THE RELATIONSHIP BETWEEN SHARED VISION, COHESION, ROLE CLARITY, MUTUAL TRUST AND TRANSFORMATIONAL LEADERSHIP WITHIN A TEAM SETTING

by
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Declaration

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Abstract

New and innovative work structures are being employed in organisations today, especially in the way in which work is approached (Rico & Cohen, 2005). This experimentation has arisen because organisations are seeking better ways of achieving productivity targets and addressing customer demand (Arnold, Barling & Kelloway, 2001). These new work structures are team-based structures, which are widely purported to be the ideal, since teams can respond rapidly because of their multiplicity of skills (Kogler Hill, 2010).

Furthermore, high performing teams with this multiplicity of skills should display certain characteristics or behaviours required to achieve results. This study suggests four team characteristics that are necessary for team success, namely shared vision, cohesion, role clarity and mutual trust. This study furthermore explores the role of the team leader in nurturing the above-mentioned characteristics at a team level, since current thinking on leadership suggests that a leader should be able to inspire, motivate and be a role model for his/her team members (Bass & Avolio, 1994), all of which are behaviours characteristic of a transformational leader; thus transformational leadership is the focal point in this study.

To determine the effect of transformational leadership on team characteristics, a convenience sample ($N = 73$) consisting of various nursing wards within a large public sector hospital was used in this study. The measurement model used in the present study fitted the data satisfactorily, RMSEA = .077 ($p > .05$, 95% CI [.024, .12]). The hypothesised structural model — where transformational leadership affects all four team characteristics directly, without latent interrelationships between team characteristics — was then fitted to the data, showing poor fit, χ^2 (*df* 50, $N = 73$) = 213.49, $p < .05$. Despite the poor initial structural model fit, the subsequent results indicated that the hypothesised relationships between transformational leadership and team characteristics (hypothesis 2 through to hypothesis 5) were all significant ($p < .05$).

The modification indices were then investigated for indications of possible model improvement and it was indicated that three additional β paths (i.e. a link between shared vision and cohesion; a link between trust and shared vision; and a link between shared vision and role clarity) were to

be considered for addition. The modification indices, in addition, also illustrated that two Γ paths (i.e. the link between transformational leadership and cohesion and the link between transformational leadership and shared vision) were to be considered for deletion. The structural model was respecified based on modification indices and expected $\Delta \chi^2$ statistics, and fitted to the data, leading to acceptable fit, RMSEA = .079 ($p > .05$, 95% CI [.048, .670]). This indicated an improvement over the unmodified model. However, further research based on a larger sample would be needed to verify these suggested path additions and deletions.

Overall, the results of the study support the key role that transformational leadership plays on desirable team characteristics. The limitations and implications of the findings of this study are discussed and recommendations for future research are also highlighted.

Opsomming

Nuwe en innoverende werkstrukture word toenemend gebruik in kontemporêre organisasies, veral met betrekking tot die manier waarop werk benader word (Rico & Cohen, 2005). Organisasies ondersoek voortdurend wyses om die bereiking van produktiwiteitsteikens en bevrediging van kliënte te maksimeer (Arnold, Barling & Kelloway, 2001). Moderne werkstrukture is toenemend spangebaseerd, aangesien spanne vinnig kan reageer op verandering weens die veelvuldigheid van spanvaardighede (Kogler Hill, 2010).

Verder kan verwag word dat hoëverrigtingspanne met 'n wye verskeidenheid van vaardighede ook oor sekere kerneienskappe sal beskik. Die huidige studie veronderstel vier spaneienskappe wat kritiek is vir spansukses, nl. gedeelde visie, kohesie, rolduidelikheid en onderlinge vertroue. Die studie verken verder die rol van die spanleier om hierdie spaneienskappe te kweek, aangesien onlangse leierskapteorie veronderstel dat 'n suksesvolle leier vaardig behoort te wees om sy/haar span te inspireer, motiveer en ook 'n rolmodel moet wees vir die span. Die laasgenoemde is eienskappe kenmerkend van transformasionele leiers (Bass & Avolio, 1994); aldus die fokus van die bestaande studie op transformasionele leierskap.

Ten einde die effek van transformasionele leierskap op spaneienskappe te ondersoek, is 'n nie-ewekansige steekproef ($N = 73$) van verplegingseenhede binne 'n groot publieke sektor hospitaal gebruik in die huidige studie. Die metingsmodel vir die studie het bevredigende passing getoon, RMSEA = .077 ($p > .05$, 95% VI [.024, .12]). Die veronderstelde strukturele model — waar transformasionele leierskap direkte invloede uitoefen op al vier spaneienskappe, in die afwesigheid van onderlinge latente interkorrelasies tussen spaneienskappe — was gevolglik gepas op die navorsingsdata, met swak passing, χ^2 (df 50, $N = 73$) = 213.49, $p < .05$. Ten spyte van die swak strukturele modelpassing het daaropvolgende resultate getoon dat die alternatiewe hipoteses rakende verwantskappe tussen transformasionele leierskap en spaneienskappe (hipoteses 2 tot 5) almal ondersteun was ($p < .05$).

As volgende stap, is die aanpassingsindekse (MI) verder verken vir moontlike aanduidings van modelverbetering; drie addisionele β roetes (nl., tussen gedeelde visie en kohesie; tussen

vertroue en gedeelde visie; en tussen gedeelde visie en rolduidelikheid) is oorweeg vir verdere byvoeging. Die aanpassingsindekse het verder getoon dat twee Γ roetes (nl., tussen transformasionele leierskap en kohesie, asook tussen transformasionele leierskap en gedeelde visie) oorweeg behoort te word ter verbetering van die strukturele model. Die strukturele model is herspesifiseer, gebaseer op die aanpassingsindekse en verwagte $\Delta \chi^2$ statistiek, en gevolglik gepas op die data. Die resultate het gedui op bevredigende passing, RMSEA = .079 (p > .05, 95% VI [.048, .670]) — 'n duidelike verbetering op die aanvanklike strukturele model. Verdere navorsing is egter nodig om hierdie voorgestelde aanpassings aan die strukturele model te verifieer in 'n groter steekproef.

In die geheel gesien, dui die studie se resultate op die sleutelrol wat transformasionele leierskap speel in die ontwikkeling en handhawing van gewenste spaneienskappe. Beperkinge en implikasies van die bevindinge word bespreek, en aanbevelings word gemaak vir verdere navorsing.

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Research Problem and Research Objectives

1.1. Introduction

Organisations have to be alert to dynamic market changes which present new challenges, such as more competition from other companies, decreased growth in productivity and early retirement (Castka, Bamber, Sharp & Belohoubek, 2001; Waters & Beruvides, 2009). Such obstacles have resulted in some very dramatic changes in the way in which work is approached, such as the implementation of innovative types of work structure (Cartwright, 2003; McGreevy, 2003; Rico & Cohen, 2005). The result of this is that "[m]any organizations are experimenting with new ways to design work to enable them to be more productive, flexible and to meet the demands of a fast paced and changing environment" (Arnold, Barling, & Kelloway, 2001, p. 315).

One of the ways in which organisations have responded to this changing environment — characterised by work re-design and re-organisation (Waters & Beruvides, 2009) — is through implementing team-based structures (Arnold *et al*., 2001; Esquivel & Kleiner, 1996; Houghton, Neck & Manz, 2003; Meyer, 1999; Sundstrom, 1999; Trent, 2003). These team-based structures have been purported to be an idyllic work structure. In fact, it has been stated that "…the use of teams has become the symbol of an ideal model of work and working behaviour for organizations" (Erdem & Ozen, 2003, p. 131). If this model of work is ideal, then what makes it an ideal framework?

It is suggested that teams can respond quickly and adapt swiftly (Kogler Hill, 2010), because of their diversity of knowledge and skills. One of the reasons for this rapid response is that, "[t]eam structure can lead to increased organizational productivity, higher job satisfaction and more effective response to competitive pressures" (Arnold *et al*., 2001, p. 315). However, if such teams can respond quickly to organisational changes, how could these types of teams be created? For this, first, a discussion is required regarding what constitutes a team and what makes teams successful.

Team Definitions and Team Types. A good definition that includes the complementary nature of teams suggests: "A group of people with either mixed or complementary skills working together for an agreed purpose" (Rabey, 2003, p. 158).

From this definition, one can see that a team is a purpose-driven entity with definite goals and objectives and, most importantly, that team members' skills should exhibit heterogeneous characteristics in order to support one another's skills.

There are various types of teams. Gibson, Ivancevich and Donnelly (2000, pp. 210-211) define three types of teams. These are:

- Problem-solving teams: These "…are formed on a temporary basis to address a specific problem…. For the most part…composed of individuals from the same department or area …. Once the problem is solved, the team disbands."
- Cross-functional teams: They "…are composed of individuals from different departments or work areas who come together on a task or project basis. These groups…monitor, standardize, and improve work processes that cut across different parts of the organization…A general rule associated with the use of cross-functional teams is that the longer the duration, the more the team members rotate in and out."
- Self-directed work teams: Such teams "…comprise 10 to 15 individuals who take on the long-term responsibilities of their former supervisors as well as retain their prior responsibilities…Typically, the self-directed work team holds control over the determination and assignment of work to be performed, choice of operating procedures, and allocation of resources. Some self-directed work teams…have members evaluate each other's performance in order to assign rewards or pay incentives."

Another type of team, the work team, is the focus of this study. Kozlowski and Bell (2003, p. 334) define these as follows:

Work teams and groups are composed of two or more individuals who (a) exist to perform organizationally relevant tasks, (b) share one or more common goals, (c) interact socially, (d) exhibit task interdepencies (i.e., work flow, goals, outcomes), (e) maintain and manage boundaries, and (f) are imbedded in an organizational context that sets boundaries, constrains the team, and influences exchanges with other units in the broader entity.

It is suggested that "[w]ork teams are integral to a new breed of high-involvement organisation…" (Sundstrom, 1999, p. 3). Therefore, if it can be said that teams are an integral part of a successful organisation, what is it that makes a work team [or any team] effective? Asked differently, what does it mean to be effective and what causes a team to be effective?

Team Effectiveness. In the Oxford Dictionary, *effective* is explained as "[p]roducing a desired or intended result" (South African Concise Oxford Dictionary, 2002, p. 370). An effective team can be described as "… one in which development of a supportive social structure has occurred, with each individual adapting his behaviour to optimise his personal contribution to the team" (Sheard & Kakabadse, 2004, p.55). Therefore, if a team accomplishes what it initially sets out to do, according to the above definitions, it is deemed effective. An added benefit of team effectiveness is that, "[e]ffective teams are not only more productive as a team, but they allow their members to be more productive and satisfied" (Campion, Papper & Medsker, 1996, p. 433). Researchers have focused on such key ingredients that affect team performance and various research studies have examined these ingredients of team effectiveness.

Haas (2010) reports on a study conducted on 96 self-managed teams that focused on autonomy and external knowledge within the teams. Teams with high levels of autonomy and external knowledge were found to be strategically and operationally more effective than teams that only exhibited high levels of either autonomy or external knowledge. An interesting study investigating the multilevel effect of minority opinions, (i.e. opinions which differed from the majority team opinion) in 57 teams, found that, in team decision making, the minority opinion is an important contributing factor to ultimate team effectiveness. The study further found that minority confidence and minority influence has a mediating effect between learning-goal orientation and team effectiveness (Park & Deshon, 2010). The study focused on newly formed

teams however, thus additional research is needed to ascertain whether these findings can be replicated in more established teams. It was also found that mental efficacy and physical efficacy contributed to team effectiveness (Hirschfeld & Bernerth, 2008), but the researchers in this study pointed out that it was mental efficacy only that positively affected problem solving. In a meta-analysis of 138 criteria studies of teamwork process and team effectiveness it was found that teamwork processes have a positive relationship with team effectiveness and member satisfaction. Interestingly, the meta-analysis also indicated that task interdependence and team size had a moderating effect on teamwork processes and team performance (Lepine, Piccolo, Jackson, Mathieu & Saul, 2008). These studies identified the various variables/behaviours that are necessary for team effectiveness. Those behaviours that are required for teams to become effective therefore need to be identified.

Team Characteristics. A team should display behaviours that reveal their belief that they, as a unit, know and do what is necessary in order to achieve an envisaged future. Thus, the team should exhibit the different variables necessary for success. A shared vision is the basis for this behaviour. Various writers (Barnett & McCormick, 2003; Kelly, 2000; Robbins & Finley, 2000; Sundstrom, 1999; Yukl, 2002) have acknowledged the importance of incorporating a good, clear vision, but a clear vision should be accompanied by a sense of belonging in the team.

A desire (on the part of the individual team members) to belong to a specific team (Deeter-Schmelz & Kennedy, 2003; Gibson *et al*., 2000; Stewart, Manz & Sims, 1999), is also required for successful, cohesive team endeavours. Another essential consideration with regard to job performance is that employees need to be clear and decisive about what they are required to do. Their role needs to be clearly defined. The same is required of team members within their specific team (Belbin, 2000; Robbins & Finley, 2000) for effective team performance. In addition, if team members clearly know their role, they also need to know that they can trust one another.

Thus it has been suggested that team members' dependence on and trusting of one another (Costa, Roe & Taillieu, 2001; Webber, 2002) also are necessary factors for effective team performance.

These behaviours are not created out of thin air, however. They are manifested by certain team characteristics or attributes possessed in a team. A team can posses most of the desirable characteristics but an individual cannot, since these characteristics repeatedly contradict one another on an individual level (Castka, Bamber & Sharp, 2003). Thus it appears that a team as a collective can become a viable work unit if the various elements or team characteristics for effective team performance are present. In this study, it is suggested that a team should possess a shared vision, cohesion, role clarity and mutual trust as necessary team characteristics for the above-mentioned behaviours to be manifested. These characteristics are necessary, but they are neither self-created nor self-perpetuated.

These characteristics therefore need to be developed, nurtured, maintained and sustained. This study explores the suggestion that the team leader should possess the required leadership capabilities necessary for nurturing these characteristics, since current thinking on leadership suggests that a leader should be able to inspire, motivate, and be a role model for his/her team members (Avolio, 1999; Bass, 1990; Bass & Avolio, 1994) in order to develop and nurture the team to achieve greater heights.

This type of leader is one who is able to transform the team into an effective unit; such a leader exhibits certain characteristics which enable the team members to achieve more. This study furthermore examines the suggestion that the transformational leader possesses the required leadership capabilities necessary for effective team functioning. To provide a meaningful contribution to the existing body of research, it therefore becomes necessary to explore the extant literature to investigate the degree to which this suggested relationship has been empirically investigated.

Research conducted. Early attempts to study the relationship between transformational leadership and various team characteristics have provided varied results. Studies that have examined aspects of this relationship have only been undertaken at a conceptual level. Shared vision, for instance, was conceptualised as mediating the relationship between two factors of transformational leadership, namely idealised influence and inspirational motivation and team performance (Dionne, Yammarino, Atwater & Spangler, 2004). An empirical study involving

senior managers of 89 branches of a large European financial services organisation, found that transformational leadership did not positively moderate a senior team's shared vision in an ambidextrous organisation (Jansen, George, Van Den Bosch & Volberda, 2008). Thus some initial research has not provided consistent results and does not take into consideration the other team characteristics mentioned in this study as necessary for team success. This inconsistency does not extend to the relationship between transformational leadership and various team characteristics only, but also to the investigation of team processes in general.

Studies on team work processes in general have produced limited results because concepts were not clearly defined in some instances and sometimes the very processes were redundant or related to each other in nontrivial ways (Lepine *et al.*, 2008). Furthermore, a meta-analysis of 104 research studies involving team-level antecedents of creativity and innovation in the workplace found that some of the analyses were based on a small number of research studies, especially at the subgroup level (Hülsheger, Anderson & Salgado, 2009). Thus it seems necessary to clearly define the team characteristics examined in the study and at the same time examine the relationship between transformational leadership and these team characteristics within the team setting.

This study therefore attempted to add to the existing literature on transformational leadership and team performance by investigating the relationship between transformational leadership and *all* four team characteristics within the *same* team setting. As mentioned above, previous studies have focused on only one or two of these characteristics, rarely within the *same* team setting.

1.2.   Identification of the Research Problem

This study attempted to identify how transformational leadership in the organisational environment influences the required team characteristics. It is thus necessary to study the relationships between these various constructs.

As such, the main research problem for this study was as follows:

- What is the relationship between transformational leadership and team characteristics? Or, stated differently: Are team characteristics [η] a linear function of transformational leadership [ξ]?

1.3. Aims of the Study

It was proposed that the team leader / manager in an organisation is partly responsible[1] for the effective performance of work teams. This study suggests that the above-mentioned characteristics exhibited by a team can be developed and nurtured by the team leader.

The relevant characteristics, however, need to be shaped and developed for eventual successful team performance. This study portends that the transformational team leader possesses the skills necessary to develop and nurture such team characteristics and the main aim of this study therefore was to highlight the effect of the transformational team leader's leadership on the effective characteristics of the team and thereby influence the performance of the team.

1.4. Practical and Fundamental Importance of the Study

From a practical point of view, this study may aid team-based organisations to determine which leadership dimensions are lacking or need to be cultivated by their respective team leaders and/or managers in order to create an environment necessary for effective teamwork. It could also highlight which team characteristics are lacking or need to be cultivated by work teams in an organisation.

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[1] There may be other organisational variables outside of the sphere of control of the team leader which can also negatively or positively affect the performance of a team, such as organisational incentive programmes; organisational retrenchment initiatives; company mergers; mandatory retirement of team members; and / or mandatory retirement of the team leader, etc. It was outside the scope of this current study to investigate which variables other than the team leader can affect team performance. This study also did not intend to investigate the extent of the influence these organisational variables have on team performance.

A further possibility involves its use as a career development tool to help team leaders and managers to focus on developing the critical leadership dimensions missing in their 'armoury'. It could also be used to aid teams in becoming more effective work units (by focusing on and developing the necessary internal characteristics of effective team behaviour).

From an academic point of view, the study also intended to develop a reliable and valid measuring instrument set designed to measure the relationship between transformational leadership and work team characteristics. The measuring instruments used in this study adapted items from previous academic questionnaires on trust, role clarity, trust and cohesion to form a composite questionnaire on work team characteristics for the purposes of this study only. The measuring instruments also included a transformational leadership component, but these leadership items were not adapted as they were deemed well suited for the study without any further adaptation.

This study also intended to broaden the existing literature on leadership and teams, by providing an introspective understanding of how transformational leadership can positively affect team performance. Previous studies (such as those studies highlighted above) have concentrated on investigating the relationship between transformational leadership and one or two of the four above-mentioned team characteristics in various team settings. However, no other study to date[2] has investigated the relationship between transformational leadership and *all* four of these team characteristics with the *same* team setting.

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[2] Every effort has been made to ascertain whether any such studies exist. To date, none have been found, although this does not mean that none exist. There may be unpublished studies or studies not found by the researcher, or there may be studies that still were to be printed at the time of the current research study.

1.5.   Summary

In summary, this chapter has presented the introduction to this study, which in the first instance took into account the existence of teams and how teams are used in the workplace. This led to a discussion of the effectiveness of teams within an organisational setting. As team effectiveness was not seen as the focus of this study, this only served as a basis for introducing team characteristics. Team performance was identified as more than something that appears out of thin air: the antecedent of effective team performance is the existence of team characteristics. These are the building blocks for team performance.

However, these team characteristics need to be developed and nurtured and the study explored the suggestion that such nurturing and developing is the role of the team leader. The extent to which the transformational team leader possesses the necessary skills to nurture and develop the requisite team characteristics therefore needed to be investigated. Transformational leaders are able to inspire those around them; they are also able to develop and nurture the talented individuals who follow them (Avolio, 1999; Bass, 1990). They are also able to motivate and cultivate trust within those who report to them.

The main research question of this study was identified as: Are team characteristics a linear function of transformational leadership? The aim of the study was to highlight the effect of transformational leadership on shared vision, role clarity, mutual trust and cohesion. Furthermore, the practical and fundamental importance of this study relies on enhancing the ability of organisations to highlight team characteristics that are lacking or need to be cultivated in work teams in the organisation and to identify the leadership characteristics that are needed or lacking in the team environment to ensure success.

Chapter 2
Literature Review

2.1. Introduction

The purpose of this chapter is to systematically argue the research hypothesis by means of a discussion of the literature on the key constructs in this study. An analysis and synthesis of the main contributions concerning these constructs are also included in this chapter. The discussion begins with an introduction of each of the key team constructs (η) studied in this research study; this is followed by a review of important concepts in leadership theory and, finally, the foundational elements of transformational leadership (ξ) are highlighted, as these form the focal point of this study.

The key constructs discussed in this chapter are shared vision, cohesion, role clarity, mutual trust and transformational leadership. Discussions on each of these constructs begin with a review of the relevant definitions and research conducted within the particular field under discussion. Furthermore, the context for this particular study is presented and the gaps that the study has attempted to fill are identified. The relationships between the various leadership dimensions and the team characteristics are also discussed in the relevant sections. This culminates in a proposed conceptual model (presented in Chapter 3) of how the variables interrelate and this will be empirically tested as a structural equation model. This concludes the introduction to Chapter 2. The first latent dependent variable$\square$ to be discussed in the following paragraphs will be shared vision.

2.2. Shared Vision: Team Characteristic #1

Definition of Vision. Organisations nowadays have an overarching principle that guides the activities of the entire organisation, called the vision. A vision can be defined, as "… statements of preference about what a leader believes his or her team or organisation should be…" (Sundstrom, 1999, p. 105). In expanding on the idea of where an organisation should strive to be,

it can be said that a vision is "what the organization has to be at its climax." (Eigeles, 2003, p. 209). Therefore if the vision is all-important, how can it be accomplished?

Thus, to achieve this overall purpose, incremental goals have to be achieved. This is what the mission statement encompasses. The vision and mission go hand in hand and the one cannot be achieved successfully without the other. This is summed up in: "If the vision is being achieved one feels it, if the mission is being achieved one can measure it." (Sheard & Kakabadse, 2004, p. 35). This reasoning applies to every level of an organisation, from divisions to departments to individual teams. The above definitions suggest that the vision is imperative for organisational success and the efforts of the leader are integral to ensuring the success of the vision. The question that follows is: How does one create a successful vision?

Processes needed to Create a Shared Vision. Eigeles (2003) describes the methods suggested by Senge and Goldratt for generating skills for developing a shared vision.
Senge's method involves

> developing and deploying systems thinking and dialoguing …it is possible to trace the elements that push a process toward further growth as well as the elements that moderate such growth …. Moreover, Senge's method enables filtering out "phantoms" … elements that falsely seem to have some influence on a process …. Senge focuses on process complexity and considers cause and effect to be counter productive. (Eigeles, 2003, p. 209)

Goldratt proffers a different view of developing a shared vision.

Goldratt's method involves the 'theory of constraints' (TOC) and 'thinking process' (TP).
The TP is a structured process of

> generating one graph (tree) for the desired future, one graph for existing reality and then one graph for the transition from the existing situation to the desired one. In these graphs constraints are defined by criteria of "must" and "should". Through this

process it is possible to locate conjunctions and disjunctions of causes as well as to determine correlated effects. (Eigeles, 2003, p. 209)

What are the lessons to be learnt from applying Goldratt's and Senge's two approaches?

Even though the two approaches differ in application, important lessons can be gleaned from them for use in organisations today. The above processes clearly suggest that a structured approach is to be followed and that an analytical approach is adopted by envisioning the future and mapping it with the past. With this, it is also necessary to investigate elements that falsely influence the desired state and to note what processes are needed to switch from the past state to the future state. These approaches from Senge and Goldratt appear quite theoretical and cumbersome. However, a practical approach by Yukl (2002, p. 286) presents a simpler "blueprint" for developing a vision. This comprises the following:

- Involve key stakeholders
- Identify strategic objectives with wide appeal
- Identify relevant elements in the old ideology
- Link the vision to core competencies
- Evaluate the credibility of the vision
- Continually assess and redefine the vision.

Concluding Remarks Concerning the Development of a Shared Vision. From the above, it is clear that the team members should also be included in the visioning process (at team level, at the very least) in all its facets from the beginning right until the end. Involving, or at least consulting everyone who may be affected may, at the very least, obviate resistance to accepting a vision. Communication will be fostered if all stakeholders, including team members, are consulted. It is also suggested that an increased shared vision may actually improve communication efficiency (Lechner, Frankenberger & Floyd, 2010). This means that team members will not be apprehensive about offering meaningful suggestions in the future regarding changes concerning the team vision and team goals. However, how can the suggestions of the team members be manifested to produce a coherent picture of the future? A guiding force that manifests this shared vision is needed.

Shared Vision and Team Leadership. The team vision is not a self-perpetuating manifestation by any means. It is suggested that, "The leader must make sure that the vision is being communicated properly so the audience really is able to 'see' it." (McLarney & Rhyno, 1999, p. 296, referring to the work of Mary Parker Follett). It is actually encouraged that leaders "enlist others in a common vision" (Kouzes & Posner, 2010, p. 28). This is important to build future commitment (Rud, 2009). Despite the leader being able to build commitment through a common vision, it is also necessary to be able to stimulate the actual creation of a vision, otherwise the ability of the leader to sustain commitment becomes limited.

This, therefore, requires more than just getting team members to buy-in. A more emotive point of view is expressed by Losoncy (1995, p. 4), who states: "Vision is the leader's dream that stretches the team's imagination and pride to their limits." Thus, a leader can actually stimulate the creative energy of the team through creating a shared vision. In fact, a study involving 408 Spanish organisations found that a shared vision promoted organisational learning and organisational innovation (Garćıa-Morales, Llorens-Montes & Verdú-Jover, 2006). Multiple regression analyses were conducted in the study. In the initial regression analysis, the dependent variable was organisational innovation ($R^2 = .360$) ($F = 33.164$, $p < 0.001$), with shared vision the independent variable ($t = 2.186$, $p < .05$). In the next set of analysis results, organisational learning ($R^2 = .390$) ($F = 38.636$, $p < .001$) was the dependent variable, with shared vision the independent variable ($t = 3.979$, $p < .01$) (Garćıa-Morales *et al.*, 2006). It thus becomes important to be able to create this shared vision because of the major organisational impact it can have. What needs to be considered, though, is how the leader can accomplish this feat.

Robbins and Finley (2000, p. 115) describe it best when they say, "The vision is the thing the team exists to do…it is the thing that leadership makes happen. Without team vision, there is no point to a team." However, if leadership makes the team vision happen, how does leadership accomplish this? It can be argued that specific leadership behaviours need to be implemented to shape and create the vision in conjunction with the team members. This study suggests that transformational leadership behaviours are the type of behaviours necessary to create and shape a shared team vision.

Shared Vision and Transformational Leadership. Transformational leaders who exhibit inspirational motivation are able to "…motivate and inspire those around them by providing meaning and challenge to their follower's work" (Avolio, 1999, p.45). Moreover, transformational leaders who exhibit idealised influence, "…result in their being role models for followers to emulate over time." (Avolio, 1999, p. 43). In other words in order to be a good transformational team leader, s/he has to "walk the talk" in order to gain credibility. A good example of such a leader is Mahatma Ghandi. Ghandi inspired a nation to rebel against its British rulers, without using violence. Standing up to such a powerful nation without once picking up arms demands tremendous courage and it takes a special type of leader to inspire such a mindset. Therefore, the mindset of the team needs to be nurtured and developed to envision a coherent, successful future.

Henry Ford once said: "Believe you can or believe you can't, either way you'll be correct (Losoncy, 1995, p. 168). Thus, the team leader needs to inspire the team members so that they will believe that team success is a reality in the near future, and it can be reasoned that, if the transformational leader can inspire his/her followers to believe strongly enough in their common cause, then, all things being equal, it can be achieved. This is corroborated by Losoncy (1995, p. 3) who concludes that "[t]here is a direct connection between the motivating team leader's encouragement and whether or not the team develops the courage to believe…. There is also a clear positive relationship between a team's courage to believe and its eventual achievements."

Avolio (1999, p. 45) continues by stating that that these types of leaders "will use sources of power at their disposal to move individuals or groups toward accomplishing their mission, vision and cause". Furthermore, because of the ethical nature of transformational leaders (Engelbrecht, van Aswegen & Theron, 2005; Simons, 1999), followers will trust their judgement. We now review the research conducted on the link between shared vision and transformational leadership.

Empirical Research. A conceptual model by Dionne *et al*. (2004) suggests that a shared vision is the mediating factor in the relationship between two factors of transformational leadership, namely idealised influence and inspirational motivation, and team performance. This conceptual model by Dionne *et al*. (2004), however, will need to be validated through future empirical testing to evaluate the linkages posited in the paper. Although this study only indicates a

conceptual linkage between transformational leadership and shared vision, a foundation for this relationship has been established.

Against this, a study conducted with senior managers of 89 branches of a large European financial services organisation (Jansen *et al*., 2008) found that transformational leadership did not positively moderate a shared vision in senior teams in ambidextrous organisations. This was one of the few studies that investigated the relationship between shared vision and transformational leadership and the result was not positive. It can be argued, however, that this result was influenced by the fact that senior team members, through having direct influence on strategy, may already be committed to the goals and objectives to be achieved (Jansen *et al*., 2008).

Despite the above result, it was found that communicating a shared vision accounted for 67% of the variance in team member trust in their leader (Gillespie & Mann, 2004). Common method variance may have influenced this result, however. Gillespie and Mann (2004, p. 602) argue that "…the consistent positive association between leadership practices, as rated by one team member, with trust in the leader, as rated by another team member, demonstrates that the relationship is not simply an artifact of same-source bias".

Concluding Remarks regarding Shared Vision and Transformational Leadership. From the preceding discourse it can be argued that the team is doomed to fail if a team leader does not demonstrate those competencies specific to ensuring a successful shared vision. In conclusion, it is suggested that the team leader who exhibits transformational leadership dimensions could be seen as one who would succeed in developing and encouraging a successful shared team vision. The foregoing discussion above thus confirms that a positive relationship between transformational leadership and shared vision does seem to exist. This hypothesis will be investigated and the results of this relationship will be discussed in Chapter 4 of this research study. The next team characteristic to be discussed is cohesion.

2.3.   Cohesion: Team Characteristic #2

Cohesion Defined. Carran, Brawley and Widmeyer (quoted in Heuzé & Fontayne, 2002, p. 1) define cohesion as "[a] dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs".

From this definition it appears that two motives are present within a cohesive group: one motive is to attain an objective and the other motive is to satisfy the affective needs of the individuals of that group. Furthermore, if the group is to be successful over a period of time, it will need to act as a cohesive unit over time. It follows that, for a group to remain cohesive, people within the group must want to belong to that group (Forsyth, 2009). So, how do group members distinguish themselves from another group? A brief investigation of the current theories on cohesion should provide more light on how group members might distinguish themselves from other groups.

Current Theories of Cohesion. Within Psychology, Social Identity Theory suggests that members of a group "… are not passive recipients of social identity but that they try to enhance the image of the in-group by a process of social comparison with relevant out-groups" (Festinger, 1954 cited in Hennessy & West, 1999, p. 362). A similar theory is the Self-Categorisation Theory, which "… emphasised the perceptions that maximised differences between in-group and out-group and minimised differences within categories" (McPherson & Smith-Lovin, 2002, p. 5). The above-mentioned theories highlight the fact that in-group members will actually try to enhance their group's cohesion through comparing other groups with themselves.

An alternative theory emphasises in-group and out-group differences. The theory of relational cohesion states that "…frequent social exchange results in … positive emotions that solidify … the person-to-group bond and … uncertainty reduction that renders the focal group more salient in relation to others" (Lawler, Thye & Yoon, 2000, p. 616). This theory builds on the fact that groups maximise differences between themselves and other groups by stating that the positive emotions of the group members also play a role in enhancing group cohesiveness. This is extremely important in the context of this study. If these emotions are not nurtured in a positive way through the efforts of the team leader, one group may not become distinct from another

group and as a result lose its cohesiveness. However, if a group becomes extremely distinct, this, too, can pose a risk to team performance and become detrimental to the success of the group in severe cases.

Detrimental Effects of Group Cohesion. On the detrimental side, extremely high cohesiveness within a team is undesirable as well. In fact, Thompson (2000) indicates four decision-making pitfalls that can arise when teams exhibit extreme cohesiveness.

The first is **Groupthink**. Conformity and invulnerability can result from groupthink (Gibson *et al*., 2000). A team's capacity for clear thinking when making decisions may also become hampered (Booysen, 1993; Sheard & Kakabadse, 2004) and may tend to be extreme. One approach which may inhibit this type of decision-making is to keep in mind that "[d]ecisions made by the majority should not be considered a consensus decision" (Kessler, 1995, p. 40).

The second pitfall is **Escalation of Commitment**. This entails that "…under certain conditions, teams will persist with a losing course of action, even in the face of clear evidence to the contrary" (Thompson, 2000, p. 118).

The third pitfall is the **Abilene paradox**. Thompson (2000, p. 125) describes it as a form of "pluralistic ignorance" and explains that "[g]roup members adopt a position because they feel other members desire it; team members don't challenge one another because they want to avoid conflict".

Lastly, **Group Polarisation** can also occur. It is the "…tendency for group discussion to intensify group opinion, producing more extreme judgement than might be obtained by pooling the individuals' views separately" (Thompson, 2000, p. 128).

From the above discourse, it appears that a fine balance needs to be cultivated between instilling too much team cohesion and the optimal level of team cohesion. If this optimal level is achieved, dramatic effects within teams and the organisation as a whole can be realised.

The Effects of Cohesion on Teams and Organisations. From an organisational standpoint, it is suggested that the relationship between the team's goals and the organisation's goals are vital. This point is summarised by Gibson *et al*. (2000, p. 209) who state: "A group can be low in

cohesiveness and yet have members' goals agree with those of the formal organisation. Here, the results are probably positive, although again more on an individual basis than on a group basis."

Recently research has shown that group cohesion has a significant effect on an individual's organisational citizenship behaviour ($r = .910$, $p < .001$) (Chen, Tang & Wang, 2009). This result is very interesting, seeing that team members may have to volunteer and be altruistic at times to ensure that a certain task or goal is accomplished. It was found, furthermore, that agreeableness predicts team cohesion (O'Neill & Kline, 2008). The study by O'Neill and Kline (2008) also highlighted that a predisposition for being in a team accounted for 36% of the variance in team cohesion. In a related study of 68 patient care teams, it was found that team cohesion had a significant direct effect of .990 ($t = 6.89$) on quality of patient care, which, in turn, affected satisfaction of patients (Deeter-Schmelz & Kennedy, 2003). These results indicate the significant effect that cohesion can have within a team and an organisation. In the face of these results, it becomes imperative that a healthy cohesive atmosphere within the organisation be maintained, but who is to sustain this atmosphere?

This study suggests that the responsibility to maintain and develop a healthy, cohesive atmosphere (and avoid the above pitfalls as far as possible) rests mainly on the shoulders of the team leader; the team leader has to exhibit certain positive actions and behaviours that encourage team members to participate in team goals and develop a sense of belonging, while, at the same time, ensuring that no maladaptive behaviour takes root. This study investigates the extent to which the transformational team leader can develop team members to become a cohesive unit.

Cohesion and Transformational Leadership. A study of 320 high school sports team athletes found a significant relationship between the behaviour that a leader displays and team cohesion, $\lambda = .735$, $F(20, 512) = 2.4779$, $p < .0004$ (Murray, 2006). This involved all the roles fulfilled by the team coach of the athletes. It appears that the team coach needs to be a driving force for good performance within the team environment. A related study of 271 American fire fighters highlighted the mediating role of cohesion between transformational leadership and unit performance (Pillai & Williams, 2004). These studies have indicated that cohesion within teams leads to good feedback and superior performance and that the role of the leader is important in

managing this cohesion within teams. It is necessary to know how the leader has to be involved with each team member to the extent that the team can grow as a unit?

This type of leader (a transformational leader) creates a climate of camaraderie within the team through his/her endearing actions (Avolio, 1999). It can be purported that this type of leader is 'in tune' with his/her follower's needs to such an exceptional level that s/he would naturally be aware of feelings of discontent between fellow team members. When a team leader exhibits a particular dimension (in this instance, individual consideration) of transformational leadership, "[t]eam spirit is enhanced. Such leaders display enthusiasm and optimism." (Avolio, 1999, p. 45). However, creating a climate of cohesive camaraderie is one thing, but once this cohesive climate is created it has to be seen whether this leader can also lead the team to successful task completion.

Through inspirational motivation, the transformational leader is always attempting to help his team 'go that extra mile' (Avolio, 1999). The team members' belief that they can accomplish agreed-upon tasks increases because of the positive motivation employed by their leader. This is what Bandura (1999) refers to as "social persuasion" and he introduces it as one of four ways (mastery experiences, vicarious experiences and physiological and emotional states being the other three) in which people's self-efficacy beliefs can be influenced. Thus people (team members) can achieve task completion through the atmosphere and individual efforts of the transformational leader.

Concluding Remarks Regarding Cohesion and Transformational Leadership. It appears that cohesiveness within the team increases because the leader employs transformational leadership behaviours that stimulate the team members to start believing in themselves and that they, as a team, can accomplish what they set out to do. From the extant literature, it seems that transformational leaders can enhance team cohesiveness and that there is a causal link between cohesion and transformational leadership. The extent of such a relationship was explored in this research study and the results are presented in Chapter 4.

2.4.   Role Clarity: Team Characteristic #3

Role Clarity Defined. As a point of departure, role clarity is defined as "… the degree to which a person is certain about how he/she is expected to do a job" (Shoemaker, 1999, p. 8). This degree of clarity has also been linked to performance whereby a person who is clear about his/her role will be more apt in fulfilling that particular function (Braxton, 2008). Thus, if a person needs to be clear about his/her role in order to perform, it is necessary to know whether particular types of roles need to be fulfilled to be successful within the world of work.

Role Types. There are various types of roles (Belbin, 2000) within the world of work. Professional roles refer to the formal training and/or qualifications that someone brings to their job, whereas work roles refer to the actual job, tasks, etc. to be accomplished, while team roles refer to what a person adds within a team environment (Belbin, 2000). All these different types of roles are needed for organisational success and a person can even fulfil multiple roles. The focus of this study is on teams, thus the team roles are of interest here. It is suggested that there are specific team roles that need to be fulfilled within a team context (Belbin, 1981, 1993). It is suggested that there are nine such role distinctions (Belbin, 1993); these are presented in **Table 2.1**.

Table 2.1. presents the various types of roles needed within a team and shows that each type of role exhibits some weakness. This illustrates the value of having a variety of skills within a team, so as to compensate for various weaknesses. It also implicitly highlights the fact that, if team members are unsure (i.e. because the role is vague or ambiguous) of what type of role they fulfil, or if they are expected to do too much (i.e. so that they cannot focus their efforts clearly), the weaknesses could become hindrances to success.

Table 2.1.

Belbin's Nine Team Roles

Role	Description	Allowable weaknesses
Plant	Creative, imaginative, unorthodox. Solves difficult problems.	Ignores details. Too preoccupied to communicate effectively.
Resource investigator	Extrovert, enthusiastic, communicative. Explores opportunities. Develops contacts.	Overoptimistic. Loses interest once initial enthusiasm has passed.
Co-ordinator	Mature, confident, a good chairperson. Clarifies goals, promotes decision-making, delegates well.	Can be seen as manipulative. Delegates personal work
Shaper	Challenging, dynamic, thrives on pressure. Has the drive and courage to overcome obstacles.	Can provoke others. Hurts people's feelings.
Monitor-Evaluator	Sober, strategic and discerning. Sees all options. Judges accurately.	Lacks drive and ability to inspire others. Overly critical.
Team worker	Co-operative, mild, perceptive and diplomatic. Listens, builds, averts friction, calms the waters.	Indecisive in crunch situations. Can be easily influenced.
Implementer	Disciplined, reliable, conservative and efficient. Turns ideas into practical actions.	Somewhat inflexible. Slow to respond to new possibilities.
Completer	Painstaking, conscientious, anxious. Searches out errors and omissions. Delivers on time	Inclined to worry unduly. Reluctant to delegate. Can be a nit-picker.
Specialist	Single-minded, self-starting, dedicated. Provides knowledge and skills in rare supply.	Contributes on only a narrow front. Dwells on technicalities. Overlooks the 'big picture'.

Note. From "*Team roles at work*". Belbin, R.M. (1993). Oxford: Butterworth-Heinemann. p. 23.

Conflicting expectations regarding a team member's role can also become a hindrance to success and can impact individual performance within the team because individual accountability is adversely impacted if individuals are unclear about their type of role (Grimshaw & Baron, 2010). This also means that team members need to be aware of the types of roles of other members within the team. It then becomes clear that the success of various role types can be affected by

ambiguity, conflicting expectations and overload, which can actually hamper team success. The adverse impact of the above-mentioned issues will be discussed in further detail below.

The Adverse Impact of Role Ambiguity, Role Conflict and Role Overload. From a psychological point of view, employees may become agitated if there is no clarity about their role in a team or even within an organisation, because they do not know where they stand or because there are conflicting demands. This type of situation can have serious ramifications since it has been suggested that, "[s]tress commonly results from work overload, role conflict[3] and role ambiguity" (Elloy & Smith, 2003, p. 57). As result, effective teamwork may become tenuous (Robbins & Finley, 2000). It should be apparent that, while a small measure of stress can galvanise one towards better performance, a prolonged period of stress can eventually have detrimental consequences for individual and team performance. Therefore if performance is hampered because of stressors like role ambiguity, role conflict and role overload, ways of avoiding or overcoming this should be found. The question, more pointedly, is whether these three stressors can be identified within the work environment. Each of these issues will be addressed below.

Role Ambiguity. Role ambiguity refers to "…lack of clarity in understanding what expectations or prescriptions exist for a given role" (Rahim, 2011, p. 71). It appears that a lack of role information is detrimental to the normal functioning of an individual with regard to completing his/her tasks within the working environment. More specifically, this lack of information can result from "…employees either lacking information concerning appropriate actions in a given situation or not understanding management expectations" (Hsieh & Hsieh, 2003, p. 597). In a study of 60 teams that participated in a computerised decision-making simulation it was found that, as teams become more coordinated because they swap role-based information (e.g. they become more familiar with who needs information from them and from whom they need information) the more effective their teamwork becomes (Pearsall, Ellis & Bell, 2010). It was found that team-interaction mental models ($\beta = .33$, $p < .01$) and transactive

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[3] For the purposes of this study, only a brief description of these three variables (role ambiguity, role conflict and role overload) and reasons for the occurrence thereof will be discussed, since an in-depth discussion of the antecedents and causes of these three factors are unnecessary for understanding role clarity within the context of this paper, thus this is beyond the scope of this research study.

memory (β = .24, p = .05) mediated the effects mentioned above. Thus it appears that team members become more effective when they do not lack crucial information regarding their roles. However, it is suggested in this study that it is the role of the team leader to provide this crucial information. In a study involving 361 employees, path analysis results indicated that role conflict and role ambiguity influence job satisfaction negatively (Yousef, 2002). This places the need to provide role clarity to team members from the team leader as all important for team success. It therefore becomes imperative for the team leader to clearly delineate what is to be expected of the team member, as well as to provide clear direction and guidance to ensure successful task completion. However, what happens if there are conflicting expectations hampering the role clarity of the individual?

Role Conflict. Role conflict "…occurs when a role occupant is required to perform two or more roles that present incongruent, contradictory, or even mutually exclusive activities" (Rahim, 2011, p. 69). This conflict can be divided further into two types of role conflict namely: intra-role conflict and inter-role conflict. Intra-role conflict can be defined as "…the simultaneous presence of two incompatible goals or expectations within [a] role (intrarole) [that results] in conflict" (Nir & Eyal, 2003, p. 550). A practical example to illustrate intra-role conflict is to envisage, for instance, a salesman who may be told by one manager to spend more time on the telephone calling prospective clients in order to get more customers while another manager might tell him that this time should rather be spent on going door-to-door, so as to entice more customers. On the other side of the spectrum, inter-role conflict "…occurs when an individual occupies two or more roles whose expectations are inconsistent" (Rahim, 2011, p. 70). A good example to illustrate inter-role conflict practically occurs when "…professions impose a set of expectations on individual professionals [and]…The goals of an organisation, however … differ from those of the profession" (Lui, Ngo & Tsang, 2001, p. 471). Moreover, in a study of 251 professional accountants in Hong Kong it was found that inter-role conflict was negatively correlated with job dissatisfaction (r = .34, p < .01) (Lui *et al*., 2001), while it was positively correlated with the propensity to leave the company (r = .24, p < .01) (Lui *et al*., 2001). Thus the effects of inter-role conflict within a team setting can have detrimental effects not only on the morale of the team members but the longevity of the team can be in jeopardy if it is not addressed in time. From a team perspective, role conflict in whatever form can prove

problematic since team members become extremely confused by all the conflicting messages and requirements imposed on them from all the various sources.

 One way to overcome this confusion is by acquiring the ability to discern which information is crucial and relevant at the required time and which information is not relevant. In a study of 778 major league baseball teams, it was found that teams with higher levels of team experience had increased team performance (β = .378, ΔR^2 = .12, p < .05) because, when team members learn more about the role of other team members they more fully understand their own role in the team and they become more adept at tapping specific knowledge from other team members when required. (Humphrey, Morgeson & Mannor, 2009). Thus, it appears that when team members become more experienced at role information discernment, effective team performance is the eventual result. It also appears, at least to this researcher, that all these issues of role conflict may be minimised if the team members limit their information to one source, namely the team leader. However, what is to be done if the demand of the role itself is too overwhelming for the team member?

   Role Overload. Role overload can be defined as occurring when "…the collective demands imposed by multiple roles (e.g., parent, spouse, employee) are so great that time and energy resources are insufficient to adequately fulfil the requirements of the various roles to the satisfaction of self or others" (Duxbury, Lyons & Higgins, 2008, p. 130).

Role overload can be further separated into either quantitative role overload or qualitative role overload. "Qualitative overload refers to a situation where a task is too difficult to complete, while quantitative overload is experienced when there are too many tasks that need to be done" (Elloy & Smith, 2003, p. 57). Essentially, the employee or team member becomes overwhelmed because s/he is unable to cope with either the volume of tasks or the difficulty of the tasks. Thus some sort of intervention or guiding force is needed to ensure optimum work performance. This study suggests that this is the work of the team leader. Team leaders moreover need to engage in behaviours that foster acceptance of team goals, so that everyone understands what the end objective is. Leaders who typify the types of behaviours mentioned above are the ones who will be able to lead a team to success. The above-mentioned behaviours mentioned are typical of the

transformational leader. Thus, it is now appropriate to discuss the relationship between role clarity and transformational leadership.

Role Clarity and Transformational Leadership. As stated in the previous section, the transformational leader is always willing to help followers in their personal growth and development (Avolio, 1999) and to motivate them to greater heights (Northouse, 2010). The leader, by providing this personalised advice, can shape the competency of the individual team member. It follows that, if the team member follows this advice, s/he can grow within his/her particular role and contribute positively to the achievements of the team.

The transformational leader (or in this case the team leader), furthermore is cognisant of the effect of his/her influence on the members of his/her team (Avolio, 1999; Northouse, 2010), therefore this team leader will exemplify all those characteristics that s/he wants the team members to exhibit and will thereby support them to achieve the exemplified behaviour. This support is crucial to the eventual role clarity of team members. In a Finnish longitudinal study of 409 participants involving polytechnic schools it was found that a decrease in perceived supervisor support decreased role clarity of newcomers over time ($\rho = .77$, $p < .05$) (Jokisaari & Nurmi, 2009). This study shows that, even when team members (albeit new individuals) think or perceive that their team leader is not supporting them their role clarity is adversely affected. Thus, the question of what the transformational leader could do to positively affect the role clarity of his team members can be asked.

Transformational leaders can achieve greater levels of role clarity amongst their team members in various ways. Such leaders are able to integrate followers within the core functions of the business (Nevarez & Wood, 2010). Transformational leaders exemplify the behaviour and expectations that they require of their followers (Northouse, 2010); through their behaviour, they ensure that task and managerial expectations are clearly communicated for goal achievement. Furthermore, to ensure that team members are not unsure of what they have to do or how they must do a task, team leaders can delegate more responsibility to the team members so that they become more familiar with the task at hand. In fact, one way of developing team members is through entrusting projects to them (Politis, 2002). This is where transformational leaders excel

because they develop, grow and motivate their followers personally to 'go the extra mile' (Avolio, 1999; Bass & Avolio, 1994; Northouse, 2010), by taking on additional projects. It has been also suggested that simulations can be used (Fisher, 1993) for further clarification. For simulations to be successful, team leaders need to be aware of each individual team member's abilities in order to gauge how well they will handle a specific task, and to be able to inspire them to reach greater heights. This is within the ambit of the transformational leader since s/he is able to develop, grow, as well as intellectually stimulate his/her followers.

Concluding Remarks Regarding Role Clarity and Transformational Leadership. When the team leader starts to employ these transformational behaviours, team members will start to embody the same ideals. Furthermore, team members will become more cognisant of the impact of their particular role in fostering trust and respect within their team, since their behaviour is will be based on the influencing behaviour of their transformational team leader. Therefore it is suggested that a positive relationship exists between role clarity and transformational leadership. This relationship is investigated in this study and the results of the investigation are presented in Chapter 4.

2.5. Mutual Trust: Team Characteristic #4

Introduction. Trust within organisations has received widespread attention in recent years. From a business standpoint, the cultivation of trust for organisational success is an extremely important issue. For example, if employees do not trust one another or their leaders, mutual co-operation is out of the question, which may mean that vital communication structures within the team and organisation become strained. The modern organisation is becoming more team-focused (Meyer, 1999; Robbins, Judge, Odendaal & Roodt, 2009; Sundstrom, 1999) and this, among other things, requires the co-operation of team members for eventual team success. This implies that a measure of trust has to exist within the team, as trust "causes the development and protection of the team spirit …" (Erdem & Ozen, 2003, p. 131). Before the manifestation of trust within the team environment can be discussed, it is imperative to first understand what the word trust means.

Trust Defined. A general definition of trust is "[f]aith or confidence in the loyalty, strength, veracity, etc., of a person or thing" (Shorter Oxford English Dictionary on Historical Principles, 2002, p. 3367). Morgan and Hunt, quoted in Adamson, Chan and Handford (2003, p. 348) define trust as: "…when one party has confidence in an exchange partner's reliability and integrity". In considering 'loyalty' from the first definition and 'reliability' from the second definition, it appears that, a trust relationship will 'bloom' if a consistent pattern of trusting behaviour has been displayed in the past. This implies initial distrust or very little trust between those meeting for the first time. This being said, to define trust in more specific terms becomes complicated because of the various aspects of trust that have received attention throughout the years. In fact, there are myriad definitions of trust, as seen in **Table 2.2**.

Table 2.2.

Definitions of the Term `Trust' with Different Focus Areas

Trust Definitions	Authors
1. Definitions focus on the personal source of trust	
· Trust results from earlier experiences and the hope of goodness in man.	Schottläender (1958)
· Trust depends on experiences in early childhood, especially on the quality of the mother- child relationship. Unnecessary frustrations, threads and personal unreliability prevent trust.	Erikson (1963)
· Trust is based on the expectation of a person or a group to be able to rely on the oral or written promise of another person or group.	Rotter (1967,1971)
2. Definitions with focus on the effects of trust	
· Trust reduces the complexity of human behaviour and enables a feeling of safety.	Luhmann (1973)
· Interpersonal trust has the effect that a person relies, in risky situations, on the information of another person about hardly estimatable facts and their consequences.	Schlenker *et al.* (1973)
3. Definitions with focus on behavioural aspects	
· Trustful action displays modes of behaviour, which (a) increase a person' s own vulnerability, (b) are directed towards persons who are not under the personal control of the trusting person, and (c) are chosen in situations when the possible damage is bigger than the usefulness which can be drawn from the action.	Deutsch (1962)
· Trust among two human beings can be observed with the following verbal and non-verbal indicators: frequent `here-and-now' statements, self-disclosing statements, wish for or reinforcement of self disclosing statements of others, asking for and giving feedback, asking for help when having a problem, spontaneous engagement and mutual re-enforcement.	Krumboltz and Potter (1980)
· Trust displays itself in the readiness to talk about issues, which potentially can cause disparagement and rejection, and by this means a risk for the client.	Johnson and Matross (1977)

Note. From "Teams without trust? Investigations in the influence of video-mediated communication on the origin of trust among cooperating persons". Mühlfelder, M., Klein, U., Simon, S. & Luczak, H. (1999). *Behaviour & Information Technology, 18*(5), p. 351.

The definitions presented in **Table 2.2** clearly exhibit the difficulty of attempting to define trust with regard to a specific phenomenon. The constructs involved, as well as the fundamental definition of the specific area of trust that is involved, change dramatically. Thus, it is essential to determine which aspect of trust is the focal point of any study and then to examine and define that particular aspect more closely. This research study focuses on the trust between team members and how it can be fostered or created.

Trust between Team Members. Webber (2002, p. 205) suggests that the creation of a climate for trust within a team environment is essential. This is defined as:

> The shared perception by the majority of team members that individuals in the team will perform particular actions important to its members and that the individuals will recognise and protect the rights and interests of all the team members engaged in their joint endeavour.

This 'climate for trust' or 'mutual trust between team members' (as stated above) does not simply manifest itself out of thin air. It has to be developed, and only then will there be mutual trust among team members. Even though the propensity to trust may be present among team members, this study suggests that the team leader still needs to direct the efforts of such trust forces into a coherent whole. This receives more attention in the following section.

Research Conducted on Trust and Transformational Leadership at the Team Level. A research study involving 83 team members across 33 Research and Development (R&D) teams investigated transformational leadership and member trust in their leader (Gillespie & Mann, 2004). It was found that consultative leadership ($r = .69$), attributed charisma ($r = .66$) and individual consideration ($r = .59$) had the strongest relationship with trust; these are all components of transformational leadership. These results indicate that aspects of transformational leadership can engender a trust relationship between a team member and a team leader. It was interesting to note that the sample reported that team members indicated higher levels of professional trust than personal trust ($t (81) = 5.91$, $p < .01$) in their team leader. This finding could have been influenced by the fact that the sample comprised research and development teams and therefore a greater emphasis on the leader's ability for technical

guidance was paramount for the individual team member. However, this study does indicate that transformational leadership can foster trust in the team leader. The next question asks how the relationship between team members change because of the leader's influence.

Another interesting study was conducted to investigate the hypothesis that co-workers trusted their fellow co-workers more if these co-workers were also trusted by the team leader (Lau & Liden, 2008). This study involved 146 team members in 32 groups across four organisations. The null model of co-worker trust showed significant group effects χ^2 (31, $N = 32$) = 74.90, $p <$ .001 (Lau & Liden, 2008). Furthermore, the results indicated that those who helped others were more trusted by team members ($\gamma = .38$, $p < .01$) and that the leader's trust was positively correlated to co-worker trust ($\gamma = .24$, $p < .01$). Lau and Liden's study shows that the relationship of trust between team members can be positively influenced by the efforts of the team leader. Moreover, this 2008 study shows that trust among team members increase when the team leader trusts his team members. This particular research study broadens this area by examining the effects of the *transformational* team leader on cultivating trust between team members in the team.

Concluding Remarks Regarding Mutual Trust and Transformational Leadership. It is essential that the team leader cultivates trust between his/her team members as this is crucial to effective team performance. Among other things, there has to be successful unity within a team for the team to be successful and effective over an extended period. Trust and co-operation among team members are the operative elements in the success mentioned above (Yukl, 2002).

This study suggests that the transformational leader is the one who can foster the type of co-operation where mutual trust exists. Such leaders inspire those around them to think 'outside the box'; they encourage them to think about new ways of doing things and help them to believe in their ability as a team. This engenders team spirit within the team, which lays the foundation for trust. Therefore it is suggested that a positive relationship exists between mutual trust and transformational leadership. This relationship was investigated and the results of the investigation are presented in Chapter 4.

2.6.   Key Concepts in Leadership Theory

Introduction. The focal point of this study is transformational leadership and the effect it has on the above-mentioned constructs. Transformational leadership is the concern of one of the younger schools of thought that have emerged from the leadership paradigm. It evolved out of previous theories of leadership such as trait theory and behavioural theory, both of which are discussed below. A brief review of the major leadership theories from the 20th century will provide a solid foundation for transformational leadership as the choice for this particular study. It is important, however, to first understand what the term 'leadership' means before the various views of leadership can be investigated.

Definition of leadership. Yukl (2002, p. 7) defines leadership as "… the process of influencing others to understand and agree about what needs to be done and how it can be done effectively, and the process of facilitating individual and collective efforts to accomplish the shared objectives."

From this definition one can discern that leadership clearly involves the use of influence in order to attain agreement on a common purpose and, secondly, that the leader acts as facilitator to achieve the agreed upon goals. However, as leadership is a dynamic term that evolves over time, it is important to understand how thinking has evolved through various schools of thought on leadership. It is essential to understand the leadership thinking evolution for reviewing the section on schools of thought on leadership.

Leadership Schools of Thought. Various schools of thought around leadership have emerged over the course of human history. The present study only focuses on the main turning points during the 20th century and this section does not present an exhaustive list of every leadership theory, style and process in existence over the last 100 years. However, valuable insight is provided in terms of how leadership thinking within the main schools of thought evolved over the years. The discussion involves three main schools of thought that have emerged, namely trait theory, behavioural theory and contingency theory.

Trait Theory. 'Trait' leadership theory was one of the great leadership theories that came to the fore in the twentieth century (Northouse, 2010; Turner & Müller, 2006). Leadership traits in great leaders were investigated and were referred to as the 'great man' theories (Northouse, 2010). They were called the 'great man' theories because "…they focused in identifying the innate qualities and characteristics possessed by great social, political, and military leaders (e.g. Catherine the Great, Mohandas Gandhi, Indira Gandhi, Abraham Lincoln…)" (Northouse, 2010, p. 15). Thus researchers investigated whether it was possible to identify the leadership traits that were linked to successful leadership and also to separate traits inherent to leaders and traits were inherent to followers (Northouse, 2010; Schermerhorn, Hunt, Osborn & Uhl-Bien, 2010). However, these early studies did not prove extremely successful as traits were not measured properly and the theory in general was insufficient (Schermerhorn *et al*., 2010). The focus of trait theory was on individual leadership traits. This theory does not answer the question concerning why certain people who possess these successful leadership traits are not leaders. Why do they behave the way they do if they possess these traits? Thus a new field of research emerged, namely behavioural leadership theory.

Behavioural Leadership Theory. In this school of thought the behaviour of the leader towards the follower instead of the leader's inherent traits was investigated (Cassidy & Kreitner, 2010; Ferraro, 2008; Schermerhorn *et al*., 2010; Turner & Müller, 2006). The intention was that the observed successful leadership behaviours could be imitated by other leaders who, in turn, could become successful leaders themselves (Ferraro, 2008). Two of the more popular behavioural theories are discussed below.

Theory X & Theory Y. McGregor's Theory X and Theory Y emerged from this behavioural school of thought. Theory X assumed that people did not like to work; in order to cultivate success, a leader / manager had to closely manage employees or institute threats (Heery & Noon, 2001). Theory Y assumed that people liked work and in order to cultivate success a leader / manager had to groom the person by allowing the employee the freedom of self-direction and using their own initiative (Heery & Noon, 2001). "McGregor argued that managers fundamentally fall into either Theory X or Theory Y styles of management…though more recent

management experts and studies have questioned the inflexibility of McGregor's model" (Maruca, 2008, p. 356).

Blake & Mouton's Management Grid. A further emergent theory from the behavioural school of thought was Blake & Mouton's Management Grid. This was a tool that was developed by Robert Blake and Jane Mouton in the 1960s (Maruca, 2008). It consisted of a questionnaire by which managers could indicate their particular behaviours concerning their concern for task versus their concern for people (Heery & Noon, 2001; Maruca, 2008). Thus leaders could see which behaviours constituted their strong areas and which behaviours were their weak areas (Heery & Noon, 2001).

The underlying problem with behavioural theories and trait theories was that they did not account for the influence that different situations had on the leader-follower relationship. This led to the emergence of contingency leadership theory.

Contingency or Situational Leadership Theory. In contrast with previous theories which focused on personal traits or behaviours, this theory focused on situations. The suggestion was that leadership effectiveness is related to circumstances (Turner & Müller, 2006). Situational theory is explained by Yukl (1989, p. 262) in: "The situational approach emphasizes the importance of contextual factors such as the leader's authority and discretion, the nature of the work performed by the leader's unit, the attributes of subordinates, and the nature of the external environment."

 Two popular situational theories are discussed below.

Fiedler's Contingency Theory. One of the earliest contingency leadership theorists was Fred Fiedler. Fiedler's theory took into account three constructs: position power of the leader, task structure and leader-member relationship (Miner, 2007). According to Lunenburg and Ornstein (2008, p. 130), "…the contingency approach is based on the proposition that effective leadership cannot be explained by any one factor". The Least Preferred Co-worker (LPC), a scale developed by Fiedler, was used to describe a team member with whom the leader worked least

well (Lunenburg & Ornstein, 2008). A high score on the scale "…indicates that the leader views the least preferred co-worker in relatively favourable terms" (Lunenburg & Ornstein, 2008, p. 131). Thus, those leaders who score high on the LPC "… have as their basic goals the desire to maintain close interpersonal relationships with subordinates and behave in a considerate manner …toward them…. Low LPC leaders have a different motivational structure: Task accomplishment is their primary goal" (Lunenburg & Ornstein, 2008, p. 132). One of the criticisms against Fiedler's theory is that it fails to explain why some types of leadership styles do not work in certain situations (Northouse, 2010). This criticism is addressed by path-goal theory.

Path-Goal Theory. This theory came to the fore when it was published in article by Robert House in 1971 (Rickards & Clark, 2006). Path-Goal Theory contrasts with Fiedler's contingency theory in that path-goal theory "…assumes that leaders can change their style or behaviour to meet the demands of a particular situation" (Griffin, 2008, p. 334).

> The path-goal theory of leadership suggests that the primary functions of a leader are to make valued or desired rewards available in the workplace and to clarify for the subordinate the kinds of behaviour that will lead to goal accomplishment and valued rewards that is, the leaders should clarify the paths to goal attainment (Griffin, 2008, p. 334).

This theory suggests that there are four types of leaders: leaders who are directive; leaders who are supportive; leaders who are participative; and leaders who are achievement-oriented (Griffin, 2008; Turner & Müller, 2006). Environmental factors (such as task structure, formal system, etc.) and subordinate factors (such as experience, perceived ability, etc.) also feature in this theory (Turner & Müller, 2006). This theory, however, also has its drawbacks which drew criticism.

A criticism of path-goal theory is that it does not take into consideration the effect that the leader's behaviour has on an employee's motivation (Northouse, 2010). Research studies to test path-goal theory validity, furthermore, have not provided conclusive findings (Northouse, 2010);

"some research supports the prediction that leader directiveness is positively related to worker satisfaction when tasks are ambiguous, but other research has failed to confirm this relationship." (Northouse, 2010, p. 134). Organisations are dynamic and changing. Crisis situations in the workplace arise every day and an organisation needs its managers / leaders to respond appropriately to deal with the crisis at hand. Whether situational theory is sufficiently adequate to address these concerns is questioned.

Situational theory espouses that different situations require different leadership styles in order to be resolved. One of the major criticisms of this school of thought is that it fails to take cognisance of the fact that leaders in organisations might not possess the appropriate leadership styles to deal with every type of situation (Northouse, 2010).

Concluding Remarks regarding Leadership Schools of Thought. In summary, the current researcher concludes that the various leadership theories reviewed above do not adequately explain how leaders are to deal with dynamic situations. For instance, the above theories do not explain how leaders can challenge their employees to think creatively to achieve greater levels of productivity. Furthermore, the emotions of the individual are not addressed. These theories, for instance, do not explain how leaders can inspire or stimulate their employees to high levels of achievement. These concerns are addressed by and encapsulated in transformational leadership theory, which is discussed in the following section.

2.7.   Transformational Leadership

Definition of Transformational Leadership. Burns (1978, p. 4) described transformational leadership as a "…relationship of mutual stimulation and elevation that converts followers into leaders and may convert leaders into moral agents". This thinking on transformational leadership evolved to the point where Avolio (1999, p. 34) describes transformational leadership as "morally uplifting". This view of transformational leadership has been developed further to also encompass shaping of the future, as evidenced through the following statement:

> Leaders that transform the status quo create a vision for the future, and then invest considerably in sharing that vision. Through sharing their vision, they clarify the

present, show how the past has influenced the present, and propose a view of the future. (Sheard & Kakabadse, 2004, p. 29)

Dimensions and Measurement Scales of Transformational Leadership. Four dimensions comprise transformational leadership (Avolio, 1999): *idealised influence, inspirational motivation, individualised consideration* and *intellectual stimulation*. Avolio (1999, p. 42) explains each of these dimensions as follows:

- Leadership is *idealised* when followers seek to identify with their leader and emulate them.

- Leadership *inspires* followers with challenge and persuasion by providing meaning and understanding regarding the required actions.

- Leadership is *individually considerate* by providing support, mentorship and a measure of coaching.

- The leadership is *intellectually stimulating,* expanding the followers' use of their abilities to question not only other people's perspectives but also their own.

With regard to the reliability of the measurement scale used to measure transformational leadership, a meta-analysis of transformational literature using the Multifactor Leadership Questionnaire (MLQ) found the "…scales of the MLQ to be reliable and [that it] significantly predicted work unit effectiveness across the set of studies examined" (Lowe, Kroeck & Sivasubramaniam, 1996, p. 385). Public sector studies and private sector studies differed, however; "For example, the mean *Charisma* score for leaders in Public Organizations was 2.61 as compared to a mean of 2.37 for leaders in Private Organizations ($z = 8.69$, $p < .001$)" (Lowe *et al.*, 1996, p. 404). It appears that the transformational leadership sub-scales do provide accurate assessment of transformational leadership; but how it impacts at an organisational level needs to be considered.

Transformational Leadership at Organisational Level. The rationale for employing this type of leadership style within an organisation has been well documented (Avolio, 1999). It can exert a positive influence on the overall climate of the organisation. It has also been hypothesized that transformational leadership has a positive effect on the ethical climate in an organisation

(Engelbrecht *et al*., 2005). The influence of transformational leadership on organisational citizenship behaviour has also been investigated (Engelbrecht & Chamberlain, 2005). The correlation between transformational leadership and various management skills (communication, conflict management, coaching and developing, delegating, personal adaptability, time management, analysis decision making) has also been studied (Burke & Collins, 2001). This extensive research has been replicated at an individual level as well.

Transformational Leadership at Individual Level. The list of transformational leadership research studies provided in **Table 2.3** clearly indicates the positive correlation between individual leadership successes in organisations and transformational leadership.

Table 2.3.

Examples of Transformational Leadership Research Studies

Research study example	Authors
- Executives who were seen to champion projects in 28 different organisations were shown to display more transformational behaviours than 25 matched nonchampions.	Howell & Higgins (1990)
- Transformational leadership among Methodist ministers was associated with greater Sunday church attendance and membership growth.	Onnen (1987)
- Transformational leadership was higher among presidents of MBA teams completing complex simulations with greater financial success.	Avolio, Waldman & Einstein (1988)
- Transformational leadership was higher among strategic business unit managers whose departments achieved greater future financial success.	Howell & Avolio (1993)
- Managers who were seen as transformational by their followers earned better performance evaluations from committees composed of their superiors.	Hater & Bass (1988)
- Naval officers who were rated as more transformational by their followers earned from their superiors recommendations for early promotion and better fitness reports.	Yammarino & Bass (1990)
- German bank unit performance over longer versus shorter time periods was higher in banks led by leaders who were rated by their followers as more transformational.	Geyer & Steyrer (1998)

Note. From *"Full leadership development: Building the vital forces in organizations"*. Avolio, B.J. (1999). California: Sage. p. 54.

It clearly appears that transformational leadership has been extensively studied at organisational and individual level and that it has proved to be successful according to the research conducted. Concerning the focal point of this research study, the question can be asked: Does transformational leadership behaviours affect teams? More to the point, does transformational leadership influence teams to such an extent that they perform better? This is the topic of discussion in the following paragraphs.

Team Leadership, Transformational Leadership and Team Performance. Effective team performance is not the focus of this study, but this section highlights the fact that team performance can be increased when the team leader focuses his/her efforts on specific characteristics within the team.

Transformational leaders, among other things; motivate their followers to achieve success; inspire their employees to believe in themselves; develop and nurture the talents of people around them; and, through their leadership actions, create and sustain a trusting work relationship (Avolio, 1999; Bass, 1990; Bass & Avolio, 1994; Bhargava, 2003; Tichy & Devanna, 1990; Yukl, 2002). Transformational leadership can be described as a "…relationship of mutual stimulation and elevation that converts followers into leaders and may convert leaders into moral agents" (Burns, 1978, p. 4). Avolio (1999, p. 34) succinctly describes transformational leadership as "morally uplifting". A study conducted by Özaralli (2003) found that transformational leadership is positively linked to perceived team effectiveness. Thus transformational leadership is really striving to push people beyond their limits. This type of engagement from a leader is especially important for a team environment and for the team's performance.

The link between Transformational Leadership and Team Performance. The link between transformational leadership and teams has received a lot of attention in recent years. It has also been found that transformational team leaders facilitate team commitment ($\beta = .27$, $p < .001$) (Strauss, Griffin & Rafferty, 2009). This highlights the existence of a definite link between commitment in a team and the behaviours exhibited by a team leader. However, whether

exhibiting these transformational behaviours also results in team performance has to be investigated.

A partially mediated model between transformational leadership, within-team goal importance and organisational performance found that transformational leadership at a CEO level positively influenced within-team goal importance in sample of 94 top management teams. The chi-square for this partially mediated model was $\chi^2 = 44.82$, $p < .05$ (Colbert, Kristof-Brown, Bradley & Barry, 2008). This study indicated that goal importance can actually be influenced through the behaviour of the leader, especially a leader who employs transformational leadership. This is an interesting finding, albeit only at CEO level. However, CEOs usually are experienced managers and usually are advanced in age, therefore whether age could have an effect on the relationship between transformational leadership and team performance should be considered.

A study involving 49 R&D teams in the pharmaceutical industry found that age had a moderating effect between transformational leadership and team performance (Kearney, 2008). Kearney (2008) furthermore found that a big age gap between the team leader and his/her followers, resulted in transformational leadership being resultantly positively related to team performance ($b = .73$, $t = 3.71$, $p < .01$). Transformational leadership was likewise shown to have a moderating effect on the relationship between age, nationality and educational diversity and team performance (Kearney & Gebert, 2009). Thus, it does appear that age plays a role in moderating the effect between transformational leadership and team performance. A possible reason for this could be that the older a transformational leader is, the more years s/he has had at implementing transformational behaviours and may therefore have spent more time 'ironing out' behaviours and nuances that do not work. This supposition would need to be empirically tested and validated. This phenomenon aside, it has been established that team performance is affected by transformational leadership. Whether this assertion can be broken down further and whether it is possible to know when specific leadership processes should be used for maximum effectiveness also need to be shown.

Morgeson, DeRue and Karam (2010) reviewed the literature on team leadership processes within teams and discussed 15 team leadership functions necessary to mobilise teams to meet their goals

successfully. The process of leading teams to effective performance through the activities of the team leader, as described in the review, is crucial to eventual team success. Two distinct phases of the team leadership function are described by Morgeson *et al*. (2010). The first is the transition phase that includes the following team leadership functions: composing the team; defining the team mission, goals and expectations; planning; training and developing team members; sense-making; and feedback (Morgeson *et al*., 2010). The transition phase is summarised as follows: "… the primary focus of teams in the transition phase is not on direct task work per se, but rather on activities that establish the structures and processes that will enable future effectiveness" (Morgeson *et al.*, 2010, p. 11). Thus, it appears that internal team characteristics first need to be structured and put in place to ensure success before the task at hand is tackled. The action phase deals with implementation and task delivery. The team leadership functions are described as including team monitoring; team boundary management; challenging the team; helping the team perform the task; problem-solving; resource provision; encouraging the team to manage themselves; and supporting the team social climate (Morgeson *et al*., 2010). This model provides an in-depth review of the general team leadership processes followed by the team leader for eventual team success. However, the model presented by Morgeson *et al*. (2010) would need to be empirically tested to validate this proposed model. Despite this model's assertion that phases of team functioning be tackled with different leadership processes, the model did not look at transformational leadership per se, thus it would be interesting to see if transformational leadership behaviours affected team processes in any way.

The positive causal link between transformational leadership and various team processes has been conceptualised by Dionne *et al*. (2004). These researchers posit that transformational leadership effects team processes, which ultimately affects team performance. The conceptual model presented by Dionne *et al*. (2004) espouses certain team processes that are crucial to team effectiveness. The model furthermore states that these team processes are mediators between transformational leadership and effective team performance. This conceptual model also needs to be validated through empirical testing to determine whether the particular team processes do in fact play a mediating role in the relationship between transformational leadership and team performance.

It appears that leadership behaviours can be used effectively during various phases of team functioning and it has been posited that transformational leadership behaviour affects certain team processes, However, the empirical validity of these assertions have yet to be extensively researched or empirically proven. An opportunity for further research therefore seems to be presented in this area. Setting such assertions aside for a moment, it is necessary to ask whether a transformational leader can take a team that is able to perform to the next level of excellence. The positive relationship between transformational and team innovation and support for innovation as a mediating variable and climate for excellence as a moderating variable were investigated in a study of 33 R&D teams (Eisenbeiss, van Knipenberg & Boerner, 2008). The results of the study showed that team innovation is only enhanced when the climate for excellence is high.

Concluding Remarks Regarding Transformational Leadership. This research study posits that the merits for employing a transformational leadership style are crucial to ensuring eventual success in any team. It has been shown that nurturing certain appropriate team characteristics are also important for team success. However, extant literature has not revealed many empirical studies validating the link between transformational leadership and team characteristics. This has been highlighted above through the various conceptual studies examined, but an area of research has been revealed where further study into the effect of transformational leadership on team characteristics can prove profitable.

Therefore, this study attempts to start closing this gap, the focus of this study being to investigate the relationship between transformational leadership and team characteristics. This study proposes that there are four team characteristics (shared vision, cohesion, mutual trust and role clarity) that need to be nurtured and / or developed in a team.

2.8. Summary

The aim of this chapter was to expound upon the existing literature concerning the various constructs mentioned above. The discussion firstly focused on leadership and how it evolved over the 20th century to have such an overarching influence that the very success of organisations depend on effective leadership. This discussion on leadership has culminated with a section on transformational leadership which is the focal point of this research study.

This chapter also examines the literature on team characteristics necessary for success. In particular, it examines four such team characteristics, namely shared vision, cohesion, role clarity and mutual trust. The main contribution of this study therefore is to highlight the fact that the constructs involved are extremely complex and are not manifested in a synergistic whole without a guiding force.

Furthermore, this chapter presents the possibility that this guiding force is the team leader who employs transformational leadership behaviours. Also included in the chapter is the elaboration from the extant literature that transformational leadership might be responsible for the optimum functioning of the various team characteristics mentioned above.

The relationship between transformational leadership and each of the above-mentioned team characteristics culminate in a proposed conceptual model that is graphically represented in Chapter 3. The relationship between transformational leadership and each of these four team characteristics was empirically investigated and the results are reported in Chapter 4 and discussed in Chapter 5.

Chapter 3
Research Methodology

3.1. Introduction

The initial chapter of this study hypothesised that effective team characteristics can be sustained through effective leadership in an organisation. The effective type of leadership discussed was argued to be transformational leadership. The first chapter also examined the specific aims and fundamental importance of this study. A literature review discussed in the second chapter extrapolated the numerous constructs to be investigated in this study and provided insight into the use of transformational leadership as the basis for this study. This third chapter investigates the approach or particular research design and methodology utilised in this study.

Firstly, this chapter will examine the particular research design chosen for this study and explain why choosing an appropriate research design is crucial, especially in relation to controlling the amount of variance within the presented data. Following this, the structural equation model and the various research hypotheses are presented. The measuring instruments utilised in this study are then discussed, as well as the reliability and validity of using measures for effective decision-making. The penultimate issue for consideration is the sampling and data collection section, which examines the nature of the sampling method; the nature of the sampling measures; ethical considerations; the data sample; and the sample demographics. The final section of this chapter examines the different data analysis techniques used in this research study.

The main aim of this chapter is to provide insight into the overall research plan that was followed for this particular study, as well as to allow further scrutiny of the various processes involved. This chapter, furthermore, is included in this thesis to provide the pertinent methodology for possible replication by other interested researchers.

3.2. Research Design

Introduction. A research design is a plan for a research study. It "…involves a set of decisions regarding what topic is to be studied, among what population, with what research methods, for what purpose" (Babbie, 2008, p. 122). The operational hypotheses within the study have to be evaluated and the research design is the means to effect this evaluation.

Research Design Type. The research design that was chosen for this particular study was a correlative *ex post facto* design. An e*x post facto* design "…is concerned with discovering relationships among variables in one's data…" (Cohen, Manion & Morrison, 2007, p. 270). Through this type of design the researcher examines the data gathered from a sample and then investigates whether interactions or relationships exist (Cohen *et al.*, 2007).

Ex Post Facto Design Advantages. An advantage of the *ex post facto* design is that it the most appropriate type of design in circumstances where it is not feasible to control or manipulate any of the factors under consideration (Cohen *et al*., 2007). This is especially relevant to this particular study since it was not possible to choose any individuals for the survey, nor was it possible to manipulate any factors within the survey because of the emergency nature of the hospital environment. A further advantage is that the *ex post facto* design is very appropriate when investigating straightforward cause-and-effect associations (Cohen *et al*., 2007). Once again, this design proved the best choice for this particular study because all the relationships were straightforward and simple in nature, which was partly due to the limited sample size. Although there are advantages, there also are disadvantages or limitations to using an *ex post facto* design.

Ex Post Facto Design Disadvantages. The *ex post facto* design type has some limitations of which one needs to be aware, for example the inability to manipulate the constructs (Coolican, 1995) and the absence of randomisation (Krauth, 2000). Another disadvantage is that one cannot be sure if the causative factor has actually been included in the sample or not when an *ex post facto* design is used (Cohen *et al*., 2007).

Conclusion. Although there are limitations to the use of this *ex post facto* research design, this type of design does allow for the investigation of factors which cannot be controlled (Ary, Jacobs, Sorenson & Razavieh, 2010). Furthermore, this type of design is used because experimental design often is unethical, costly or just not practical (Cohen *et al.*, 2007). These limitations and considerations were taken into account during the interpretation of the results of this research study.

3.3. Structural Equation Model

The following model depicts the proposed relationships between transformational leadership and the proposed effective team characteristics which form the basis of this research study and, as such, is depicted in the conceptual structural model (**Figure 3.1.**), and the conceptual structural model as depicted in the output of the LISREL programme (**Figure 3.2.**).
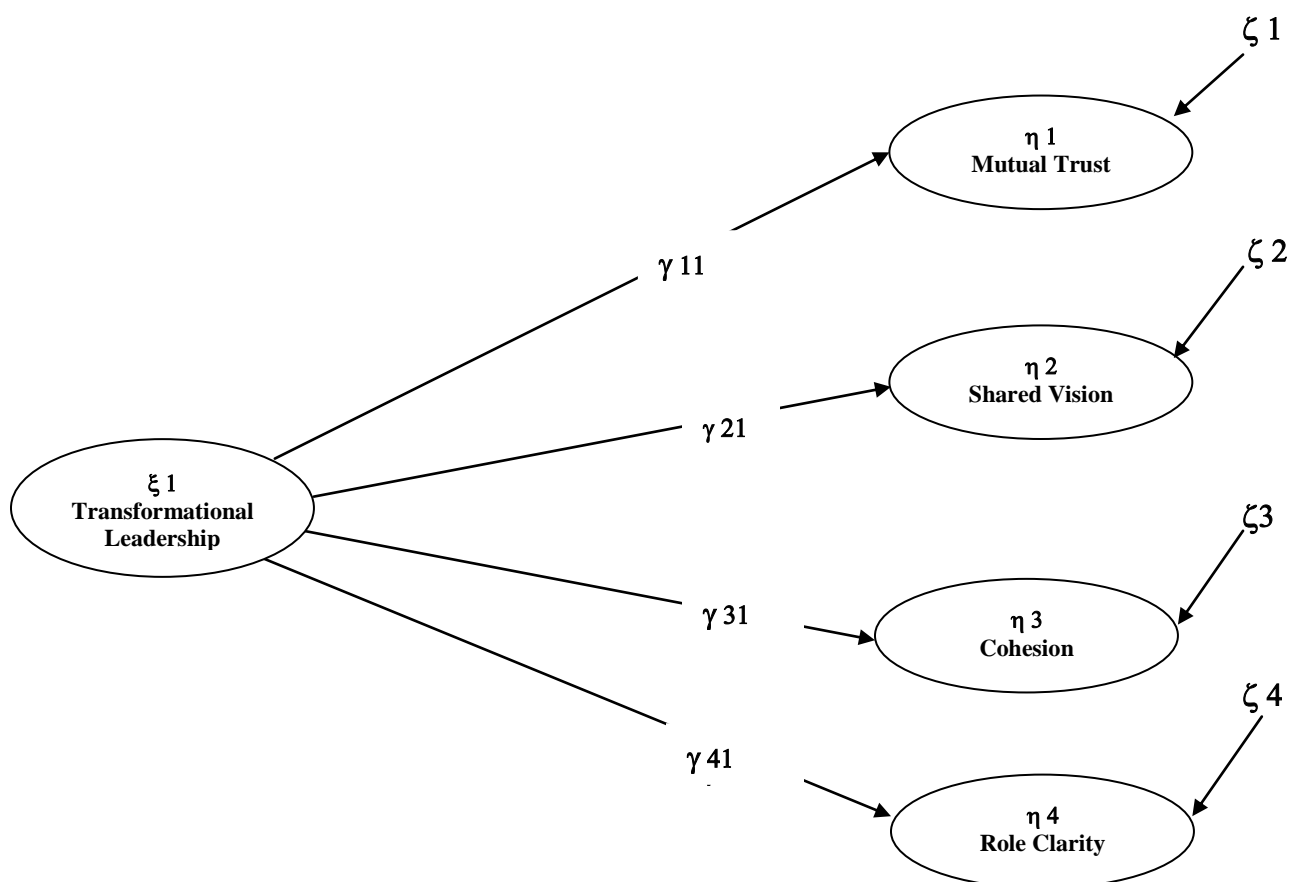
Figure 3.1. The structural equation model depicting the relationships between transformational leadership and the various team characteristics.
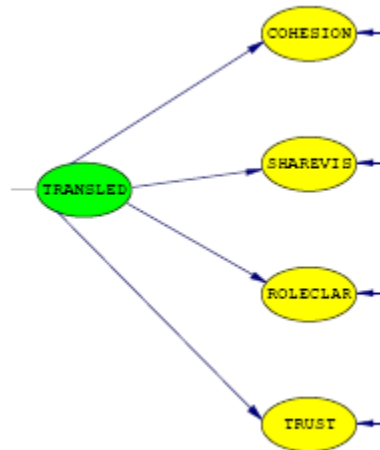
Figure 3.2. The conceptual structural equation model depicting the relationships between transformational leadership and the various team characteristics depicted in LISREL programme format (provided for continuity with results reported later).

3.3.1. Structural equation model expressed as a set of equations

$\eta_1 = \gamma_{11} \xi_1 + \zeta_1$

$\eta_2 = \gamma_{21} \xi 1 + \zeta_2$

$\eta_3 = \gamma_{31} \xi_1 + \zeta_3$

$\eta_4 = \gamma_{41} \xi_1 + \zeta_4$

3.4.   Research Hypotheses

In accordance with the proposed relationships among the concepts as formulated above, the following research hypotheses are presented. The overall fit hypotheses are presented first in addition to the above-mentioned relationships since it ultimately is necessary to examine whether the hypothesised structural model reflects a true observed reality or not.

Hypothesis 1:

There is no significant discrepancy between the reproduced covariance matrix $\Sigma(\theta)$ and the observed population covariance (Σ). The exact fit hypothesis is presented below:

$H_{01}: \Sigma = \Sigma(\theta)$
$H_{a1}: \Sigma \neq \Sigma(\theta)$

This hypothesis can be stated alternatively as a close fit hypothesis:

$H_{01}: \text{RMSEA} \leq 0.05$
$H_{b1}: \text{RMSEA} \geq 0.05$

Hypothesis 2:

A significantly positive causal relationship exists between transformational leadership and mutual trust.

$H_{02}: \gamma_{11} = 0$
$H_{a2}: \gamma_{11} > 0$

Hypothesis 3:

A significantly positive causal relationship exists between transformational leadership and shared vision.

$H_{03}: \gamma_{21} = 0$
$H_{a3}: \gamma_{21} > 0$

Hypothesis 4:

A significantly positive causal relationship exists between transformational leadership and cohesion.

H_{04}: $\gamma_{31} = 0$
H_{a4}: $\gamma_{31} > 0$

Hypothesis 5:

A significantly positive causal relationship exists between transformational leadership and role clarity.

H_{05}: $\gamma_{41} = 0$
H_{a5}: $\gamma_{41} > 0$

3.5.   Measurement Instruments

Introductory Remarks Concerning Measurement. It can be stated that "[m]easurement focuses on attributes of people, objects or events…measurement uses a set of rules to quantify these attributes" (Aguinis, Henle & Ostroff, 2001, p. 28). By quantifying these attributes, more precise assertions can be made regarding the attribute being observed, because more details can be gathered through proper quantification and measurement (Aguinis *et al*., 2001). Furthermore, measurement (specifically, measuring instruments) is needed because subjectivity is limited; scientific theory associated with the observed attributes can be tested; and standardised measures result in better decision making regarding individuals (Aguinis *et al*., 2001).

These measures have to be reliable and valid to enable better decision making. "If a measure is reliable, there is consistency between two sets of scores on a measure" (Aguinis *et al*., 2001, p. 33). Therefore a difference between these two scores may indicate that errors in measurement have occurred. For a measure to be reliable, all measurement error associated with the measure should be minimised or even eradicated (Aguinis *et al*., 2001). One of the ways to estimate the reliability of a measure is to examine the internal consistency of that measure (Aguinis *et al*., 2001). This internal consistency can range between zero and one, with numbers closer to zero indicating low reliability and large measurement error (Aguinis *et al*., 2001). In this research

study, internal consistency of various measurement instruments was primarily evaluated through the use of Cronbach's Alpha (which is a reliability measure).

In addition, measures must be valid as well as reliable. Validity is the, "…utility of the inferences made from a measure's scores" (Aguinis *et al*., 2001, p. 37). In other words, it must be determined whether the measure indeed assesses what it is intended to assess. This is why validation is an ongoing process; evidence is always being evaluated to investigate whether a measure needs to be revised or not (Aguinis *et al*., 2001). Furthermore, it should be kept in mind that there is a variety of evidence for evaluating the validity of a measure (Aguinis *et al*., 2001). Content-related evidence determines whether "…the content of a measure is judged to be a representative sample of the content of the attribute under consideration" (Aguinis *et al*., 2001, p. 38) and relies on the judgement of subject matter experts in the field. Criterion-related evidence investigates "…if a measure can be used to make predictions and/or decisions" (Aguinis *et al*., 2001, p. 39). Finally, construct-related evidence investigates whether, "…inferences made from a measure's scores are valid" (Aguinis *et al*., 2001, p. 39). Construct-related evidence evaluates whether an actual relationship between two constructs are the same as what was hypothesised (Aguinis *et al*., 2001). This research study makes use of a combination of the various types of evidence for the measurement instruments under consideration.

A host of considerations with regard to reliability and validity of measures therefore need to be evaluated for inclusion in any research questionnaire. However, other variables also require attention within a research questionnaire. Among these are the control variables which might mitigate certain inferences, if not catered for sufficiently. Therefore this research study included certain demographic variables (which are discussed in the next paragraph) to assist in this requirement.

Control Variables. Included in the research questionnaire were a number of demographic variables which may influence the various constructs in the investigation. These demographic variables were included to control for possible extraneous influences which might have been present when conducting the research. The demographic variables were measured by six items (*ward*; *race*: 1 = Asian, 2 = black, 3 = coloured and 4 = white; *education*: 1 = primary school

qualification, 2 = high school qualification, 3 = tertiary level qualification and 4 = other; *position*: 1 = manager / team leader / shift supervisor positions, 2 = team member; *gender*: 1 = female, 2 = male; *age*: 1 = 18-25 years old, 2 = 26-30 years old, 3 = 31-35 years old, 4 = 36-40 years old, 5 = 41-50 years old, 6 = 51-above). The questionnaire was conducted in English as this is the business's official language. Once the control variables were finalised, attention was given to the inclusion of measurement items.

Measurement Items. For this study, existing measurement items were used and adapted as necessary in the questionnaire. The questionnaire was divided into two sections (**Appendix A**). The first section comprised the four team characteristics sub-scales, namely role clarity, mutual trust, cohesion, and shared vision. The transformational leadership sub-scale formed the second section of the questionnaire. The explanation of the measurement instrument procedure for each of the five sub-scales is as follows.

Role clarity was measured by using an adapted version of the 6-item scale used by Viator (2001). The reported alpha for this scale is .89 (Viator, 2001). Viator adapted the 6-item scale of Rizzo, House and Lirtzman (1970). Is has to be noted that the items in the Viator (2001) study focused on the individual with regard to his/her organisation (e.g. "I know what my responsibilities are at my firm."). In this study, the focus of the items was directed towards the individual and his/her team (e.g. "I know what my responsibilities are in my team."), thus the focus has been adapted accordingly. The response format utilised in this study for this particular sub-scale was a 6-point Likert scale (i.e. the scale dimensions range from 1 = Completely Disagree to 6 = Completely Agree).

Mutual trust was measured by using a 10-item scale adapted from the 11-item scale of Wong and Sohal (2002). One of the original items (i.e. Retail store understands the customer) had to be excluded since it made substantive sense to do so. Wong and Sohal (2002) adapted items from three different measurement scales (i.e. Crosby, Evans & Cowles, 1990; Morgan & Hunt, 1994; Swan, Trawick, Rink & Roberts, 1988) to create their composite trust scale. The reported alpha for this scale is .9 (Wong & Sohal, 2002). Is has to be noted that the items in the study by Wong and Sohal (2002) focused on the employee and the customer with regard to a

retail store (e.g. "Employees put the customer's interests before their own" or "Retail store can be trusted at all times"). In this study, the focus of the items was directed towards the individual and his/her team (e.g. "Team members put the team's interests before their own." or "The team can be trusted at all times"), thus it has been adapted accordingly. The response format utilised in this study for this particular sub-scale was a 6-point Likert scale (i.e. the scale dimensions range from 1 = Completely Disagree to 6 = Completely Agree).

Cohesion was measured by using an adapted version of the 8-item scale used by Riordan and Weatherly (1999). The reported alpha of this scale is .92 (Riordan & Weatherly, 1999). Riordan and Weatherly (1999) likewise adapted the 8-item scale proposed by Stogdill (1965) for the purposes of their study. The response format utilised in this study for this particular sub-scale was a 6-point Likert scale (i.e. the scale dimensions ranged from 1 = Completely Disagree to 6 = Completely Agree). An example of one of the items in this scale is "In my work team, team members stand up for one another".

A 5-item scale for Shared Vision was developed for this study. It comprised three conceptually selected items from Henning, Spangenberg and Theron's (2004) Performance Index Questionnaire, which were adapted for this research study. It also incorporated two items that made theoretical sense in light of the shared vision literature that was reviewed. An example of one of the items of this is sub-scale is "Attitudes and behaviours of team members are positive regarding achievement of the team vision". These five adapted items were compiled into the composite sub-scale questionnaire and reviewed by a subject matter expert (with a PhD in IO Psychology) for content and face validity. No changes were made. Subsequently, this sub-scale was exposed to item analysis to determine the reliability of the individual items, as well as factor analysis to determine uni-dimensionality. The item analysis revealed excellent internal consistency ($\alpha = .908$), while the factor analysis revealed that all the factor loadings for the five items of the shared vision sub-scales were excellent ($.749 \leq \lambda \leq .900$). The results of the item analysis and factor analysis of this shared vision sub-scale are discussed in greater depth in Chapter 4. The response format for this particular sub-scale was a 6-point Likert scale (i.e. the scale dimensions ranged from 1 = Completely Disagree to 6 = Completely Agree).

Transformational Leadership was measured with the Multi-Factor leadership Questionnaire (MLQ) originally developed by Bass and Avolio (Engelbrecht *et al*., 2005). The short form of the questionnaire, namely MLQ form 5-45, as adapted by Engelbrecht *et al*., (2005) will be utilised. This short form takes less time to complete and consists of 32 items whereas the long form consists of 45 items. In the nursing environment, this is ideal: emergencies and trauma influence the amount of leisure time a nurse has, thus time is a critical issue when completing a survey of this nature. This research study found that the Cronbach alphas for the following MLQ transformational leadership sub-scales were: intellectual stimulation (α = .768), idealised influence (α = .922), inspirational motivation (α = .885) and individual consideration (α = .872). The response format for this leadership sub-scale was a 6-point Likert scale (i.e. the scale dimensions ranged from 1 = Almost Never to 6 = Almost Always). An example of one of the items from the MLQ that was included in this research study is "The person I report to re-examines critical assumptions to question whether they are appropriate."

3.6. Sampling & Data Collection

Nature of Sampling Method. Researchers can utilise two types of sampling methods in their research studies. The first type of sampling method is probability sampling, which is discussed first. Probability sampling can be defined as "…samples selected in accord with probability theory, typically involving some random-selection mechanism." (Babbie, 2010, p. 196). The nature of the hospital environment prohibited a completely random sample because the researcher was assigned various wards by the Night or Day Nursing Service Manager, depending on the critical nature of the patients or whether the ward was inundated with patients. Thus the researcher had no input into sample population as this was determined by the environmental constraints of the organisation. Probability sampling therefore was not feasible, and was not considered under these constraints, therefore the second type of sampling method was considered and the non-probability convenience sampling method was chosen for the research study. A convenience sample can roughly be defined as when "[p]eople are selected on the basis of their availability and willingness to respond" (Gravetter & Forzano, 2009, p. 141).

The major advantages of using convenience sampling are that it is easy and less expensive than utilising probability sampling (Gravetter & Forzano, 2009). A major drawback of convenience sampling is that this type of sampling method provides little control over the representativeness of the sample, thus bias becomes an issue (Gravetter & Forzano, 2009). One way by which this research study (through the assistance of the Night or Day Nursing Service Manager) tried to address this issue was by ensuring that nursing teams from different nursing wards were chosen. Surgical wards, medical wards, trauma and emergency wards and gynaecological / obstetrical wards were included in the sample. Nursing teams on night shifts and day shifts were also included, which further diversified the sample. Thus, as diversified a sample as possible was utilised to prevent a distorted representation of team characteristics and leadership dimensions within the wards (nursing teams). The next issue for consideration was obtaining valid measures for the constructs being investigated.

Nature of Sample Measures. In order to obtain valid measures of the team and leadership characteristics, one would have to investigate established teams that can actually exhibit these characteristics. One could look at sport teams, for example, where it can be seen that team characteristics can be influenced by the leader's behaviours. Following this logic, all things being equal, nursing teams within a large public sector hospital in the Western Cape were used. For the purposes of this study, a ward was regarded (or, put more succinctly, 'defined') as a team with regard to the definition provided in Chapter 1. Each ward consisted of a 'team' of nurses, a shift leader / manager (team leader) and individual nurses (team members). A pilot study was conducted on the completed questionnaire to ensure that the language was easy to understand. A university lecturer, a hospital matron, a university undergraduate and a high school student were involved. The reason for such diversity was that nurses present diverse levels of education and comprehension. Within any one nursing team there could be tertiary level educated nurses as well as nurses with only a high school or similar qualification. It was necessary to ascertain whether the questionnaire would be easily understood at any of these levels. Feedback was positive and no major changes to the questionnaire were necessary. Once the questionnaire was finalised, ethical feasibility was the next milestone.

Ethical Considerations. The proposed research, as well as the questionnaire was submitted to the hospital's ethical committee for review. This is an important part of the research process since

this study would impact an integral part of the hospital staff complement. Organisational review committees such as this one establish that the particular research study will neither be biased nor unfair towards any staff member or the organisation in general. An official letter delineating approval to conduct the research study within the large public sector hospital was eventually received from the committee (**Appendix B**). In conducting the actual research it is recommended that further consideration should ensure that the participants are protected from any type of harm (Aguinis & Henle, 2002).

The ethical considerations of which the researcher has to take note include the right to informed consent; right to privacy; right to confidentiality; right to protection from deception; and right to debriefing (Aguinis & Henle, 2002). These issues were addressed in person prior to each and every distribution of questionnaires within each ward. The researcher personally addressed each nursing ward separately and explained the purpose and aim of the questionnaires and the research study to both the team leader and team members. No-one was compelled to complete the questionnaire, but it was asked that all questions be answered when the questionnaire was attempted (this was to ensure that the issue of missing data would be limited as far as possible). It was explained that the questionnaires were anonymous and that no-one but the researcher would have access to actual individual answers. Participants moreover were not required to provide names. In addressing the issue of deception, the nursing teams were allowed to field any question regarding the research study that was deemed important to the researcher (before attempting the questionnaire). They were informed that, once the study had been completed, the findings would be presented in précis format (1-2 pages) to the hospital and the hospital would be able to share this with the general staff for their perusal.

Sample Data. The number of questionnaires distributed to the various nursing wards totalled 105. Four questionnaires were not returned. This represented a response rate of 96.2%. Twenty-two questionnaires were returned incomplete and had to be discarded. Three night staff members completed the questionnaires twice, thus the extra three questionnaires had to be discarded. This represented a total of 29 questionnaires that could not be used. Thus, 76 questionnaires were used for the final analysis and missing values within the sample set then had to be addressed.

Missing values reduced the initial number of 76 cases to 73 cases because of the imputation process (This imputation process is explained in greater depth in Chapter 4). The researcher also personally followed up the completion of questionnaires with the nursing ward sisters on the following day. In this researcher's opinion, this personal follow-up on an individual level resulted in a higher rate of return of completed questionnaires.

Sample Demographics. The demographic variables were included in the study for possible relationships between the constructs that were studied. Future studies will need to take cognisance of the demographic variables for validity purposes when replicating the results of this study. Of the initial 76 respondents, 23.7% were black, 61.8% were coloured and 6.6% were white. From an educational perspective, 40.8% of the sample had high school qualifications, 48.7% had tertiary level qualifications and 1.3% were recorded as other. On an organisational level, 22.4% of the respondents were in team leader / shift supervisor positions, 75% of the respondents were in a team member position. The majority of the sample respondents were female (92.1%) and only 6.6% were male. With regard to age, 6.6% of the respondents were between 18 and 25 years old, 7.9% were 26 to 30 years old, 7.9% were between 31 and 35 years old, 22.4% were between 36 and 40 years old, 46.1% were 41 to 50 years old and 9.2% were 51 years old and above. A more complete delineation of the demographic variables can be viewed in **Table 3.1.**

Table 3.1.

Demographic Variables of Research Study Sample

Ward		
Variable	Frequency	Percentage
C5	3	3.9
D14	2	2.6
D15	3	3.9
E11A	3	3.9
E7	3	3.9
G12	7	9.2
G17	4	5.3
G25	4	5.3
G4	3	3.9
G5	4	5.3
G7	4	5.3

	3	3.9
G8	3	3.9
MF	4	5.3
MG	16	21.1
MK	13	17.1

Age

Variable	Frequency	Percentage
18-25	5	6.6
26-30	6	7.9
31-35	6	7.9
36-40	17	22.4
41-50	35	46.1
51-above	7	9.2

Gender

Variable	Frequency	Percentage
Female	70	92.1
Male	5	6.6
Missing Data	1	1.3

Race

Variable	Frequency	Percentage
Black	18	23.7
Coloured	47	61.8
White	5	6.6
Missing Data	6	7.9

Education

Variable	Frequency	Percentage
High School Qualification	31	40.8
Tertiary Level Qualification	37	48.7
Other	1	1.3
Missing Data	7	9.2

Position

Variable	Frequency	Percentage
Manager/Team Leader/Shift Supervisor	19	25
Team Member	57	75

Note*: N* = 76

3.7. Data Analysis

Introduction to Data Analysis. Various types of data analysis methodologies can be considered when conducting a research study. The particular type of analysis that is chosen, whether univariate data analysis, bivariate data analysis or multivariate data analysis, depends largely on the constructs within the research study that is being conducted. A univariate data analysis study includes examination or investigation of only one construct at a time (Rubin & Babbie, 2010). Bivariate data analysis examines the connection between two constructs (Sims, 2004). Multivariate data analysis, on the other hand, entails "…the analysis of more than two variables simultaneously" (Babbie, 2008, p. 463).

The type of data analysis conducted in this research study was multivariate data analysis. This was chosen because the study involved the investigation of five constructs simultaneously, which made multivariate data analysis methodology the optimal choice. Multivariate analysis also enables a researcher to better understand the association between two constructs (Babbie, 2010). Once the data analysis rationale had been established, one needs to consider how to analyse the gathered data, for which there are various data analysis techniques. These techniques are discussed below.

Data Analysis Techniques & Software Packages. A number of statistical techniques were employed in analysing the data collected in this research study. Item analysis, factor analysis, frequency analysis, item parcelling, confirmatory factor analysis (CFA) and structural equation modelling (SEM) were among the techniques employed. These techniques are discussed in greater detail below. The software packages utilised for data analysis were Statistical Package for Social Sciences version 18 (SPSS 18) and LISREL 8 (Jöreskog & Sörbom, 1996a). The procedure whereby these software packages were employed will be elaborated on below.

Data Analysis Procedure. Various steps were followed in order to assess and evaluate the gathered data, the measurement model and the eventual structural model. These steps included data cleaning, item analysis, factor analysis, frequency analysis, item parcelling, CFA and SEM and will be explained below.

Initially, SPSS was used to clean the data and to conduct item analysis and exploratory factor analysis to assess reliability and uni-dimensionality. Item analysis and factor analysis were done on the 76 cases' complete data. Two recoded Trust items were deleted because it made substantive sense to do so. The negative inter-item correlations and increased alpha (when these items were deleted) corroborated the decision for their deletion. The factor loadings of all the individual sub-scales loaded onto one factor respectively for each factor; this matter is discussed in more detail in Chapter 4.

Following the item analysis and factor analysis, frequency analysis via SPSS was conducted to establish the number of missing values per item and to pick matching variables for imputation (the rationale behind utilising imputation, as well as its implications, is explained in detail in Chapter 4). Imputation was done using PRELIS. Seventy-three cases emerged after imputation. Data was then transferred back to SPSS. Item and factor analysis were done on the remaining items after imputation to ascertain final reliability and uni-dimensionality. The reliability and uni-dimensionality findings are discussed in further detail in Chapter 4.

After the frequency analysis, parcel items were calculated for each of the constructs. There were two parcels per construct, except for transformational leadership, which had four parcels. The parcels were calculated by using the means of the particular items involved. Items were divided amongst the parcels on the following basis: Odd-numbered items were apportioned to one parcel and even-numbered items were apportioned to the second parcel. For example, if shared vision consisted of six items, the first parcel associated with shared vision would contain the computed means of items one, three and five and the second parcel would contain the computed means of items two, four and six.

The test of multivariate normality on imputed item parcels before and after normalisation was then carried out. The normality tests did improve the fit, although the deviation from multivariate normality was still significant [$p < .05$]. As a result, Robust Maxim Likelihood (RML) was conducted and the asymptotic covariance matrix was calculated. The rationale behind the use of RML is discussed in Chapter 4.

The next step in the data analysis process was to employ LISREL and PRELIS to assess factorial validity by means of CFA to assess the measurement model fit. It has to be noted that CFA falls within the ambit of structural equation modelling (SEM). SEM can be defined as a "[m]ultivariate technique combining aspects of factor analysis and multiple regression that enables the researcher to simultaneously examine a series of interrelated dependence relationships among the measured variables and latent constructs (variates) as well as between several latent constructs" (Hair, Black, Babin & Anderson, 2010, p. 634).

CFA serves as one type of strategy within SEM to test relationships between the constructs (Child, 2006). CFA can be defined by stating that it "…provides a method of testing hypotheses…and…testing and building equations and models" (Child, 2006, p. 108). The way in which CFA accomplishes this is through assessing the measurement model by verifying the number of factors (which would be pre-specified); the factor loading outline; and the error variance (Brown, 2006). It should be noted that CFA only examines how well the data fit the model and does not prove that the model is valid (Child, 2006). Furthermore, it should be noted that "[t]he measurement model provides an assessment of convergent and discriminant validity" (Schumacker & Lomax, 2004, p. 98). The acceptability of the measurement model through CFA was then evaluated through goodness-of-fit measures as well as parameter estimates. The goodness-of-fit measures and parameter estimates resulting from the assessment of the measurement model are presented and discussed in Chapter 4.

Following the evaluation of the measurement model, LISREL was utilised to do SEM to assess structural model fit and also evaluate paths to assess the hypotheses and various interrelationships. The overall fit hypotheses will be keenly evaluated during this process through investigation of the mean squared error of approximation (RMSEA), which is based on the analysis of residuals. Stieger, cited in Kelloway (1998), suggests that values below .10 indicate a good fit to the data and values of $< .05$, a very good fit. Alternatively, it is suggested that, "[v]alues less than .05 are indicative of good fit, between .05 and under .08 of reasonable fit, between .08 and .10 mediocre fit and .10 of poor fit." (Diamantopoulos & Siguaw, 2000, p. 85) For the purposes of this study, the researcher will make use of the second set of criteria. Using LISREL, the following null hypothesis was tested (for the specific purposes of this study, this null hypothesis will be referred to as $H0_1$): $H0_1$: $\Sigma = \Sigma (\theta)$ or, alternatively, $H0_1$: RMSEA $\leq$

0.05. It is usually expected that H01 will not be rejected, therefore the suggestion is that there will be good fit of the structural model, if the value of the RMSEA is lower than .05 and if the chi-square is not significant and as small as possible (bearing in mind that chi-square is affected by large sample size). The findings from testing the overall fit hypotheses are presented and discussed in Chapter 4. Furthermore, the gamma null hypotheses, namely $H0_2$ to $H0_5$, were also tested and it should be stated that these null hypotheses would be rejected if their t-values > 1.96. The findings from these gamma null hypotheses are also presented and discussed in Chapter 4.

Finally, the modification indices associated with the structural model were assessed to see if any model modification would be needed. This modification indices process is discussed and elaborated on in greater detail in Chapter 4.

Statistical Power. The statistical power of the study was also taken into consideration. The power algorithm from MacCallum, Browne and Sugawara (1996) was utilised in this study. The power estimate of close fit was obtained for a given effect size of .08, a given significance level (α) of .05 and the sample size ($N = 73$) of this research study. The power assessment is discussed more fully in Chapter 4 of this study.

3.8. Summary

The literature review of Chapter 2 has laid the foundation for explaining all the constructs under investigation and each section culminated in theorised hypotheses for further study. Chapter 3 built on this foundation by explicating the research hypotheses, the research design applied and the conceptual structural model being fitted as a result of the theorised hypotheses presented in Chapter 2.

Chapter 3 also investigated the proper use of measurement within research studies and the measurement items which were used in this study. Furthermore, the sampling procedure, including the nature of the sample items as well the sampling method was addressed.

The data collection conducted within this research study also received attention. Moreover, a self-administered questionnaire composed of various sub-scales, namely transformational leadership, role clarity, shared vision, mutual trust and cohesion, was utilised. The sample under investigation consisted of $N = 76$ nurses from various nursing wards within the large public sector hospital in the Western Cape. This original sample of $N = 76$ was later reduced to $N = 73$ as a result of imputation.

Chapter 3 culminates in a discussion of the data analysis techniques that were implemented in the study. The various techniques employed in this study include item analysis, factor analysis, frequency analysis, item parcelling, confirmatory factor analysis (CFA) and structural equation modelling (SEM). The software packages utilised for data analysis were the Statistical Package for Social Sciences version 18 (SPSS 18) and LISREL 8 (Jöreskog & Sörbom, 1996a). The power assessment of this research study is also briefly discussed in Chapter 3. Chapter 4 presents the results of the research and examines the viability of the proposed overall null fit research hypotheses and gamma null hypotheses and also elaborates on the findings of the measurement model as well as the structural model findings.

Chapter 4
Research Results

4.1. Introduction

Chapter 3 has provided a discussion of the theoretical model and identified the relationships between the various latent variables. The hypotheses derived and formulated from the above-mentioned relationships were also identified. Furthermore, Chapter 3 provided insight into the overall research plan that was followed and a description of the various data analysis processes which were used in this study.

Chapter 4 examines the results of testing the various statistical hypotheses that were formulated and presented in Chapter 3, and elaborates on the procedures that were used to analyse the data. This chapter will first examine the data cleaning procedures utilised in this study which includes discussions on the missing values within the sampled data set, as well as discussions on the results of the item and dimensionality analysis before and after imputation of all the sub-scale items of the measuring instrument. Secondly, the univariate and multivariate analysis of the data are presented to examine the continuous non-normal variables of the measurement model.

Thirdly, the results and interpretation of the confirmatory factor analysis of the measurement model is presented and discussed. Fourthly, the assessment of the fit statistics for the structural model, as well as the evaluation of the hypothesised structural model relationships, are discussed. The evaluation of the structural model modification indices analysis is discussed fifthly and the ramifications of the structural model modification process are presented. Lastly, the chapter concludes in discussing the power implications of this research study. All SPPS and LISREL analyses and outputs of the study are presented on the attached CD for further perusal.

4.2.   Missing Values

Introduction. Missing values within the data set presented a problem. This was an issue that had to be addressed. Missing values can occur in a data set because of various reasons, including "…negligence, damage, aversion, irrelevance, unimportance, lack of expertise, and lack of information" (Kabak & Ruan, 2010, p. 146). Deletion, imputation and using the data as it is provide three common approaches to the missing value problem (Kabak & Ruan, 2010). An in-depth explanation of the appropriateness of these approaches in dealing with missing values is not within the scope of this study, but a very brief synopsis to familiarise the reader with a few salient points of these approaches is in order.

Various Approaches to Dealing with Missing Values. Using deletion as an approach presents two deletion methods, namely list-wise deletion and pair-wise deletion. However, Kabak and Ruan (2010, p. 146) warn that these methods can lead to "… elimination of useful information in the data and possibility of leading to serious biases". More specifically, the use of these approaches may curtail the effect of the sample size and the data may exhibit non-permissible values exceeding 1. Using the data as it is without addressing the missing values in the data set is used hardly ever (Kabak & Ruan, 2010).

Imputation as an approach means to "…impute, that is, fill in, a value for each missing datum." (Rubin & Schenker, 2010, p. 425). This definition is further expanded by Jöreskog and Sörbom (1996b, p. 78) who state, "[t]he value to be substituted for the missing value for a case is obtained from another case that has a similar response pattern over a set of matching variables." This approach of imputation by matching is the procedure used in this study. Imputation offers an advantage that "…fixes the missing-data problem in the same way for all uses, so that consistency of answers across different users employing the same complete-data analysis is ensured" (Rubin & Schenker, 2010, p. 425).

Process for Dealing with Missing Values in this Study. Frequency analysis using SPSS of items was initiated on the data set ($N = 76$) to determine the number of missing values per item and to pick matching variables for imputation. Items that had two or less missing values were chosen as

matching variables. Imputation was done via PRELIS. Imputation did not work at first (more precisely, there were still missing values after the initial imputation). It was discovered that case 29 in the data set contained missing values within each of the variables chosen for imputation. Case 29 was therefore deleted. Frequency analysis was reintroduced this time on the data set (N = 75) items with a missing value of 1 or less were chosen for imputation. Imputation by matching produced a final effective data set with N = 73. The data set was transferred back to SPSS 18 for item and dimensionality analysis. The results of the item analysis before and after imputation are presented in **Table 4.3** in the item analysis section.

4.3. Descriptive Statistics

Introduction. Descriptive statistics are necessary since it may sometimes be required of the researcher to summarise the relationship between one or more variables in a data set (Healey, 2012). Statistics of this kind allow the investigation of the strength and direction of the relationship in question (Healey, 2012). In the case of this research study, it was necessary to assess certain patterns and characteristics presented by the data and to determine if any peculiarities existed. It is suggested that specific areas be used for presenting these statistics are: measures of central tendency, measures of variability, skewness and kurtosis (Dantzker & Hunter, 2012); this is besides the use of tables and graphs, etc. These descriptive statics are presented in **Table 4.1** and **Table 4.2**. The descriptive statistics for all the individual items are depicted in **Table 4.1** and the descriptive statistics for all the item parcels are illustrated in **Table 4.2**. The four measures mentioned above will each be expanded on in the paragraphs that follow.

Measures of Central Tendency. Typically, central tendency measures examine the "… middle part of a group of numbers" (Black, 2010, p. 47). The common measures of central tendency are the mean, mode and median (Walker, 1999). The most popular statistic is the mean and the most suited to this research study because of its advantage over the other measures of central tendency; it is a widely known measure and can be compared to similar data from different sources. **Table 4.1** and **Table 4.2** both indicate that the means of all items and item parcels are generally centrally distributed as they are close to the average. We now turn our attention to the measures of variability.

Table 4.1.

Descriptive Statistics for all Individual Items

	N	Min	Max	Mean	Std. Dev.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
coh1	73	1	6	4.75	1.362	-1.267	.281	1.187	.555
coh2	73	1	6	4.75	1.199	-1.145	.281	1.377	.555
coh3	73	1	6	4.26	1.463	-1.098	.281	.427	.555
coh4	73	1	6	4.68	1.189	-1.195	.281	1.516	.555
coh5	73	1	6	4.29	1.253	-.874	.281	.825	.555
coh6	73	2	6	4.70	1.127	-.693	.281	-.092	.555
coh7	73	1	6	4.51	1.192	-.776	.281	.292	.555
coh8	73	1	6	4.89	1.149	-1.078	.281	1.047	.555
rolec1	73	1	6	4.89	1.208	-1.387	.281	2.050	.555
rolec2	73	2	6	4.96	1.123	-1.307	.281	1.275	.555
rolec3	73	2	6	5.34	.870	-1.908	.281	4.794	.555
rolec4	73	1	6	5.63	.717	-3.961	.281	23.376	.555
rolec5	73	5	6	5.66	.478	-.678	.281	-1.585	.555
rolec6	73	3	6	5.41	.879	-1.548	.281	1.685	.555
sharev1	73	1	6	4.66	1.157	-1.004	.281	.866	.555
sharev2	73	1	6	4.48	1.303	-.806	.281	-.164	.555
sharev3	73	1	6	4.42	1.268	-1.107	.281	.825	.555
sharev4	73	1	6	4.32	1.363	-.765	.281	-.174	.555
sharev5	73	1	6	4.23	1.409	-.978	.281	.049	.555
trust1	73	1	6	4.32	1.290	-.696	.281	-.146	.555
trust4	73	1	6	3.95	1.393	-.470	.281	-.350	.555
trust5	73	1	6	4.74	1.179	-1.042	.281	.901	.555
trust6	73	1	6	4.59	1.311	-1.170	.281	.889	.555
trust7	73	1	6	4.00	1.491	-.517	.281	-.659	.555
trust8	73	1	6	4.25	1.299	-.475	.281	-.283	.555
trust9	73	2	6	4.68	1.091	-.655	.281	-.171	.555
trust10	73	1	6	4.23	1.400	-.648	.281	-.254	.555
is1	73	1	6	3.68	1.403	.306	.281	-1.141	.555
ii1	73	1	6	3.37	1.679	.151	.281	-1.134	.555
is2	73	1	6	3.51	1.492	.180	.281	-.794	.555
im1	73	1	6	3.55	1.573	.107	.281	-.907	.555
ii2	73	1	6	3.37	1.776	.213	.281	-1.201	.555
im2	73	1	6	4.04	1.687	-.209	.281	-1.208	.555
ii3	73	1	6	3.88	1.481	-.020	.281	-.912	.555

ic1	73	1	6	3.75	1.770	-.062	.281	-1.444	.555
ii4	73	1	6	3.64	1.759	.093	.281	-1.287	.555
ic2	73	1	6	3.64	1.719	-.049	.281	-1.140	.555
ii5	73	1	6	3.85	1.769	-.152	.281	-1.272	.555
ii6	73	1	6	4.14	1.566	-.479	.281	-.780	.555
ii7	73	1	6	4.56	1.509	-.782	.281	-.462	.555
im3	73	1	6	3.81	1.639	-.170	.281	-1.008	.555
ic3	73	1	6	3.41	1.526	.186	.281	-.713	.555
is3	73	1	6	3.73	1.557	-.186	.281	-.880	.555
ic4	73	1	6	3.75	1.754	-.135	.281	-1.276	.555
is4	73	1	6	3.56	1.716	.003	.281	-1.199	.555
ii8	73	1	6	3.70	1.613	-.043	.281	-1.060	.555
im4	73	1	6	4.03	1.699	-.271	.281	-1.194	.555
Valid N (listwise)	73								

Table 4.2.

Descriptive Statistics for all Item Parcels

Descriptive Statistics for Item Parcels									
Variable	Mean	St. Dev.	T-Value	Skewness	Kurtosis	Minimum	Freq.	Maximum	Freq.
COH_1	4.452	1.055	36.068	-.086	-.291	1.739	1	6.335	7
COH_2	4.757	.990	41.074	-.136	-.353	2.194	1	6.362	10
ROLEC_1	5.297	.659	68.709	-.328	-.584	3.544	1	6.109	21
ROLEC_2	5.333	.689	66.096	-.329	-.708	3.789	3	6.166	22
SHAREV_1	4.438	1.081	35.068	-.058	-.401	2.224	4	6.380	7
SHAREV_2	4.397	1.193	31.491	-.127	-.509	1.925	4	6.293	11
TRUST_1	4.435	1.095	34.595	-.078	-.331	1.897	2	6.391	7
TRUST_2	4.253	1.167	31.14	-.043	-.175	1.265	1	6.620	4
IS	3.620	1.187	26.047	-.037	-.165	.582	1	6.025	4
II	3.813	1.325	24.595	-.014	-.161	.767	2	6.860	2
IM	3.856	1.422	23.168	-.124	-.524	.770	3	6.091	11
IC	3.640	1.440	21.594	-.041	-.355	.540	3	6.311	6

Note:

N = 73

Measures of Variability. Variability is extremely important in examining data because the degree of variability determines how easy it is to recognise any discernable patterns (Gravetter & Wallnau, 2009). Low variability equals easily recognisable patterns (Gravetter & Wallnau, 2009), whereas high variability makes patterns incomprehensible. The most commonly used measure of variability is the standard deviation (Gravetter & Wallnau, 2009). An empirical rule

emphasises (for normal data distributions) that "…68% of the data fall within one standard deviation of the mean … 95% fall within two standard deviations of the mean and … 99.7% fall within three standard deviations of the mean" (Brase & Brase, 2012, p. 103). Both **Table 4.1** and **Table 4.2** exhibit values that generally are close to 1, there are a few that are less than 1 but do not present any major cause for concern and 100% of the data fall within two standard deviations of the mean. Thus, reasonably acceptable variability is presented by the data. The next measures for examination are skewness and kurtosis.

Skewness and Kurtosis. Measures of skewness and kurtosis are useful to determine the form of the distribution, as well as to ascertain whether the assumption of a normal data distribution has been met (Lomax, 2007). We first examine skewness. Skewness is a measure of how asymmetrical the distribution of the data is. Valuable insight is given by Spiegel and Stephens (2008, p. 125) who state that:

> If the frequency curve… of a distribution has a longer tail to the right of the central maximum than to the left, the distribution is said to be skewed to the right, or have a positive skewness. If the reverse is true, it is said to be skewed to the left, or to have negative skewness.

Skewness of 0 is obtained for a normal distribution. In research, distributions can be negatively skewed or positively skewed since obtaining a perfect symmetrical distribution is highly unlikely. Negatively skewed distributions occur when the distribution is skewed to the left and the mode is larger than the median, which, in turn, is larger than the mean (Lomax, 2007). Alternatively, a positively skewed distribution is right-skewed with the mode smaller than the median, which, in turn, is smaller than the mean (Lomax, 2007). **Table 4.1** and **Table 4.2** reflect that the data is slightly negatively skewed.

Kurtosis is defined as the "…degree of peakedness of a distribution, usually taken relative to a normal distribution" (Spiegel & Stephens, 2008, p. 125). Normalised kurtosis is 0 for a normal distribution. Negative kurtosis values indicate a platykurtic distribution (this is indicative of flat distribution) and positive kurtosis values indicate a leptokurtic distribution (this illustrates a

peaked distribution) (Lomax, 2007). **Table 4.1** and **Table 4.2** indicate that the data is slightly platykurtic. A kurtosis measure that is +/- 2 is considered to be an outlier (Reimann, Filzmoser, Garret & Dutter, 2008). Most of the values in the data set were close to 0, but there were three extreme values larger than 2. This would suggest a non-normal data distribution and indicates that further consideration is needed to address the non-normal data issues. These non-normal data issues are addressed in depth in the section on univariate and multivariate normality in the present chapter.

4.4.   Item Analysis

Introduction. The reliability or internal consistency of a sub-scale can be defined as "…the degree to which individual scale items correlate with one another or with the entire scale. A scale is internally consistent if each item in a scale measures the same concept or construct" (Mahfouz, Theocharous & Philaretou, 2010, p. 275).

The most widely used reliability coefficient for internal consistency is Cronbach's alpha. The higher Cronbach's alpha is, the more reliable the measurement scale. Reliability coefficients less than .70 are not ideal; internal consistency estimates should ideally be between .80 and .90 (Lehman, O'Rourke, Hatcher & Stepanski, 2005).

Based on the above, the present study will make use of a Cronbach's alpha of .70 for acceptable levels of internal consistency. The first issue that affected the internal consistency of the present study was the issue of recoding certain items within the *Trust* sub-scale. The effect of recoding on the reliability of the *Trust* sub-scale is discussed in the following section.

Item Analysis and Recoding. It is to be noted that, even before the missing values and imputation processes were implemented on the data set, two items in the data set (trust2 and trust3) were found to warrant recoding. These items were recoded using SPSS. "Recoding is the SPSS function that allows the researcher to recategorize the variable to suit the needs of the analysis" (Wagner, 2010, p.13). That these two items required recoding was due to the fact that respondents to the questionnaire did not respond as they should have (or, more precisely: they

did not respond as was expected). A possible reason for this finding is that respondents may not have seen these two items as reflective.

Upon recoding these items (*Recodetrust2*, *Recodetrust3*) and conducting item analysis via SPSS, these recoded items were found to correlate negatively with the other items of the trust sub-scale (see **Table 4.3**) and that the internal consistency of the entire sub-scale would increase if they were to be deleted (see **Table 4.4**). These items (*Recodetrust2*, *Recodetrust3*) were therefore deleted from the data set and the internal consistency of the *Trust* sub-scale increased from α = .852 (before recoded items were deleted) to α = .941.

Table 4.3.

Inter-Item Correlation Matrix of the Trust Sub-Scale before Recoded Items were Deleted

	Trust1	Recodetrust2	Recodetrust3	Trust4	Trust5	Trust6	Trust7	Trust8	Trust9	Trust10
				Inter-Item Correlation Matrix						
Trust1	1.000	-.299	-.130	.634	.702	.610	.676	.752	.720	.623
Recodetrust2	-.299	1.000	.340	-.227	-.358	-.458	-.140	-.155	-.178	-.225
Recodetrust3	-.130	.340	1.000	-.007	-.136	-.033	-.002	-.168	-.034	-.077
Trust4	.634	-.227	-.007	1.000	.699	.488	.561	.678	.627	.732
Trust5	.702	-.358	-.136	.699	1.000	.777	.527	.665	.664	.662
Trust6	.610	-.458	-.033	.488	.777	1.000	.550	.566	.598	.526
Trust7	.676	-.140	-.002	.561	.527	.550	1.000	.792	.582	.587
Trust8	.752	-.155	-.168	.678	.665	.566	.792	1.000	.657	.806
Trust9	.720	-.178	-.034	.627	.664	.598	.582	.657	1.000	.648
Trust10	.623	-.225	-.077	.732	.662	.526	.587	.806	.648	1.000

Note. Reliability Coefficients

N = 76

No. of Items = 10

Table 4.4.

Item-Total Statistics of the Trust Sub-Scale before Recoded Items were Deleted

			Item-Total Statistics		
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Trust1	34.9492	51.325	.762	.713	.821
Recodetrust2	36.8983	69.265	-.257	.413	.897
Recodetrust3	37.2203	65.175	-.042	.283	.883
Trust4	35.3898	49.621	.741	.666	.820
Trust5	34.5932	51.935	.745	.777	.823
Trust6	34.7119	53.209	.629	.722	.832
Trust7	35.2881	49.381	.729	.692	.821
Trust8	35.1186	49.106	.831	.851	.812
Trust9	34.5932	53.039	.758	.628	.824
Trust10	35.1356	48.878	.763	.747	.818

Note. Reliability Coefficients

N = 76

No. of Items = 10

Item Analysis and Imputation. After the recoding process was completed, imputation by matching (explained in the missing values section) was implemented on the data set. Item analysis via SPSS was performed on the data set both before imputation and after imputation on all the measurement sub-scales within this present study. **Table 4.5** shows a summary of the results of the item analysis performed before imputation and after imputation. **Table 4.5** indicates that all of the sub-scales exhibited an acceptable internal consistency above .70 after imputation (Lehman *et al.*, 2005).

In **Table 4.5** it is also evident that the reliability coefficients decreased slightly after imputation, but that the reliability of specific subscales (i.e. trust sub-scale, role clarity sub-scale) remained unchanged. The general trend that alpha decreased in this particular study after imputation could be due to the artificial replacement of missing values with means, albeit a mean from a subset of cases within the current data set. This result is in stark contrast to findings by Dunbar-Isaacson (2006, p. 33) who reported that "…imputation has an attenuating affect [sic] on internal consistency calculations when the number of valid cases

increased with imputation, and the opposite effect when the number of valid cases decreased with imputation".

Table 4.5.

Reliability Analysis of the Measurement Sub-Scales Before and After Imputation

	Before Imputation				**After Imputation**			
	Cases	Alpha	Mean	Variance	Cases	Alpha	Mean	Variance
Cohesion	70	.925	37.10	66.352	73	.920	36.84	63.778
Trust	67	.941	35.36	79.597	73	.941	34.75	77.994
Shared Vision	61	.921	22.57	31.849	73	.908	22.11	31.016
Role Clarity	65	.799	32.14	14.527	73	.799	31.89	14.932
Individualised Consideration	72	.880	14.99	35.338	73	.872	14.56	33.194
Inspirational Motivation	67	.890	15.46	33.768	73	.885	15.42	32.359
Idealised Influence	62	.923	30.56	113.496	73	.922	30.51	112.309
Intellectual Stimulation	66	.746	14.12	22.047	73	.768	14.48	22.559

Note: Reliability Coefficients

N = 73

No. of Sub-Scales = 8

Detailed presentations of the item analysis of each of the eight sub-scales (cohesion, trust, shared vision, role clarity, individualised consideration, inspirational motivation, idealised influence and intellectual stimulation) of the imputed data set are discussed in separate sections below. The purpose of these separate discussions is to investigate whether the decision to delete or retain specific sub-scale items could be verified through reliability analysis of each sub-scale. This verification was done by examining the strength of the inter-item correlations of each sub-scale as well as the item-total correlations of each.

Cohesion Sub-Scale Item Analysis. The results of the cohesion sub-scale item analysis are presented in **Table 4.6**. Cronbach's alpha for the cohesion subscale after imputation was .920. Thus 92% of the variance in the items is true score variance while 8% of the variance is random error variance. Investigation of each item's Cronbach's alpha, if the item was deleted, revealed that the Cronbach alpha would not increase if any of the items were to be deleted. All items correlated quite well with the total score calculated from the remaining items (lower $r = .609$). Bad items will not correlate with any of the other items because it is not reflective of the same

factor. None of the items exhibited the extreme means or small standard deviations that indicate the absence of poor items.

Table 4.6.

Reliability Analysis of the Cohesion Sub-scale

	Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
coh1	32.08	47.076	.794	.777	.905
coh2	32.08	50.049	.724	.690	.911
coh3	32.58	47.942	.676	.564	.916
coh4	32.15	48.796	.817	.700	.903
coh5	32.55	51.279	.609	.533	.920
coh6	32.14	49.12	.848	.845	.902
coh7	32.33	49.89	.741	.756	.909
coh8	31.95	50.941	.702	.634	.912

Note. Reliability Coefficients

N = 73

No. of Items = 8

Alpha = .920

Role Clarity Sub-Scale Item Analysis. The results of the role clarity sub-scale item analysis are presented in **Table 4.7**. Cronbach's alpha for the role clarity subscale after imputation was .799. Approximately 80% of the variance in the items was true score variance while 20% of the variance was random error variance. Item 6 (rolec6) correlated somewhat low with the total score of the remaining items ($r = .477$) and was a cause for concern. The squared multiple correlation, showed that item 6 (rolec6) was responsible for a reasonable proportion of variance ($R^2 = .497$) when regressed on all the remaining items. Investigation of the Cronbach alpha of item 6 revealed that the Cronbach alpha would actually decrease if item 6 were to be deleted. Thus the evidence provided suggested that item 6 should not be deleted and it was retained. None of the items exhibited extreme means or small standard deviations which would indicate the absence of poor items.

Table 4.7.

Reliability Analysis of the Role Clarity Sub-scale

	Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
rolec1	27.00	9.417	.547	.399	.781
rolec2	26.93	9.009	.691	.549	.732
rolec3	26.55	10.696	.612	.545	.755
rolec4	26.26	11.695	.555	.583	.771
rolec5	26.23	12.570	.630	.617	.776
rolec6	26.48	11.336	.477	.497	.785

Note. Reliability Coefficients

N = 73

No. of Items = 6

Alpha = .799

Shared Vision Sub-Scale Item Analysis. The results of the shared vision sub-scale item analysis are presented in **Table 4.8**. Cronbach's alpha for the shared vision subscale after imputation was .908. Approximately 90% of the variance in the items was true score variance while approximately only 10% of the variance was random error variance. The investigation of each item's Cronbach alpha, if that particular item was deleted, revealed that the Cronbach alpha would not increase if any of the items were to be deleted. All items correlated very well with the total score calculated from the remaining items (lower r = .711). Bad items will not correlate with any of the other items because they are not reflective of the same factor. None of the items exhibited extreme means or small standard deviations, which indicated the absence of poor items.

Table 4.8.

Reliability Analysis of the Shared Vision Sub-scale

	Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
sharev1	17.45	21.334	.780	.738	.886
sharev2	17.63	20.403	.757	.760	.889
sharev3	17.68	20.747	.749	.747	.891
sharev4	17.79	18.999	.855	.883	.868
sharev5	17.88	20.054	.711	.790	.901

Note. Reliability Coefficients

N = 73

No. of Items = 5

Alpha = .908

Trust Sub-Scale Item Analysis. The results of the trust sub-scale item analysis are presented in **Table 4.9**. Cronbach's alpha for the trust subscale after imputation was .941. Approximately 94% of the variance in the items was true score variance while approximately 6% of the variance was random error variance. Investigation of each item's Cronbach alpha, if that particular item was deleted, revealed that the Cronbach alpha would not increase if any of the items were to be deleted. All items correlated quite well with the total score calculated from the remaining items (lower r = .723). Bad items will not correlate with any of the other items because they are not reflective of the same factor. None of the items exhibited extreme means or small standard deviations, which indicated the absence of poor items.

Table 4.9.

Reliability Analysis of the Trust Sub-scale

	Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
trust1	30.44	60.194	.806	.700	.932
trust4	30.81	59.490	.771	.690	.935
trust5	30.01	61.791	.799	.730	.933
trust6	30.16	61.417	.723	.647	.938
trust7	30.75	58.299	.768	.711	.936
trust8	30.51	59.031	.865	.818	.928
trust9	30.07	62.759	.812	.674	.933
trust10	30.52	58.753	.805	.769	.932

Note. Reliability Coefficients

N = 73

No. of Items = 8

Alpha = .941

Intellectual Stimulation Sub-Scale Item Analysis. The results of the intellectual stimulation sub-scale item analysis are presented in **Table 4.10**. Cronbach's alpha for the intellectual stimulation subscale after imputation was .768. Approximately 77% of the variance in the items was true score variance while approximately 23% of the variance was random error variance. Item 2 (*is2*) correlated low with the total score of the remaining items (*r* = .428) and caused some concern. The squared multiple correlation showed that item 2 (*is2*) was responsible for a proportion of variance (R^2 = .201). Investigation of the Cronbach alpha for item *is*2 revealed that the Cronbach alpha would increase slightly (from α = .768 to α = .782) if item *is*2 were to be deleted, but the scale variance and scale mean would not increase drastically.

The nature of item 2 (*is2*), that is, "The person I report to seeks differing perspectives when solving problems" can appear to be out of place within a medical emergency environment. Nurses working in a hospital or emergency environment do not have free reign when it comes to handling certain medical predicaments or even when decisions might impact patient care; they have to follow rigid standard operating procedures. The reason is that any solution to a medical predicament will impact the life and well-being of patients. This reasoning could have impacted

the responses given. The evidence provided in **Table 4.10** would suggest that item *is*2 was to be deleted, but it was decided to retain it for the factor analysis.

Table 4.10.

Reliability Analysis of the Intellectual Stimulation Sub-scale

	Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
is1	10.79	14.693	.548	.354	.725
is2	10.97	15.333	.428	.201	.782
is3	10.75	13.411	.590	.390	.702
is4	10.92	11.243	.728	.543	.617

Note. Reliability Coefficients

N = 73

No. of Items = 4

Alpha = .768

Idealised Influence, Inspirational Motivation and Individual Consideration Sub-Scale Item Analysis. The results of the idealised influence sub-scale item analysis (**Table 4.11**), inspirational motivation sub-scale item analysis (**Table 4.12**) and individual consideration sub-scale item analysis (**Table 4.13**) are presented below. The Cronbach alphas for idealised influence (α = .922), inspirational motivation (α = .885) and individual consideration (α = .872) indicated that at least 87% of the variance in the items within each sub-scale was systematic variance. Furthermore, investigation of each item's Cronbach alpha if that particular item was deleted, revealed that Cronbach's alpha would not increase if any of the items were to be deleted [This finding held true across all three sub-scales]. Within each of the three sub-scales, all items correlated quite well with the total score calculated from the remaining items (i.e. Idealised Influence - lower r = .631 / Inspirational Motivation - lower r = .736 / Individual Consideration - lower r = .667). None of the items exhibited extreme means or small standard deviations that indicate the absence of poor items.

Table 4.11.

Reliability Analysis of the Idealised Influence Sub-scale

	Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ii1	27.14	89.453	.631	.512	.920
ii2	27.14	85.981	.704	.587	.915
ii3	26.63	88.959	.757	.618	.911
ii4	26.86	83.287	.808	.691	.906
ii5	26.66	85.201	.734	.676	.912
ii6	26.37	87.597	.759	.600	.910
ii7	25.95	89.969	.701	.543	.915
ii8	26.81	85.129	.826	.710	.905

Note. Reliability Coefficients

N = 73

No. of Items = 8

Alpha = .922

Table 4.12.

Reliability Analysis of the Inspirational Motivation Sub-scale

	Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
im1	11.88	19.554	.743	.575	.854
im2	11.38	18.684	.743	.579	.854
im3	11.62	19.129	.736	.579	.856
im4	11.40	18.243	.773	.622	.842

Note. Reliability Coefficients

N = 73

No. of Items = 4

Alpha = .885

Table 4.13.

Reliability Analysis of the Individual Consideration Sub-scale

	Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ic1	10.81	18.629	.748	.575	.827
ic2	10.92	19.993	.667	.452	.859
ic3	11.15	21.102	.696	.527	.849
ic4	10.81	18.157	.800	.659	.805

Note. Reliability Coefficients

N = 73

No. of Items = 4

Alpha = .872

Lastly, a summarising table (**Table 4.14**) detailing all the sub-scale reliability analyses including the Cronbach alpha and average inter-item correlation of each sub-scale utilised in this research study is provided for further investigation and future research study replication purposes.

Table 4.14.

Summary Table of Overall Reliability Analysis of Sub-scales

	Sub-scale Reliability Analysis		
	No. of Items	Cronbach's Alpha	Average Inter-Item Correlation
Cohesion (coh)	8	.920	.599
Role Clarity (rolec)	6	.799	.439
Shared Vision (sharev)	5	.908	.668
Trust (trust)	8	.941	.674
Intellectual Stimulation (is)	4	.768	.449
Idealised Influence (ii)	8	.922	.599
Inspirational Motivation (im)	4	.885	.658
Individual Consideration (ic)	4	.872	.630

4.5. Dimensionality Analysis

Uni-dimensionality. In this study factor analysis via SPSS was used to determine the number of factors underlying each of the items within the various sub-scales. The basic idea of factor analysis is that "[f]or a given data set of response variables … one wants to find a set of underlying latent factors … fewer in number than the observed variables" (Jöreskog & Sörbom, 1993, p. 23). Thus factor analysis can confirm the uni-dimensionality of the measurement items (i.e., if each item loads successfully onto one dimension or factor).

Uni-dimensionality of the team characteristics measurement scale and transformational leadership measurement scale was evaluated to determine whether all items of each sub-scale measured on a single variable. This very simply means that "…a composite measure should represent only one dimension of a concept" (Babbie, 2010, p. 164). The test for uni-dimensionality is also used to remove any items that exhibit poor factor loadings. Principal axis factoring with varimax rotation by means of SPPS was utilised to test the uni-dimensionality of the measurement scales. Uni-dimensionality of each sub-scale can be determined by using eigenvalues and examining the factor loadings of each item.

Uni-dimensionality and Eigenvalues. The eigenvalue, together with its accompanying scree plot, was used to confirm the uni-dimensionality of each sub-scale item. In the analysis of each sub-scale, eigenvalues greater than 1 was examined and considered for factor extraction. The process of using the eigenvalue for factor extraction and what exactly the eigenvalue entails is succinctly explained by Norman and Streiner (2008, p. 200) who state that:

> an eigenvalue can be thought of as an index of variance. In FA, each factor yields an eigenvalue which is the amount of the total variance explained by that factor…So why use the criterion of 1.0 for the eigenvalue?...The reason is…to transform all the variables to z-scores so that each has a mean of 0 and a variance of 1… so you can think of a factor with an eigenvalue of less than 1 as accounting for less variance than is generated by one variable.

During principal axis factoring (PAF) with varimax rotation a single factor was extracted (since one factor has an eigenvalue of greater than 1) in terms of each of the items that formed part of the four team characteristics sub-scales (i.e. cohesion sub-scale, role clarity sub-scale, shared vision sub-scale and trust sub-scale). Since only a single factor was extracted for each of the four sub-scales, it was decided to compile a composite view of all the factor extractions as it would be superfluous to discuss each of the four sub-scales to depict a similar outcome in all four. This single factor extraction result is depicted in **Table 4.15**, which represents a composite factor matrix of the team characteristics sub-scales.

 The same factor extraction process was followed for the transformational leadership sub-scales (i.e. intellectual stimulation sub-scale, idealised influence sub-scale, inspirational motivation sub-scale and individual consideration sub-scale). This extraction process produced a similar result to that found with the team characteristics factor extraction process, with a single factor being extracted in terms of each of the items that formed part of the transformational leadership sub-scales. Since only a single factor was extracted for each of the four transformational leadership sub-scales, it was decided to compile a composite view of all the factor extractions as it would be superfluous to discuss each of the four leadership sub-scales to depict a similar outcome in all four sub-scales. This single factor extraction result is depicted in **Table 4.16**, which represents a composite factor matrix of the transformational leadership sub-scales.

Table 4.15.

Composite Factor Matrix for Team Characteristics

Items	Factor Loadings			
	1	2	3	4
coh1	.834			
coh2	.746			
coh3	.704			
coh4	.855			
coh5	.639			
coh6	.898			
coh7	.782			
coh8	.736			
rolec1		.588		
rolec2		.743		
rolec3		.694		
rolec4		.658		
rolec5		.723		
rolec6		.575		
sharev1			.829	
sharev2			.811	
sharev3			.798	
sharev4			.900	
sharev5			.749	
trust1				.832
trust4				.800
trust5				.827
trust6				.748
trust7				.792
trust8				.893
trust9				.841
trust10				.837

Extraction Method: PAF.

Table 4.16.

Composite Factor Matrix for Transformation Leadership

Items	Factor Loadings			
	1	2	3	4
is1	.632			
is2	.476			
is3	.678			
is4	.918			
ii1		.656		
ii2		.734		
ii3		.788		
ii4		.845		
ii5		.778		
ii6		.795		
ii7		.735		
ii8		.864		
im1			.802	
im2			.805	
im3			.795	
im4			.841	
ic1				.815
ic2				.714
ic3				.757
ic4				.893

Extraction Method: PAF.

Uni-dimensionality and Factor Loadings. Factor loadings can be thought of as a "…gauge of the substantive importance of a given variable to a given factor" (Field, 2000, p. 440). A fuller explanation of this statement means that λ_{ij} indicates the proportion of variance in the ith item explained by the jth factor. Therefore, if all items load successfully onto one factor, it indicates that a major proportion of the variance can be explained by a single factor which means that uni-dimensionality has been achieved.

 However, an important consideration to take note of is: How much variance is explained by the item in terms of the factor extracted? A low factor loading (.3) means that not much shared variance (approximately 9%) is present in the particular item. Thus, items with factor loadings

higher than .3 generally are chosen (Child, 2006). Furthermore, there is not much consensus in the extant literature in terms of what is the acceptable absolute minimum value for a factor loading. Meyers, Gamst and Guarino (2006) suggest that a minimum factor loading of .4 can be used, whereas, Comrey and Lee, cited in Prett, Lackey and Sullivan (2003), suggest that .45 is fair, .55 is good, .63 is very good and .71 is excellent. A minimum factor loading of .45 was subsequently adopted for this study.

All the factor loadings for the four team characteristics sub-scales depicted in **Table 4.15** are quite good ($.588 \leq \lambda \leq .900$). As a result, no item from any of the four team characteristics sub-scales required deletion. All the factor loadings for the four transformational leadership sub-scales depicted in **Table 4.16** are quite satisfactory ($.476 \leq \lambda \leq .918$). Initially, during the item analysis phase, there was concern over the *is*2 item. Item *is*2 correlated low with the total score of the remaining intellectual stimulation items ($r = .428$); in addition, the squared multiple correlation showed that item *is*2 was responsible for a proportion of the variance ($R^2 = .201$). However, the confirmatory factor analysis showed that item is2 had a factor loading of .476 which surpassed the minimum factor loading of .45 adopted for this study. Consequently, item *is*2 was not deleted. Furthermore, as a result of these satisfactory overall factor loadings, no items from any of the four transformational leadership sub-scales in **Table 4.16** were considered for deletion.

After the item and dimensionality analysis was completed, items parcels were calculated for each of the constructs. There were two item parcels per construct except for transformational leadership, which had four item parcels. The item parcels were calculated by using the means of the particular items involved. Items were divided amongst the parcels by ensuring that odd-numbered items were apportioned to one parcel and even-numbered items were apportioned to the other parcel. (e.g., if shared vision consisted of six items, the first item parcel associated with shared vision would contain the computed means of items 1, 3 and 5 and the other item parcel would contain the computed means of items 2, 4 and 6).

4.6.   Univariate and Multivariate Normality

Introduction. Univariate normality and multivariate normality within the data were investigated. Normality was investigated because of testing assumptions underlying the statistical technique of SEM utilised in this study. In general, deviations in normality can cause bias "…in critical values for determining coefficient significance, and affecting standard errors" (Vieira, 2011, p. 15). Therefore, the extent or prevalence of non-normal data distribution (outliers, excessive skewness and kurtosis) within the sample needs to be investigated and, if the variables in question are not expected to be normally distributed, the appropriate strategy needs to be selected to address this non-normality (Green & Thompson, 2003). Utilising the appropriate estimation method to address this non-normality is one such strategy, but the estimation method should be chosen once a model has been specified (Hair *et al.*, 2010).

Model Specification. The model has to be specified and every possible parameter should be either freed or fixed by the researcher (Hair *et al.*, 2010). "A free parameter is one to be estimated in the model…a fixed parameter is one in which the value is specified by the researcher" (Hair *et al.*, 2010, p. 663). Once the model specification has been addressed, the appropriate estimation method can be examined.

Model Estimation. There are several estimation methods. **Maximum Likelihood Estimation** (MLE) is the most common and even provides acceptable results with very small samples (Hair *et al.*, 2010). When estimating parameters, one should be aware of whether the distribution is normal and non-normality should be addressed immediately. If errors are not normal, "… we shall not know how this affects our interpretation of the data or the inferences we make from it" (Crawley, 2005, p. 122). Thus, the univariate and multivariate normality of the imputed item parcels was evaluated by PRELIS (Jöreskog & Sörbom, 1996b) and the imputed item parcels were treated as continuous variables.

It can be seen in **Table 4.17** that six of the imputed item parcels failed the test of univariate normality ($p < .05$). Furthermore, **Table 4.18** shows that the deviation from multivariate normality is significant ($p < .05$), consequently the null hypothesis of multivariate normality had

to be rejected χ^2 = 65.305; $p < .05$. The decision was taken to normalise the data set using PRELIS (Jöreskog & Sörbom, 1996b).

Table 4.17.

Test of Univariate Normality on Imputed Item Parcels before Normalisation

Variable	Skewness		Kurtosis		Skewness and Kurtosis	
	Z-Score	P-Value	Z-Score	P-Value	Chi-Square	P-Value
COH_1	-2.560	.010	.366	.714	6.689	.035
COH_2	-2.799	.005	1.114	.265	9.075	.011
ROLEC_1	-3.643	.000	2.690	.007	20.51	.000
ROLEC_2	-3.902	.000	2.044	.041	19.405	.000
SHAREV_1	-2.352	.019	-.197	.844	5.571	.062
SHAREV_2	-1.818	.069	-1.923	.054	7.006	.030
TRUST_1	-1.986	.047	-.749	.454	4.505	.105
TRUST_2	-1.851	.064	-.619	.536	3.811	.149
IS	.134	.894	-.674	.500	.473	.790
II	-.084	.933	-1.587	.113	2.524	.283
IM	-.213	.832	-2.370	.018	5.661	.059
IC	-.254	.799	-2.590	.010	6.775	.034

Table 4.18.

Test of Multivariate Normality on Imputed Item Parcels before Normalisation

Skewness			Kurtosis			Skewness and Kurtosis	
Value	Z-Score	P-Value	Value	Z-Score	P-Value	Chi-Square	P-Value
47.767	6.856	.000	189.887	4.279	.000	65.305	.000

The evidence that normalisation improved the situation somewhat can be seen in **Table 4.19**, where all the imputed item parcel variables after normalisation have passed the test for univariate normality ($p > .05$). Moreover, the chi-square improved from χ^2 = 65.305; $p < .05$ before normalisation (see **Table 4.18**) to χ^2 = 41.526; $p < .05$ (see **Table 4.20**). However the deviation from multivariate normality is still significant ($p < .05$), therefore the appropriate estimation method needed to be investigated.

Consequently, robust Maximum Likelihood Estimation (robust MLE) was used due to the failure of the data to satisfy the multivariate normality requirements after normalisation, therefore the asymptotic covariance matrix was calculated. Standard MLE is an appropriate choice if the supposed model is precise; however, when the assumed model is inexact (as is in the case of this research study), a more robust method is appropriate as it is more insensitive to the presence of deviations from the assumed model (Li, 2009). Robust MLE therefore was an appropriate choice.

Table 4.19.

Test of Univariate Normality on Imputed Item Parcels after Normalisation

Variable	Skewness		Kurtosis		Skewness and Kurtosis	
	Z-Score	P-Value	Z-Score	P-Value	Chi-Square	P-Value
COH_1	-.320	.749	-.427	.670	.284	.868
COH_2	-.502	.616	-.583	.560	.592	.744
ROLEC_1	-1.193	.233	-1.261	.207	3.014	.222
ROLEC_2	-1.197	.231	-1.703	.089	4.333	.115
SHAREV_1	-.214	.831	-.710	.478	.550	.759
SHAREV_2	-.467	.640	-1.022	.307	1.262	.532
TRUST_1	-.287	.774	-.527	.598	.360	.835
TRUST_2	-.159	.874	-.159	.874	.050	.975
IS	-.139	.890	-.137	.891	.038	.981
II	-.051	.960	-.127	.899	.019	.991
IM	-.457	.648	-1.067	.286	1.348	.510
IC	-.153	.879	-.588	.556	.369	.831

Table 4.20.

Test of Multivariate Normality on Imputed Item Parcels after Normalisation

Skewness			Kurtosis			Skewness and Kurtosis	
Value	Z-Score	P-Value	Value	Z-Score	P-Value	Chi-Square	P-Value
43.642	5.453	.000	182.794	3.434	.001	41.526	.000

4.7.   Measurement Model Fit

Introduction. In SEM (structural equation modelling) the entire model is investigated to determine its predictive accuracy, which differs from regression analysis where a single relationship is examined (Hair *et al*., 2010). In order to investigate the entire model, both the measurement model and the structural model need to be evaluated. SEM is primarily used to test the structural model. CFA on the other hand, was utilised to assess the measurement model. CFA is a strategy within the framework of SEM. CFA assesses how well the data fits the model and provides a means of testing the hypotheses that were postulated (Child, 2006). CFA as a technique to assess the measurement model was elucidated in section 3.7 of this research study.

In order to completely assess measurement model fit, this section comprises four areas of evaluation, namely goodness of fit statistics; LISREL factor loadings; LISREL standardised residuals; and LISREL modification indices. The measurement model was conceptualised and fitted to the data accordingly. This is represented in **Figure 4.1**.
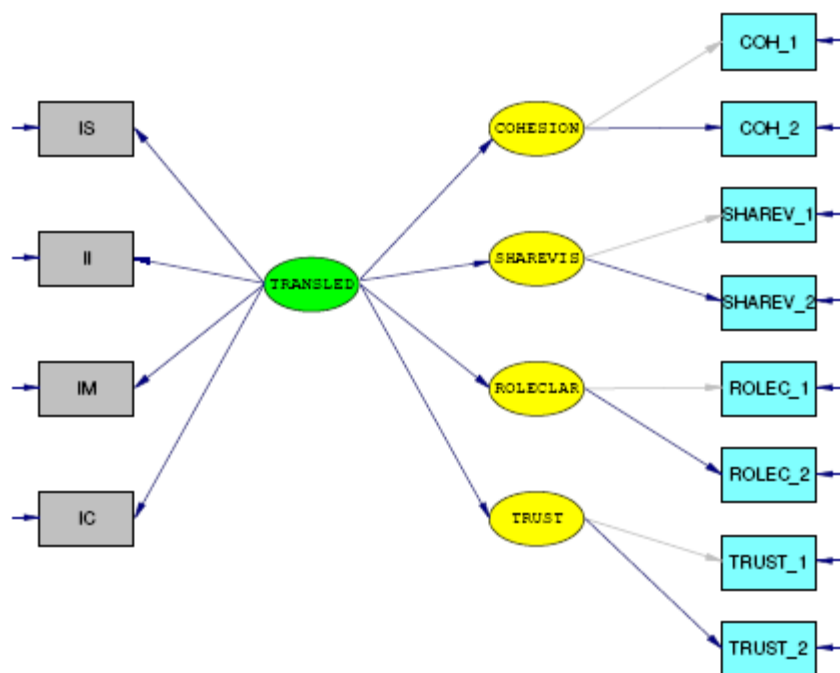
Figure 4.1. Conceptualised Measurement Model fitted to the data

The measurement model was fitted to the data and the resultant path diagram is presented in **Figure 4.2**. "Model fit is determined by the correspondence between the observed covariance matrix and an estimated covariance matrix that results from the proposed model" (Hair *et al.*, 2010, p. 641). An admissible final solution of parameter estimates was obtained after eleven iterations. Confirmatory factor analysis was done though LISREL 8 (Jöreskog & Sörbom, 1996a). Once an admissible solution was obtained, it became necessary to evaluate the various goodness-of-fit statistics to further determine whether acceptable model fit had been attained or not.
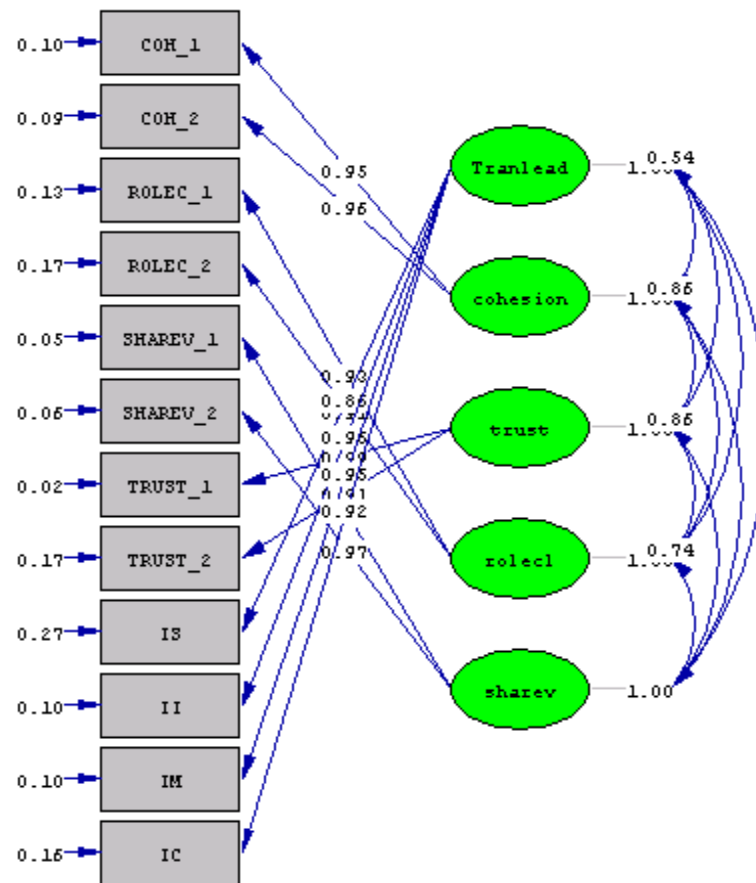
Figure 4.2. Measurement Model of Observed Variables and Latent Variables

4.7.1. Evaluation of the Goodness-Of-Fit Indices for the Measurement Model

Exact Fit versus Close Fit Hypotheses. Ideally, an exact fit between the observed covariance matrix and the estimated covariance matrix is desired. This exact fit means that the proposed model fits what is happening in reality exactly (Diamantopoulos & Siguaw, 2000). As stated in Chapter 3, the null hypothesis of exact fit can be stated as:

$$H_0: \Sigma = \Sigma\,(\theta)$$
$$H_a: \Sigma \neq \Sigma\,(\theta)$$

However the exact fit null hypothesis is not realistic, since all models can only be estimations of reality (Diamantopoulos & Siguaw, 2000). Realistically, the null hypothesis of close fit is more appropriate. The close fit null hypothesis employs the use of the root mean square error of approximation which is elaborated on in the RMSEA section.

$$H_0: \text{RMSEA} \leq 0.05$$
$$H_a: \text{RMSEA} \geq 0.05$$

Categories of Fit Indices. To investigate whether the close fit null hypothesis can be rejected or not, the series of fit indices provided in **Table 4.21** were evaluated to determine whether the measure model had achieved good fit or not. Kelloway (1998) identifies three different categories of 'fit' indices, namely absolute fit indices; comparative fit indices; and parsimonious fit indices. These indices will be discussed in greater length below.

> Absolute fit indices are concerned with the ability of the model to reproduce the covariance matrix … comparative fit is concerned with comparing two or more competing models to assess which provides the better fit to the data … parsimonious fit provide a fairer basis for comparison by adjusting for the known effects of estimating more parameters. (Kelloway, 1998, p. 23).

However, parsimonious fit indices are only meaningful when comparing two different theoretical models (Kelloway, 1998), therefore will not form part of this evaluation.

Table 4.21.

Goodness-of-Fit Statistics for the Measurement Model

Goodness of Fit Statistics	
Degrees of Freedom	44
Minimum Fit Function Chi-Square	75.50 (P = 0.0022)
Normal Theory Weighted Least Squares Chi-Square	75.68 (P = 0.0021)
Satorra-Bentler Scaled Chi-Square	62.87 (P =0.032)
Chi-Square Corrected for Non-Normality	101.49 (P =0.000)
Estimated Non-centrality Parameter (NCP)	18.87
90 Percent Confidence Interval for NCP	(1.75 ; 44.00)
Minimum Fit Function Value	1.05
Population Discrepancy Function Value (F0)	.260
90 Percent Confidence Interval for F0	(.024 ; .61)
Root Mean Square Error of Approximation (RMSEA)	.077
90 Percent Confidence Interval for RMSEA	(.024 ; 0.12)
P-Value for Test of Close Fit (RMSEA < 0.05)	.160
Expected Cross-Validation Index (ECVI)	1.820
90 Percent Confidence Interval for ECVI	(1.58 ; 2.17)
ECVI for Saturated Model	2.170
ECVI for Independence Model	26.69
Chi-Square for Independence Model with 66 Degrees of Freedom	1897.83
Independence AIC	1921.83
Model AIC	130.87
Saturated AIC	156
Independence CAIC	1961.31
Model CAIC	242.75
Saturated CAIC	412.66
Normed Fit Index (NFI)	.960
Non-Normed Fit Index (NNFI)	.970
Parsimony Normed Fit Index (PNFI)	.640
Comparative Fit Index (CFI)	.980
Incremental Fit Index (IFI)	.980
Relative Fit Index (RFI)	.940
Critical N (CN)	66.53
Root Mean Square Residual (RMR)	.040
Standardized RMR	.033
Goodness of Fit Index (GFI)	.850
Adjusted Goodness of Fit Index (AGFI)	.740
Parsimony Goodness of Fit Index (PGFI)	.480

4.7.1.1. Absolute Fit Indices

The absolute fit indices are discussed below.

Chi-Square (χ^2). The chi-square (χ^2) is the traditional method of evaluating overall model fit. When χ^2 is significant the exact fit null hypothesis [H_0: $\Sigma = \Sigma\,(\theta)$] can be rejected (Diamantopoulos & Siguaw, 2000), thus H_0: $\Sigma = \Sigma\,(\theta)$ is tested via the χ^2 in order to not reject H_0 ($p > .05$). The Satorra-Bentler scaled chi-square was χ^2 (44, $N=73$) $= 62.87$, $p < .05$. This implied that the null hypothesis should be rejected. There are some concerns, however, with using the chi-square in isolation of other fit indices. These concerns are highlighted by Kelloway (1998, p. 26) who state:

> First, the approximation to the χ^2 distribution occurs only for large samples (i.e. N $\geq$ 200). Second, just at the point where the χ^2 distribution becomes a tenable assumption, the test has a great deal of power…as N increases, the value of χ^2 must also increase…This makes it highly unlikely that you will obtain a nonsignificant test statistic with large sample sizes.

When it comes to small sample sizes, as is the case in this study, the reliability of the chi-square statistic can also be questioned (Healy, 2010). This justifies the need to examine other fit indices before drawing a final conclusion regarding the close fit of the measurement model.

Root Mean Square Residual (RMR). This is defined as "… the square root of the mean of the squared discrepancies between the implied and observed covariance matrices" (Kelloway, 1998, p. 27). The RMR is sensitive to the scale of the measurement (Kelloway, 1998), thus the standardised RMR was evaluated. The standardised RMR $=$ .033, which indicates good fit since values less than .05 is indicative of good or acceptable fit (Diamantopoulos & Siguaw, 2000; Kelloway, 1998).

Root Mean Square Error of Approximation (RMSEA). The RMSEA is a very useful fit index. It focuses on error due to approximation. "Values less than .05 are indicative of good fit, between

.05 and under .08 of reasonable fit, between .08 and .10 mediocre fit and .10 of poor fit". (Diamantopoulos & Siguaw, 2000, p. 85). The RMSEA (.077) depicted in **Table 4.21** is therefore indicative of reasonable fit. Furthermore, the 90% confidence interval for the RMSEA (.024; .12) shown in **Table 4.21** proves that the RMSEA value of .077 is not significantly different from .05 and indicates acceptable fit, therefore the close fit null hypothesis is not rejected (p > .05). This finding is corroborated by the *P-Value for Test of Close Fit (RMSEA <* .05*)*, in **Table 4.21**, which is .16 indicates that the close fit null hypothesis is not rejected (p > .05).

Goodness-of-Fit Index (GFI). For good fit it suggested that values should exceed .9 (Kelloway, 1998). This study presents a GFI of .83 which indicates reasonable fit.

4.7.1.2. Comparative Fit indices

Comparative Fit Index (CFI), Normed Fit Index (NFI), Non-Normed Fit Index (NNFI) and Incremental Fit Index (IFI). "The CFI and NFI are measures assessing the fit of the proposed model relative to the independence model, which assumes that there are no relationships in the data" (Meyers *et al.*, 2006, p. 608). CFI values > .95 represent good fit (Meyers *et al.*, 2006). In this study, the CFI was .98 (see **Table 4.21**). Values between .9 and .95 for the NFI indicate acceptable fit (Meyers *et al.*, 2006). The NFI in this study was .96 (see **Table 4.21**), which indicates good fit. The NNFI and IFI are also common relative fit indices. Values between .9 and .95 are acceptable (Meyers *et al.*, 2006). In this study the NNFI (.97) and IFI (.98) indicated good fit.

Goodness-of-Fit Statistics: Conclusion. The various fit indices depicted above illustrate that the measurement model fits the data reasonable well, but not perfectly. Thus the null hypothesis of perfect fit is rejected, but the null hypothesis of close fit is not rejected because the model nearly fits the independent model. However, for a thorough overall assessment of measurement model fit, the residuals produced by LISREL during measurement model fit were also investigated.

4.7.2. Evaluation of the LISREL Factor Loadings for the Measurement Model

It is important to understand the scale and importance of the various paths depicted in the measurement model. An assessment of the strength of the factor loadings associated with each of these paths provides a good indicator of the validity of the indicators involved in the measurement model (Diamantopoulos & Siguaw, 2000). **Table 4.22** provides the unstandardised parameter estimates, the standard error and the *t*-values. Factor loadings are significant if *t*-values > │1.96│. As illustrated in **Table 4.22**, all the factor loadings within the measurement model are significant (*p* < .05), since all the *t*-values > │1.96│.

Table 4.22.

Unstandardised Lambda-X Matrix for the Measurement Model

	Tranlead	Cohesion	Trust	Rolecl	Sharev
IS	**1.02**				
	(.110)				
	9.18				
II	**1.26**				
	(.110)				
	11.88				
IM	**1.35**				
	(.100)				
	12.88				
IC	**1.32**				
	(.120)				
	11.2				
COH_1		**1.00**			
		(.090)			
		11.71			
COH_2		**.950**			
		(.080)			
		12.39			
TRUST_1			**1.08**		
			(.080)		
			13.5		
TRUST_2			**1.06**		
			(.100)		

	11.05	
ROLEC_1	**.610**	
	(.050)	
	12.22	
ROLEC_2	**.630**	
	(.050)	
	12.45	
SHAREV_1		**1.05**
		(.080)
		13.05
SHAREV_2		**1.16**
		(.090)
		13.28

*Note: Unstandardised parameter estimates in **bold**;*

Standard errors between brackets;

t-values in italics

However Diamantopoulos and Siguaw (2000, pp. 89-90) state that:

> One problem with relying on unstandardised loadings and associated t-values is that it may be difficult to compare the validity of different indicators measuring a particular construct…because indicators of the same construct may be measured on very different scales…direct comparisons of the magnitudes of the loadings are clearly inappropriate.

Thus, Diamantopoulos and Siguaw (2000) suggest that the completely standardised loadings should also be examined. **Table 4.23** shows that the factor loadings of all the items parcels are valid. It is prudent to examine both the validity and the reliability of the indicators. The reliability of the indicators can be examined by evaluating the squared multiple correlation (R^2) values which depict the "…proportion of variance in an indicator that is explained by its underlying latent variable" (Diamantopoulos & Siguaw, 2000, p. 90). These writers further suggest that a high R^2 is indicative of high reliability. In this study, all the indicators are reliable ($R^2 > .73$), as depicted in **Table 4.24**.

Table 4.23.

Completely Standardised LAMBA-X Matrix for the Measurement Model

	Tranlead	Cohesion	Trust	Rolecl	Sharev
IS	.860				
II	.950				
IM	.950				
IC	.920				
COH_1		.950			
COH_2		.960			
TRUST_1			.990		
TRUST_2			.910		
ROLEC_1				.930	
ROLEC_2				.910	
SHAREV_1					.980
SHAREV_2					.970

Table 4.24.

Squared Multiple Correlations for X - Variables

Variable	R²	Variable	R²	Variable	R²
COH_1	.900	SHAREV_1	.950	IS	.730
COH_2	.910	SHAREV_2	.940	II	.900
ROLEC_1	.870	TRUST_1	.980	IM	.900
ROLEC_2	.830	TRUST_2	.830	IC	.840

4.7.3. Evaluation of Measurement Model Standardised Residuals

Residuals are the difference between elements of the observed and estimated covariance matrices. Standardised residuals are defined as "…a residual divided by its estimated standard error" (Jöreskog & Sörbom, 1993, p. 146). In other words, standardised residuals are residuals which have been converted into *z*-scores (Field, 2009). For normal distribution samples, 95% of z-scores should lie between -1.96 and +1.96; 99% should lie between -2.58; and +2.58, and

99.9% should lie between -3.29 and +3.29" (Field, 2009, p. 216). A standardised residual can be considered large if the z-score is larger than 2.58 (Byrne, 1998). The size of standardised residuals are influence by sample size (Field, 2009), however, which has already been mentioned as a cause for concern for interpretation of the measurement and structural model fit in the case of this study.

Furthermore, large positive standardised residuals mean that the model is underestimated and that additional paths may be needed to account for the covariance (Brown, 2006), while large negative residuals mean that the models are overestimated and that some paths may need to be trimmed from the model to better explain the covariance. **Table 4.25**, which presents the summary of the statistics for the measurement model's standardised residuals, indicates that only two covariant terms are poorly reproduced by the fitted covariance matrix. This conclusion corroborates the evaluation of the goodness-of-fit statistics findings which indicate that the measurement model fits the data reasonably well.

Table 4.25.

Summary Statistics for Standardised Residuals of the Measurement Model

Smallest and Largest Standardised Residuals		
Smallest Standardised Residual	=	-4.300
Median Standardised Residual	=	.000
Largest Standardised Residual	=	1.450
Largest Negative Standardised Residuals		
Residual for IS and ROLEC_2		-4.300

A stem-and-leaf plot visually indicates how the residuals are distributed; most of the residuals should be grouped around the zero with only a few of the residuals in the outer limits (Byrne, 1998). The stem-and-leaf plot of the standardised residuals for the measurement model as depicted in **Figure 4.3** clearly depicts that the standardised residuals in this study do not present any major cause for concern since all but one residual is larger than 2.58. However, the distribution exhibits a very slight negative tail, suggesting a very slight over-estimation of the measurement model.

```
- 4|3
- 3|
- 2|310
- 1|44
- 0|9877541110000000000000000000000000000000000000000000000000000000
   0|2567
   1|115
```

Figure 4.3. Stem-and-Leaf Plot of Standardised Residuals for Measurement Model

Figure 4.4 shows is Q-plot of the standardised residuals for the measurement model, which contains a linear 45^0 reference line. In the Q-plot the residuals are plotted against this reference line. Specification errors can be evident if any of these points deviate from the reference line and exhibit a non-linear pattern (Blalock, 1985; Jöreskog & Sörbom, 1993). It seems that there is a very slight misspecification of the model, but this is not pronounced at all, as evidenced by the stem-and-leaf plot above (see **Figure 4.3**). This finding further corroborates the earlier evidence that the measurement model fits the data reasonably well.

Figure 4.4: Q-Plot of Standardised Residuals for Measurement Model

4.7.4. Evaluation of Measurement Model Modification Indices

Modification indices indicate "…an approximation of how much the overall model χ^2 would decrease if the fixed or constrained parameter was freely estimated" (Brown, 2006, p. 119). Modification indices larger than 5 should be considered, but it should not be freed if it does not make substantive sense to do so (Kelloway, 1998). The modification index of *IS* and *ROLEC_1* and *ROLEC_2* found in the Lamba-X modification index table below (see **Table 4.26**) was slightly above 5, but it did not make substantive sense to consider this index at this stage, although it could be considered for future cross-validation. Furthermore, the fit of the measurement model is already tenable, so further change in terms of modification index consideration is not needed to ensure that measurement model fit is ensured.

Table 4.26.

Measurement Model Modification Indices of Lambda-X

	Tranlead	Cohesion	Trust	Rolecl	Sharev
IS	- -	.580	1.270	5.630	1.320
II	- -	.300	.220	2.380	.170
IM	- -	2.530	1.460	.860	.600
IC	- -	3.690	1.250	1.100	.290
COH_1	.310	- -	2.060	.150	1.410
COH_2	.300	- -	1.310	.090	.360
TRUST_1	.470	.020	- -	.440	.090
TRUST_2	.360	.020	- -	.320	.070
ROLEC_1	.080	.830	1.060	- -	.690
ROLEC_2	.070	.720	.880	- -	.600
SHAREV_1	.410	.080	.310	.090	- -
SHAREV_2	.330	.050	.190	.100	- -

4.8. Structural Model Fit

Introduction. It is very important to assess the validity of the structural model and to ensure that the theoretical paths between constructs are valid (Hair *et al*., 2010). Thus, when fitting the structural model to the data, the focus is on the associations between all the dependent and independent variables (Diamantopoulos & Siguaw, 2000). To determine the validity of the structural model, it is suggested that the statistical significance and predicted direction of the hypothesised relationships be investigated, as well as checking the completely standardised loading estimates for non-triviality (Hair *et al*., 2010). Robust Maxim Likelihood was used in this estimation and the structural model was evaluated through LISREL 8 (Jöreskog & Sörbom, 1996a).

This section is divided in two parts, the initial unmodified model (**Figure 4.5**) is evaluated in the first part and the modified model is evaluated in the second part of this section. An admissible final solution of parameter estimates for the unmodified model was obtained after ten iterations. This is followed by the goodness of fit statistics in **Table 4.27**. A detailed discussion of the goodness of fit statistics is also presented in the following paragraphs.
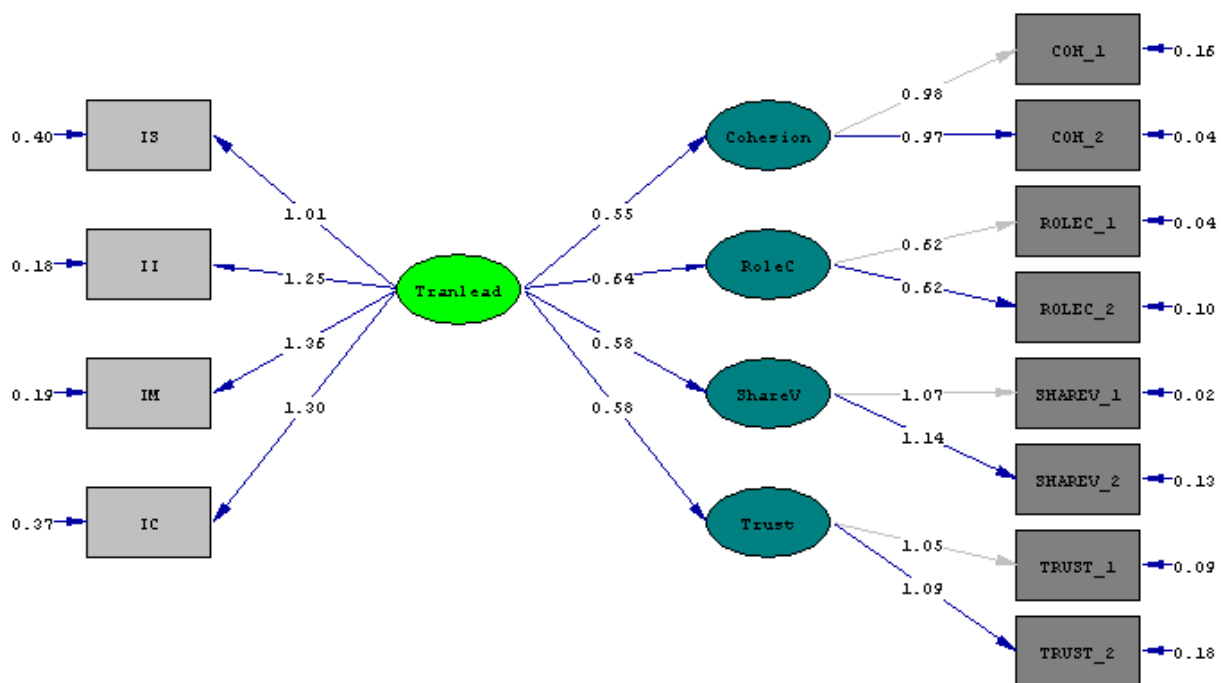
Figure 4.5. *Unmodified Transformational Leadership and Team Characteristics Structural Model*

4.8.1. Assessing the Goodness-Of-Fit Statistics for the Unmodified Structural Model

Introduction. A variety of fit statics need to be evaluated before rejecting or accepting either the null hypothesis of exact fit or the null hypothesis of close fit. Two categories of fit statistics were examined to determine unmodified structural model fit. These categories, namely absolute fit statistics and comparative fit statistics are evaluated below. A detailed explanation of each of these categories, as well as the various fit indices within each category, was presented in section 4.7.1. Thus only the evaluations of the various fit indices are presented below.

Table 4.27.

Goodness-of-Fit Statistics for the Unmodified Structural Model

Goodness of Fit Statistics	
Degrees of Freedom	50
Minimum Fit Function Chi-Square	237.32 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square	251.71 (P = 0.0)
Satorra-Bentler Scaled Chi-Square	213.49 (P = 0.0)
Chi-Square Corrected for Non-Normality	278.83 (P = 0.0)
Estimated Non-centrality Parameter (NCP)	163.49
90 Percent Confidence Interval for NCP	(122.05 ; 212.49)
Minimum Fit Function Value	3.30
Population Discrepancy Function Value (F0)	2.27
90 Percent Confidence Interval for F0	(1.70 ; 2.95)
Root Mean Square Error of Approximation (RMSEA)	.210
90 Percent Confidence Interval for RMSEA	(.180 ; .240)
P-Value for Test of Close Fit (RMSEA < 0.05)	.000
Expected Cross-Validation Index (ECVI)	3.74
90 Percent Confidence Interval for ECVI	(3.17 ; 4.42)
ECVI for Saturated Model	2.17
ECVI for Independence Model	26.69
Chi-Square for Independence Model with 66 Degrees of Freedom	1897.83
Independence AIC	1921.83
Model AIC	269.49
Saturated AIC	156
Independence CAIC	1961.31
Model CAIC	361.62
Saturated CAIC	412.66
Normed Fit Index (NFI)	.890
Non-Normed Fit Index (NNFI)	.880
Parsimony Normed Fit Index (PNFI)	.670
Comparative Fit Index (CFI)	.910
Incremental Fit Index (IFI)	.910
Relative Fit Index (RFI)	.850
Critical N (CN)	26.68
Root Mean Square Residual (RMR)	.250
Standardized RMR	.230
Goodness of Fit Index (GFI)	.630
Adjusted Goodness of Fit Index (AGFI)	.430
Parsimony Goodness of Fit Index (PGFI)	.410

Absolute Fit Indices. Absolute fit indices are "…concerned with the ability of the model to reproduce the covariance matrix…" Kelloway (1998, p. 23). The Satorra-Bentler scaled chi-square was χ^2 (50, N = 73) = 213.49, p < .05. This indicated that the null hypothesis of exact fit H_{01}: $\Sigma = \Sigma$ (θ) could be rejected (p = .00) in favour of H_{a1}: $\Sigma \neq \Sigma$ (θ). Furthermore, the null hypothesis of close fit H_{01}: RMSEA $\leq$ .05 could also be rejected in favour of H_{b1}: RMSEA $\geq$ .05. Values below .05 for the *Root Mean Square Residual* (RMR), *Standardised* RMR and *Root Mean Square Error of Approximation* (RMSEA) indicate good fit, while values above .1 indicate poor fit (Diamantopoulos & Siguaw, 2000; Kelloway, 1998). In this study the RMR was .25, the *Standardized* RMR was .23 and the RMSEA was .21 (see **Table 4.27**), which indicated extremely poor fit of the unmodified structural model on the data. This was further corroborated by the *Goodness of Fit Index* (GFI) which was .63 and *Adjusted Goodness of Fit Index* (AGFI) which was .43 and indicative of poor fit.

Comparative Fit Indices. These types of indices are "…concerned with comparing two or more competing models to assess which provides the better fit to the data…" (Kelloway, 1998, p. 23). Values for these fit indices above .9 are deemed acceptable (Meyers *et al*., 2006). The *Comparative Fit Index* (*CFI*) was .91 and the *Incremental Fit Index* (*IFI*) was .91, which was on the border of acceptable fit. However, the *Normed Fit Index (NFI)* is .89 and the *Non-Normed Fit Index (NNFI)* was .88 which contradicted the CFI and IFI and indicated poor fit instead of acceptable fit.

Goodness-Of-Fit Statistics Conclusion. In conclusion, the various fit statistics indicate that the unmodified structural model fitted the data in an extremely poor manner. It may have been necessary to re-specify the structural model, but further evaluation was needed to ascertain exactly what measures needed to take place to ensure optimal fit. In the following section the standardised residuals are investigated to understand to what extent the unmodified structural model was overestimated or underestimated.

4.8.2. Evaluation of the Unmodified Structural Model Standardised Residuals

The stem-and-leaf plot depicting the standardised residuals for the unmodified structural model (see **Figure 4.6**) indicates that the distribution was negatively skewed and suggests that the model was underestimated. **Table 4.28,** which illustrates the summary statistics for the standardised residuals of the structural model, indicates that there are five large negative residuals and 24 large positive residuals. All 29 residuals are larger than 2.58, which is of some concern. This means that 29 covariance terms were poorly estimated by the unmodified structural model. The large positive residuals indicate that the model was underestimated and that additional paths may need to be added (Brown, 2006). The existence of negative residuals means that some of the paths may have been overestimated and may require deletion. On closer inspection of the residuals in **Table 4.28** it appears that the prevalence of large residuals associated with the trust, shared vision and role clarity variables suggest that these variables be considered for possible improvement.

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-10|0
- 8|5
- 6|
- 4|1
- 2|113
- 0|43208755000000000000000000000000000000000000000
  0|1
  2|2456688
  4|13356677778992589
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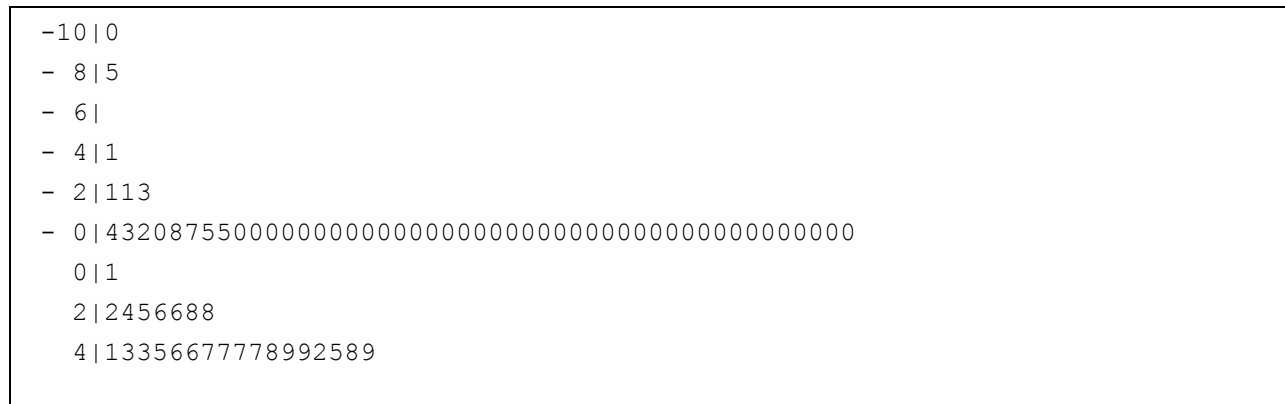
Figure 4.6. Stem-and-Leaf Plot of Standardised Residuals for Unmodified Structural Model

Table 4.28.

Summary Statistics for Standardised Residuals of the Unmodified Structural Model

Smallest and Largest Standardised Residuals		
Smallest Standardised Residual	=	-11.03
Median Standardised Residual	=	.000
Largest Standardised Residual	=	5.94
Largest Negative Standardised Residuals		
Residual for IS and ROLEC_1		-3.11
Residual for IS and ROLEC_2		-11.03
Residual for IC and COH_1		-4.08
Residual for IC and COH_2		-3.13
Residual for IC and TRUST_1		-9.54
Largest Positive Standardised Residuals		
Residual for ROLEC_1 and COH_1		3.57
Residual for ROLEC_1 and COH_2		4.28
Residual for ROLEC_2 and COH_1		3.22
Residual for ROLEC_2 and COH_2		3.64
Residual for SHAREV_1 and COH_1		4.86
Residual for SHAREV_1 and COH_2		4.76
Residual for SHAREV_1 and ROLEC_1		3.78
Residual for SHAREV_1 and ROLEC_2		4.72
Residual for SHAREV_2 and COH_1		4.68
Residual for SHAREV_2 and COH_2		4.60
Residual for SHAREV_2 and ROLEC_1		3.83
Residual for SHAREV_2 and ROLEC_2		4.68
Residual for TRUST_1 and COH_1		4.70
Residual for TRUST_1 and COH_2		4.90
Residual for TRUST_1 and ROLEC_1		4.12
Residual for TRUST_1 and ROLEC_2		4.27
Residual for TRUST_1 and SHAREV_1		5.79
Residual for TRUST_1 and SHAREV_2		5.94
Residual for TRUST_2 and COH_1		4.49
Residual for TRUST_2 and COH_2		4.58
Residual for TRUST_2 and ROLEC_1		3.54
Residual for TRUST_2 and ROLEC_2		3.37
Residual for TRUST_2 and SHAREV_1		5.23
Residual for TRUST_2 and SHAREV_2		5.47

Further corroboration for model misspecification is provided by the evidence in **Figure 4.7** of the Q-plot depicting the standardised residuals for the unmodified structural model. This Q-plot

indicates major deviation from the 45^0 reference line in both the upper and lower quadrants of the x-axis that is more severe than in the case of the measurement model.

Standardised Residuals: Conclusion. Evaluation of the standardised residuals of the structural model indicated definite areas of concern in terms of the model being misspecified and over-estimated. However, further evaluation of the modification indices would indicate which of the currently fixed parameters would improve the model fit, if freed.

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     Q    .                   .                                    x
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     a    .               .                                      x x.
     n    .          x        x                                    .
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     i    .         x x  .                                         .
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     s    .   *             .                                      .
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     -3.5                                                              3.5
              Standardised Residuals
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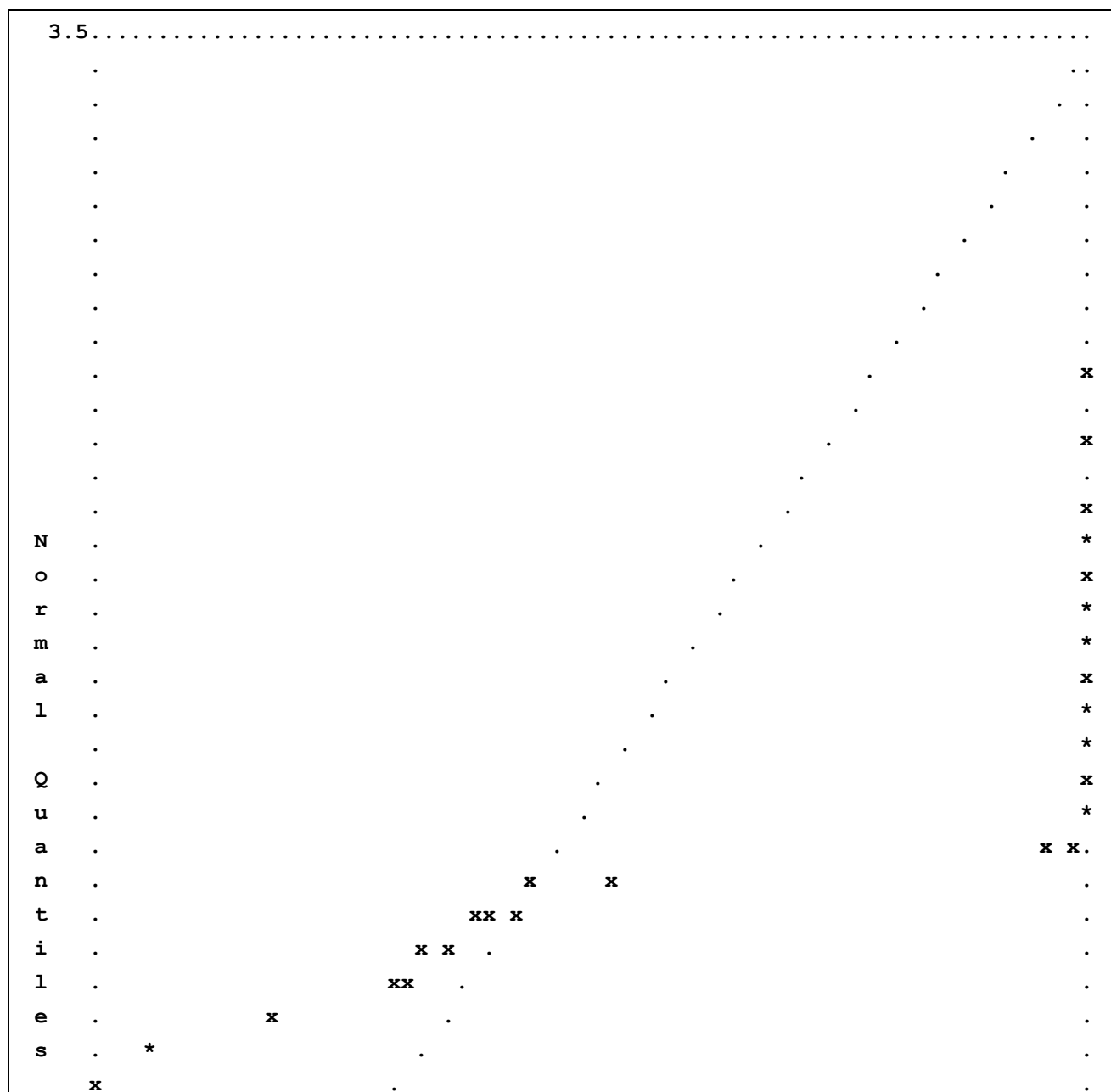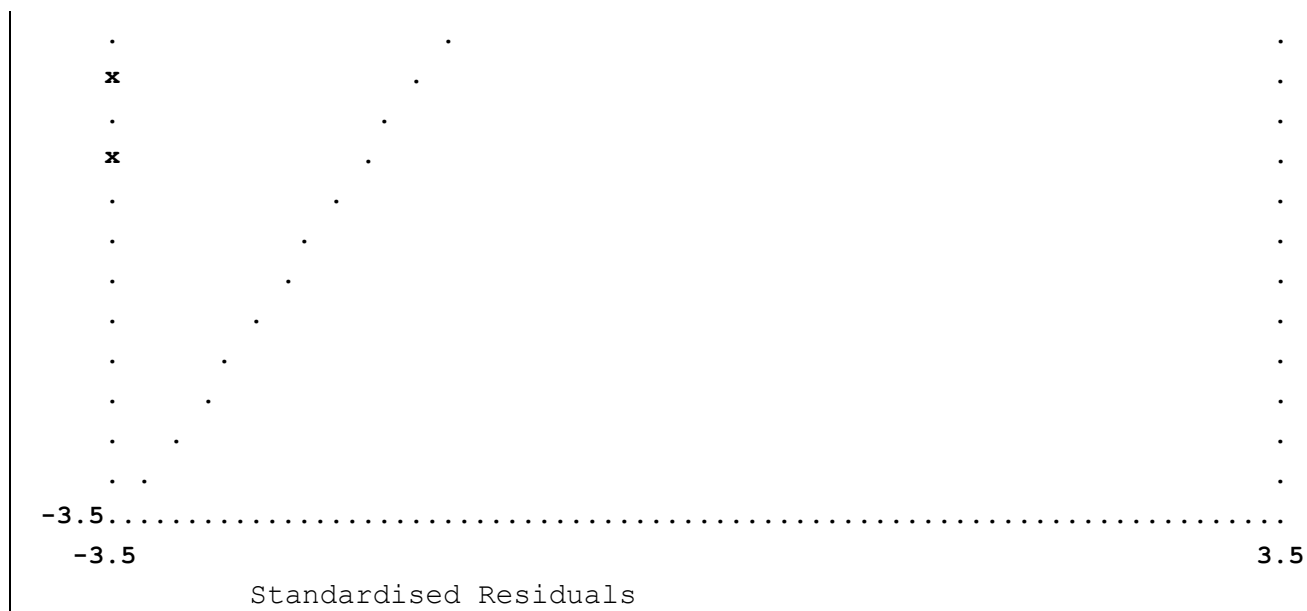
Figure 4.7. Q-Plot of Standardised Residuals for Unmodified Structural Model

4.8.3. Evaluation of the Total Effects of KSI on ETA for the Unmodified Structural Model

The total effect of an independent variable upon a dependent variable equals the sum of the direct and indirect effects between the various variables (Kelloway, 1998). "Direct effects are the parameters estimated in the model…" (Kelloway, 1998, p. 96). There were no indirect effects for this unmodified structural model. LISREL reported these effects, as well as the standard error and t-values of these effects. The total effects of KSI on ETA for the unmodified structural model are illustrated in **Table 4.29**. The total effects of the transformational leadership independent variable on the various team-characteristic dependent variables are all significant (p < .05), since all the t-values are > ⎸1.96 ⎸.

Table 4.29.

Total effects of KSI on ETA for the Unmodified Structural Model

	TRANSFOR
TEAMCOH	**.550**
	(.130)
	4.18
ROLECLAR	**.640**
	(.120)
	5.32
SHAREDVI	**.580**
	(.120)
	4.80
TRUST	**.580**
	(.110)
	5.25

*Note: Unstandardised parameter estimates in **bold**;*

    Standard errors between brackets;

    t-values in italics

4.8.4. Evaluation of Original Research Hypotheses in light of Unmodified Structural Model Fit

Hypothesis 1: H_{01}: $\Sigma = \Sigma$ (θ); Ha_1: $\Sigma \neq \Sigma$ (θ) or, stated alternatively, H_{01}: RMSEA ≤ 0.05; H_{b1}: RMSEA ≥ 0.05. The research hypothesis states that there is no significant discrepancy between the reproduced covariance matrix $\Sigma(\theta)$ and the observed population covariance (Σ) with regard to exact fit or, stated alternatively, as a close fit hypothesis; that the reproduced covariance matrix $\Sigma(\theta)$ closely approximates the observed population covariance (Σ). As indicated in **Table 4.27**, the chi-square was χ^2 (50, $N = 73$) = 213.49, $p < .05$, which indicated that the null hypothesis of exact fit H_{01}: $\Sigma = \Sigma$ (θ) could be rejected ($p = .00$) in favour of H_{a1}: $\Sigma \neq \Sigma$ (θ). Furthermore, the null hypothesis of close fit H_{01}: RMSEA $\leq .05$ could also be rejected in favour of H_{b1}: RMSEA $\geq$ .05 because the RMSEA was .21 (see **Table 4.27**). Overall, it appeared that the unmodified structural model provided a poor fit for the data.

Hypothesis 2: H$_{02:}$ γ_{11} = 0; H$_{a2:}$ γ_{11}> 0. The research hypothesis states that transformational leadership has a positive significant affect on mutual trust. **Table 4.30** illustrates that this relationship is significant (p < .05) since the *t*-value > │1.96│, thus the null hypothesis H$_{02}$ was rejected in favour of the alternative hypothesis H$_{a2.}$ The data therefore indicate a statistically significant relationship between transformational leadership and mutual trust.

Hypothesis 3: H$_{03}$: γ_{21} = 0; H$_{a3}$: γ_{21}> 0. The research hypothesis states that transformational leadership has a positive significant effect on shared vision. The Γ path coefficient in **Table 4.30** illustrates that this relationship is significant (p < .05), since the *t*-value > │1.96│, thus the null hypothesis H$_{03}$ was rejected in favour of the alternative hypothesis H$_{a3.}$ The data therefore indicate that the proposed relationship between transformational leadership and shared vision is corroborated.

Table 4.30.

Gamma Matrix of Path Coefficients for Unmodified Structural Model

	TRANSFOR
TEAMCOH	**.550**
	(-.130)
	4.18
ROLECLAR	**.640**
	(-.120)
	5.32
SHAREDVI	**.580**
	(-.120)
	4.80
TRUST	**.580**
	(-.110)
	5.25

*Note: Unstandardised parameter estimates in **bold**;*

Standard errors between brackets;

t-values in italics

Hypothesis 4: H_{04}: $\gamma_{31} = 0$; H_{a4}: $\gamma_{31} > 0$. The research hypothesis states that transformational leadership has a positive significant effect on cohesion. Upon examining the Γ matrix (see **Table 4.30**) it was clear that the relationship between transformational leadership and cohesion was tenable and that this relationship indeed was significant (p < .05) since the *t*-value > │1.96│. Thus the null hypothesis H_{04} was rejected in favour of the alternative hypothesis H_{a4}.

Hypothesis 5: H_{05}: $\gamma_{41} = 0$; H_{a5}: $\gamma_{41} > 0$. The research hypothesis states that transformational leadership has a positive significant effect on role clarity. **Table 4.30** illustrates that the null hypothesis H_{05} was rejected in favour of alternative hypothesis H_{a5} since the *t*-value > │1.96│ and the relationship was significant (p < .05). Therefore the relationship between transformational leadership and role clarity was corroborated.

Hypothesis Evaluation: Conclusion. It appears that, overall, the unmodified structural model fitted the data poorly. Possible reasons for this could be found in the relatively small sample size, low statistical power, or model misspecification (Hair *et al*., 2010). These specific constraints are dealt with in detail in Chapter 5. The individual hypothesis statements, however, (hypothesis 2 through hypothesis 5) are all corroborated. These original hypothesised relationships between transformational leadership and the four team characteristics were therefore all found to be statistically significant. Thus, the aim of this research study — to investigate the veracity of the relationship between transformational leadership and these team characteristics — was achieved. However, these results have to be viewed as somewhat tenuous because of the overall poor structural model fit. The individual outcomes of each of these results are discussed in depth in Chapter 5.

Finally, due to the overall poor structural model fit, it was decided to investigate the possibility of improved model fit through examination of the modification indices. The possibility of structural model fit improvement through evaluation of the unmodified structural model modification indices was investigated and is discussed in the following paragraphs.

4.8.5. Evaluation of the Unmodified Structural Model Modification Indices for Possible Model Fit Improvement

Introduction. The modification indices for the beta (β) path coefficients (see **Table 4.31**) presented some very high values. This caused concern since all the values in **Table 4.31** were above 5, which meant that these additional paths should be considered as improvements to the model (Kelloway, 1998), but it is suggested that this should only be considered if theoretical substantiation can be found for the suggested freed parameters (Diamantopoulos & Siguaw, 2000; Kelloway, 1998). It is further suggested that if this route for model improvement is followed the highest modification indices should be considered first, then the second highest and so on (Kelloway, 1998).

Thus, on examining the modification indices for the β path coefficients in **Table 4.31.** it appeared that the fixed parameter from shared vision to cohesion should be freed, since it has the highest modification index value (55.95). This was further corroborated by the standardised expected change for the path coefficient in **Table 4.32,** which indicated that there is a substantial standard deviation greater than 1 for the relationship between shared vision and cohesion. Initially, all gamma (Γ) path coefficients of the unmodified structural model were significant and did not require any modification (see **Table 4.30**).

However, with various β path coefficients being considered and added, certain Γ path coefficients became affected and, as a result, became non-significant. As a β path was added this in turn changed the existing β path modification indices and some indices increased as a result; in the end, three additional β paths were considered and added, namely the link between shared vision and cohesion; the link between trust and shared vision; and the link between shared vision and role clarity (see **Figure 4.8**). It made substantive sense to add these paths. In addition, two Γ paths were considered and deleted, namely the link between transformational leadership and cohesion and the link between transformational leadership and shared vision (see **Figure 4.8**). This resulted in an improved overall fit for the modified structural model (the modified structural model is evaluated in the next section); overall, no further paths were required to be deleted or

added since tenable fit for the modified structural model was attained and the modified structural model modification indices were indicative of this fact (see **Table 4.35** & **Table 4.36**). It should be noted that all modifications in this research study were data driven; however future studies should examine the theoretical nature of each modification before adding or deleting a particular path.

Table 4.31.

Modification Indices for BETA Path Coefficients for the Unmodified Structural Model

	Cohesion	RoleC	ShareV	Trust
Cohesion	- -	29.020	55.950	47.940
RoleC	22.050	- -	27.210	22.680
ShareV	52.670	33.350	- -	55.110
Trust	37.550	19.430	44.320	- -

Table 4.32.

Standardised Expected Change for BETA Path Coefficients for the Unmodified Structural Model

	Cohesion	RoleC	ShareV	Trust
Cohesion	- -	.990	1.130	1.060
RoleC	.640	- -	.730	.680
ShareV	1.000	1.000	- -	1.080
Trust	.790	.650	.870	- -

4.8.6. Evaluation of the Modified Structural Model after Consideration of Modification Indices

Introduction. The modified structural model was evaluated by LISREL 8 (Jöreskog & Sörbom, 1996a). An admissible final solution of parameter estimates was obtained after eleven iterations. The modified structural model is presented in **Figure 4.8**, followed by the *t*-values of the modified model presented graphically in **Figure 4.9,** and the goodness of fit statistics are presented in **Table 4.33**. A detailed discussion of the goodness of fit statistics is presented in the

following section. The assessment of the goodness of fit statistics is followed by an evaluation of the standardised residuals and modification indices of the modified structural model. The evaluation of the modified structural model section concludes with a discussion of the total and indirect effects of ksi on eta within the modified structural model.
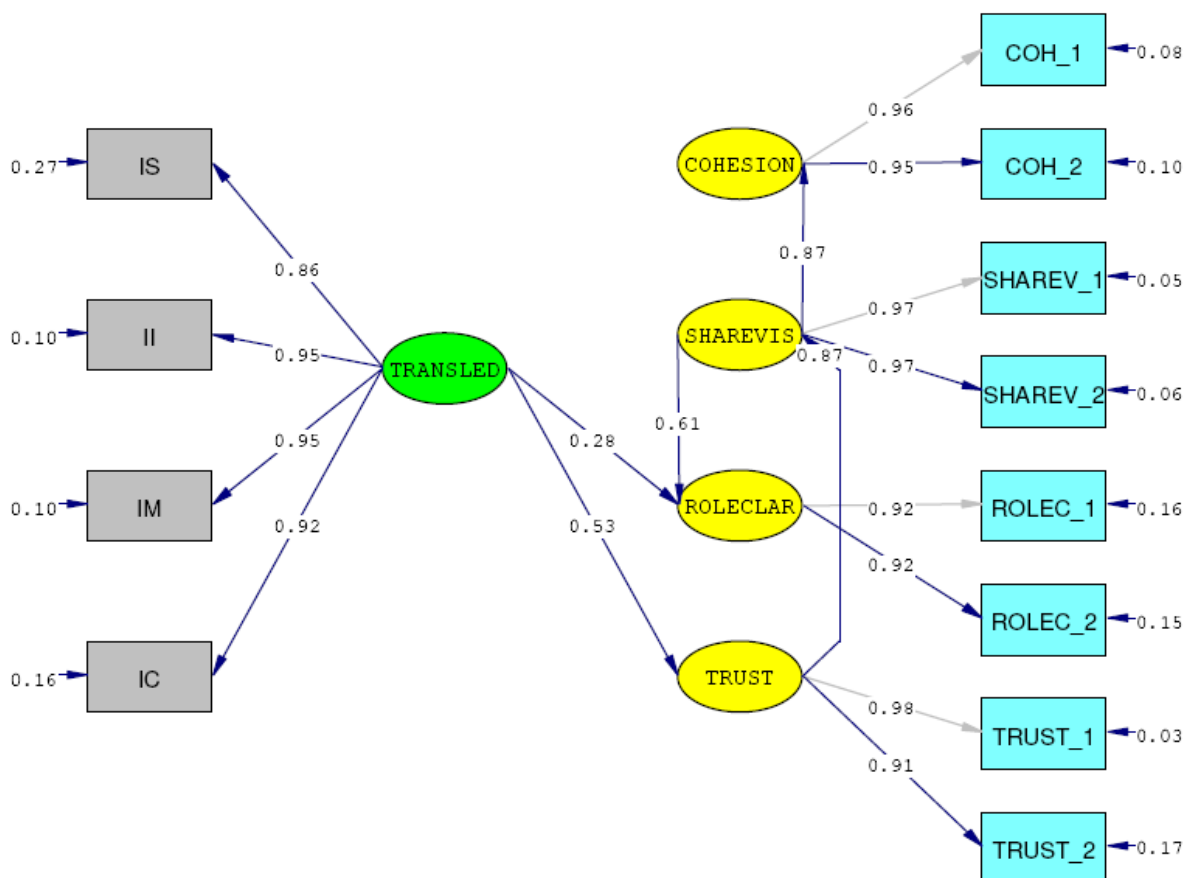
Chi-Square=70.95, df=49, P-value=0.02180, RMSEA=0.079

Figure 4.8. Standardised Solution of the Modified Structural Model after Consideration of Modification Indices
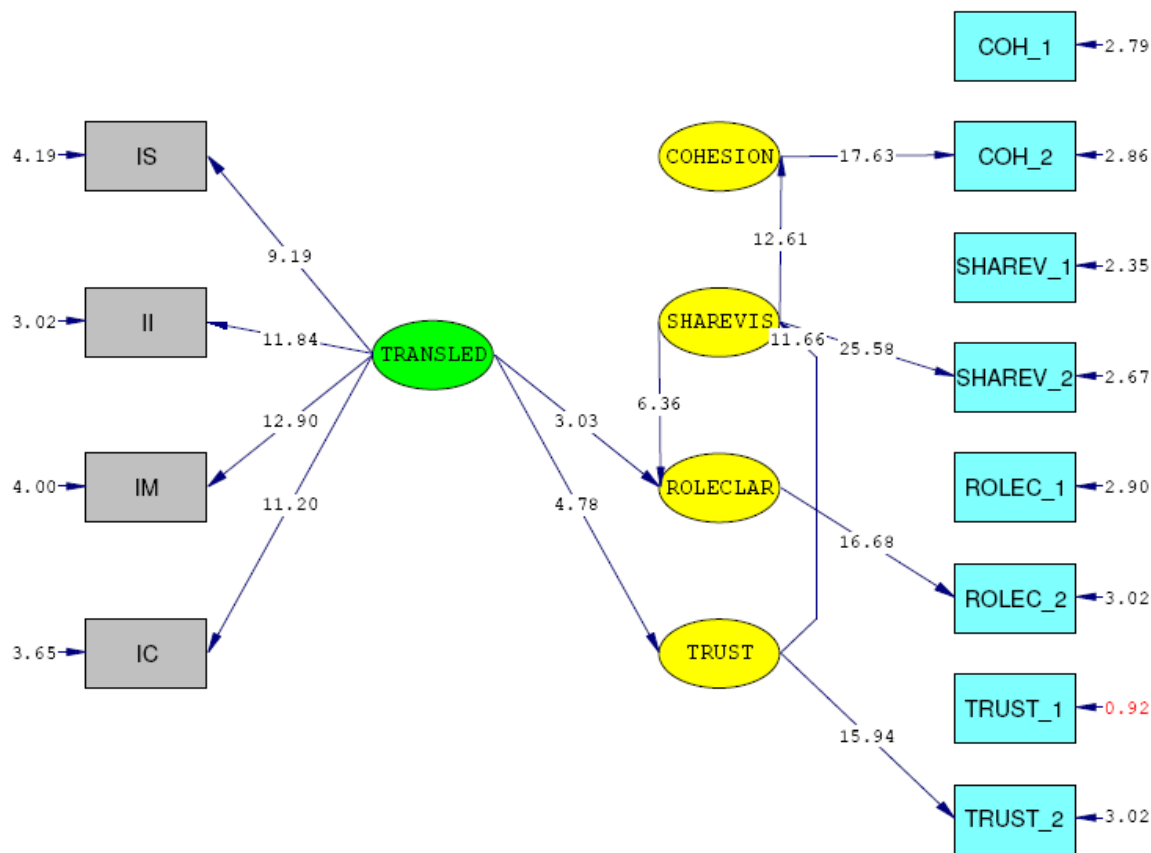
Chi-Square=70.95, df=49, P-value=0.02180, RMSEA=0.079

Figure 4.9. T-values of the Modified Structural Model after Consideration of Modification Indices

4.8.7. Evaluation of Modified Structural Model Goodness-Of-Fit Statistics after Consideration of Modification Indices

Introduction. The modified structural model presented a much closer fit than the initial unmodified structural model, albeit only one indicator per variable was utilised in the modified model. The small sample size precluded the investigation of multiple parameters that more than one indicator per variable would provide. The evaluation of the modified structural model is discussed through investigating the absolute fit statistics as well as the comparative fit statistics as found in the goodness of fit statistics of the modified structural model in **Table 4.33**.

Table 4.33.

Goodness-of-Fit Statistics for the Modified Structural Model after Consideration of Modification Indices

Goodness of Fit Statistics	
Degrees of Freedom	49
Minimum Fit Function Chi-Square	82.080 (P = 0.0021)
Normal Theory Weighted Least Squares Chi-Square	85.710 (P = 0.00092)
Satorra-Bentler Scaled Chi-Square	70.950 (P = 0.022)
Chi-Square Corrected for Non-Normality	125.270 (P = 0.00)
Estimated Non-centrality Parameter (NCP)	21.950
90 Percent Confidence Interval for NCP	(3.440 ; 48.460)
Minimum Fit Function Value	1.140
Population Discrepancy Function Value (F0)	.300
90 Percent Confidence Interval for F0	(.048 ; .670)
Root Mean Square Error of Approximation (RMSEA)	.079
90 Percent Confidence Interval for RMSEA	(.048 ; .670)
P-Value for Test of Close Fit (RMSEA < 0.05)	.130
Expected Cross-Validation Index (ECVI)	1.790
90 Percent Confidence Interval for ECVI	(1.530 ; 2.160)
ECVI for Saturated Model	2.170
ECVI for Independence Model	26.690
Chi-Square for Independence Model with 66 Degrees of Freedom	1897.830
Independence AIC	1921.830
Model AIC	128.950
Saturated AIC	156
Independence CAIC	1961.310
Model CAIC	224.380
Saturated CAIC	412.660
Normed Fit Index (NFI)	.960
Non-Normed Fit Index (NNFI)	.980
Parsimony Normed Fit Index (PNFI)	.710
Comparative Fit Index (CFI)	.980
Incremental Fit Index (IFI)	.980
Relative Fit Index (RFI)	.940
Critical N (CN)	66.720
Root Mean Square Residual (RMR)	.061
Standardized RMR	.048
Goodness of Fit Index (GFI)	.830
Adjusted Goodness of Fit Index (AGFI)	.740
Parsimony Goodness of Fit Index (PGFI)	.520

Absolute Fit Indices. The Satorra-Bentler scaled chi-square was χ^2 (49, *N* = 73) = 70.95, *p* < .05 (see **Table 4.33**). This indicated that the null hypothesis of exact fit H_0: $\Sigma = \Sigma$ (θ) could be rejected (*p* = .022*)* in favour of H_a: $\Sigma \neq \Sigma$ (θ), which indicated excellent improvement over the chi-square of the unmodified structural model which was χ^2 (50, *N* = 73) = 213.49, *p* < .05 (see **Table 4.27**). The addition and deletion of paths in consideration of the model modification indices had a favourable impact upon the overall improvement of χ^2.

Furthermore, the null hypothesis of close fit H_0: RMSEA $\leq$ 0.05 could also be rejected in favour of H_a: RMSEA $\geq$ .05. Values below .05 for *Standardised* RMR and *Root Mean Square Error of Approximation* (RMSEA) indicate good fit, while values above .1 indicate poor fit (Diamantopoulos & Siguaw, 2000; Kelloway, 1998). In this study the *Standardised* RMR was .048 (see **Table 4.33**), which is indicative of good fit and the RMSEA was .079 (see **Table 4.33**), which indicates reasonable fit. The *Standardized* RMR and RMSEA together indicated that the modified structural model exhibited a reasonable fit on the data. This was further corroborated by the *Goodness of Fit Index* (GFI) which was .83 and *Adjusted Goodness of Fit Index* (AGFI) which was .74 and indicative of reasonable fit.

Comparative Fit Indices. Values for these fit indices above .9 are deemed acceptable (Meyers *et al*., 2006*)*. The *Comparative Fit Index* (CFI) was .98 and the *Incremental Fit Index* (IFI) was .98, which indicated good fit. Furthermore, the *Normed Fit Index (*NFI*)* was .96 and the *Non-Normed Fit Index (*NNFI*)* was .98, which corroborated the CFI and IFI and indicated good fit.

Goodness-of-Fit Statistics: Conclusion. The goodness-of-fit statistics indicated that the modified structural model fitted the data reasonably well. In the following section, the standardised residuals are investigated to understand to what extent the modified structural model was overestimated or underestimated.

4.8.8. Evaluation of the Modified Structural Model Standardised Residuals

It is suggested that 99.9% of all *z*-scores should be smaller than absolute 3.29; if larger, it is an immediate cause for concern and should be addressed (Field, 2009). As can be seen in **Table 4.34**, which shows the summary statistics for the standardised residuals for the modified structural model, there were no *z*-scores larger than 3.29. Only two residuals exhibited values slightly larger than 2.58, but these were not significant causes for concern. The conclusion could be drawn that the values of the standardised residuals illustrate that the modified structural model fitted the data well. This was further corroborated by the stem-and-leaf plot depicted in **Figure 4.10**, which shows that most of the standardised residuals were centred on the zero. **Figure 4.10** reveals a very slight positive tail to the data distribution; this suggests a very slight under-estimation of modified structural model fit. However, since no *z*-scores of any of the standardised residuals (see **Table 4.34**) were above absolute 3.29, there was no cause for concern.

Table 4.34.

Summary Statistics for Standardised Residuals of the Modified Structural Model

Smallest and Largest Standardised Residuals		
Smallest Standardised Residual	=	-2.61
Median Standardised Residual	=	.000
Largest Standardised Residual	=	3.06
Largest Negative Standardised Residuals		
Residual for IC and TRUST_1		-2.61
Largest Positive Standardised Residuals		
Residual for II and ROLEC_1		3.06

```
- 2|621
 - 1|0
 - 0|941000000000000000000000000000000000000000000000000000
  0|22558889
  1|113333469
  2|02
  3|1
```
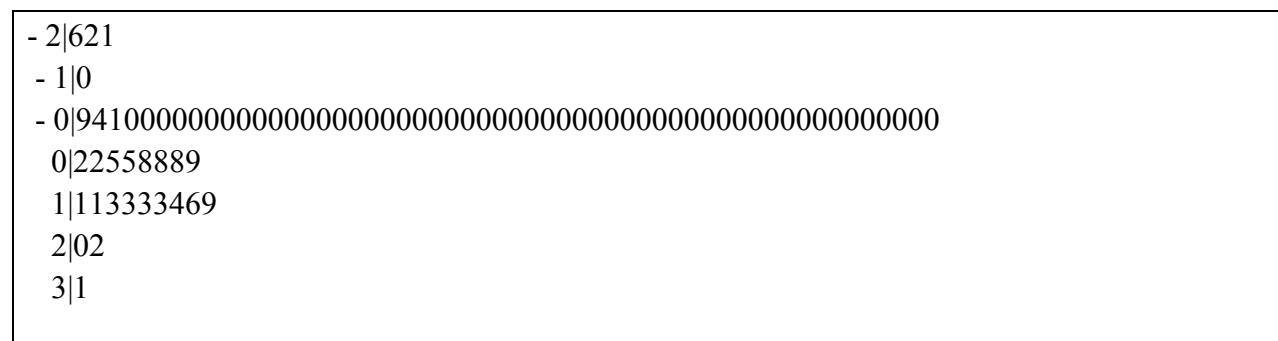
Figure 4.10. Stem-and-Leaf Plot of Standardised Residuals for Modified Structural Model

It can be seen from **Figure 4.11** that the distribution of the standardised residuals along the 45^0 reference line deviates very slightly from the linear pattern. Any deviation from the linear 45^0 reference line suggests miss-specification of model fit (Blalock, 1985; Jöreskog & Sörbom, 1993). However, the deviation of the standardised residuals, as can be seen from **Figure 4.11,** was very slight and thus was no major cause for concern, as is corroborated by the earlier evidence from the stem-and-leaf plot of standardised residuals for the modified structural model (see **Figure 4.10**) and the summary statistics of standardised residuals for the modified structural model (see **Table 4.34**).

```
i .                 .   x                    .
l .                   x   x                  .
e .                 x                        .
s .          x         .                     .
    .            .                           .
    .         x     .                         .
    .            .                           .
    .     x      .                           .
    .         .                              .
    .         .                              .
    .         .                              .
    .         .                              .
    .         .                              .
    .         .                              .
    . .                                      .
    . .                                      .
-3.5................................................
    -3.5                            3.5
            Standardised Residuals
```
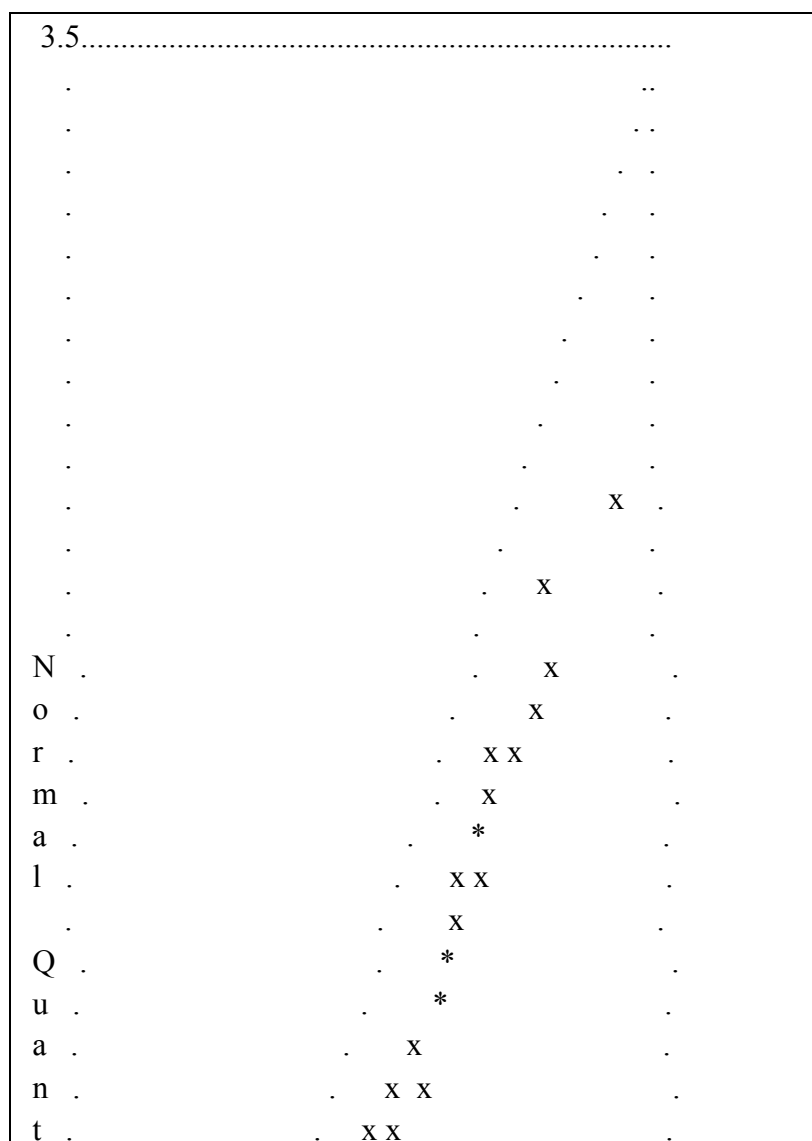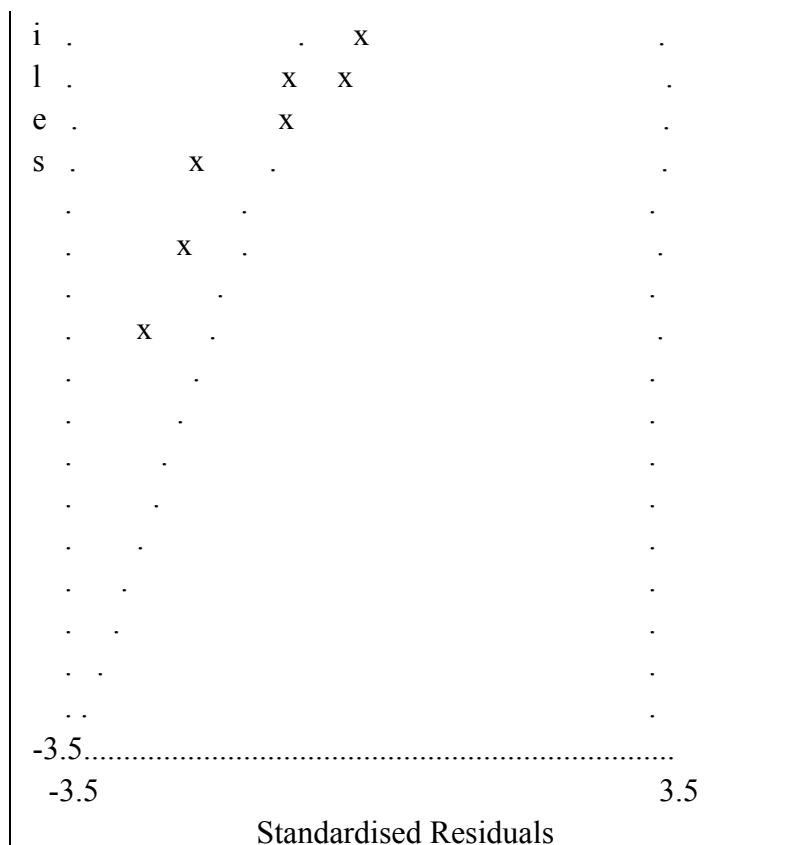
Figure 4.11. Q-Plot of Standardised Residuals for Modified Structural Model

4.8.9.   Evaluation of the Modified Structural Model Modification Indices

Table 4.35 presents the modification indices for the β path coefficients. It can be seen that no modification index was above five, which would have indicated a cause for concern (Kelloway, 1998) and **Table 4.36,** which shows the change in β path coefficients, corroborates this finding of no cause for concern. Furthermore, **Table 4.37** shows that all modification indices for the Γ matrix were also below the critical value of five, which indicated that no additional paths would need to be freed. **Table 4.38** illustrating the expected change for the Γ path coefficients, corroborates this finding as well. As a result of the various parameters freed after consideration of the various modification indices, it appears that no further model modification was necessary.

Table 4.35.

Modification Indices for BETA Path Coefficients for Modified Structural Model

	Cohesion	RoleC	ShareV	Trust
Cohesion	- -	.390	- -	1.930
RoleC	.120	- -	- -	.120
ShareV	1.890	.060	- -	- -
Trust	.010	.010	.250	- -

Table 4.36.

Standardised Expected Change for BETA Path Coefficients for Modified Structural Model

	Cohesion	RoleC	ShareV	Trust
Cohesion	- -	.070	- -	.160
RoleC	.040	- -	- -	.040
ShareV	-.180	.030	- -	- -
Trust	-.010	-.020	-.070	- -

Table 4.37.

Modification Indices for Gamma Path Coefficients for Modified Structural Model

	TranLead
Cohesion	.350
RoleC	- -
ShareV	2.60
Trust	- -

Table 4.38.

Standardised Expected Change for Gamma Path Coefficients for Modified Structural Model

	Tranlead
Cohesion	.040
RoleC	- -
ShareV	.130
Trust	- -

4.8.10. Evaluation of the Beta (β) Matrix and Gamma (Γ) Matrix of the Modified Structural Model

After consideration of the modification indices from the unmodified structural model, three additional paths were added to the unmodified structural model and two existing paths were deleted from the unmodified structural model. Examination of the β matrix of path coefficients presented in **Table 4.39** indicates that all three additional paths added to the modified structural model were significant ($p < .05$) since all the t-values $> \mid 1.96 \mid$. Furthermore, examination of the Γ matrix of path coefficients presented in **Table 4.40** indicates that the two existing paths of the structural model were also significant ($p < .05$) since the t-values $> \mid 1.96 \mid$.

Table 4.39.

Beta Matrix of Path Coefficients for Modified Structural Model

	Cohesion	RoleC	ShareV	Trust
Cohesion	- -	- -	**.910** (-.070) *12.610*	- -
RoleC	- -	- -	**.600** (-.090) *6.360*	- -
ShareV	- -	- -	- -	**.840** (-.070) *11.660*
Trust	- -	- -	- -	- -

*Note: Unstandardised parameter estimates in **bold**;*
   Standard errors between brackets;
   t-values in italics

Table 4.40.

Gamma Matrix of Path Coefficients for Modified Structural Model

	TranLead
Cohesion	- -
RoleC	**.270**
	(-.090)
	3.030
ShareV	- -
Trust	**.540**
	(-.110)
	4.780

*Note: Unstandardised parameter estimates in **bold**;*
    Standard errors between brackets;
    t-values in italics

4.8.11. Evaluation of the Total Effects and Indirect Effects of KSI on ETA for the Modified Structural Model

Total Effects of KSI on ETA. In **Table 4.41**, the total effects of the transformational leadership independent variable on the various team characteristic dependent variables are all significant ($p < .05$), since all the *t*-values are $> |1.96|$.

Table 4.41.

Total Effects of KSI on ETA for Modified Structural Model

	TranLead
Cohesion	**.420**
	(.110)
	3.890
RoleC	**.550**
	(.110)
	5.010
ShareV	**.460**
	(.110)
	4.005
Trust	**.530**
	(.110)
	4.780

*Note: Unstandardised parameter estimates in **bold;***
   Standard errors between brackets;
   t-values in italics

Indirect Effects of KSI on ETA. Following the investigation of the total effects of ksi on eta, the indirect effects were assessed by inspection of the effects of the transformational leadership variables on the variables of the team characteristics. "Indirect effects represent the influence of an independent variable on a dependent variable as mediated by one or more intervening variables" (Kelloway, 1998, p. 70). Indirect effects investigate the presence of mediating variables within the model (Kline, 2011). In **Table 4.42**, the indirect effects of the transformational leadership exogenous variable on the endogenous team characteristic variables are significant ($p < .05$), since the *t*-values are $> |1.96|$. These indirect effects were not hypothesised in the modified structural model, but it is still interesting to note that the relationship between transformational leadership and the team characteristic variables. The extent of this relationship can only be confirmed in a future independent study, though.

Table 4.42.

Indirect Effects of KSI on ETA for Modified Structural Model

	TranLead
Cohesion	**.420**
	(.110)
	3.890
RoleC	**.270**
	(.070)
	3.800
ShareV	**.460**
	(.110)
	4.050
Trust	- -

*Note: Unstandardised parameter estimates in **bold**;*
   Standard errors between brackets;
   t-values in italics

4.9.   Power Assessment

Power can be defined as "…the probability that the test will correctly reject a false null hypothesis. That is, power is the probability that the test will identify a treatment effect if one really exists" (Gravetter & Wallnau, 2009, p. 265). Traditionally, research studies aim to reject H_0. However, if a study fails to correctly reject H_0, then a *Type II error* has occurred; 1- β, moreover, is the probability of correct rejection of H_0 (Friedman, Furberg & DeMets, 2010).

Therefore, it is suggested that a power of .8 be aimed; it would be very fortunate if a significant result was obtained if the power analysis provides a result of below .5 (Myors, 2006). In this research study the power algorithm of MacCallum *et al*. (1996) was used to calculate the power in SPSS. Power estimates for the test of close fit were obtained for a given effect size of .08, a significance level (α) of .05 and a sample size of $N = 73$. The results following this power

analysis were .303. This low power estimate suggested that the conclusions regarding close model fit could be somewhat tentative, given the small size ($N = 73$) in this research study.

4.10. Summary

Chapter 4 has presented all the results from the analysis techniques employed in this study, as well the results of testing the various statistical hypotheses that were formulated in Chapter 3. However, this chapter examined how the extent of the data cleaning procedures influenced the data before the data were analysed. Missing values introduced a factor that required urgent attention and the result of imputation was that the original sample ($N = 76$) resulted in a final sample of $N = 73$.

Following the data cleaning process, discussions on the results of the item and dimensionality analysis, both before and after imputation of all the sub-scale items of the measuring instrument were presented. The item analyses of the four team characteristics sub-scales were found to be quite good ($.799 \leq \alpha \leq .941$), as were the item analyses of the four transformational leadership sub-scales ($.768 \leq \alpha \leq .922$).

Uni-dimensionality was then examined and all the factor loadings for the four team characteristics sub-scales were also found to be quite good ($.588 \leq \lambda \leq .900$), while all the factor loadings for the four transformational leadership sub-scales depicted were found to be quite satisfactory ($.476 \leq \lambda \leq .918$). No deletion of items was found to be necessary.

Following the item and dimensionality analysis, the univariate and multivariate analyses of the data were examined. The data were normalised, but the deviation from multivariate normality was still significant ($p < .05$); consequently, robust MLE was used to satisfy the multivariate normality requirements. As result, the asymptotic covariance matrix was calculated.

Next, confirmatory factor analysis was used to assess the measurement model. The Satorra-Bentler scaled chi-square was χ^2 (44, $N = 73$) = 62.87, $p < .05$. Furthermore, the RMSEA was .077. The 90% confidence interval for the RMSEA (.024; .12), however, indicated that the RMSEA value of .077 was not significantly different from .05 and therefore indicated satisfactory fit of the measurement model.

After the satisfactory fitting of the measurement model, the structural model was fitted to the data. The chi-square was χ^2 (50, N = 73) = 213.49, $p < .05$, which indicated that the null hypothesis of exact fit H_{01}: $\Sigma = \Sigma\,(\theta)$ could be rejected ($p = .00$) in favour of H_{a1}: $\Sigma \neq \Sigma\,(\theta)$. In addition to this finding, the null hypothesis of close fit H_{01}: RMSEA $\leq .05$ was also rejected in favour of H_{b1}: RMSEA $\geq .05$ because the RMSEA was .21. This indicated that the unmodified structural model provided a poor fit for the data. However, the results also illustrated that the hypothesised relationships (hypothesis 2 through to hypothesis 5) were significant ($p < .05$) since all the t-values $> \lvert 1.96 \rvert$ (see **Table 4.28**). The null hypothesis was therefore rejected in favour of the alternative hypothesis in each of the cases mentioned above. These results are indicative of a statically significant relationship existing between transformational leadership and each of the four team characteristics, even though it is slightly tenuous because of the small sample size and small power.

The unmodified structural model modification indices were analysed next, to assess the viability of possible model improvement. These indices indicated that three additional β paths were to be considered (a link between shared vision and cohesion; a link between trust and shared vision; and a link between shared vision and role clarity). In addition, two Γ paths were also considered and deleted (namely the link between transformational leadership and cohesion and the link between transformational leadership and shared vision). The alternative modified model was then fitted to the data; the chi-square of the modified structural model was χ^2 (49, N = 73) = 70.95, $p < .05$, which indicated an excellent improvement over the chi-square of the unmodified structural model of χ^2 (50, N = 73) = 213.49, $p < .05$.

Lastly, the power implications of this research study were examined. The results of the power assessment were .303. This suggested that the conclusions regarding the results of the hypothesised relationship should be viewed with caution, given the small sample size as well as small power.

These results and the limitations of this research study are discussed in Chapter 5, and recommendations for future research endeavours are made.

Chapter 5
Conclusion

5.1.   Introduction

The literature has shown that transformational leadership adds substantial value at business unit and at follower level (Avolio, 1999), largely by facilitating unit effectiveness. For this reason, the role of the (transformational) leader in optimising the functioning of his/her team — chiefly by demonstrating certain leader behaviours — has been the 'crux' of many research studies (Avolio, 1999; Dionne *et al*., 2004).

Research has suggested that various team leadership processes are necessary for effective team functioning (Morgeson *et al*., 2010).[4] As outlined in Chapter 1 and 2, the present study proposed that four specific team characteristics necessary for effective team performance, namely: shared vision, cohesion, role clarity and mutual trust, are directly affected by the behaviours of the team leader. The hypothesised interaction between these four team characteristics and transformational leadership was discussed in Chapter 2.

To investigate these hypothesised effects, a convenience sample of nursing wards at the large public sector hospital (in the Western Cape) provided the data for this study, which were analysed with confirmatory factor analysis. The sampling method, instrument development, and research methods used for the present study, were discussed in Chapter 3. Chapter 4 reported the results of the statistical analysis of the measurement model and structural model fit.

This present chapter presents a discussion of the general findings regarding the original research hypotheses in this study, and closes with an outline of limitations and recommendations for practice and for further study.

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[4] The reader is urged to refer to the discussion in paragraph 2.3, which provides a more in-depth review of the link between transformational leadership and team performance.

5.2.   Summary Findings and Discussion of Research Study

Introduction. The aim of this study was to establish the relationship between transformational leadership and selected team characteristics, namely shared vision, cohesion, role clarity and mutual trust. As mentioned in the literature review (Chapter 2), previous research studies have investigated the link between transformational leadership and team *processes*, but the link between transformational leadership and team *characteristics* remain largely unexplored. The research findings regarding the proposed research hypotheses are discussed below.

First Research Hypothesis: Finding and Discussion. This research was undertaken to investigate the relationship between transformational leadership and four team characteristics in a team environment, as hypothesised in a combined structural model. The null hypotheses of exact and close fit were tested to examine how well the hypothesised model fitted the data. The null hypothesis of exact fit H_{01}: $\Sigma = \Sigma(\theta)$ was not supported by the data ($p = .00$) and was subsequently rejected in favour of the alternative null hypothesis H_{a1}: $\Sigma \neq \Sigma(\theta)$. This decision was supported by the chi-square statistic, which was χ^2 ($50df$, $N = 73$) = 213.49, $p < .05$. Furthermore, the null hypothesis of close fit H_{01}: RMSEA $\leq$ .05 was also investigated to determine whether the data supported this hypothesis; it, too, was rejected in favour of the alternative hypothesis of close fit H_{b1}: RMSEA $\geq$ .05, since the RMSEA was .21, 95% CI [.180, .240], which is indicative of poor structural model fit. Overall, the unmodified structural model was found to fit the data poorly, as is evident in the goodness-of-statistics in **Table 4.27**. The research findings are somewhat tenuous because of this poor fit.

The poor fit was possibly due to the small sample size and low power, which are discussed in the relevant section below. For this reason, it was decided to investigate the modification indices for possible model improvement and thereby investigate possible improved model fit. Reflection on the unmodified structural model modification indices led to the realisation that the modification indices indicated three additional β paths for consideration (a link between shared vision and cohesion; a link between trust and shared vision; and a link between shared vision and role clarity). In addition, two Γ paths (the link between transformational leadership and cohesion and the link between transformational leadership and shared vision) were also considered and

deleted, although these deletions are arguable theoretically speaking. These suggested changes were effected and a modified model was fitted to the original data. This modified model indicated improved fit, with a chi-square of χ^2 (49df, $N = 73$) = 70.95, $p < .05$ and RMSEA = .079 ($p = .130$), 95% CI [.048, .670] (see **Table 4.33**). However, the viability of the β path additions and Γ path deletions remains substantively tenable and has to be verified by future research analysis.

Second Research Hypothesis: Finding and Discussion. The second research hypothesis states that transformational leadership has a positive significant effect on mutual trust. It was put forward that transformational leaders are able to inspire and stimulate their followers to greater achievement (Avolio, 1999). Furthermore, it was theorised that transformational leaders are able to inspire and motivate their followers to trust them (Lussier & Achua, 2010). In an earlier study conducted with 146 members of 32 work groups in four different organisations, it was found that co-workers trust their fellow workers more if those fellow workers are trusted by the team leader (Lau & Liden, 2008). Building on this view, it was suggested that trust is created "…from the nature of the relationship between interactants, including shared group membership" (Foddy & Yamagishi, 2009, p.18). It seems plausible that a climate of mutual trust within a team environment can be cultivated by a team leader who employs transformational leadership behaviours. This research study tested this theory by investigating the link between transformational leadership and mutual trust. It was found that this relationship was significant. The null hypothesis H_{02} was therefore rejected in favour of the alternative null hypothesis $H_{a2.}$ The results of this study thus support the second hypothesis — transformational leadership seems to affect perceptions of mutual trust within work teams. This finding provides a good argument for leaders to cultivate transformational leadership behaviours, since the present research suggests that team member trust could possibly increase, assuming that the nature of the relationship is causal.

Third Research Hypothesis: Finding and Discussion. The third research hypothesis states that transformational leadership has a positive significant effect on shared vision. Transformational leadership theory suggests that a positive relationship exists between transformational leadership and shared vision (Lussier & Achua, 2010), since these leaders communicate their vision

transparently and are able to enthuse followers to achieve high goals (Gittens, 2008). A positive link between transformational leadership and commitment to shared vision was found (Jansen *et al.*, 2008), which makes substantive sense because it is the duty of the leader to inculcate the vision amongst followers (Kouzes & Posner, 2010; McLarney & Rhyno, 1999). By exhibiting the above-mentioned behaviours, a transformational leader should be able to inculcate a shared vision among his/her followers.

This research study tested this theory by investigating the link between transformational leadership and shared vision. A significant relationship was found to exist, therefore the results of the study support the third hypothesis. Consequently, the null hypothesis H_{03} was rejected in favour of the alternative hypothesis H_{a3}. Stated otherwise, followers of leaders that exhibited transformational leadership behaviours reported higher perceptions of sharing a common team vision.

Fourth Research Hypothesis: Finding and Discussion. The fourth research hypothesis posited a positive relationship between transformational leadership and cohesion. The literature suggests that leaders displaying transformational leadership behaviours are able to influence and foster group cohesion (Bass & Avolio, 1994; Hartnell & Walumbwa, 2011). In earlier studies, it has been shown that unit performance is ultimately affected through this relationship; it was found that cohesion plays a mediating role between transformational leadership and unit performance in a sample of 72 light infantry rifle platoon leaders (Bass, Avolio, Jung & Berson, 2003). It seems that transformational leaders are able to do this because they make belonging to a group appear attractive by placing emphasis on the project at hand and encouraging acceptance among members (Bass & Avolio, 1994). This research study tested this theory by investigating the link between transformational leadership and cohesion. Through examining the results from the data analysis it was found that a significant relationship exists between transformational leadership and cohesion, therefore the results of this research study supports the fourth hypothesis. Thus, the null hypothesis H_{04} was rejected in favour of the alternative hypothesis H_{a4}.

Fifth Research Hypothesis: Finding and Discussion. The fifth research hypothesis states that transformational leadership has a positive significant effect on role clarity. It can be said that

transformational leaders inspire their followers to accept a clear vision; this galvanises the followers to understand their individual roles more clearly, and followers furthermore emulate a transformational leader by being conscientious about their own actions (Nielsen, Randall, Yarker & Brenner, 2008). This research study tested this relationship between transformational leadership and role clarity and found it to be significant ($p < .05$). Subsequently, the null hypothesis H_{05} was rejected in favour of the alternative null hypothesis $H_{a5.}$ The results of this study thus support the fifth hypothesis. This is an important finding, since it indicates that, if leaders do not want ambiguity to reign in their teams, it is essential that they employ transformational leadership behaviours. The practical implication of this finding is that team leaders should inspire their followers to follow a shared view of the future if any individual sense of purpose is to be fostered. This finding also indicates that team members should know exactly what roles they have to fill if their team leader invests time and interest in individual team members, which is another behavioural characteristic of a transformational leader.

Final Remarks Concerning Findings. Support was found for all the original hypotheses, although the structural model fitted the data poorly (possibly due to small sample size, low power or poor model specification, Hair et al., 2010). Notwithstanding the poor fit, all the remaining hypotheses were supported (even though tenuously because of the poor fit) and concurred within the extant literature. From these results, it appears that transformational leadership had a definite effect on team characteristics, including cohesion, role clarity, shared vision and mutual trust. In general, our results highlight the important interaction between transformational leader behaviour and teams (Bass & Avolio, 1994) and suggest that team leaders should invest the effort to demonstrate these behaviours, since they are likely to lead to desirable team characteristics. However, it is suggested that these suppositions should be tested using larger samples, and perhaps research designs which would allow inferences about the causal nature in this process, in order to strengthen the recommendations made.

5.3. Limitations of Research Study

Introduction. This research study experienced obstacles which one should bear in mind when interpreting the results obtained from the data. No research methodology or research study can

be perfect — an element of inadequacy frequently becomes apparent — but such inadequacies do not necessarily invalidate the results; it merely presents an objective view through which the results should be viewed. The limitations (inadequacies) of this research study are discussed in the paragraphs that follow.

Common Method Bias. One of the limitations of this study was common method bias which can be described as "…the overlap between two variables due to a common bias rather than to a relationship between the underlying constructs" (Bass & Bass, 2008, p. 74). It is suggested that research studies can overcome common-method bias through using different groups of people for data collection (Krause, 2006). This research study has complied with this suggestion to some extent in that data were collected from a diverse group of nursing teams including surgical teams, medical wards, trauma and emergency wards and gynaecological / obstetrical wards. However, subjective ratings on all study variables were still obtained from the same source, which represents a significant limitation of the current study.

Small Sample Size. Small sample size presents a problem in research studies as tenable inferences cannot be supported because of insufficient cases or data. A researcher needs to be cognisant of a few considerations in order to obtain tenable SEM results from a small sample (Hair *et al*., 2010). Important considerations are multivariate normality, estimation technique, model complexity and missing data, which are discussed in the following paragraphs.

The results of the multivariate normality tests are presented in Chapter 4. The data were tested for multivariate normality deviation before and after normalisation, but the deviation from multivariate normality was still significant ($p < .05$). Thus, the first consideration was not met because of the small sample size.

A second consideration is that of estimation technique. It is suggested that maximum likelihood estimation is a common procedure for SEM studies and that samples as small as 50 can produce valid results (Hair *et al*., 2010). Because of the deviation from multivariate normality, robust maximum likelihood (RML) was used in this study and the asymptotic covariance matrix (ACM) was calculated. However, when conditions change and missing data become prevalent, the

requirements for ideal sample size also change (Hair *et al.*, 2010). Then the suggestion is to increase sample size to a minimum of 100 and a maximum of 400, subject to the other considerations (Hair *et al.*, 2010). This research study had missing data and an effective sample size of $N = 73$, therefore the second consideration for tenable small sample size results was not met.

A third consideration is that of model complexity. The small sample size in this research study precluded the use of a more complex model. This is because an increase in indicator variables requires large samples and "[m]ore constructs that require more parameters to be estimated" (Hair *et al.*, 2010, p. 661). The small sample size did not provide enough data to allow the use of more complex models which could allow transformational leadership to be broken up into various sub-scales. This means that, even though transformational leadership as a whole may have affected the constructs in question, it does not preclude the supposition that the sub-scales of transformational leadership affect these constructs independently. This study also did not provide enough cases to estimate parameters sufficiently. Lastly, when examining the bi-variate correlation matrix (available from the author) it does seem that the results support the notion that individual *dimensions* of transformational leadership are differentially related to respective team characteristics. Future research studies should explore this possibility using larger samples.

A fourth consideration concerns missing data. The data set was affected because of missing data. When data is missing, an increase in sample size should be considered to compensate for the effects of such missing data (Hair *et al.*, 2010). Because of the operational nature of the hospital environment, a large sample could not be obtained as certain parts of the hospital could not be accessed.

Finally, the power of .303 for this research study was inadequate due to the small sample size; this makes the results appear tenuous, even though it has been shown above that the hypotheses make substantive sense. Despite the lack of sufficient statistical power, most hypothesised effects were detected, negating the threat of low statistical power. However, future research should replicate the present research study using larger samples which allow for sufficient power.

Final Remarks Concerning Limitations. It has been suggested that, for tenable results from small samples, a minimum sample size of 100 should be chosen for models with five or fewer variables and more than three items for each construct (Hair *et al*., 2010). This study did not meet all the requirements set out by Hair *et al*. (2010) and the power was not adequate enough for this small sample, either. However, this does not signify that the results are not plausible – it was shown in the preceding section that alternative explanations for these results make substantive sense.

5.4.   Concluding Remarks and Recommendations for Future Research

Introduction. The findings of the study suggest that transformational leadership interventions have a direct effect on the selected team characteristics within a team environment. The contribution of the present study to leadership literature is limited by practical and statistical considerations, such as small sample size and lack of multivariate normality, making the drawing of conclusions from the results more tentative until confirmed by further replication. In spite of this, a good foundation for the suggested hypotheses has been established in this study. A few key recommendations may suffice for future research applications.

A key recommendation is that future research should attempt to mimic the complexity of the leadership-team process. The model presented in this research study was relatively simple due to the limitations of the sample size. The leadership-team process in reality is far more complex than presented here. Future studies may consider a division of the transformational leadership factor into its sub-scales to investigate the relationship between these sub-components and the various team characteristics. Two possible recommendations in this regard concern the sub-components of transformational leadership which may influence shared vision and cohesion. These suggestions are elaborated in the following paragraphs.

Possible relationship between the individual sub-components of transformational leadership and shared vision. The literature on transformational leadership suggests that specific components of transformational leadership might affect shared vision more than other components of

transformational leadership; it is suggested, for instance, that transformational leadership inspires people to commit to a shared vision (Bass & Riggio, 2006). This is amplified by the suggestion that transformational leaders influence others to accept a desired goal through a sense of meaning (Marshall, 2011). Furthermore, it is suggested that the leader is able to stretch the team to its limits by means of the vision which should be the leader's dream (Losoncy, 1995). This can be summed up by saying that, "…it is the thing that leadership makes happen" (Robbins & Finley, 2000, p. 115).

Based on the arguments above, it is a plausible conclusion that, while transformational leadership as a whole may not directly influence shared vision, the individual sub-components of transformational leadership may indeed affect shared vision. Future research studies should consider testing the relationship between the individual components of transformational leadership and shared vision and examining the strength of this relationship.

Possible relationship between the individual sub-components of transformational leadership and cohesion. A second possibility mentioned above concerns the suggestion that transformational leadership does affect cohesion, but not in the way commonly accepted. Individual sub-components of transformational leadership could be responsible for affecting the relationship with cohesion, and not the transformational leadership construct as a whole. Transformational leaders are able to create a sense of identity (Bass & Riggio, 2006) through being considerate of individual follower's needs. It has been suggested that team spirit is likely to be engendered when transformational leaders are considerate of the individual needs of followers (Avolio, 1999).

The implication of this plausible rival hypothesis is that it may not be necessary for the leader to exhibit the full spectrum of transformational leadership behaviours when faced with situations in the workplace in which team members feel isolated and not part of the team. It may perhaps be necessary to focus on certain aspects of transformational leadership only to foster cohesion within a work team. Careful consideration should be given to further testing of the relationship between various sub-components of transformational leadership and cohesion, and investigation

should focus on determining which sub-components affect cohesion, and to what degree. Another consideration concerns possible model improvement.

Model Modification. The fitting of the alternative modified structural model on the data in this study led to the suggestion that transformational leadership indirectly influences shared vision, role clarity and team cohesion through the mediating effect of mutual trust (see **Figure 4.8**). This conclusion resulted from the examination of the modification indices of the unmodified structural model and the modified model that was fitted to the data. It was found that three distinct β paths had to be added to the final structural model – between shared vision and cohesion; shared vision and role clarity; and mutual trust and shared vision. This proved to be an interesting finding.

Adding the β path between trust and shared vision (through investigating the modification indices) leads to the impression that shared vision is affected by transformational leadership, albeit through the mediating effect of the mutual trust variable. The nature and strength of this relationship needs to be further investigated by means of a larger sample to verify this supposition. Furthermore, once the β path between shared vision and cohesion had been added; it seemed that transformational leadership does affect team cohesion, with trust and shared vision playing a mediating role in this relationship. This makes hypothetical sense; once a leader is able to inculcate trust within the team, the followers will develop mutual trust in their team members. This will make it much easier to accept a common vision and with this shared vision and mutual trust they would want to remain part of the team. Hence, transformational leadership would ultimately affect team cohesion. This assumption, however, requires further investigation with a much larger sample to enable any tenable suggestions.

Once again further research is needed with a larger sample in order to develop plausible hypotheses regarding these path additions. This discussion brings another question to the fore: If mediating relationships exist among all these constructs, was the role of the leader in this study exaggerated?

Team Leader Role Misspecification. A further key consideration is that the role of the team leader may have been overemphasised in terms of his/her role in the team in this research study. Because the results of the modified model do suggest possible mediating effects occurring between transformational leadership and some of the DVs, one could ask what it is exactly that affects these constructs? In other words, the question that can be asked, is: If leaders do not influence shared vision and cohesion directly within a team, what does influence these constructs within a team setting? One study from existing research has posited that agreeableness predicts such cohesion (O'Neill & Kline, 2008), although this lab study was conducted with 78 college students in 10 long-standing teams, all taking part in a business simulation. Perhaps future research should investigate whether these results are replicated within an organisational setting. Besides the possible overemphasises on the leader's role, another avenue of future research could lead to the possibility of an alternative leadership paradigm affecting these team constructs differently.

Alternative Leadership Model. On a final note, it should be acknowledged that transformational leadership was the chosen paradigm for this research study as well as the driving force behind establishing a shared vision, role clarity, mutual trust and cohesion within a team setting, which would thus effectively lead to enhanced team performance. However, alternative leadership models could also explain the variance between these constructs. Furthermore, it should be noted that other leadership theories may also offer different results.

For instance, leader-member exchange (LMX) theory is an alternative leadership theory that could be investigated to examine the link between leadership and team performance. LMX proposes that leaders customise their relationships with each of their followers and that relationships are elucidated by the distance between the leader and the follower (Boise & Howell, 2006). Interestingly, in a study involving 35 military teams ($N = 162$) in the Canadian armed forces, it was found that a significant relationship existed between mean LMX and team potency ($r = .30$, $p < .05$, one-tailed). These results suggest that, if the relationships between leaders and their team members are positive, team members are more confident (essentially, that cohesion exists within the team) that the team will succeed, thus there will be higher levels of team potency (Boise & Howell, 2006). Thus, if team members are more confident of the success

of the team this could possibly mean that the team members could develop a stronger sense of belonging (cohesiveness) to the team. Thus, the cohesiveness of the team does not necessarily have to be explained through the transformational leadership model alone. Therefore it could be that the relationships between the team leader and the four team characteristics investigated could also be explained through an alternative leadership theory. This postulation would require further examination with a much larger sample to facilitate tenable suggestions.

Conclusion. In conclusion, analysis of these research results should be interpreted with caution due to the nature of the small size and power considerations. The results should be seen as an opening attempt to explore how team characteristics are affected by transformational leadership behaviours and to what extent transformational leadership behaviours affect certain desirable characteristics associated with eventual team success.

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LIST OF APPENDICES

APPENDIX A

<u>Thesis Questionnaire</u>

<u>Shaun Ryan</u>
University of Stellenbosch
MComm (Industrial Psychology) (H.R.D.)

Biographical Information

This section provides a brief overview of your biographical information. It will be kept private and confidential and will be used **for the statistical purposes of this study only**. Please put a cross in the boxes that apply to you.

1.   Age:

☐	18-25	36-40	☐
☐	26-30	41-50	☐
☐	31-35	51-above	☐

2.   Gender: **3. Ethnic Group (Race):**

☐	Female	Asian	☐
☐	Male	Black	☐
		Coloured	☐
		White	☐

4.   Level of Education:

☐ Primary School Qualification

☐ High School Qualification

☐ Tertiary Level Qualification

Other (please print):   ………………………………………………….

5.   Position in Organisation:

☐ Manager / Team Leader / Supervisor

☐ Team Member

6.   Ward:
(please print): …………………………………………………………..

7.   Unit / Area / Section:
(please print): …………………………………………………………..

Section A: Work team characteristics

This section aims to provide a description about work team characteristics. Please describe your work team members when answering **all** the questions.

DIRECTIONS: Listed below are descriptive statements about your team members. For each statement, please indicate the **extent to which you agree with the statement** concerning the people in your team, displaying the behaviours described.

For example: If you completely agree that there is no team unity among your team members, then put a cross in box number 6.

1	2	3	4	5	6
Completely Disagree	Mostly Disagree	Slightly Disagree	Slightly Agree	Mostly Agree	Completely Agree

Read each question carefully and choose only ONE answer !

Questions	Completely Disagree	Mostly Disagree	Slightly Disagree	Slightly Agree	Mostly Agree	Completely Agree
1. In my work team, there is a lot of team spirit among the members.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
2. In my work team, team members know that they can depend on one another.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
3. In my work team, team members stand up for one another.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
4. In my work team, individuals pitch in to help one another.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
5. In my work team, team members regard each other as friends.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
6. In my work team, team members are very co-operative with each other.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
7. In my work team, team members take interest in one another.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
8. In my work team, team members work as a team.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
9. I feel certain about how much authority I have in my team.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
10. In my work team, there exists clear, planned goals and objectives for my job.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
11. I know that I have allocated my time properly in my team.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
12. I know what my responsibilities are in my team.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
13. I know exactly what is expected of me in my team.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA

Questions	Completely Disagree	Mostly Disagree	Slightly Disagree	Slightly Agree	Mostly Agree	Completely Agree
14. I have been provided with clear explanations of what has to be done by me in my team.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
15. Team members are committed to the team vision.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
16. Attitudes and behaviours of team members are positive regarding achievement of the team vision.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
17. There is consensus regarding the team vision, as well as the means and strategies to achieve it.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
18. Team members are involved in the creation of the team vision.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
19. Team members are involved in the modification of the team vision.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
20. Team members can be relied on to keep their promises.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
21. There are times when the team members are a bit insincere.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
22. Caution is necessary in dealing with the team members.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
23. Team members can be trusted at all times.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
24. The team can be counted on to do what is right.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
25. Team members have high integrity.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
26. Team members put the team's interests before their own.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
27. Team members are honest.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
28. Team members are responsible.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA
29. The team can be trusted at all times.	1 CD	2 MD	3 SD	4 SA	5 MA	6 CA

Section B: Leadership

This section aims to provide a description about leadership. Please describe your manager / team leader when answering **all** the questions.

DIRECTIONS: Listed below are descriptive statements about your manager / team leader. For each statement, please indicate **how frequently** the person you report to displays the behaviour described.

For example: If you feel your manager / team leader is <u>once in a while</u> absent when you need him / her, then put a cross in box number 2 .

1	2	3	4	5	6
Almost never	Once in a while	Sometimes	Fairly often	Frequently	Almost always

Read each question carefully and choose only ONE answer !

The Person I Report To …

Questions	Almost never	Once in a while	Sometimes	Fairly often	Frequently	Almost always
1. Provides me with assistance in exchange for my efforts.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
2. Re-examines critical assumptions to question whether they are appropriate.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
3. Fails to interfere until problems become serious.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
4. Focuses attention on irregularities, mistakes, exceptions and deviations from standards.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
5. Talks about his/her most important values and beliefs.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
6. Seeks differing perspectives when solving problems.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
7. Talks optimistically about the future.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
8. Instils pride in me for being associated with him/her.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always

The Person I Report To …

Questions	Almost never	Once in a while	Sometimes	Fairly often	Frequently	Almost always
9. Discusses in specific terms who is responsible for achieving performance targets.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
10. Waits for things to go wrong before taking action.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
11. Talks enthusiastically about what needs to be accomplished	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
12. Specifies the importance of having a strong sense of purpose.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
13. Spends time supporting and coaching	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
14. Makes clear what one can expect to receive when performance goals are achieved.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
15. Shows he/she is a firm believer in " if it isn't broken, don't fix it."	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
16. Goes beyond his/her self-interest for the good of the group.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
17. Treats you as an individual rather than just a member of the group.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
18. Demonstrates that problems must become chronic before he/she will take action.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
19. Acts in ways that builds my respect.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
20. Concentrates on correcting anticipated mistakes, complaints and failures.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
21. Considers the moral and ethical consequences of his/her decisions.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
22. Keeps track of all mistakes.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always

The Person I Report To …

Questions	Almost never	Once in a while	Sometimes	Fairly often	Frequently	Almost always
23. Displays a sense of power and confidence.	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
24. Articulates a compelling vision of the future	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
25. Directs his/her attention toward failures to meet standards	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
26. Considers me as having different needs, abilities and aspirations from others	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
27. Gets me to look at problems from many different angles	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
28. Helps me to develop my strengths	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
29. Suggests new ways of looking at how to complete assignments	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
30. Emphases the importance of having a collective sense of mission	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
31. Expresses satisfaction when I meet expectations	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always
32. Expresses confidence that goals will be achieved	1 Almost never	2 Once in a while	3 Sometimes	4 Fairly often	5 Frequently	6 Almost always

ENQUIRIES
NAVRAE   :   Ms. C J Thorpe

TELEPHONE
TELEFOON   404 – 2071

FAX
FAKS   :   404 – 2370

E-MAIL   :   F 9/1/2

REFERENCE   :
VERWYSING   :

DATE   :
DATUM   :   23 June 2006

PROVINCIAL ADMINISTRATION : WESTERN CAPE

Department of Health

PROVINSIALE ADMINISTRASIE : WES-KAAP

Departement van Gesondheid

ULAWULO LWEPHONDO : INTSHONA KOLONI

Isebe Lezempilo

APPROVAL TO CONDUCT RESEARCH PROJECT AT GROOTE SCHUUR HOSPITAL

NAME OF RESEARCHER – Mr Shaun Ryan

RESEARCH PROJECT TITLE – The effect of transformational leadership on effective work team characteristics to enhance effective work team performance.

PROPOSED RESEARCH PERIOD – 26 June 2006 to 31 July 2006

METHOD OF DATA COLLECTION – completion of questionnaires

COORDINATION OF VISITS TO WARDS – researcher report to Nursing Service Manager on duty (E11 A). Nursing Service Manager on duty (E11 A), identity the specific wards to be utilised and inform the registered nurses in charge of the wards.

TIME SCHEDULE OF VISITS TO WARDS - **Night duty:** 20h00 – 05h00 from Monday to Friday / **Day duty:** 09h00 – 17h00, only on Saturday and Sunday.

DEPARTMENTS IDENTIFIED – Surgical, Medical, Trauma/Emergency, Gynae and Obstetrics

AT WARD LEVEL – the co-operation of all nurses is requested and visits to the wards should not disrupt the busy routines performed by nursing staff.

(MISS) C J THORPE
DEPUTY DIRECTOR: NURSING
GROOTE SCHUUR HOSPITAL
For Chief Director
PS/dr
Research. Doc