the constructs. There was a strong, positive correlation between team performance and team learning behaviour, $r(73) = .72$, $p < .01$, indicating that higher levels of learning behaviour within teams were associated with higher reported team performance. Team performance was also positively correlated with psychological safety, $r(70) = .65$, $p < .01$, and with leadership, $r(73) = .55$, $p < .01$, suggesting that teams with higher perceptions of psychological safety and stronger leadership also tended to report higher team performance.

Similarly, team learning behaviour demonstrated a strong, positive relationship with both psychological safety, $r(70) = .67$, $p < .01$, and leadership, $r(73) = .62$, $p < .01$. Finally, leadership was strongly and positively correlated with psychological safety, $r(70) = .71$, $p < .01$, indicating that high-quality leadership is strongly associated with greater levels of psychological safety within teams.

Table 5.10: Correlation Matrix

Construct		Team Performance	Team learning behaviour	Psychological Safety	Leadership
Team Performance	Pearson Correlation	1	,716**	,646**	,548**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	75	75	72	75
Team learning behaviour	Pearson Correlation	,716**	1	,671**	,621**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	75	75	72	75
Psychological Safety	Pearson Correlation	,646**	,671**	1	,714**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	72	72	72	72
Leadership	Pearson Correlation	,548**	,621**	,714**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	75	75	72	75

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

5.7.2 Structural Model and Hypotheses

The structural model was assessed using standardised path coefficients (β), t -values, and p -values for statistical significance. Leadership inclusiveness, psychological safety, team learning behaviours, and team performance were modelled as latent constructs (Tables 5.11–5.12 and Figure 5.3). H1 stated that inclusive leadership is positively associated with psychological safety. The path from leadership to psychological safety was positive and statistically significant, $\beta = 0.750$, $t = 12.853$, $p < .001$. This represents a strong effect, indicating that greater inclusiveness of leadership is associated with higher levels of psychological safety within the team. This result supports hypothesis one. H2 tested that psychological safety is positively associated with team learning behaviours.

The path from psychological safety to team learning behaviours was positive and statistically significant, $\beta = 0.696$, $t = 8.671$, $p < .001$, indicating a strong relationship. This result supports Hypothesis 2. H3 tested that team learning and behaviours are positively associated with patient safety performance. The path from team learning behaviours to team performance was positive and statistically significant, $\beta = 0.583$, $t = 5.128$, $p < .001$. This supports hypothesis three. H4 stated that psychological safety is positively associated with safety performance.

The direct path from psychological safety to team performance was positive, but did not reach conventional statistical significance at 5%, $\beta = 0.238$, $t = 1.927$, $p = .054$ (Table 5.11). Although the direction of the effect is consistent with the hypothesis, the p -value is slightly above the commonly used $\alpha = .05$ threshold, indicating only marginal evidence of a direct effect, with a possible significance at $p < .01$. Based on the threshold of 5%, the result does not support hypothesis four. H5, the exploratory hypothesis, tested that team learning behaviours mediate the relationship between psychological safety and safety performance. The direct effect of psychological safety on team performance was $\beta = 0.238$, $t = 1.927$, $p = 0.054$. The total effect of psychological safety on team performance, which is the combination of direct + indirect, was statistically significant, $\beta = 0.644$, $t = 7.670$, $p < .001$. The indirect effect of psychological safety on team performance through team learning behaviours was significant, $\beta = 0.407$, $t = 4.238$, $p < .001$ (Table 5.12). The nonsignificant direct effect but significant indirect effect is consistent with an indirect-only (full) mediation, where psychological safety improves team performance primarily by fostering team learning

behaviours, which in turn enhance performance. The result indicates that H5 is supported, in that team learning behaviours significantly mediate the effect of psychological safety on team performance (Figure 5.3).

Table 5.11: Path Coefficients (Direct and Total Effects)

Direct effect	β	t-statistics	p-values
Leadership → Psychological safety	0.750	12.853	0.000
Psychological safety → Team Learning and Behaviour	0.696	8.671	0.000
Psychological safety → Team Performance	0.238	1.927	0.054
Team Learning and Behaviour → Team Performance	0.583	5.128	0.000
Total Effects			
Leadership → Psychological safety	0.750	12.853	0.000
Leadership → Team learning and behaviour	0.525	5.986	0.000
Leadership → Team Performance	0.485	5.683	0.000
Psychological safety → Team learning and behaviour	0.696	8.671	0.000
Psychological safety → Team Performance	0.644	7.670	0.000
Team learning and behaviour → Team Performance	0.583	5.128	0.000

Source: Author's own.

Table 5.12: Path Coefficients (Indirect Effects)

Indirect effect	β	t-statistics	p-values
Leadership → Psychological safety → Team Performance	0.178	1.864	0.062
Leadership → Psychological safety → Team Learning and Behaviour	0.525	5.986	0.000
Leadership → Psychological safety → Team Learning and Behaviour → Team Performance	0.307	3.649	0.000
Psychological safety → Team Learning and Behaviour → Team Performance	0.407	4.238	0.000

Source: Author's own.

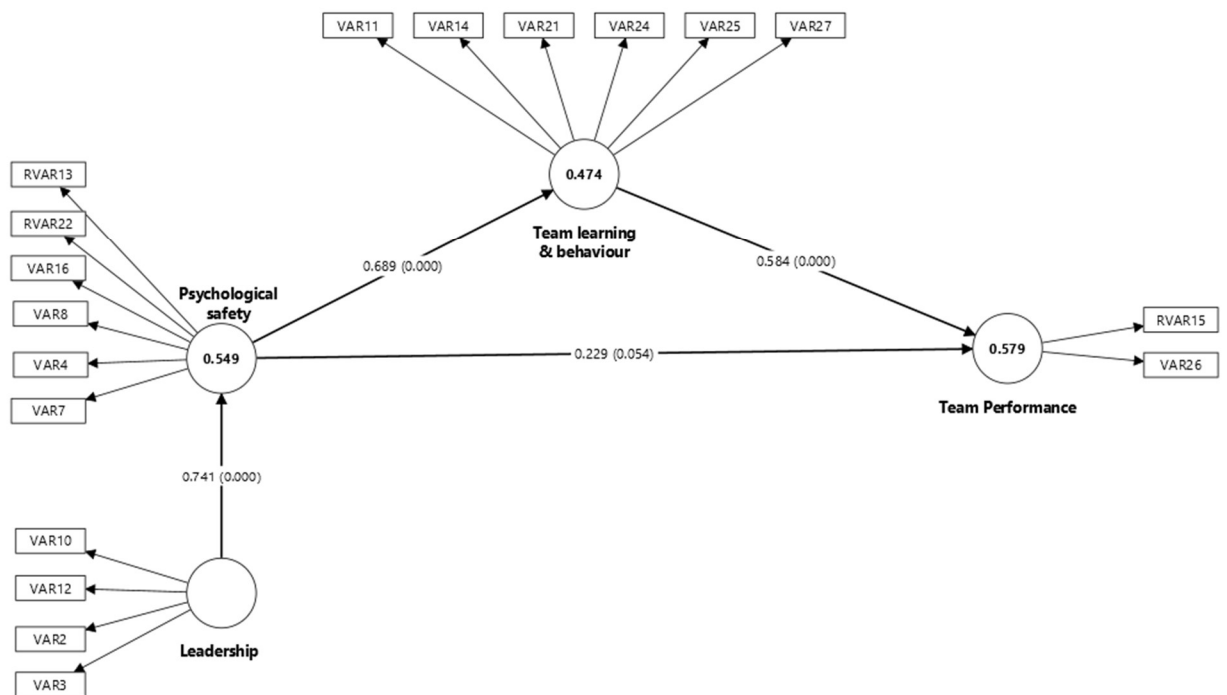


Figure 5.3: Structural Model

Source: Author's own.

5.7.3 Sufficiency of the Data

A post-hoc statistical power analysis was conducted using G*Power 3.1 to determine the achieved power of the regression model predicting Team Performance (Figure 5.4).

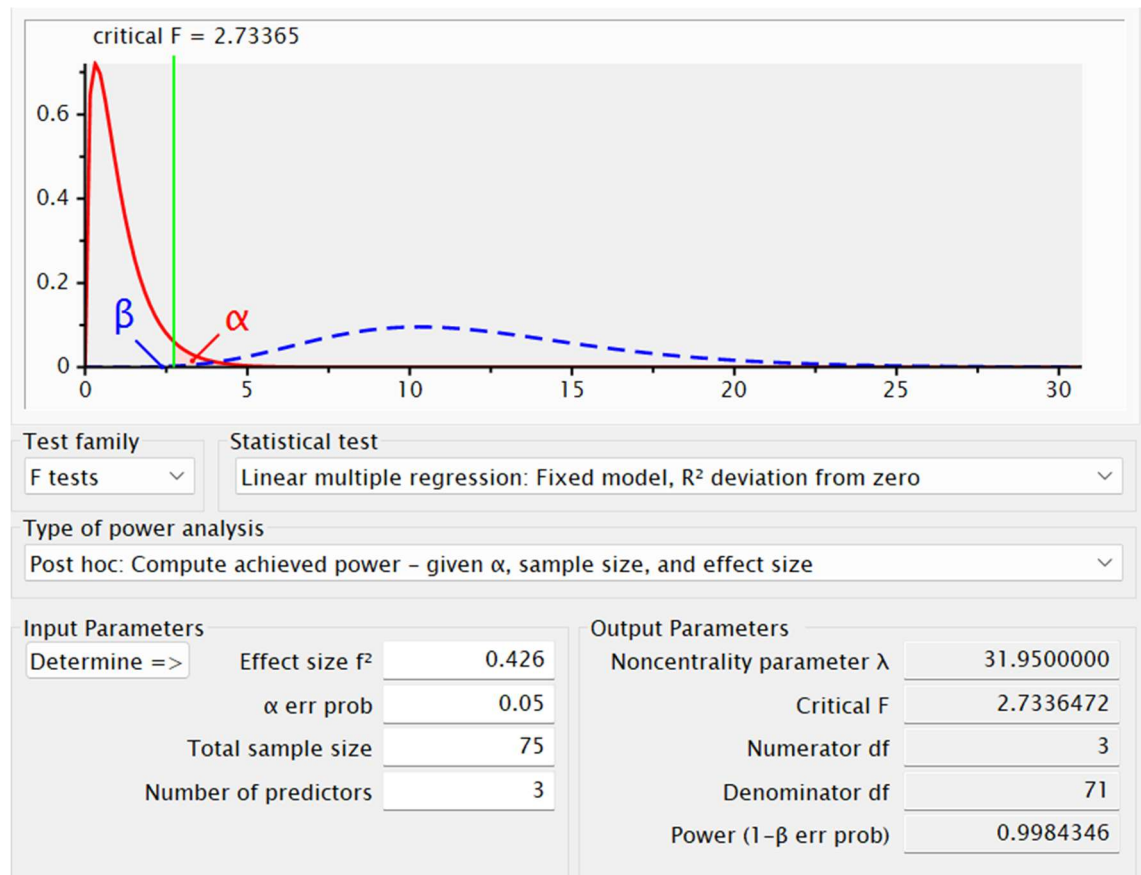


Figure 5.4: Post-hoc Statistical Power Analysis

Source: Author's own.

The analysis used an effect size of $f^2 = 0.426$ (instead of $f^2 = 0.066$, which was part of the full mediation), an alpha level of .05, a sample size of $n = 75$, and three predictors included in the regression model. The results indicated that the analysis achieved a statistical power of 0.998 ($1 - \beta$ error probability), which is well above the recommended minimum power level of 0.80 (Cohen, 1988). This demonstrates that the study had an adequate sample size and power to detect a statistically significant effect.

5.8 Chapter Summary

This study examined the relationships among leadership inclusiveness, psychological safety, team learning and behaviours, and team performance. Overall, the model showed substantial explanatory power and predictive relevance. The results demonstrate that leadership plays a central role in fostering psychological safety among team members. In turn, psychological safety was found to strongly predict team learning and behaviours, highlighting the importance of a supportive environment. Team learning behaviours significantly enhanced patient safety performance, confirming their value as a key mechanism through which teams translate interpersonal climate into outcomes. Although psychological safety did not have a significant direct effect on patient safety performance, its indirect effect through team learning behaviours was strong, supporting a full mediation pathway. These results are discussed in Chapter 6.

Chapter 6: Discussion of Results

6.1 Introduction

In this chapter, we discuss the empirical findings from chapter five of the study and relate them to the literature review, theoretical framework, research model and the local context of a private hospital in Mpumalanga, South Africa. This study went beyond exploring the presence of PS within the chosen context and its importance in the healthcare environment to examine how PS influences team learning and performance and to what extent it produces meaningful improvements in patient outcomes, particularly patient safety.

The research model proposed a structured pathway in which leadership inclusiveness and support lead to PS, which in turn leads to team learning and ultimately to patient safety. The model presented two additional direct paths and a mediating effect. This chapter interprets the relationships between these constructs by connecting the statistical findings to the theories of SET, Supportive Leadership and Team Learning Theory. Three overarching themes frame the discussion in this chapter: the decisive antecedent role of leadership inclusiveness in shaping PS in organisations, team learning as a central construct, and the safety paradox, which explains the weak link between PS and performance.

6.2 Data Quality and Demographics

The study, through its survey instrument, achieved a sample of N=75 healthcare professionals. A Post-Hoc Power Analysis yielded a statistical power of 0.9998, a score well above the recommended minimum of 0.80, which confirmed that the model was adequately powered (Cohen, 1988). Cronbach's Alpha values exceeded the 0.70 threshold, confirming internal consistency reliability. The discriminant validity was assessed using HTMT, and it was confirmed that the respondents differentiated clearly between feeling psychologically safe, engaging in team learning and evaluating team performance as constructs.

6.3 Supportive Leadership Antecedent – H1

H1: Leadership inclusiveness is positively associated with psychological safety.

- Leadership Inclusiveness – PS ($\beta = 0.750$, $t = 12.853$, $p < 0.001$)

6.3.1 Empirical Evidence

The relationship between leadership inclusiveness and PS emerged as extremely strong statistically, with a path coefficient of $\beta = 0.750$, a t-value of $t = 12.853$, and $p < 0.001$, indicating a highly significant effect. A high coefficient means PS is almost entirely dependent on the leader. This makes the leader the gatekeeper of PS; they set the safety tone, as suggested by Grailey et al. (2021) in their assessments of hierarchical structures and the influence leaders have in those positions, and then become tone setters for PS. Beyond significance, the magnitude of this effect is also impressive as leadership inclusiveness explains 54.9% of its variance in PS ($R^2 = 0.549$). These findings imply that more than half of the staff members' sense of PS is determined by their leaders' behaviour. The findings indicate that in this context, the studied PS is heavily dependent on Supportive Leadership Theory and the SET literature reviewed.

This finding moves beyond the idea that PS is a broad phenomenon and instead demonstrates that PS is intensely leader-dependent in this organisational context. Staff do not develop a sense of safety merely through team interactions; the leader is the primary determinant of whether staff feel safe to speak up, voice concerns, ask questions, or even challenge decisions. The South African healthcare context is characterised by high power distance and by historic hierarchical structures that remain in place, amplifying this dynamic. Staff rely on their leaders to create environments that encourage and enable speaking up.

6.3.2 Theoretical Connection – Supportive Leadership and Social Exchange Theory

Supportive Leadership Theory asserts that leaders who engage with staff, acknowledge their contributions and treat them respectfully reduce the perceived risks associated with voice behaviour. The study's results support this theory. The

study's results show that leadership inclusiveness increases PS levels, thereby enabling speaking up and interpersonal risk-taking.

Social Exchange Theory explains that relationships are reciprocal and operate on reciprocal exchanges between parties. This theory highlights that when leaders behave inclusively, respect, protect, and support their subordinates, those subordinates will reciprocate by offering openness, honesty, and trust. The substantially high $\beta = 0.750$ suggests that these exchange relationships function with high intensity in this hospital studied. When a unit manager listens, protects, or encourages positive voice behaviour, staff will reciprocate by consistently feeling safe (having high levels of PS). These results align with Edmondson's (1999) psychological safety framework, which positions leaders as signal givers who set the tone for interpersonal risk-taking in the organisation. The results in chapter five empirically confirm this theory: the leaders in this hospital are a dominant source of safety signals.

6.3.3 Contextual Interpretation – Hierarchy and high-power distance in the SA Healthcare Industry

In the South African private healthcare industry, the hierarchical structure remains strong, with significant power distances driven by job ranks, professional qualifications, and titles. Nurses and junior professionals work under strict protocols and authority. In these settings, PS does not emerge naturally; it must be stimulated by being granted through leadership behaviour.

The high β coefficient suggests that PS in this Hospital is a permission structure, implying that subordinates speak up only when leaders indicate it is acceptable. Professional hierarchy, high power distance and fear of victimisation exacerbate this unsafe dependency on the leader. In these settings, silence often becomes the default unless leaders explicitly interrupt it and force engagement, as evidenced by the questionnaire response rate of 45%.

6.3.4 Comparison With Existing Literature

The results from chapter five align strongly with those of Grailey et al. (2021), who found that hospital staff are significantly more likely to speak up in units where leaders actively model inclusivity and respect. O'Donovan (2020) also reiterates this by stating that PS is heavily leader-driven, especially in high-pressure healthcare teams.

The effect size in this study is, however, stronger than those reported in other studies reviewed. This suggests that in resource-constrained environments like Mpumalanga, South Africa, the role of leadership becomes that much more crucial as the leaders in such environments also control access to needed resources. This only intensifies staff dependency on their leaders, making leadership a critical factor in whether they feel psychologically safe. Bregenzer et al. (2020) also found that PS acts as a “social resource surplus”, meaning that it acts as a buffer in environments where resources are low, moving beyond being a nice-to-have.

6.4 Team Learning – H2, H3 and H5

H2: Psychological safety is positively associated with team learning behaviours.

- PS – Team Learning $\beta = 0.696$

H3: Team learning behaviours are positively associated with patient safety performance.

- Team Learning – Performance $\beta = 0.583$

H5: (Exploratory): Team learning behaviours mediate the relationship between psychological safety and patient safety performance.

- Full mediation confirmed that team learning fully mediates the relationship between PS and performance.

6.4.1 Empirical Evidence

These findings on these hypotheses indicate that PS alone is not sufficient to improve patient outcomes; PS should trigger or activate learning behaviours, such as discussing mistakes, probing, reflecting on processes, and sharing information. Team Learning Theory also supports this. This mechanism is even more important in resource-constrained contexts such as Mpumalanga, South Africa, where collaborative problem-solving is common. The model presented in chapter two, PS acts as the input, team learning as the process and performance as the output, highlighting a conceptual breakthrough of the study. The findings in the study extend the existing research by Kim et al. (2020) by quantifying the mediation's strength.

6.4.2 Theoretical Connection – Team Learning Theory

Edmondson and Harvey (2025), in their study on Team Learning Theory, distinguish between taskwork, as technical work done, and teamwork, as the interpersonal coordination used to execute tasks. In the healthcare environment, typical taskwork involves using clinical skills, such as administering medication and administering injections, and teamwork involves probing the dosages or intervals of medications being administered.

Psychological safety does not directly influence task work; clinical skills remain stable regardless of the PS climate. What changes, in essence, is the teamwork dynamics, such as the willingness to ask probing questions, correct others, ask for help, and provide feedback for improvement. The results of the study validate this notion that safety predicts learning behaviours, not performance directly. When staff feel safe, they shift from behaviour associated with compliance to behaviour that leans more toward learning or discovery as they begin to challenge assumptions, voice concerns, and reflect with team members on work processes.

6.4.3 Mediation

The mediation results uncovered in hypothesis five reveal what many hospitals overlook. Psychological safety is often treated as an organisational cultural

aspiration, but unfortunately, feeling safe does not automatically improve performance. Many hospitals try to improve culture (safety) without changing the mechanism of learning. The results from chapter five reveal that, without a mechanism for team learning, the pursuit of performance is futile. Therefore, hospitals that stop at building culture and do not go further to enhance learning processes will not see patient safety gains. According to the results, PS improves only when it is first converted into learning behaviours.

6.4.4 Comparison With Existing Literature

The findings in chapter five align closely with those of Kim et al. (2020), who argue that PS is a core driver of team learning in hospitals. Psychological safety sets the tone for engagement in the organisation and within teams. When it is present, engagements are characterised by openness and interpersonal risk-taking, involving critical voice behaviour such as probing processes, reflecting, and sharing knowledge. However, your study extends this literature by quantifying the strength of mediation. The indirect effect is the primary path in the model, meaning that the learning is not optional; it is the essential bridge between relational dynamics and clinical outcomes.

The model therefore contributes uniquely to South African research by empirically validating the process model proposed in the international literature, which has rarely been tested in the local private healthcare industry.

6.5 The Safety Paradox (H5 Unpacked)

H5: (Exploratory): Team learning behaviours mediate the relationship between psychological safety and patient safety performance.

- $\beta = 0.238$
- $p = 0.054$ (marginal significance)

6.5.1 Marginal Result

Although the findings are close to significance, the effect was weaker than those of the other paths. This indicates that PS alone does not directly improve patient safety

outcomes. Staff's feelings of safety do not translate into higher performance or, in this context, fewer medical errors.

The direct path between psychological safety and performance was marginally significant with a $\beta = 0.238$ and $p = 0.054$, suggesting that PS alone does not automatically improve performance. The Safety Paradox explains this further by emphasising that safe teams report more errors because they feel safe and comfortable disclosing issues they experience. In contrast, unsafe teams are characterised by secrecy, silencing, and even the concealment of errors. In more recent studies, Dietl et al. (2023) highlight that reporting patient safety errors and adverse events can be seen as indicative of high PS levels, leading teams with high PS levels to appear to perform poorly due to reported errors, in contrast to unsafe teams where errors are concealed. This paradox weakens the direct relationship but strengthens the indirect path through team learning. These findings align with Lee and Dahinten (2021), who highlight the critical role of breaking the silence in clinical teams.

6.5.2 Emerging Insight

The safety paradox identified was:

- High safety teams: Report more errors (because they feel comfortable being open and honest).
- Low safety teams: Report fewer errors (not because they commit fewer, but because they conceal them).

This paradox creates a statistical illusion that may make it appear as though higher safety is associated with lower performance simply because those staff members are more honest and transparent. This paradox aligns with the study, as it confirms that the direct link should not be strong, because PS increases behaviours such as honesty and interpersonal risk-taking, yet does not make individuals perfect at what they do. In contrast, team learning on H5 provides the corrective mechanism through which transparency leads to improved performance.

Recent 2025 literature supports the notion that the lack of a direct, significant link between PS and patient safety performance is not a failure of the model but a reflection of the Safety Paradox inherent in healthcare. Derksen et al. (2023) note that psychologically safe teams generate higher rates of error reports, not because they commit more, but because they report more, as there is no barrier to their voice behaviour.

6.5.3 Voice and Silence Behaviour

The study's results align with Lee and Dahinten (2021), who highlight that the threat to patient safety lies in silence. In SA hospitals, silence is often a survival mechanism shaped by hierarchy, fear of blame, and job security. The study results show that PS and learning behaviours reduce or break the silence, and ultimately, performance improves when that silence has been overcome. The weak direct path of H4 and the strong indirect path of H5 together confirm that voice behaviour, not feelings alone, drives performance.

The study, in this context, established that PS does not directly improve performance. Van Dyne et al. (2003) make an important distinction between latent voice opportunity and withholding voice, which further expands the findings of this study. Latent voice opportunity refers to the moment when an individual recognises a potential risk in the clinical environment (for this context), and they know immediately that they should rightfully report it. On the other hand, withholding voice refers to the subsequent decision not to report despite knowing they should; this cognitive-behavioural gap is crucial to understanding why PS does not automatically lead to better patient outcomes.

This study's findings illuminate this gap: although PS demonstrated a strong and significant relationship with team learning ($\beta = 0.696$), its direct relationship with patient safety performance was marginal and non-significant, with β values of 0.238 and 0.054. These findings support those of Van Dyne et al. (2003), who found that PS alone often creates latent opportunities for clinicians' voice, and that without a structured mechanism to activate that voice, the insight from the latent opportunity goes unused, presenting a missed learning opportunity. This further explains why team learning emerged as a full mediator (H5) in the present study. Psychological safety is the precondition, not the driver of improved patient safety, but the driver in the learning process.

6.6 Chapter Summary

The aim of this chapter was to interpret the statistical findings detailed in Chapter Five that relate to the theories, constructs and healthcare context discussed in the earlier chapters. Overall, the results revealed a clear pattern: PS does not operate as a standalone predictor of patient safety performance. Its influence flows from team learning behaviours, which are the mechanism that converts interpersonal safety into improved patient outcomes.

The analysis confirmed the role of inclusive leadership, with leadership emerging as the strongest predictor of PS ($\beta = 0.750$, $p < 0.001$). This result highlights the leader's role as a gatekeeper of voice in healthcare teams. In the hierarchical and resource-pressured context of South African private hospitals, junior nurses and allied professionals depend heavily on unit managers to create permission structures for speaking up. This strong leadership-safety relationship reinforces theories of supportive leadership and social exchange, which emphasise that individuals will only take interpersonal risks when they trust that leaders will respond constructively.

A second major finding was the internal functioning of PS. While the safety significantly predicted team learning ($\beta = 0.696$), it did not directly predict patient safety performance ($\beta = 0.238$, $p = 0.054$) (Van Dyne et al., 2003). Instead, team learning mediated the relationship between feeling safe and acting on that safety. Psychological safety creates cognitive readiness that requires adequate structures to be expressed. Structures include but are not limited to debriefings, reflections, near-miss discussions and brainstorming improvements. Thusa is making the team learning the engine that activates the potential of PS.

The final finding was the marginal link between PS and performance, which reinforces what has been described in the literature as the safety paradox (Dietl et al., 2023). Teams with higher PS levels tend to report more errors and near misses, making it seem as though they perform badly, whereas it's just a reflection of their feeling free and safe to report. In contrast, teams that feel unsafe will withhold from reporting or even conceal errors and near misses. The paradox highlights the importance of interpreting safety performance metrics with caution, particularly in environments where punitive leadership cultures persist.

Together, these findings reveal that PS is necessary but an insufficient condition for patient safety excellence. Leadership establishes the climate, PS enables cognitive awareness, and team learning converts this awareness into collective action. The pathway is validated in this chapter: leadership leads to PS, which leads to team learning, then ultimately to patient safety performance. It shows that improving patient outcomes requires more than cultivating a supportive culture; it requires operationalising that culture through structure, consistent and team-based learning routines.

This chapter, therefore, concludes that organisational efforts to improve patient safety must target both leadership behaviours and team learning processes. Psychological safety provides the foundation, but team learning is the mechanism that transforms safety into measurable improvements in clinical performance. These insights provide a strong standing for the theoretical contributions, managerial implications, recommendations and final synthesis presented in Chapter Seven.

Chapter 7: Conclusions And Recommendations

7.1 Introduction

The purpose of this study was to move beyond the general question of whether PS matters in the healthcare industry and instead determine how it matters within a resource-constrained South African private hospital context. As outlined in Chapter 1, the South African healthcare industry, particularly in the peri-urban province of Mpumalanga, is characterised by high power distance, rigid hierarchical norms and resource shortages. These conditions create an environment where silence among clinical staff thrives, weakening the voice behaviour needed to prevent avoidable medical errors and adverse events. Chatziioannou et al. (2025) support this observation by describing environments where silence persists despite observed risks, and Weiss et al. (2016) also highlight communication failures that lead to medical errors. The study therefore sought to identify the specific mechanisms through which PS influences patient safety performance, focusing on the roles of inclusive leadership and team learning behaviours.

This chapter combines the empirical results presented in Chapter Five and interpreted in Chapter Six. It demonstrates that while PS forms a crucial foundation for clinical work, its impact on performance linked to patient safety is primarily achieved through team learning processes. This chapter further outlines the study's theoretical contributions, managerial implications for hospital leaders, practical recommendations for strengthening team functioning, its limitations, and recommendations for future research. This chapter concludes by revisiting the overarching Golden Thread of the validated model: safety enables learning, and learning, in turn, drives performance.

7.2 Main Results

The results of the study validate a clear and coherent causal chain across leadership, PS, team learning, and patient safety performance. This section combines these

relationships into an integrated narrative rather than repeating the hypothesis-level details.

7.2.1 The Driver: Leadership Inclusiveness

The structural model confirmed that leadership inclusiveness is the strongest predictor of PS. With a path coefficient of $\beta = 0.750$ ($p < 0.001$), leadership accounted for 54.9% of the variance in PS. This confirms the study's central argument that, in the South African healthcare context, PS is primarily leader-dependent; without inclusive leadership, PS cannot thrive. Leaders are seen as the tone-setters for team climate and safety (Fransen et al., 2020), and their behaviours, if harmful and intimidating or humiliating, will ultimately reduce subordinates' PS levels.

7.2.2 The Engine: Team Learning Behaviours

The second significant result concerns the mechanism by which PS influences outcomes. The model revealed a strong relationship between PS and team learning behaviours ($\beta = 0.696$) and between team learning and patient safety ($\beta = 0.583$). The mediation analysis of H5 provided evidence of complete mediation, indicating that team learning is not a supplementary component but the core mechanism that converts PS into actual clinical outcomes.

7.2.3 The Outcome

The direct path from PS to patient safety performance was marginal and non-significant ($\beta = 0.238$, $p = 0.054$). This result reinforces the Safety Paradox: that psychologically safe teams may appear to be more error-prone and thus viewed as underperforming because they have a high reporting rate and are more honest about the errors and near misses that occur (Dietl et al., 2023). Therefore, performance improvements do not arise from the feeling of safety itself but stem from the learning behaviours that safety enables. Together, these results validate the model's pathway as the central contribution of the study.

7.3 Contribution of the Study

7.3.1 Theoretical Contribution

This study contributes to theory by validating the complete mediation model within a South African healthcare setting, which is underrepresented in global PS research. Prior studies often assumed a direct link between PS and performance; however, this study demonstrates empirically that PS is a necessary but insufficient condition. Its influence becomes meaningful only when preceded or activated by team learning behaviours such as error reporting, reflection and problem-solving. These results support and extend Edmondson's Team Learning Theory, reinforcing that PS facilitates teamwork rather than taskwork.

The study further provides empirical support for Social Exchange Theory in clinical environments, demonstrating that inclusive leadership signals reduce the perceived psychological cost of speaking up and strengthen PS in high-pressure environments (Cropanzano & Mitchell, 2025).

7.3.2 Managerial Implications

The study's managerial implications are substantial. The results reveal that “speak up” initiatives will not work in this context without “listen up” leadership behaviours. Leadership inclusiveness was found to be the most decisive factor in fostering PS, indicating that hospitals should prioritise leadership development programmes that train unit managers, matrons, doctors, and allied professionals in inclusive communication, humility, and the active invitation of staff input.

Additionally, the mediation effect highlights the importance of institutionalising team learning practices. Hospitals must shift from merely measuring safety climate scores to monitoring the frequency and quality of team learning activities, such as shift debriefs, near-miss discussions, and reflective case reviews.

7.3.3 Evolution of Thinking

This study transformed initial assumptions. It was initially hypothesised that low PS directly contributed to patient harm; however, the results revealed a more nuanced reality. In reality, the absence of PS leads to silent behaviour, which in turn halts team learning. It is therefore the breakdown of team learning rather than PS alone that creates a patient safety risk. Our understanding evolved from seeing psychological safety as an outcome itself to understanding that it is an enabler in the process of team learning and ultimately performance.

7.4 Recommendations

Based on the empirical results and theoretical frameworks, three main recommendations are made.

7.4.1 Recommendation 1: Leadership Inclusiveness Training

The hierarchical structures in the healthcare industry present the most significant challenge as they have been proven to suppress voice behaviour. Initiatives to reduce power distance in organisations will create leaders with greater humility, allowing team learning to thrive (Hu et al., 2018). Senior clinical staff and stakeholders, including doctors and allied professionals, need structured training in inclusive leadership. Inclusive leadership increases nurses' voice behaviour and the probability of error reporting (Lee & Dahinten, 2021). This can be done by adopting a “Leader speaks last” culture during shift handovers to ensure that junior staff contribute before senior staff anchor the discussion, and that junior staff do not feel intimidated to contribute afterwards.

7.4.2 Recommendation 2: Institutionalise Shift Debriefs

Even in environments with a high level of PS, there are missed opportunities to convert PS into team learning behaviours that will then boost performance. A solution

to this challenge may be to introduce structured debriefs (not just handovers) at the end of each shift. Kolbe et al. (2020) emphasise the importance of managing PS through debriefings. This can be the platform for reflections, sharing new knowledge and insights, and focused discussions on near misses and improvement measures.

7.4.3 Recommendation 3: Awarding Reporting

The Safety Paradox poses a challenge in which reporting may start to feel punitive. To resolve this, there needs to be a change in approach to error and adverse event reporting, with the intention of shifting mindsets to view reporting as a positive input that benefits the team and the organisation. This can be achieved by creating systems for reporting errors and near misses, reinforcing transparency rather than silence, and enhancing performance improvements to be well-designed and fit for purpose, because the challenges are known.

7.5 Areas for Future Research

The study identifies a few areas for further exploration on the subject.

7.5.1 Longitudinal Research

There is an opportunity for future studies to employ longitudinal designs to investigate how PS and team learning behaviours develop over time and whether improvements in these areas translate into measurable patient outcomes, such as reduced near misses or adverse events.

7.5.2 Qualitative Exploration

Interviews or focus groups could explain why the direct link between psychological safety and performance was marginal; they would provide better context than a questionnaire alone.

7.5.3 Comparative Studies

Future research should compare PS and learning dynamics across public and private hospitals or across provinces. Leadership coefficient may vary significantly in severely resource-constrained public settings.

7.6 Study Limitations

The study acknowledges several limitations in the process of compiling it. Firstly, the sample size of $N = 75$ limits the generalisability of the results, although the Post-Hoc Power Analysis indicated sufficient power (0.998) for the tested structural model (Cohen, 1988). Secondly, the study relied on self-reported measures, which may introduce subjective bias in assessments of both PS and team performance. Thirdly, the research was conducted at a single private hospital in Mpumalanga, South Africa, limiting the transferability of the results to other hospital contexts such as large metropolitan hospitals or public-sector facilities.

7.7 Study Conclusion

In conclusion, this study demonstrates that in complex and high-pressure environments such as healthcare, patient safety improves not merely through the absence of fear but through the presence of team learning. Inclusive and supportive leadership provides the foundation for PS, but it is the active use of that safety through learning behaviours that translates into improved performance. For South African healthcare leaders, the implication is clear: leadership must not only shield staff from fear but also intentionally cultivate a culture of inquiry, reflection, and shared learning. Only then can PS fulfil its promise of enhancing patient safety performance.

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Appendix A – Participant Information Sheet: Inviting Participation

This study evaluates levels of psychological safety in the workplace and how it affects team dynamics and performance.

INFORMED CONSENT

I am currently a student at the Gordon Institute of Business Science (GIBS), University of Pretoria, and am conducting research as part of the requirements for completing my MBA.

Continuing with the questionnaire is an indication that you consent to participate in this study. You are invited to participate in a research project that explores psychological safety in the workplace and its influence on team interaction and performance. Completing the survey should take about 15 minutes. Taking part is completely voluntary, and all responses will remain anonymous. You may choose not to answer certain questions or stop participating at any point. All information gathered will be kept confidential and will only be used for academic research purposes.

By proceeding, you confirm that:

- You are older than 18 years.
- You understand the purpose of the study.
- You voluntarily consent to participate.
- You agree to the use of your anonymous responses for research.

If you have any concerns, please contact my supervisor or me. Please find our contact details below.

Researcher: Felicia Khoza

Email: felicia.ffkhoza@gmail.com

Supervisor: Dr Karen Nel

Appendix B – Informed Consent Statement

This study evaluates levels of psychological safety in the workplace and how it affects team dynamics and performance.

INFORMED CONSENT

I am currently a student at the Gordon Institute of Business Science (GIBS), University of Pretoria, and am conducting research as part of the requirements for completing my MBA.

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- You understand the purpose of the study.
- You voluntarily consent to participate.
- You agree to the use of your anonymous responses for research.

If you have any concerns, please contact my supervisor or me. Please find our contact details below.

Researcher: Felicia Khoza

Email: felicia.ffkhoza@gmail.com

Supervisor: Dr Karen Nel

Appendix C – Company Permission Letters



Case Study Research Approval: Ms. F Khoza

Date: 20 August 2025

To Whom It May Concern,

Kiaat Private Hospital, through my capacity as CEO, hereby grant permission to Ms. Fikile Khoza to use and access our institution, its facilities and Healthcare workers for the purpose of a case study research . This approval is granted with the common understanding that all activities will be conducted anonymously and that surveys will be distributed to personnel relevant to the study.

The granted approval include but not limited to the evaluation of the SHERQ (Safety, Health, Environment, Risk and Quality) reports and statistics. It is explicitly stated that no identifiable details of patients or specific incidents will be outlined in the research paper to ensure confidentiality and privacy.

We look forward to the insights that Ms. Khoza's research may provide and are committed to facilitating a constructive process.

The hospital retains the right to have access to the research findings.

Sincerely,

A handwritten signature in black ink, appearing to read 'SM', is placed above the printed name of the signatory.

Steven Mashishi

CEO, Kiaat Private Hospital

Appendix D – Instrument (Survey)

1. I fall under the following group within the team
 - Nursing Staff
 - Pharmacy Staff
 - Doctors
 - Allied Professionals
2. If I had a question or was unsure of something in relation to my role at work, I could ask my peers or team leader
 - Strongly Agree
 - Disagree
 - Neutral – neither agree nor disagree
 - Agree
 - Strongly Agree
3. I can communicate my opinions about work issues with my peers or team leader
 - Strongly Agree
 - Disagree
 - Neutral – neither agree nor disagree
 - Agree
 - Strongly Agree
4. I can speak up about personal problems or disagreements to my peers or the team leader
 - Strongly Agree
 - Disagree
 - Neutral – neither agree nor disagree
 - Agree
 - Strongly Agree
5. Critical quality errors occur frequently in this team
 - Strongly Agree
 - Disagree
 - Neutral – neither agree nor disagree
 - Agree

- Strongly Agree
6. I can NOT speak up with recommendations/ideas for new projects or changes in procedures to my peers or the team leader
- Strongly Agree
 - Disagree
 - Neutral – neither agree nor disagree
 - Agree
 - Strongly Agree
7. If I made a mistake on this team, I would feel safe speaking up to my peers and the team leader
- Strongly Agree
 - Disagree
 - Neutral – neither agree nor disagree
 - Agree
 - Strongly Agree
8. It is safe to take a risk on this team
- Strongly Agree
 - Disagree
 - Neutral – neither agree nor disagree
 - Agree
 - Strongly Agree
9. If I saw a colleague making a mistake, I would NOT feel safe speaking up to
- Strongly Agree
 - Disagree
 - Neutral – neither agree nor disagree
 - Agree
 - Strongly Agree
10. If I speak up/voice my opinion, I know that my input is valued by my peers and team leader
- Strongly Agree
 - Disagree
 - Neutral – neither agree nor disagree
 - Agree
 - Strongly Agree

11. It is difficult to ask other members of this team for help.

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

12. Team leaders encourage and support taking on of new tasks or to learning how to do things never done before.

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

13. If I had a problem in this company, I could depend on my peers to be my advocate

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

14. If I had a question or was unsure of something in relation to my role at work, it would be easy for me to ask

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

15. We regularly take time to figure out ways to improve our team's work processes

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

16. I can NOT communicate my opinions about work issues with my peers

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

17. I can speak up with recommendations/ideas for new projects or changes in procedures to my peers

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

18. If I made a mistake on this team, I would feel safe speaking up to my peers

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

19. In this team, someone often makes sure that we stop to reflect on the team's work process

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

20. If I saw a colleague making a mistake, I would feel safe speaking up to this colleague

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

21. If I speak up/voice my opinion, my input is NOT valued by my peers

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

22. There are real attempts to share information throughout the team

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

23. If you make a mistake on this team, it is often held against you.

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

24. Members of this team are able to bring up problems and tough issues.

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

25. Working with members of this team, my unique skills and talents are valued and utilised

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

26. This team frequently seeks new information that leads us to make important changes.

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

27. The quality of work provided by this team is improving over time.

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

28. This team meets or exceeds its customers' expectations.

- Strongly Agree
- Disagree
- Neutral – neither agree nor disagree
- Agree
- Strongly Agree

29. What else would you like to share about psychological safety and performance in this environment?

This is the end of the survey. Thank you for participating in my study.

Appendix E – Ethics Approval

Masters Research <MastersResearch@gibs.co.za>

to me, Masters ▾

**Gordon Institute
of Business Science**
University of Pretoria

**Ethical Clearance
Approved**

Dear [REDACTED]

Please be advised that your application for **Ethical Clearance** has been approved.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Ethical Clearance [Form](#)

Kind Regards

This email has been sent from an unmonitored email account. If you have any comments or concerns, please contact the GIBS Research Admin team.

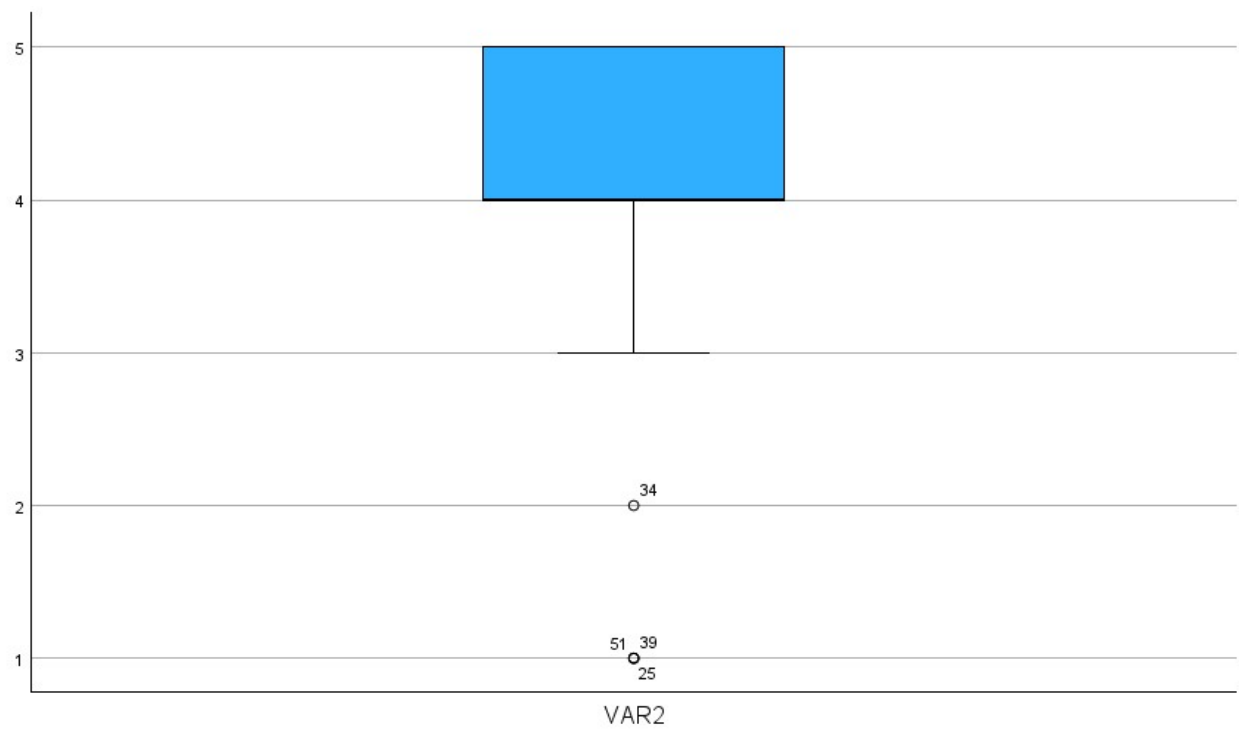
Appendix F – Missing Value Analysis

Var#	N	Mean	Std. Deviation	Missing		No. of Extremes ^a	
				Count	Percent	Low	High
VAR2	75	4,27	,949	0	,0	4	0
VAR3	75	4,01	1,033	0	,0	8	0
VAR4	75	3,75	1,067	0	,0	4	0
VAR5	75	2,51	1,190	0	,0	0	5
VAR6	75	2,80	1,208	0	,0	0	0
VAR7	75	3,03	1,078	0	,0	0	0
VAR8	75	3,52	1,143	0	,0	6	0
VAR9	75	2,44	1,244	0	,0	0	0
VAR10	75	3,52	1,178	0	,0	6	0
VAR11	75	2,99	1,236	0	,0	0	0
VAR12	75	3,91	1,055	0	,0	10	0
VAR13	75	2,51	1,057	0	,0	0	1
VAR14	75	3,55	1,211	0	,0	6	0
VAR15	75	2,28	1,047	0	,0	0	2
VAR16	75	3,69	,958	0	,0	4	0
VAR17	75	3,64	1,035	0	,0	4	0
VAR18	75	2,84	1,151	0	,0	0	0
VAR19	75	3,44	1,130	0	,0	0	0
VAR20	75	2,32	1,092	0	,0	0	5
VAR21	75	3,71	,912	0	,0	3	0
VAR22	75	2,48	1,201	0	,0	0	5
VAR23	75	3,63	1,112	0	,0	4	0
VAR24	75	3,65	,979	0	,0	3	0
VAR25	75	3,63	1,112	0	,0	4	0
VAR26	75	3,65	1,059	0	,0	4	0
VAR27	75	3,75	1,015	0	,0	4	0

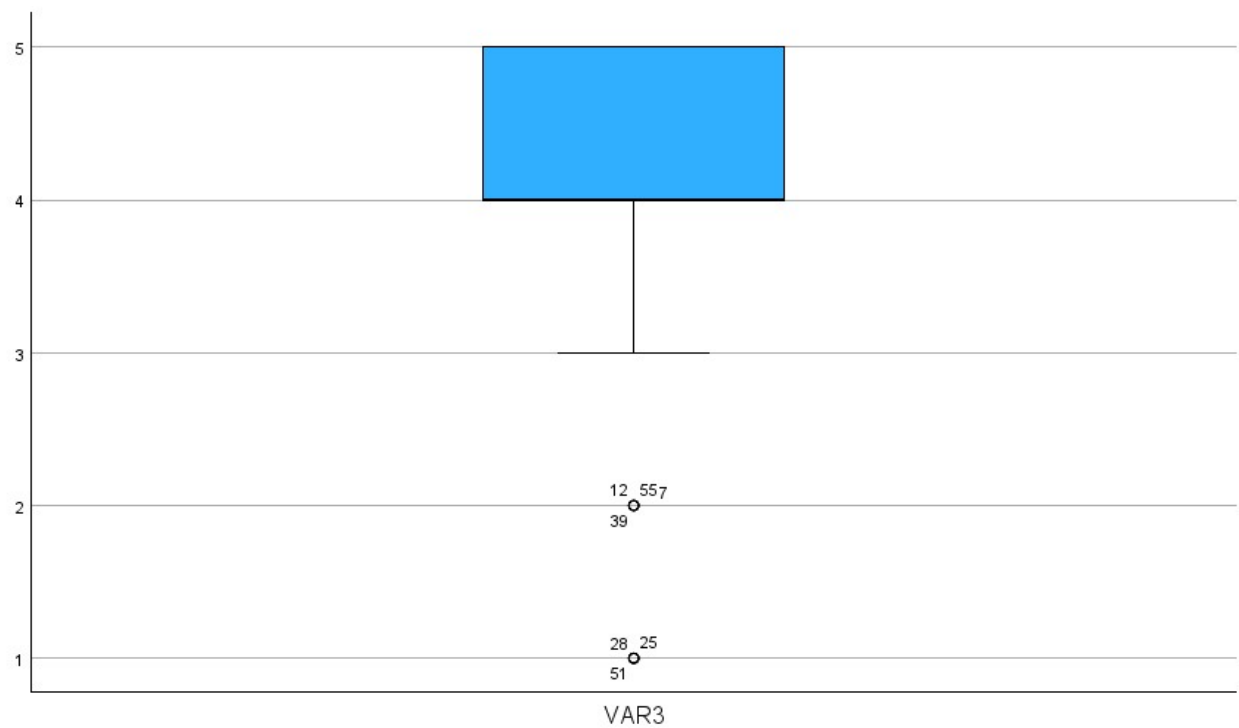
a. Number of cases outside the range (Q1 - 1.5*IQR, Q3 + 1.5*IQR).

Appendix G – Boxplot for Assessing Extreme Outliers

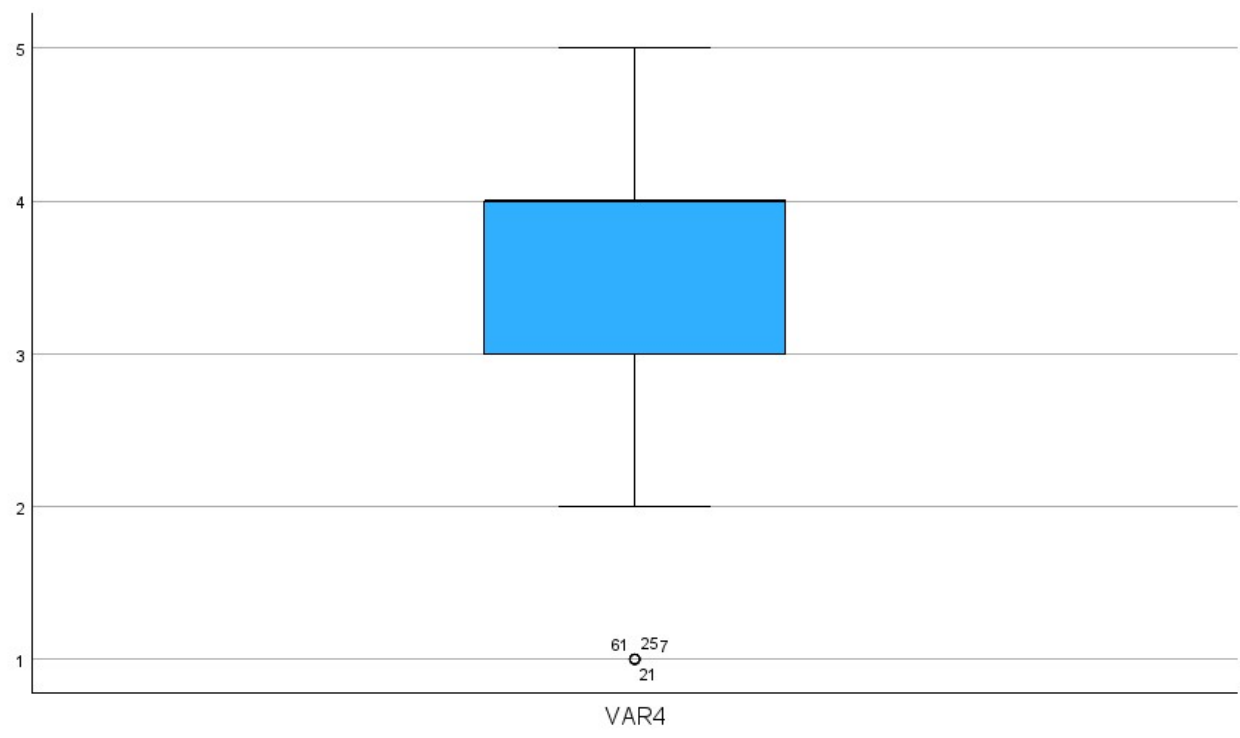
VAR2



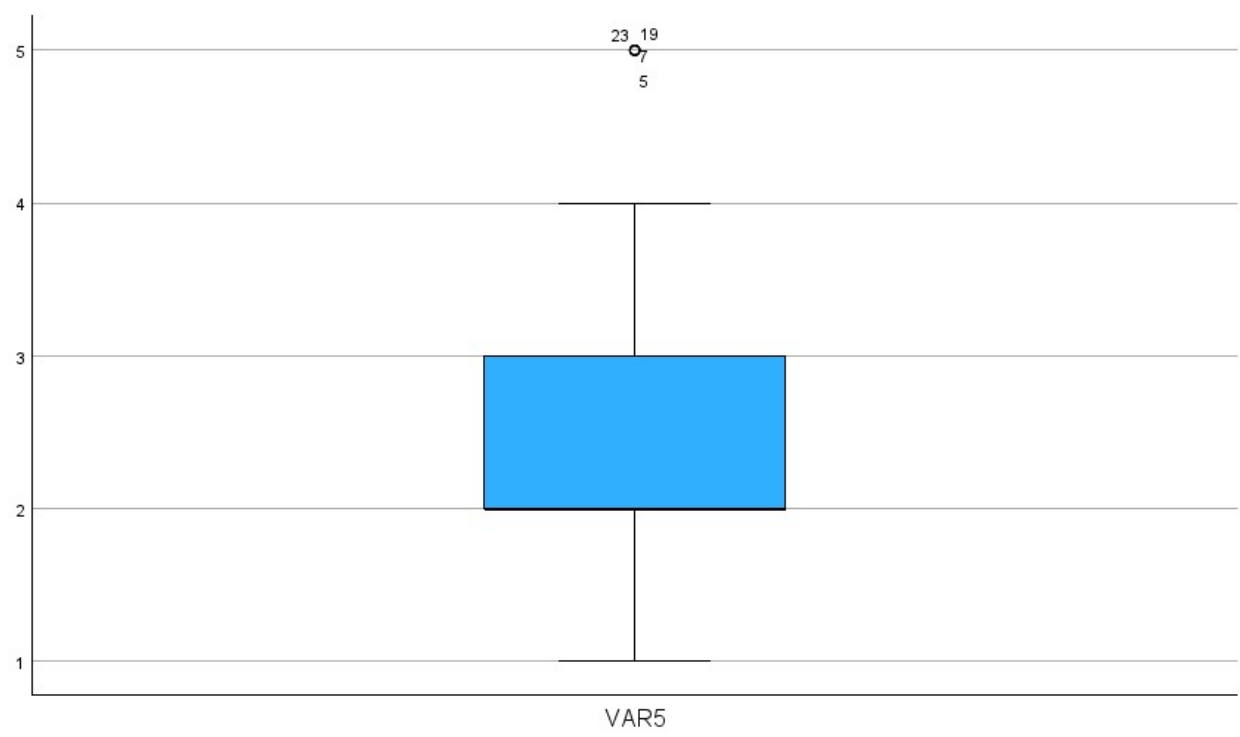
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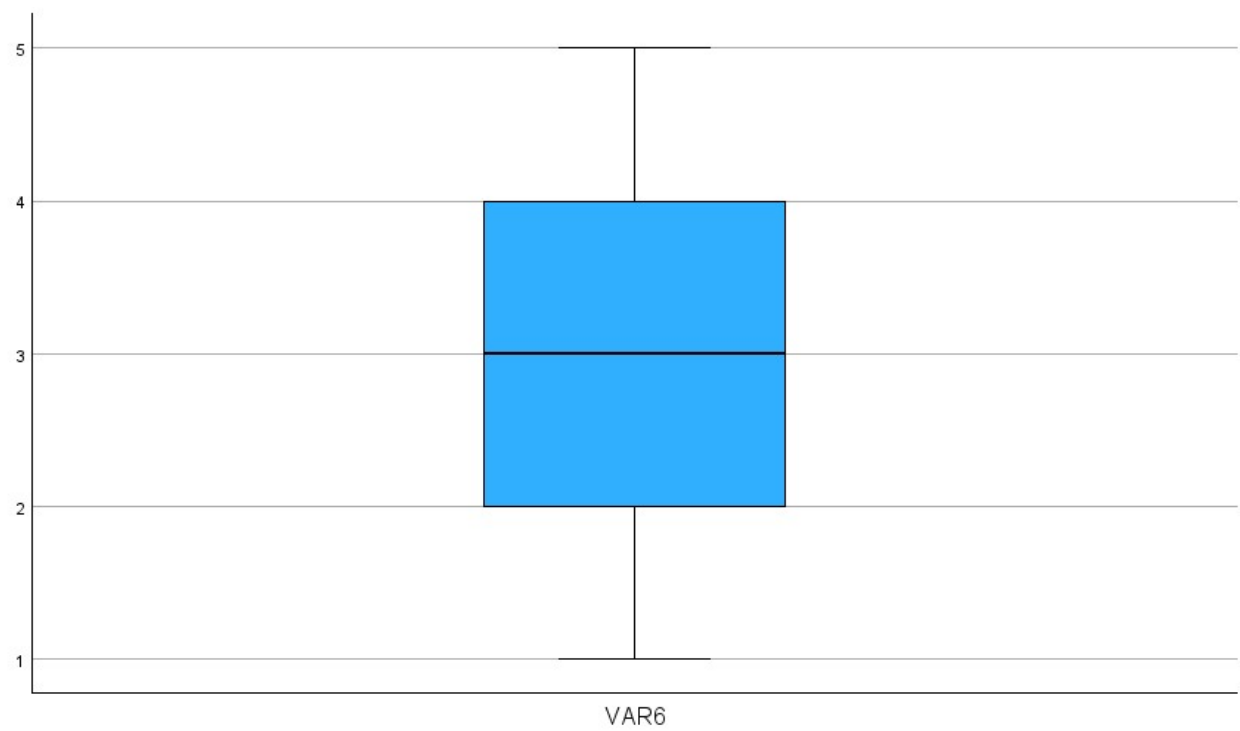
VAR4



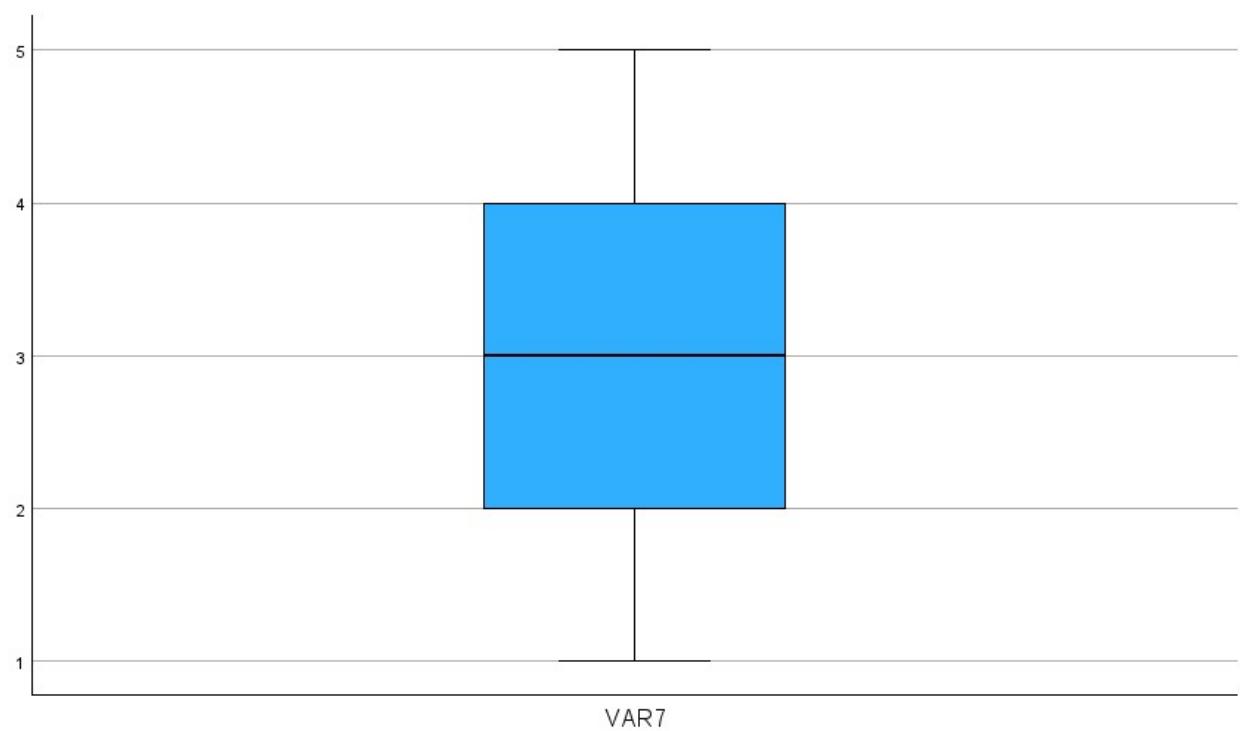
VAR5



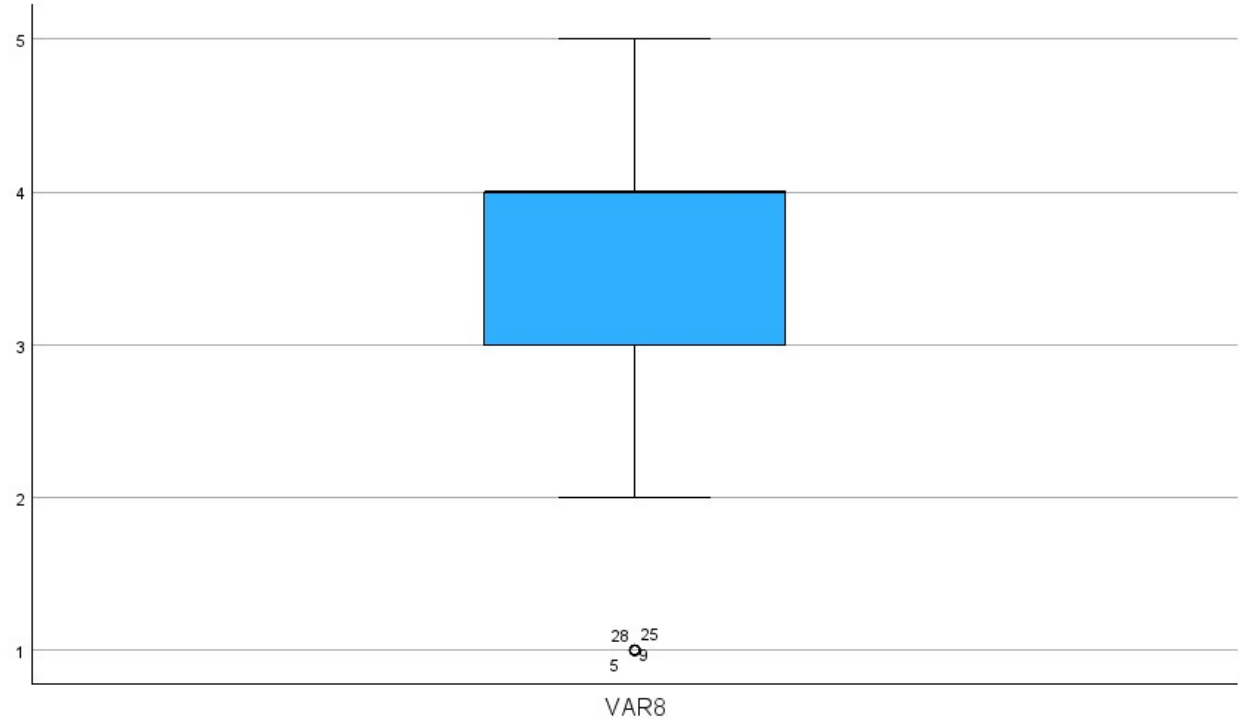
VAR6



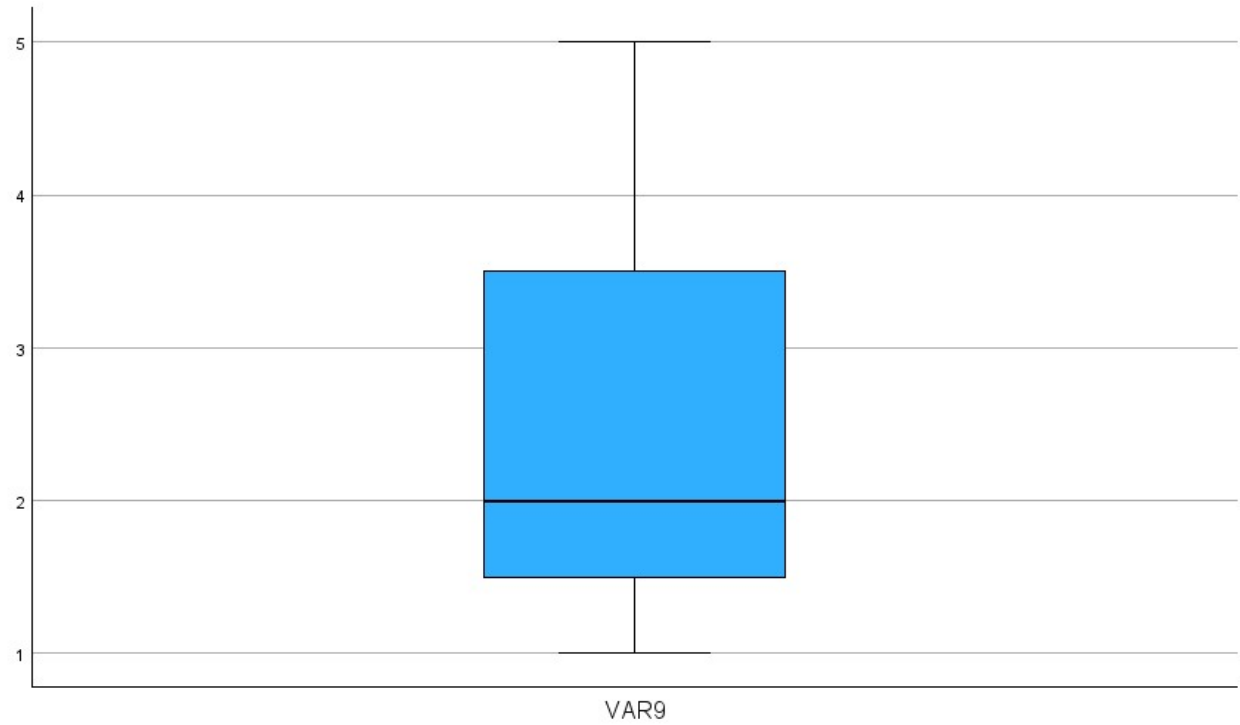
VAR7



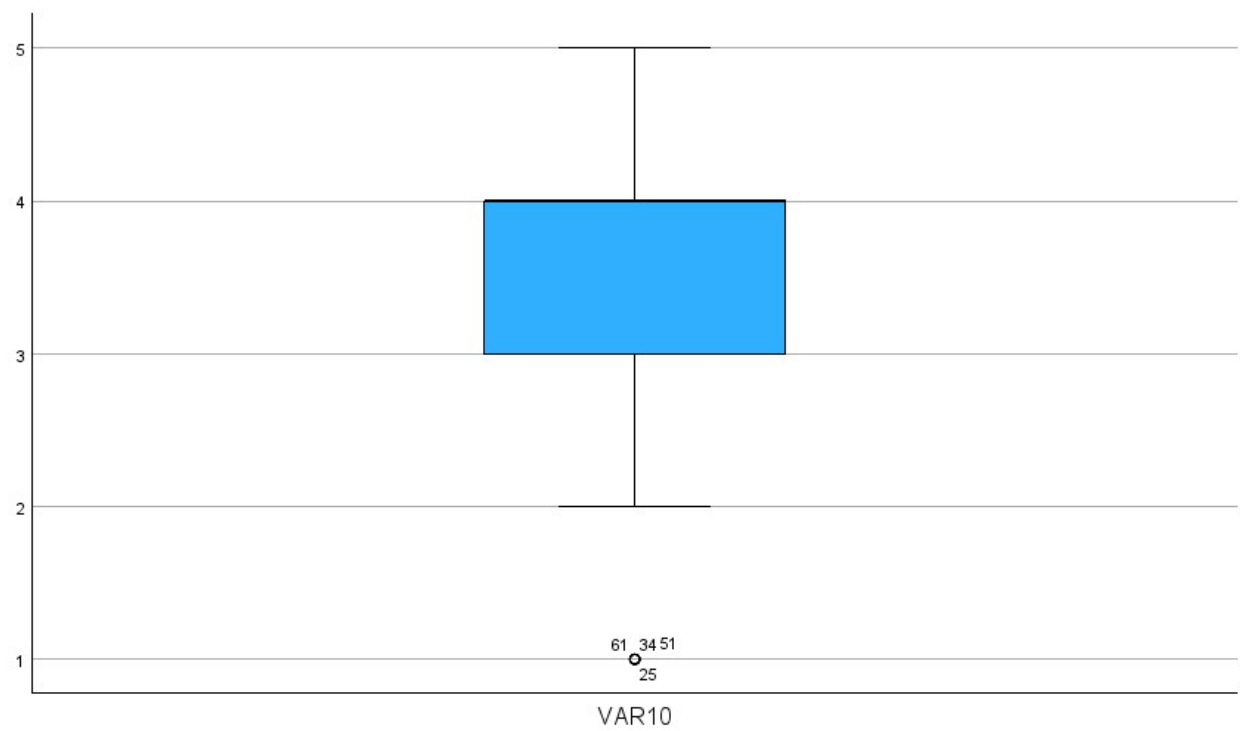
VAR8



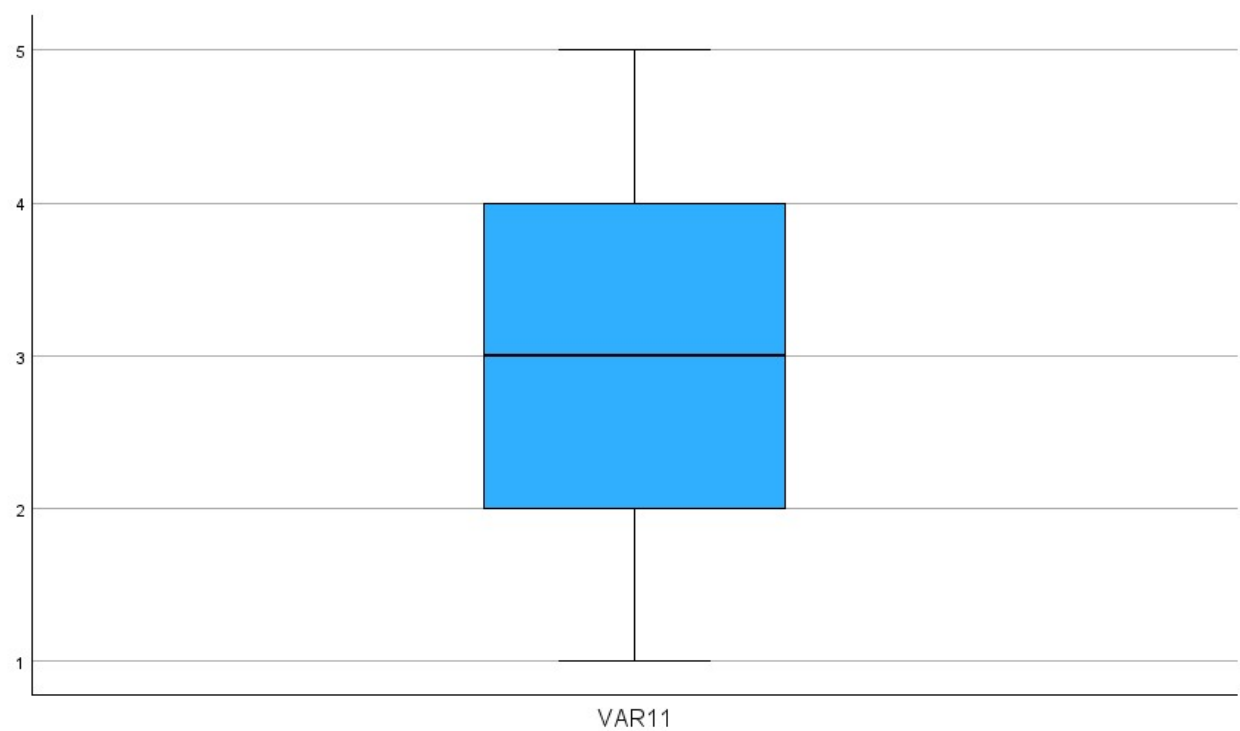
VAR9



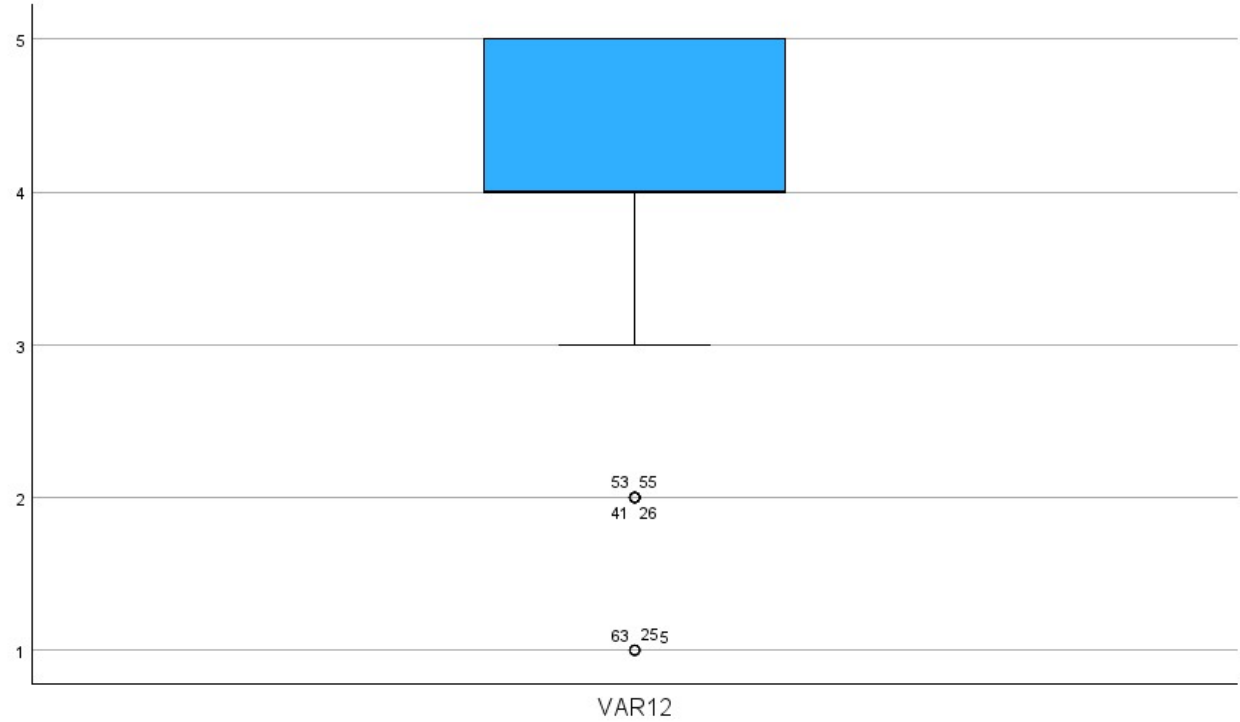
VAR10



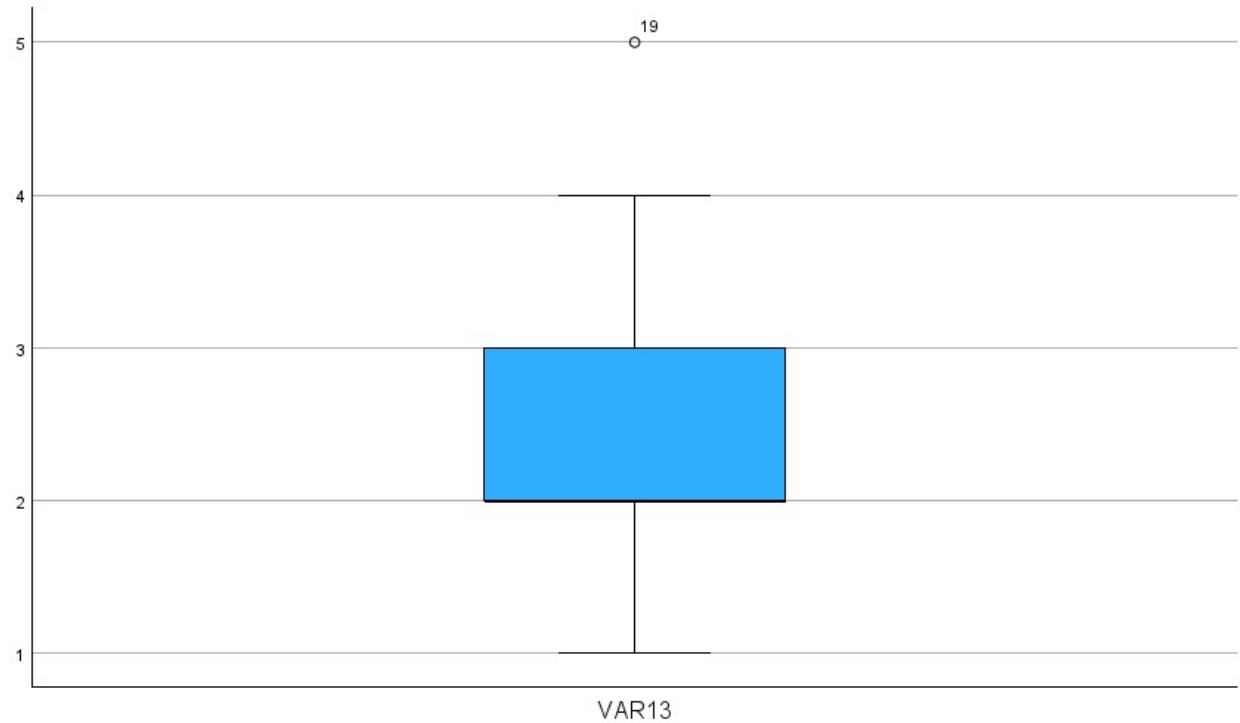
VAR11



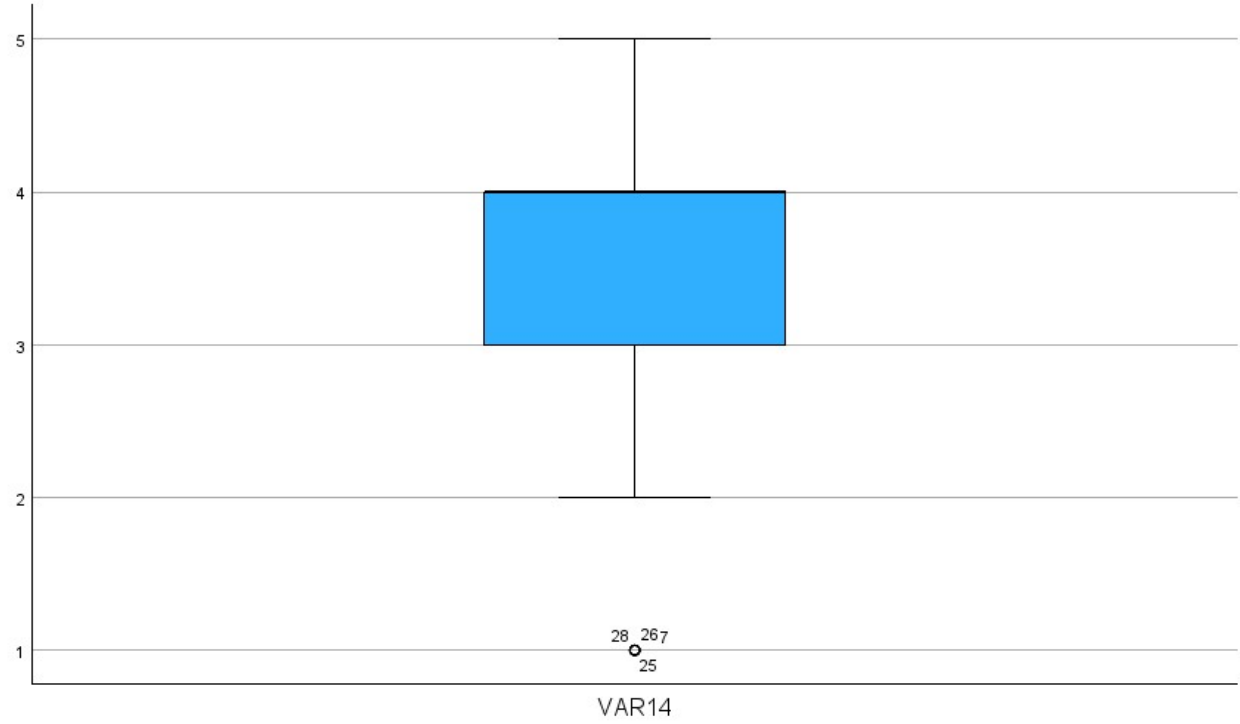
VAR12



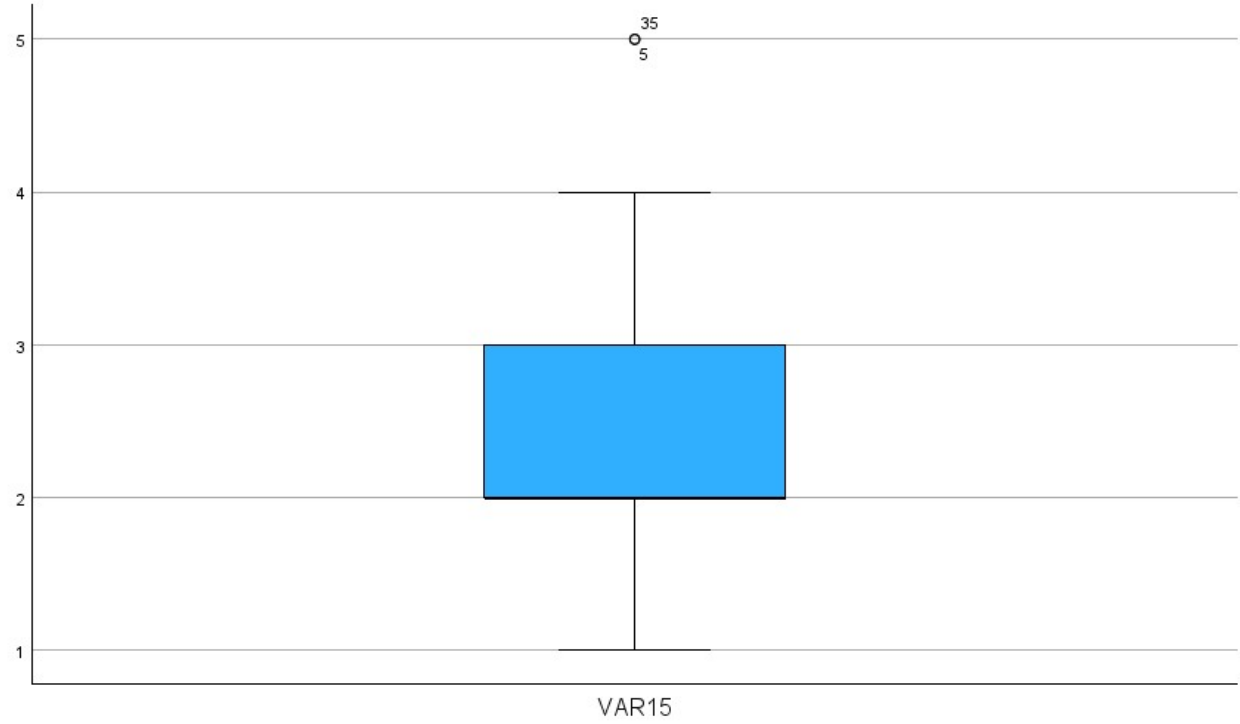
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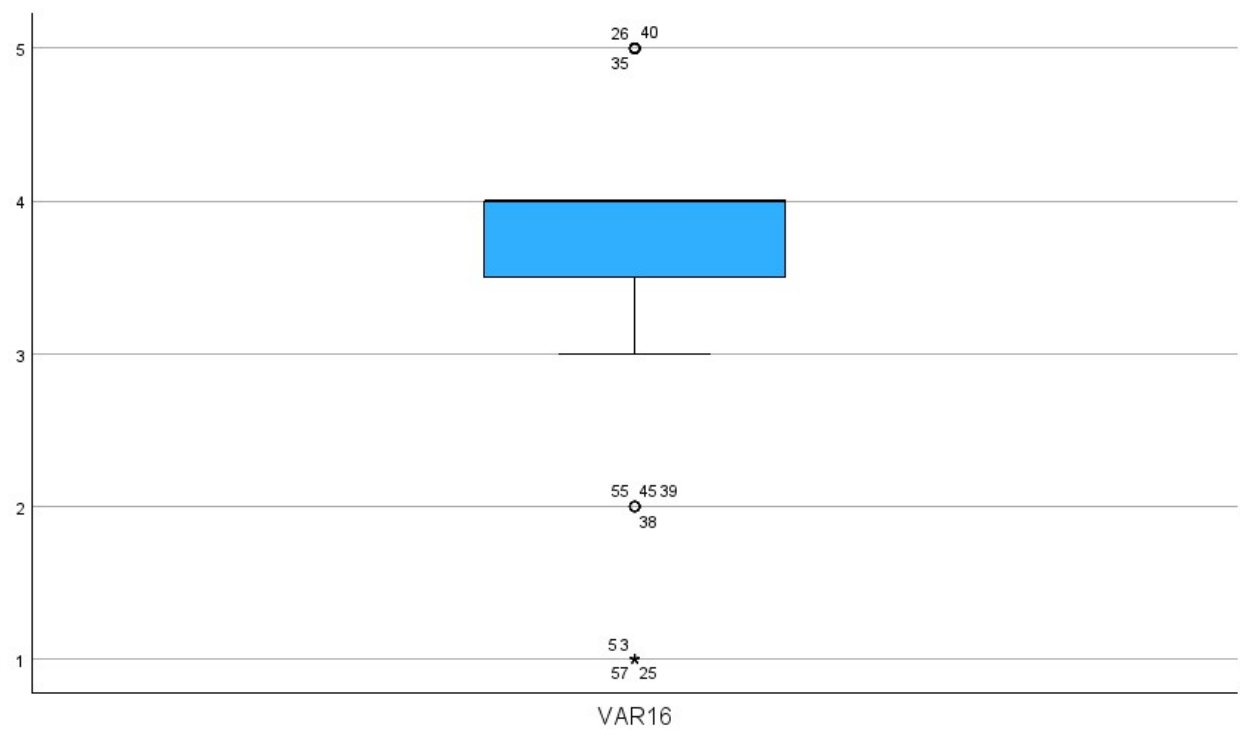
VAR14



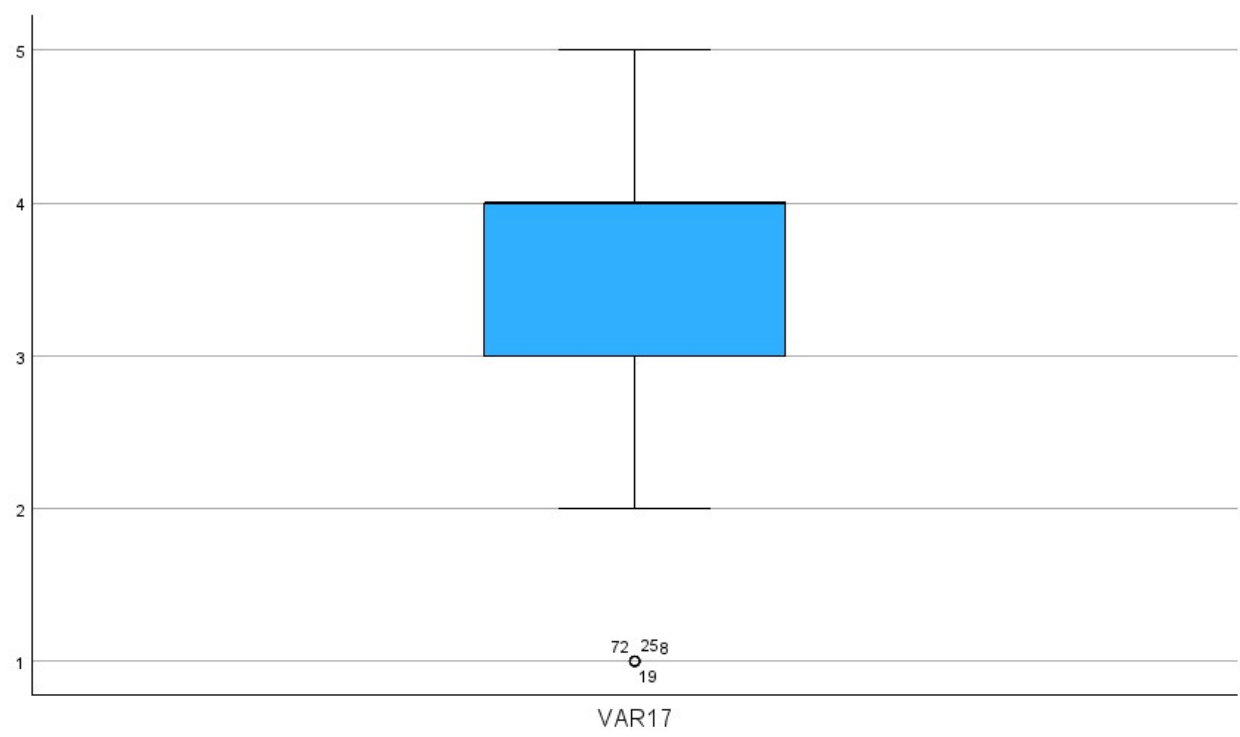
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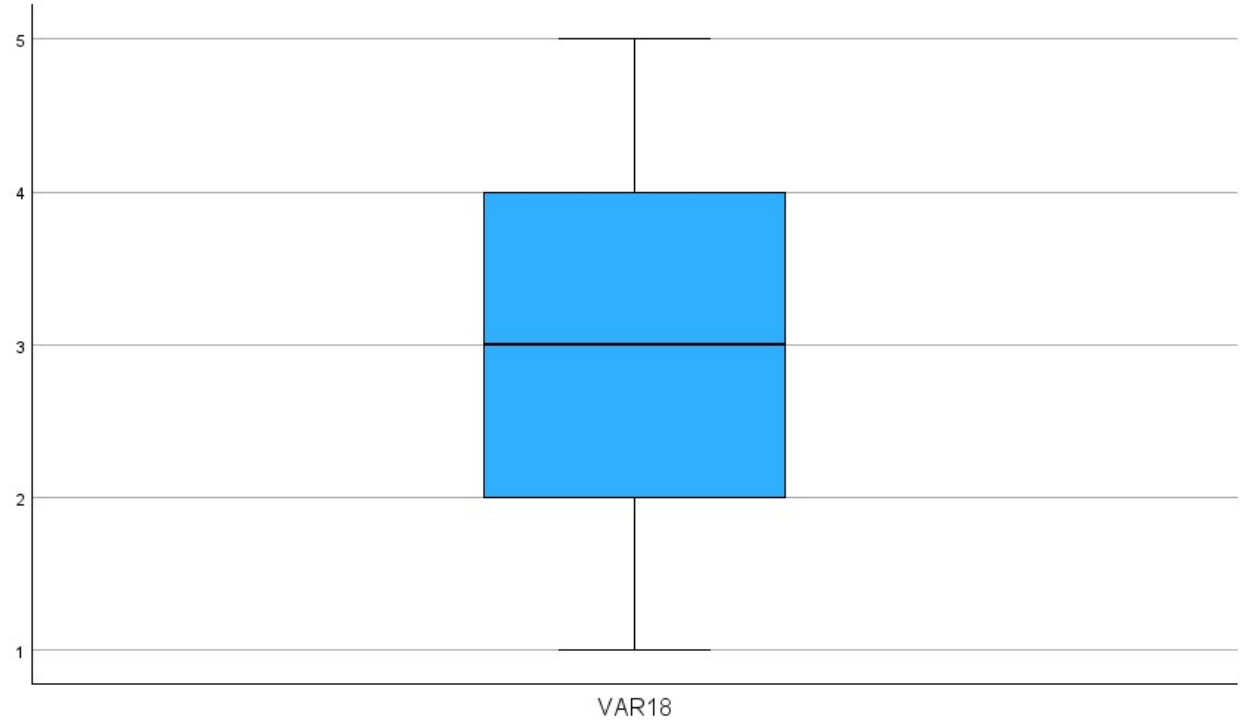
VAR16



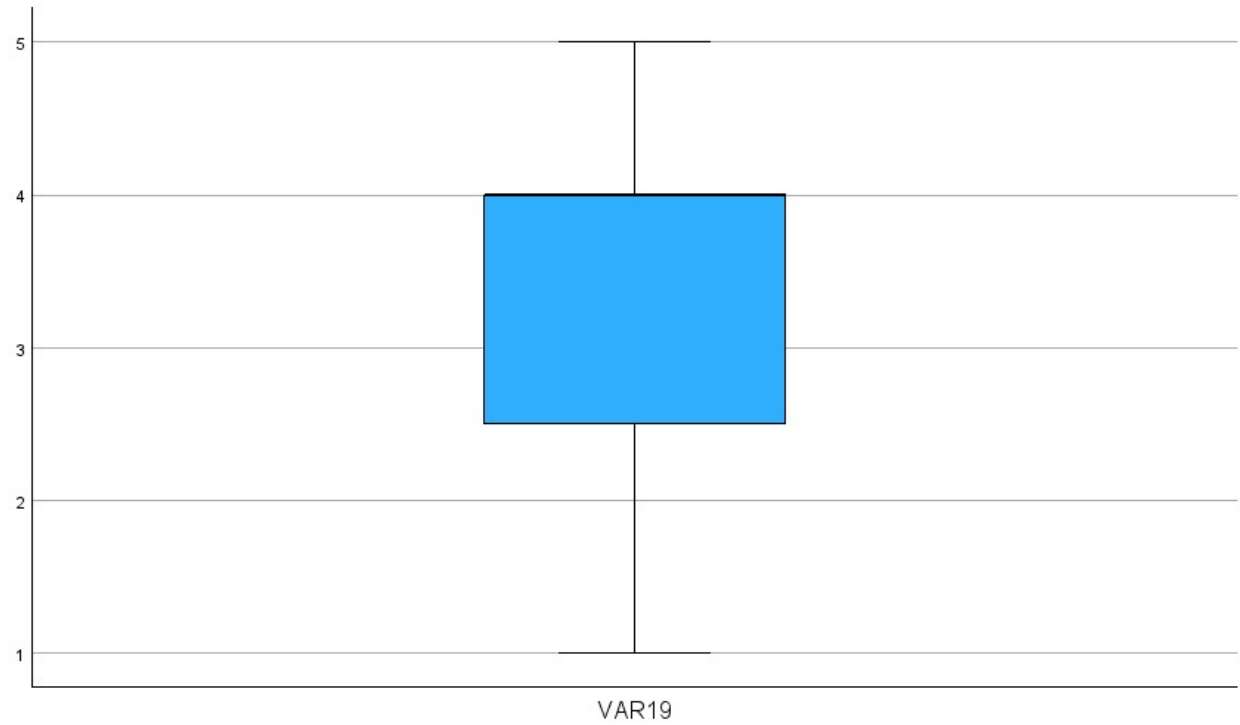
VAR17



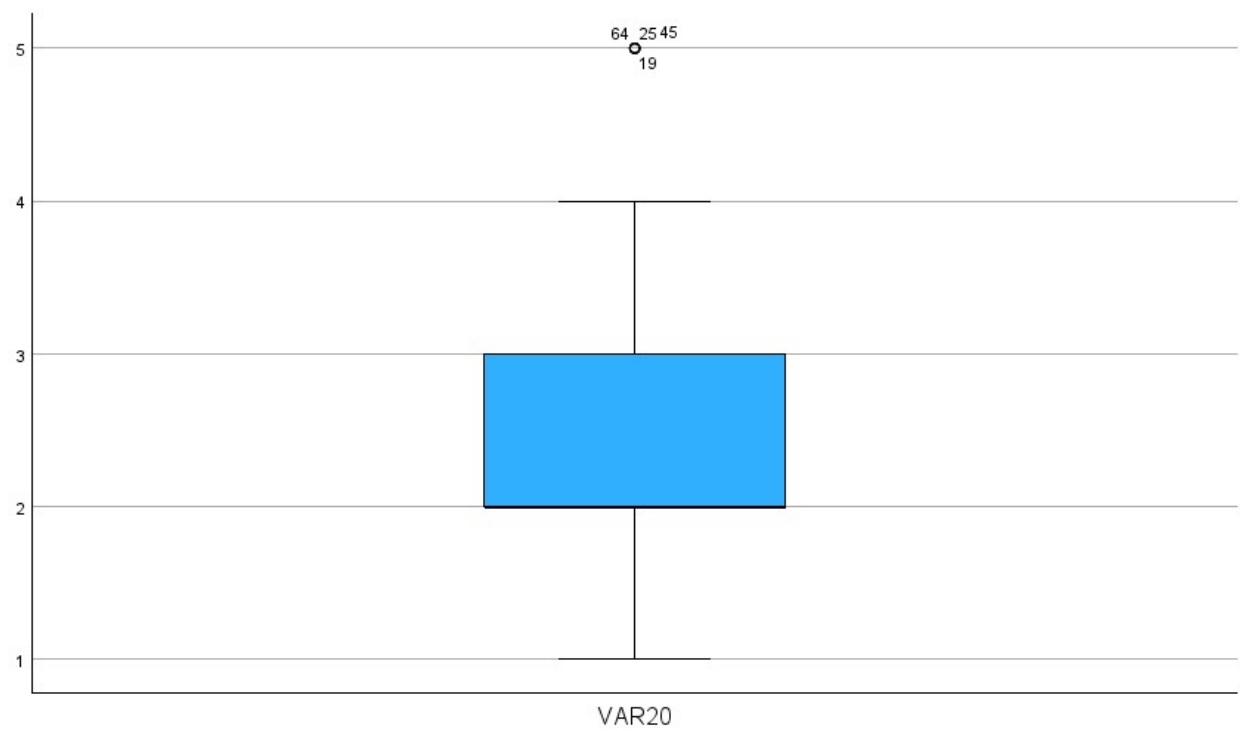
VAR18



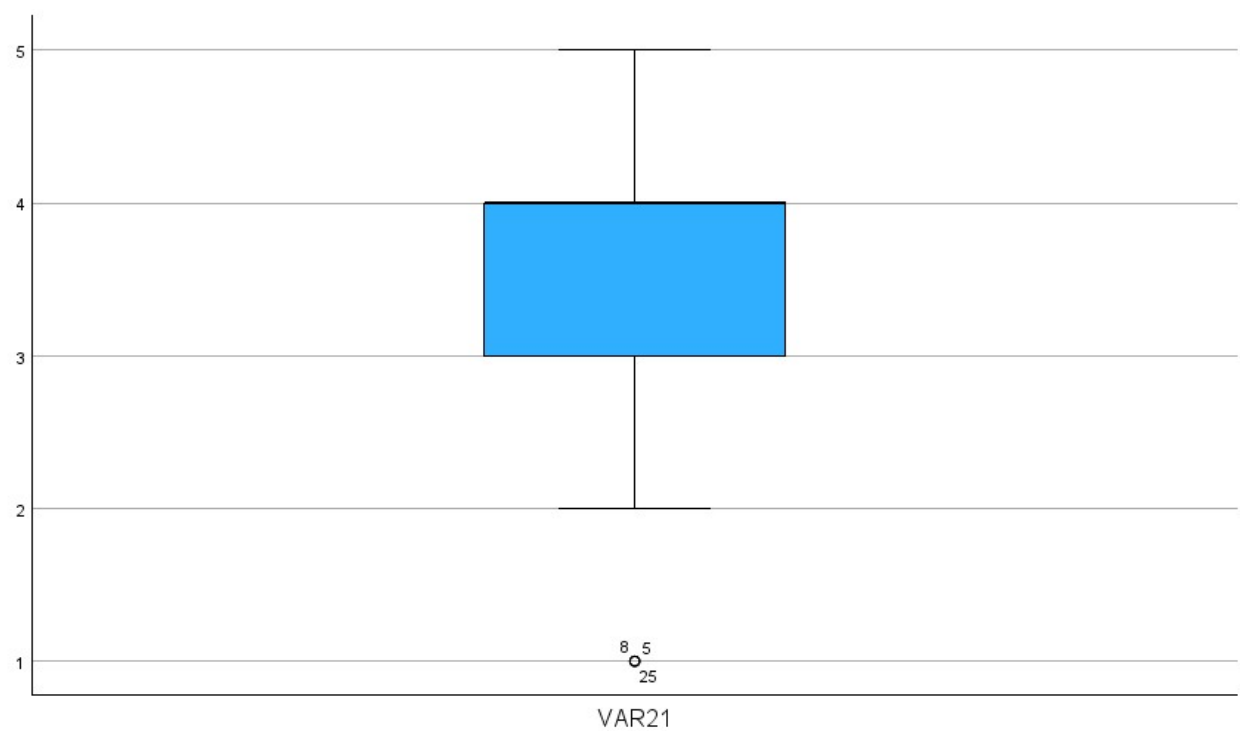
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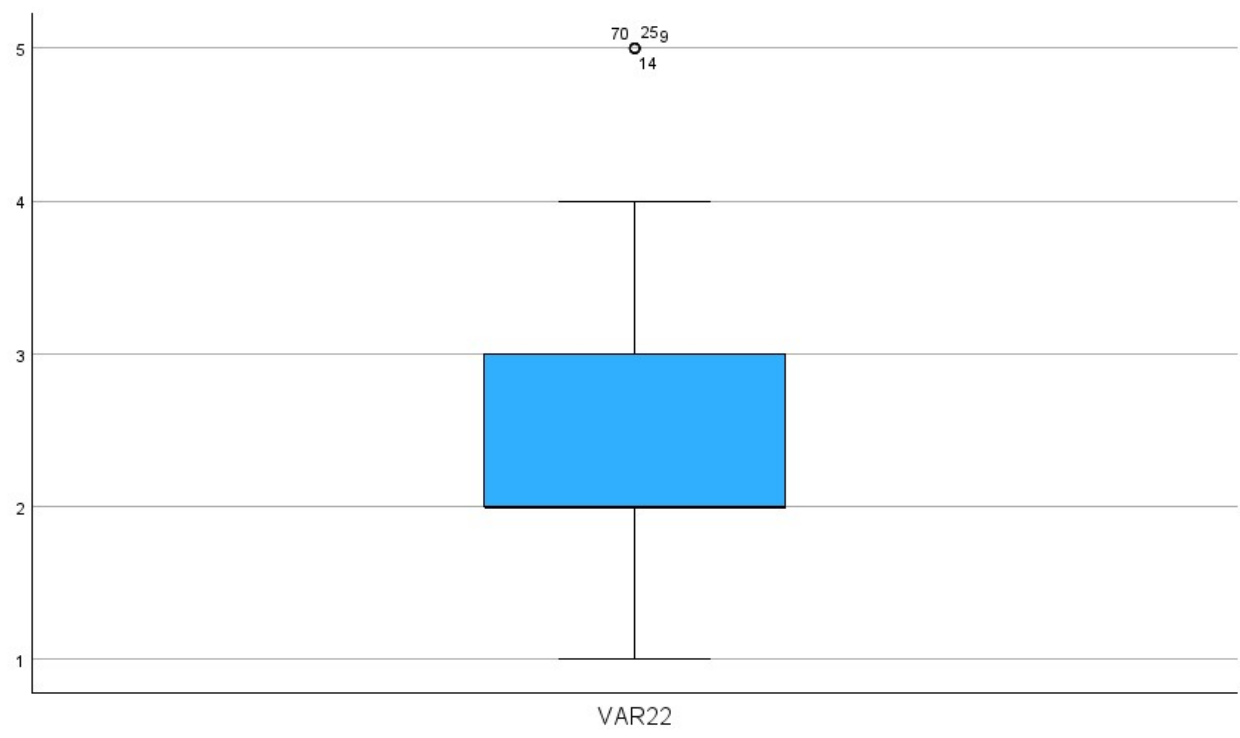
VAR20



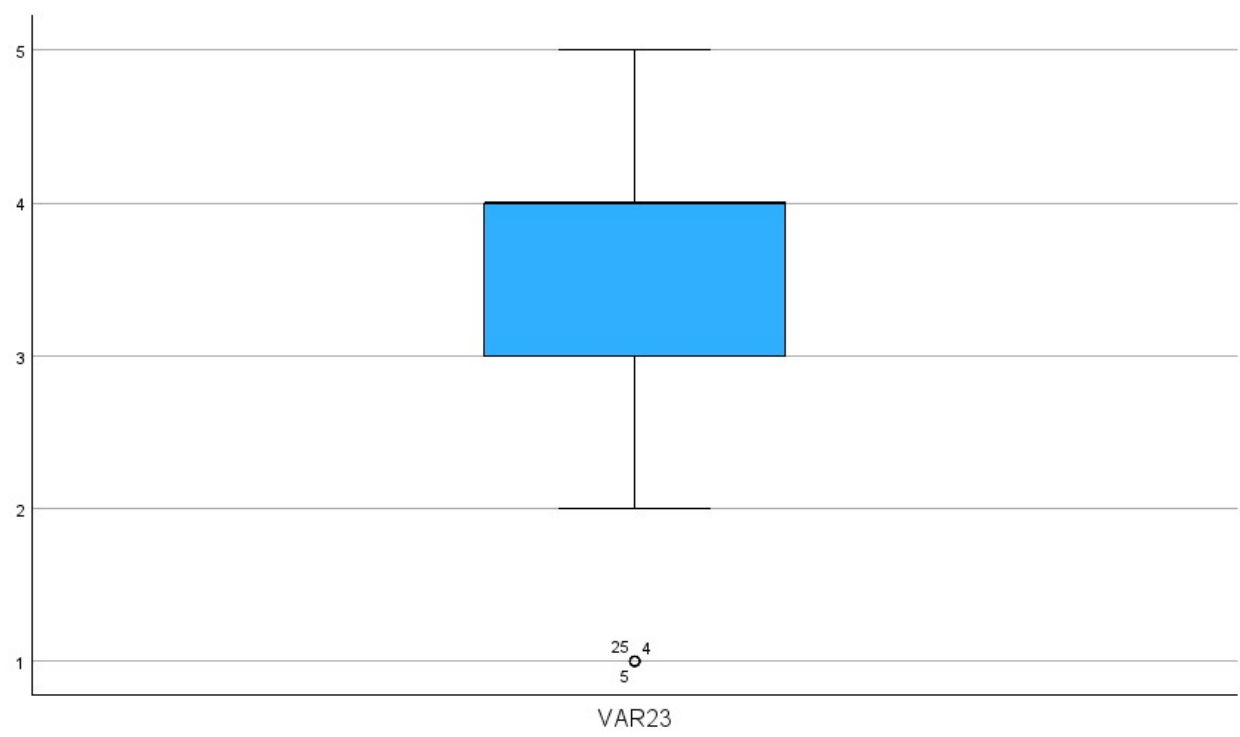
VAR21



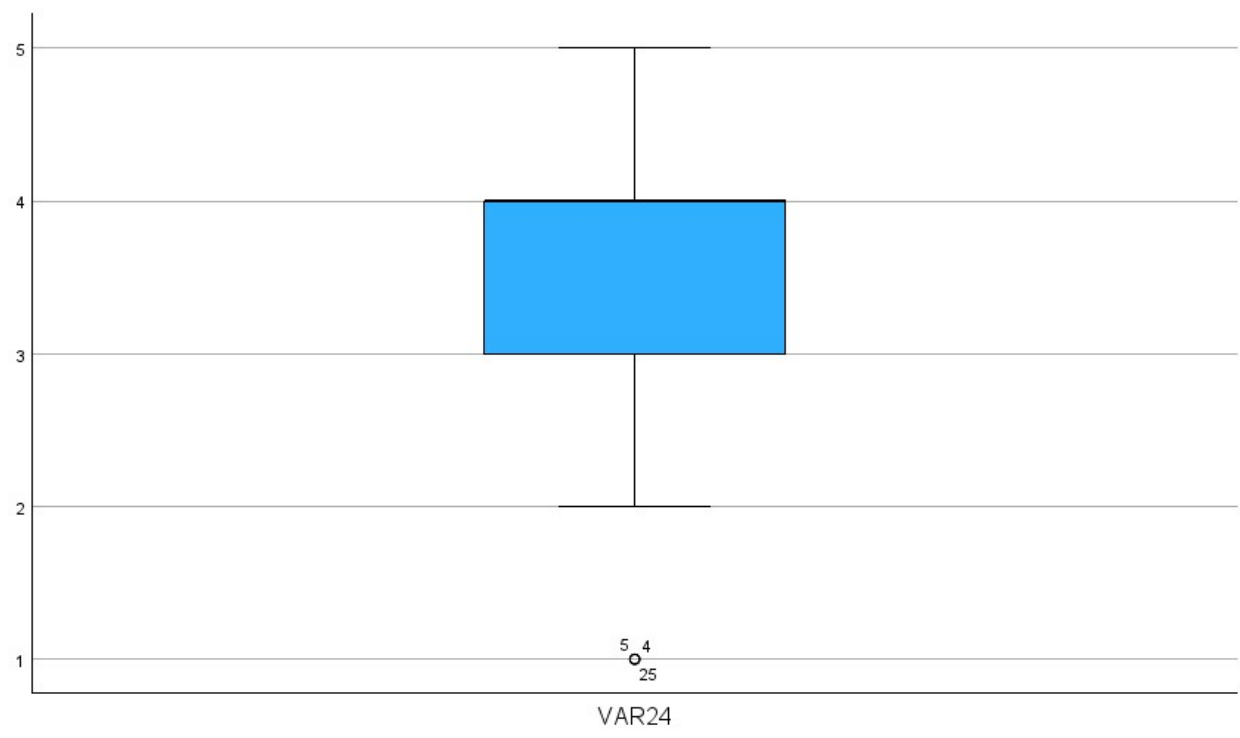
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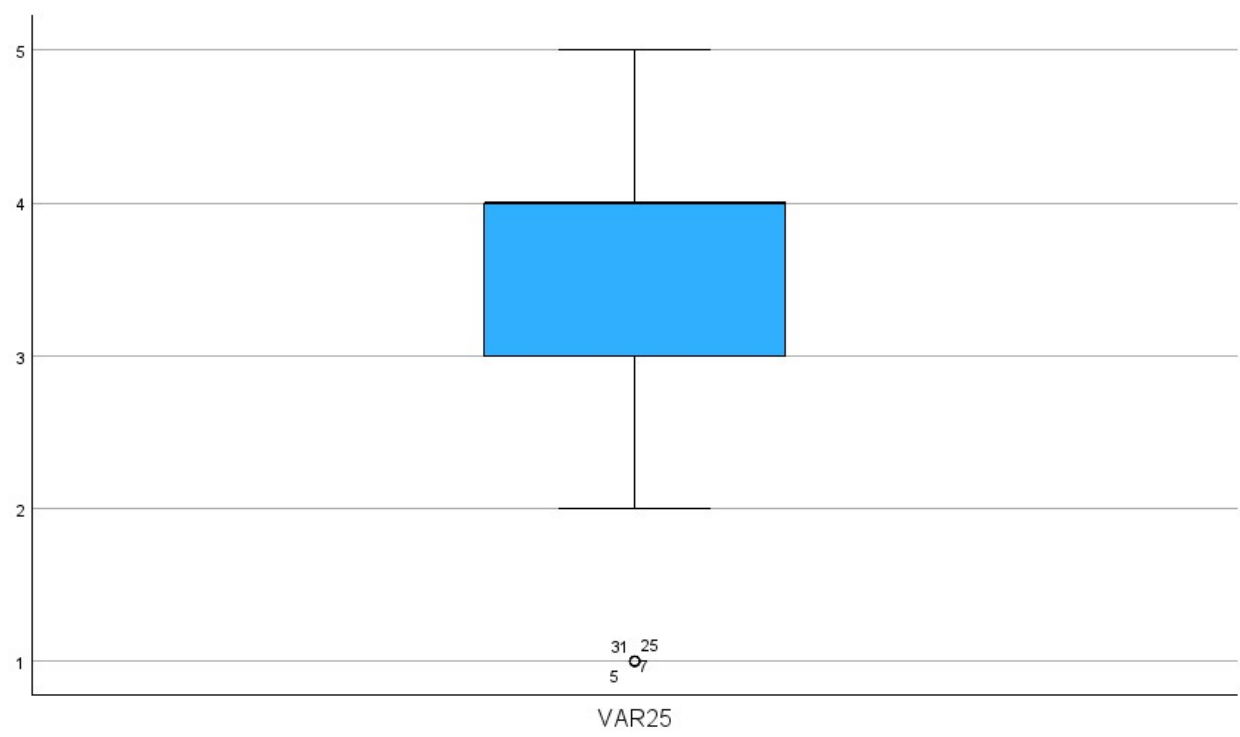
VAR23



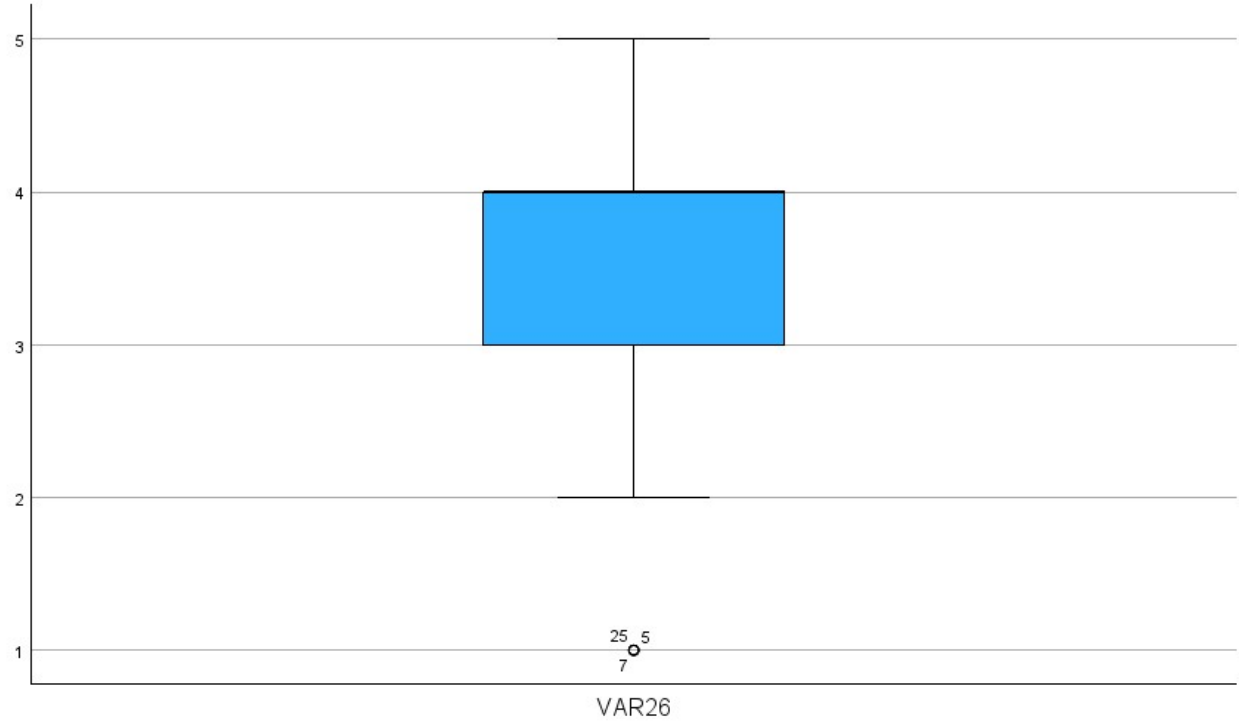
VAR24



VAR25



VAR26



VAR27

