THE IMPACT OF TEAM-FOCUSSED TRANSFORMATIONAL AND ETHICAL LEADERSHIP ON TEAM INNOVATION:

An Investigation of the Role of Team Engagement and Team Developmental Climate

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DECLARATION

I hereby declare that this thesis, submitted in partial fulfilment of the requirements of Edinburgh Napier University, for the degree of Doctor of Philosophy, represents my own work and has not been previously submitted in part or in whole to this or any other institution for any degree.

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ABSTRACT

PURPOSE: The purpose of this thesis is to investigate the impact of transformational leadership and ethical leadership on innovation. Drawing on social learning and social information processing theory, this research focusses on team level processes. This study considers direct effects as well as indirect and moderated indirect effects through team engagement and team developmental climate.

DESIGN: This study follows a positivist research paradigm and a survey method, using questionnaires containing items on all variables of interest. The sample consists of 325 employees of an Irish energy company. Data were analysed in SPSS23 and AMOS25, using a range of statistical tests, whereby hierarchical linear regression is used to test the hypothesised relationships.

FINDINGS: The results show that both leadership concepts are directly and indirectly related to team innovation through team engagement and through team developmental climate. Team developmental climate further moderates the relationship between both leadership constructs and innovation through team engagement. Similarly, team engagement moderates the relationship between both leadership concepts and innovation through team developmental climate. When controlling for the respective other leadership variable however, the effect of ethical leadership became statistically non-significant and therefore redundant in the presence of transformational leadership.

ORIGINALITY: This study extends the literature in several ways. First, it explores the relationship between ethical leadership and innovation as an outcome which is neglected in the literature. Second, it expands the knowledge on the relationship between transformational and ethical leadership and innovation by

investigating the role of team developmental climate and team engagement, and looks at the team processes involved by conceptualising the relationship at the team level. Finally, in investigating two leadership constructs, this study contributes to current debates around the need for diverging positive forms of leadership.

IMPLICATIONS: This study has clear practical implications for leaders and HR professionals. It points towards the importance of transformational and ethical leadership for innovation, and discusses how HR and leaders can create an environment that strengthens the impact of these forms of leadership on innovation.

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LIST OF ABBREVIATIONS

4I's	idealised influence, inspirational motivation, intellectual stimulation, individualised consideration
ANOVA	analysis of variance
CFA	confirmatory factor analysis
CFI	comparative fit index
CI	confidence interval
CSR	corporate social responsibility
DC	developmental climate
EL	ethical leadership
ELQ	Ethical Leadership Questionnaire
ELS	Ethical Leadership Scale
ESB	Electricity Supply Board
GFI	goodness-of-fit index
GTL	Global Transformational Leadership
HR	human resources
HRD	human resource development
ICC	intraclass correlation
MLQ	Multifactor Leadership Questionnaire
n.s.	non-significant
OCB	organisational citizenship behaviour
OCTAPAC	openness, confrontation, trust, autonomy, proactivity, authenticity and collaboration
PCFI	parsimonious comparative fit index
RE	renewable energies
RMSEA	root mean square error of approximation
SD	standard deviation
SEM	single energy market
SPSS	Statistical Package for the Social Sciences
SRMR	standardised root mean square residual
TDC	team developmental climate
TE	team engagement
TEL	team-focussed ethical leadership
TL	transformational leadership

TLQ- LGV   Transformational Leadership Questionnaire – Local Government
            Version
TTL   team-focussed transformational leadership
UK   United Kingdom
VIF   variance inflation factor

1. INTRODUCTION

The purpose of this thesis is to investigate the impact of two forms of team-level leadership, transformational leadership and ethical leadership, on team innovation. With ever faster changing business environments, technologies and competition, companies rely on innovation in order to stay competitive (Sarros, Cooper, & Santora, 2008). One key influence within the workplace are leaders and the way they encourage or inhibit innovation through their actions as role models for their employees. While both leadership concepts, ethical and transformational leadership, are often considered positive forms of leadership (Hoch, Bommer, Dulebohn & Wu, 2018; Toor & Ofori, 2009; Zbierowski, 2016), academic research and literature has so far mainly focussed on the impact of transformational leadership on innovation; however, the literature lacks studies on ethical leadership and innovation. In incorporating both leadership concepts into the research model, this thesis aims to shed light on their distinctiveness. It further investigates the specific impact these two forms of leadership have on innovation.

However, leaders are not the sole reference points for employees in the workplace (Chiaburu & Harrison, 2008). Investigating the relationships between transformational and ethical leadership and innovation at the team level, allows us to not only capture the impact of leadership, but also to incorporate the team level processes and emergent states which affect employees' behaviours and attitudes in the workplace. Using social information processing theory, this thesis assumes that employees within one team influence each other by providing a referencing frame for what is expected, and what accepted behaviours and attitudes are (Salancik & Pfeffer, 1978). In using such a lens, this thesis

acknowledges the team level processes within the leadership and innovation relationship investigated in this study.

This introductory chapter gives an overview of the thesis including its rationale, existing knowledge gaps in the literature, and how this study addresses those gaps. It describes research context and setting in the Irish energy sector, before laying out the aim and specific objectives of this study. Finally, it outlines the structure of the thesis in order to facilitate navigation through the document.

1.1 RATIONALE OF RESEARCH

The current business climate presents organisations with a range of challenges that need to be addressed, however this thesis focusses on two challenges in particular, which are discussed here. First, the last decade's business and economic crises have drawn the public's attention toward organisations' ethical and moral behaviours (Kacmar, Barach, Harris & Zivnuska, 2011). Academics, practitioners and society demand changes in management approaches and call for more focus on ethical behaviours within organisations. It is therefore not surprising that focus has shifted towards the ethics of leadership (Barling, Christie & Turner, 2008), organisational goals and their legitimacy, as well as the question of how such changes can be achieved within organisations.

Second, organisations are faced with an increased need for innovation (van Knippenberg, 2017). Business is running at an ever-faster pace. Globalisation has not only given organisations access to wider consumer markets, but has also increased competition and complexity of the business environment (Sarros, et al., 2008; Widmann, Messmann & Mulder, 2016). In order to retain their competitive advantages in quality, innovation or efficiency, companies need to focus and rely on their creativity leading to new developments and innovation and growth (Mazzucato & Parris, 2015). The drive for sustainability and related political targets force companies to rethink their products and operations and therefore call for innovations in terms of environmental impact, and hence a transformation of the energy networks (Winskel, et al., 2014). Innovations concern on the one hand new technologies, products or services, but on the other hand, organisations also investigate how they can innovate the process by which

they come up with new innovations as their competitors force them to bring new innovations to market at an ever-faster pace (Robbins & O'Gorman, 2015).

The academic literature attempts to answer both these issues, ethics and innovation, by proposing that leaders might be key in influencing their employees' attitudes and behaviours in the workplace. According to Brown and Mitchell (2010), employees observe the type of behaviours and attitudes that are rewarded by their leaders, which means that leaders can influence their employees through rewarding desired behaviours.

Transformational leadership is a leadership concept that supports on the one hand organisational change (Bamford-Wade, & Moss, 2010) and on the other hand higher levels of morality in the organisation. Originally introduced by Burns (1978) and Bass (1985), it describes leaders that are open to change and encourage challenging the status quo, but also leaders who are driven by common goals rather than self-interest and who transform their employees to also buy into and strive towards those common goals. On a conceptual level, this leadership concept seems predestined to address ethical issues within the organisation by focussing on long term societal goals rather than short-term self-interest, but also by encouraging and enabling change within the organisation which might be necessary to successfully achieve those goals. Since its introduction, transformational leadership has been increasing in popularity among both academics and practitioners and the literature on transformational leadership contains a wealth of studies on outcomes of transformational leadership, including studies on employee and team innovation (Chen, Tang, Jin, Xie & Li, 2014; Li, Mitchell & Boyle, 2016; Gumusluoglu & Ilsev, 2009 a, b), indicating that transformational leadership could indeed trigger higher levels of innovation.

However, it is also suggested that ethical leadership could be one of the key factors in implementing more ethical approaches and cultures within organisations. Despite being a fairly recent concept which emerged largely as a result of Trevino, Hartman and Brown's (2000) concept of an ethical leader and Brown, Trevino and Harrison's (2005) ethical leadership scale (ELS), recent reviews (Den Hartog, 2015) and meta-analyses (Bedi, Alpaslan & Green, 2016; Ng & Feldman, 2015) of the literature present evidence for a wide ranging effect of ethical leadership on employee as well as the organisational outcomes, including, but not limited to, employee commitment (Beeri, Dayan, Vigoda-Gadot & Werner, 2013) and satisfaction (Brown et al., 2005), organisational citizenship behaviours (Newman, Kiazad, Miao & Cooper, 2014) and ethical behaviours (Lu & Lin, 2014), as well as ethical culture and climate in the organisation (Beeri et al., 2013) and performance outcomes (Chughtai, 2016). Some of these outcomes such as employee ethical behaviour or organisational ethical climate directly link back to the attempt to change organisations towards becoming more ethical players in the economy. However, research also suggests largely positive outcomes such as commitment and OCBs that are not specifically focussed on ethics, when leaders engage in ethical leadership.

Although a range of these outcomes is frequently and comprehensively investigated in existing studies, there seems to be a scarcity of research investigating effects of ethical leadership on several areas. Firstly, compared to transformational leadership, the ethical leadership and outcomes literature largely neglects effects of ethical leadership on specific employee performance outcomes such as innovation (Tu & Lu, 2013). Given the impact that innovation has on organisational success, this neglect of research on ethical leadership and innovation is somewhat surprising and a clear gap in the ethical leadership and

outcomes literature can be found. This research addresses this gap by investigating the relationship between both, transformational and ethical leadership and innovation. It therefore adds to existing literature which, especially for ethical leadership, is scarce to date with very few studies examining the link between ethical leadership and innovation, despite a general abundance on ethical leadership and outcomes studies.

In terms of levels of analysis, the vast majority of studies investigates effects of ethical leadership on employee outcomes at the individual level with only very few studies investigating ethical leadership and its outcomes at the team level. Exceptions include studies by Bouckenooghe, Zafar and Raja (2015) Huang and Paterson (2017) and Mayer, Nurmohamed, Trevino, Shapiro & Schminke, (2013) who have utilised a group level conceptualisation of ethical leadership. There is therefore scope to extend the ethical leadership literature by investigating the impact of ethical leadership on such under-researched outcome areas.

The omission of team level research on the impact of ethical leadership on innovation, as well as only little research of the relationship between transformational leadership and team innovation represents a general neglect of team-level processes in innovation research (Widmann et al., 2016) which is only slowly addressed by current research. A growing body of literature investigates team level processes and relationships as well as multilevel data to bridge the gap between different levels within the organisation, however team level literature on leadership and innovation is still scarce (Jiang & Chen, 2018). This is surprising given that "using teams is probably the most widely cited approach to managing the innovation process" (Robbins and O'Gorman, 2015, p. 77). Tapping into the diverse knowledge and larger learning capacities of teams as compared to individuals, organisations use teams to achieve higher efficiency

(Widmann et al., 2016). It therefore seems appropriate to further investigate the effects of both ethical and transformational leadership on innovation at the team level, taking team-level processes into consideration.

The purpose of this study is therefore to investigate the leadership and innovation relationship at the team-level. The focus on the team level as focal unit of theory adds to the limited team level research existing to date and provides insights as to the applicability and the effect of the leadership concepts on organisational teams. This study aimed to use data from multiple sources, i.e. collect data from employees which could be aggregated to the team level and matched with data collected from their respective managers. Due to data limitations this approach is not possible and while this was the intended approach, ultimately only the employee data is used.

This study uses not only social learning theory (Bandura, 1971), but also social information processing theory (Salancik & Pfeffer, 1978) to explain the relationships between transformational leadership and innovation, as well as ethical leadership and innovation. It therefore incorporates not only leader influences, but also co-worker influences, which seems central to investigating team-level effects and responds to calls to further investigate team contexts in the creation of innovation (van Knippenberg, 2017; Widmann et al., 2016). In terms of practical implications, the team level approach is particularly relevant for managerial practice as teams have been shown to be more creative and innovative than individuals, but also because most organisations heavily rely on teamwork in their day to day operations.

Despite general support at least for the hypothesis that there is a positive relationship between transformational leadership and innovation, there seems to

be some ambiguity as to the process, including which specific leader behaviours support employee innovation or which other mediators/moderators might be relevant in such a relationship (Gumusluoglu & Ilsev, 2009a, b; Khan, Rehman & Fatima, 2009). Several authors therefore call for an inclusion of several leadership concepts into one study to explore the different effects different leadership concepts might have (Henker, Sonnentag & Unger, 2015; Hu, Gu & Chen, 2013). Given the scarcity of ethical leadership and innovation literature, a similar ambiguity can be found in the ethical leadership literature and the impact of possible mediators of a relationship between ethical leadership and innovation remain largely untested.

This study therefore aims to shed some light on moderating and mediating factors involved in the transformational and ethical leadership and innovation relationships. In including two mediators in the research, the process by which transformational leadership and ethical leadership influence innovation is examined. Two team focussed mediators, team engagement and team developmental climate, are used to explain underpinning processes in the relationship between transformational leadership and innovation as well as ethical leadership and innovation.

Finally, transformational and ethical leadership are both considered positive forms of leadership and several authors argue, that these concepts overlap, to the point of being redundant (Anderson & Sun, 2017; Hoch et al., 2018). However, this view is not widely accepted in the literature. In using both, transformational and ethical leadership as independent variables and investigating the different effects these concepts might have on innovation, this research addresses the debate on the distinctiveness of the two concepts and advances the leadership literature as it looks at the specific effects of two different

leadership concepts on innovation. It further provides insights into which particular leadership styles and behaviours might be particularly useful to foster innovation and hence guides leaders and managers who wish to support innovation within their teams.

Overall, a range of gaps in the literature in terms of under-researched outcomes, levels issues, the nature of the relationship and conceptual ambiguity are identified, which will be addressed in this study. A summary of these knowledge gaps is presented in table 1.1. In addressing these knowledge gaps, this study contributes not only to the bodies of the innovation literature, leadership literature in general, and transformational and ethical leadership literatures in particular, but also provides meaningful insights for practitioners that aim at fostering innovation within their organisations.

Table 1.1.1: Knowledge Gaps

CATEGORY	DESCRIPTION OF KNOWLEDGE GAP
Under-researched Outcomes	There is a lack of research on the relationship between ethical leadership and innovation
Level of Analysis	There is generally a lack of team level research in the ethical leadership and outcomes literature The literature of both, transformational leadership and ethical leadership and their relationship to innovation includes only a small number of studies investigating the team level
Nature of Relationship	The impact of specific leader behaviours on innovation is unclear Moderators and mediators require further investigation
Conceptual issues	The distinctiveness of the concepts of transformational leadership and ethical leadership requires further investigation.

1.2 RESEARCH CONTEXT

The setting of this research is the Irish energy sector which includes both, Northern Ireland and the Republic of Ireland which have joint a single energy market (SEM) (IEA, 2012). This setting seems appropriate as the Irish energy sector faces a strong need for innovation in order to respond to increasing pressures for change.

The demand for energy in Ireland has more than doubled since 1973 (IEA, 2016) and forecasts see the electricity consumption rising by about 75 percent as compared to 2000 in 2020 (Madrigal-Sanchez & Quesada-Pineda, 2012). This increase has to be mirrored by a growth in energy generation capacity as well as an expansion of the transmission and distribution networks (IEA, 2012), forcing energy companies to invest in the energy grid-infrastructure. In the Irish market, 43 percent of energy is generated from oil that is imported from the UK (IEA, 2014; IEA, 2012). Due to the SEM, this supply seemed very secure, however in light of Brexit, a strong dependency on UK imports could be riskier and more expensive than previously anticipated (Oxford Analytica, 2016).

Rising energy consumption further raises a range of environmental issues, like an increase of greenhouse gas emissions and the exploration and exploitation of new energy fields and sources (IEA, 2012). The Irish government answered these concerns with a pledge to create 40 percent of consumed energy through renewable energies (RE) (IEA, 2012). While RE generation on a large scale is technologically possible (Hartley, Medlock, Temzelides & Zhang, 2011) investments in RE are still considered risky due to the greater technical uncertainty compared to conventional energy sources (Kang & Hwang, 2016) and generally long life cycles (Rehme, Nordigarden & Chicksand, 2015). However,

innovation and investment in RE could on the one hand help with achieving climate change targets (Johnstone, Hascic & Popp, 2010) and similarly reduce Ireland's dependency on energy imports.

Overall, the challenges imposed on the Irish energy market by environmental factors increase the pressure on energy companies (Jones & Yarrow, 2010) and force them to adapt and transform their businesses to stay profitable and competitive. Madrigal-Sanchez and Quesada-Pineda (2012) argue that one key strategy for profitable growth in the energy sector is innovation which can rely on different sources such as customer demands, co-operation with universities or research centres, but also on employees' creativity (Madrigal-Sanchez & Quesada-Pineda, 2012). The management of the Irish energy companies is therefore required to not only transform their businesses, but also to foster innovation amongst their customers, partners and employees. Transformational leadership, which conceptually embraces this change and encourages transformation through setting common challenging goals but also by considering and developing each employee (Bass, 1985), seems a promising approach to answer to the challenges of the Irish energy market.

While dealing with those economic, technical and political challenges, the social environment's focus on ethical organisations, fair pricing and decision making also impacts on the Irish energy sector. Energy sectors are traditionally dominated by few big companies or even monopolists, which raise concerns over fair pricing and market manipulation (Gal, 2004). While the Irish energy market has undergone a degree of deregulation and has seen a rise of competition and new companies entering the market over the last decades (Cleff, Grimpe & Rammer, 2009; IEA, 2012), some of the former structures remain, which can be seen e.g. looking at the electricity transmission and distribution networks which

are still owned and operated by the Electricity Supply Board (ESB), a 95 percent state owned company and former single electricity supplier (IEA, 2012). In a time where consumers are more and more aware of ethical issues and where energy companies need community support to expand their network infrastructure to integrate new energy sources into the grid (IEA, 2012), it is imperative to be considered an ethical entity in the market. A critical factor in achieving this is management and the standards set within the organisation. Honest and trustworthy leadership might encourage an open environment that helps them gain trust and acceptance from both their employees and the community.

Such an environment that faces both ethical issues as well as the need for real change and innovation, and in an industry that relies heavily on innovation, seems to be a good fit to investigate the role and impact of transformational and ethical leadership on innovation at the team level.

1.3   AIM AND OBJECTIVES

Research Aim

The aim of this research is to investigate the relationship between both, team-focussed transformational leadership and team-focussed ethical leadership, on team innovation in the context of the Irish energy sector.

Research Objectives

1) To synthesise existing literature on both transformational and ethical leadership and their impact on innovation

2) To create a conceptual model detailing the relationships between transformational leadership and innovation and ethical leadership and innovation

3) To conduct a large-scale survey within the Irish energy sector to collect data on all variables of interest based on the conceptual model

4) To investigate direct effects of team-focussed transformational leadership and team-focussed ethical leadership on team innovation.

5) To investigate the indirect effects of team-focussed transformational leadership and team-focussed ethical leadership on team innovation through team engagement and team developmental climate.

6) To compare effects of team-focussed transformational leadership to those of team-focussed ethical leadership

7) To discuss the contribution of this research to both theory and practice

1.4   STRUCTURE OF THE THESIS

The thesis is divided into six main chapters. Following this introduction, chapter two, the literature review, covers four key literatures: leadership, focussing particularly on transformational leadership and ethical leadership, innovation, employee engagement, and team developmental climate. It introduces these concepts which are the key variables in the conceptual model which guides this research, and discusses the applicability to the team level. The literature review further includes an overview of the theoretical underpinnings used to explain the relationships investigated in this study, as well as a summary of the research model and the proposed hypotheses.

Chapter three describes the research methodology and philosophical perspectives of this research. In line with the research aim, this study takes a positivist stance using survey data which has been collected from employees and their managers of an Irish energy company.

Chapter four presents the data analysis and findings of this thesis. It is split into two major sections: data preparation, which discusses data cleaning procedures and testing of assumptions, and results, which presents the outcomes of testing the hypotheses.

Chapter five includes the discussion of the findings, this study's contribution to knowledge and practice, as well as limitations of the study and recommendations for future research. Finally, chapter six concludes this thesis.

2.   LITERATURE REVIEW

2.1   INTRODUCTION TO THE LITERATURE

This chapter provides a literature review on the theoretical concepts that form the basis of the research model. In doing so, it aims to build an understanding of the relationships investigated in the research model. Several bodies of literature are integrated in this literature review.

The leadership literature, particularly research on transformational leadership and ethical leadership, are reviewed to conceptually define the two concepts and discuss the distinctiveness of transformational leadership and ethical leadership. Despite other perspectives being discussed, the key focus lies on Bass's (1985) concept of transformational leadership and ethical leadership as introduced and defined by Trevino et al. (2000) and Brown et al. (2005). The leadership and outcomes literature draws on a range of theoretical underpinnings to explain relationships between leadership and the respective outcomes. Both transformational leadership and ethical leadership have been found to exert their influence through social learning processes (Bouckenooghe et al., 2015; Brown et al., 2005; Eisenbeiβ & Boerner, 2013; Khuong, Linh & Duc, 2015). The second theoretical underpinning that this study draws on is social information processing theory, which similar to social learning theory, suggests that people look to their surroundings to determine appropriate rules and behaviour (Bandura, 1971; Salancik & Pfeffer, 1978). However, social information processing theory places particular focus on co-workers as a source of influence (Chen, Takeuchi & Shum, 2013) and hence seems appropriate for investigating team level processes.

The second key body of literature included in this review is the innovation literature. Several notions of innovation as well as the innovation process are

discussed and innovation is conceptually distinguished from creativity. Drawing on this separation of concepts, this study focusses on innovation as outcome, rather than on the innovation process. The innovation literature is then integrated with the leadership literature in that both theoretical and empirical linkages between leadership and innovation are discussed, and generally, a positive relationships between both transformational leadership and innovation as well as ethical leadership and innovation are suggested.

Finally, the concepts of the two mediators and moderators are reviewed to establish their conceptual role in the relationship between the leadership concepts and innovation. In the vast but somewhat scattered engagement literature, this study follows Kahn's (1990) definition which is adapted to reflect team members' perceptions of team engagement rather than their perceptions of their own engagement. The developmental climate literature is comparably small and can be considered part of the more comprehensive literature on organisational climate (Spell, Eby & Vandenberg, 2014). The concept of developmental climate includes leader, human resources (HR) and co-worker influences that help support and develop employees and instil openness and trust (Devi & Naga, 2014; Krishnaveni & Ramkumar, 2006; Saraswathi, 2010; Walia, Aggarwal & Jangra, 2013). It therefore offers great potential in explaining relationships between leadership and innovation at the team level.

The structure of this literature review is displayed in figure 2.1 in order to provide guidance through the chapter. At the end of each main section, a summary section contains the key points made.

2.2: Transformational Leadership
- The concept of TL
- Definitions of TL
- Dimensions of TL
- Differentiation from related concepts
- Antecedents of TL
- Outcomes of TL

2.3: Ethical Leadership
- Concept
- Definitions
- Measures used
- Antecedents of EL
- Outcomes of EL

2.4: Leadership at the Team Level
- Team-focussed transformational leadership
- Team-focussed ethical leadership

2.5: Distinctiveness of TL and EL

2.6: Methods used in TL and EL Research

Independent Variables

2.7.1: Social Learning Theory
- The concept of social learning theory
- Links to transformational leadership
- Links to ethical leadership

2.7.2: Social Information Processing Theory
- The concept of social information processing theory
- Links to the team influence

Theoretical Underpinning

2.8: Innovation
- Concepts of innovation
- Impact of transformational leadership on innovation
- Impact of ethical leadership on innovation
- Team innovation

Dependent Variable

2.9.1: Engagement
- Defining engagement
- Team engagement
- Antecedents of employee engagement
- TL and engagement
- EL and engagement
- Engagement and innovation

2.9.2: Developmental Climate
- Concept of DC
- Leadership and DC
- TL and DC
- EL and DC
- DC and innovation

2.9.3: Moderating Effects of Engagement and Team Developmental Climate

Mediating and Moderating Effects

2.10: Research Model
- Summary of Research Model
- Hypotheses

Summary

Figure 2.1: Structure of the Literature Review Chapter

2.2   THE CONCEPT OF TRANSFORMATIONAL LEADERSHIP

The concept of transformational leadership is one of the key leadership concepts discussed in the literature on positive leadership, and has received considerable attention from both, academics and practitioners since its emergence in the 1970s. Current literature on transformational leadership is largely based on the early works by Burns (1978) who discusses the influencing mechanisms of transformational leadership in contrast to transactional leadership. He argues that transactional leadership is based on the "exchange of valued things" (p. 19), which could take various forms but aim at fulfilling an actual need. This implies that the relationship between leader and follower is mainly based on this transaction, the exchange of goods, time, or, in an organisational environment, rewards such as pay increases and other forms of recognition (Bass, 1990, p. 20). Transformational leadership on the other hand can only occur if leaders and followers engage with each other at a higher level. Burns (1978) describes this engagement as necessary because the idea is to not only exchange goods to fulfil each individual's self-interest, but to create change and transformation with the aim of reaching higher levels of morality, merging goals and motivations and finding a common purpose.

While Burns discusses this concept in a political context, interest in transformational leadership in the business context emerged on the basis of Bass's (1985) work, where he transferred the concept of transformational leadership to the business environment. In bridging the gap between political sciences and social psychology literature, Bass intended to apply what is known about great political leaders to organisations and provide organisational leaders with an understanding of potential impacts of leaders on their followers'

behaviours (Bass, 1985). This triggered a vast amount of interest and research in the topic of transformational leadership and its potential impact on organisational success. It is therefore not surprising that studies have investigated leaders from a wide range of hierarchical levels, sectors, and professions (Bass, 1990).

While Bass (1985) largely draws on Burns's (1978) work there are significant differences between the two. First, Bass introduces three dimensions of transformational leadership, namely inspirational leadership, individualised consideration and intellectual stimulation and hence operationalises and describes the concept (Yammarino, 1993). Second, while Burns discusses transactional and transformational as two ends of one continuum, Bass separates these two concepts, suggesting that each of them can be shown by a leader to a certain extent (Bass, 1985). That means, that transactional and transformational leadership components can be shown simultaneously and are not mutually exclusive. Third, while Burns sees morality as the basis for transformational leadership, Bass suggests that transformational leadership might not necessarily be beneficial for the organisation or the wider society which led to discussions around pseudo-transformational leadership which will be introduced later in this chapter. Fourth, in building on Burns' idea that transformational leadership elevates leaders' and followers' motives to higher levels, Bass suggests that this also translates into an expansion of higher level needs which ought to be satisfied (Bass, 1985).

Transformational leadership is most commonly treated as a static concept (Tepper et al., 2018), assuming that leaders generally show behaviours that are consistent over time (Breevaart, Bakker, Demerouti, & Derks, 2016). Some scholars explicitly link transformational leadership to relatively constant

personality traits (Judge & Bono, 2000) which supports such a notion of stability of transformational leadership over time. There are, however, calls for research that conceptualises transformational leadership as a more dynamic construct (Breevaart et al., 2014; Breevart et al., 2016; Tepper et al., 2018; Tims, Bakker & Xanthopoulou, 2011). These studies tend to adopt a follower-centric, needs-based approach that assumes that followers perceive different levels of transformational leadership depending on their current needs and the fulfilment of these needs (Tepper et al., 2018). Such dynamic approaches are useful for research that takes a more individualised and short term perspective and is thus interested in short-term fluctuations of both perceptions of leadership and short-term outcomes. Where the focus lies on long-term outcomes and emerging constructs, which includes a range of team level constructs, a more static concept of transformational leadership seems appropriate. A static view of transformational leadership is further used to generally compare and contrast different leadership styles and their potential impact on employees and organisations (Breevaart, 2016). As this study investigates team-level processes and compares effects of transformational leadership and ethical leadership, this study conceptualises transformational leadership as a static concept.

2.2.1 Definitions of Transformational Leadership

Since its introduction through Burns (1978) and Bass (1985), a variety of definitions of transformational leadership are used in academic literature (see selected definitions in table 2.1). From the definitions presented, two main trends can be extracted. The first trend emphasises the leaders' ability to engage with their followers in such a way, that they can change followers' motivations so that they move beyond fulfilling their own needs and individual interests, and instead,

focus on higher level goals and interests such as group, organisational or societal interests. However, it remains unclear as to how leaders can actually achieve this transformation. Questions also remain in terms of the decisions regarding which goals and interests are to be followed. Looking at Burns (1978, p. 20) as the seminal work, the aim is to "raise one another to higher levels of motivation and morality", but the extent to which this rise happens or if all followers need to be included in this transformation is not discussed. The definitions, beside their common focus, also differ in terms of the direction of power and the assumed relationship between leader and follower. Bass (1990) and Gumusluoglu and Ilsev (2009a) describe very much a top-down approach whereby leaders influence and elevate their followers. Garcia-Morales, Matias-Reche and Hurtado-Torres (2008) and to an even stronger extent Burns (1978) imply a two-way interaction, which indicates that leaders and followers influence each other and that both, the leader and the followers are transformed in the process.

The second trend focuses mainly on four dimensions of transformational leader attributes and behaviours: idealised influence, inspirational motivation, intellectual stimulation and individual consideration. This category of definitions focuses more on the operationalisation of transformational leadership and hence, the leader behaviours that are shown (Yukl, 1999). The aim of engaging in such behaviours might well be the transformation of followers' interests and goals (Bass, 1999). While most definitions as such don't make this link clear, Podsakoff, MacKenzie and Moorman (1990) argue that the overarching theme is the idea of influencing followers' beliefs, attitudes and behaviours in order for them to perform beyond the pure job specification.

Table 2.1: Selected Definitions of Transformational Leadership

Selected References	Definition of Transformational Leadership	Focus of Definition
moving followers beyond self-interest		
Burns (1978), p. 20	Transformational leadership "occurs when one or more persons *engage* with others in such a way that leaders and followers raise one another to higher levels of motivation and morality."	• engagement • rise in morality
Bass (1990), p. 21	"Superior leadership performance – transformational leadership – occurs when leaders broaden and elevate the interests of their employees, when they generate awareness and acceptance of the purposes and mission of the group. And when they stir their employees to look beyond their own self-interest for the good of the group."	• elevate followers' interests • go beyond self-interest • common mission
Gumusluoglu & Ilsev (2009a),p. 265	"transformational leaders are those leaders who transform followers' personal values and self-concepts, move them to higher levels of needs and aspirations […], and raise the performance expectations of their followers"	• elevate follower's interests raise and aspirations
Garcia-Morales et al. (2008), p. 189	Transformational leadership "can be defined as the style of leadership that heightens consciousness by the organization's (sic) members of a collective interest and helps them to achieve it."	• collective interest • support
Leader behaviours		
Bass (1999), p. 11	"Transformational leadership refers to the leader moving the follower beyond immediate self-interests through idealized influence (charisma), inspiration, intellectual stimulation, or individualised consideration. It elevates the follower's level of maturity and ideals as well as concerns for achievement, self-actualization, and the well-being of others, the organization (sic), and society."	• going beyond self-interest • idealised influence • inspiration • intellectual stimulations • individualised consideration
Boerner & von Streit (2005), p. 32	"we speak of transformational leadership, if (1) the led experience the leader and the proximity towards him as emotionally attractive, (2) the leaders imparts the led by help of a vision to orientation and meaning and thus causes enthusiasm, and (3) when the leader is able to stimulate the led to rethink their old perceptions and replace them with new ones."	• emotionally attractive • vision • motivation • challenge perceptions
Bass & Riggio (2006), p. 5	"conceptually, leadership is charismatic, and followers seek to identify with the leader and emulate him or her. The leadership inspires followers with challenge and persuasion, providing both meaning and understanding. The leadership is intellectually stimulating, expanding the followers' use of their abilities. Finally, the leadership is individually considerate, providing the follower with support, mentoring, and coaching"	• followers identify with leader • inspiration and meaning • intellectual stimulation • individualised support
Seltzer & Bass (1990), p. 694	"Transformational leaders may inspire their follower, may deal individually with subordinates to meet their development al needs, and may encourage new approaches and more effort toward problem solving."	• inspiration • individual follower development • encourage innovation

2.2.2 Dimensions of Transformational Leadership

Transformational leadership is commonly broken down into various dimensions or leaders behaviours. The most common ones are known as the 4 I's of transformational leadership (Bass, 1990; Ghadi, Fernando & Caputi, 2013; Khatri, 2005), idealised influence, inspirational motivation, intellectual stimulation and individualised consideration. These dimensions are also reflected in the category of definitions that focus on leader behaviours, which align with the four dimensions (see Table 2.1).

The *idealised influence* dimension, which is sometimes called charisma, describes leaders that act as a role models that followers want to identify with and they trust to do the right thing and being ethical (Bass, 1990; Bass, 1999; Bass & Riggio, 2006; Weng, Huang, Chen & Chang, 2015) and hence relates to the leader's charismatic actions (Tipu, Ryan & Fantazy, 2012). The leader also helps followers envision a desirable future and set standards that help achieve that future. The *inspirational motivation* dimension motivates followers by providing a sense of purpose and communicates the team's common goal and hence creates a team spirit that increases the commitment to set goal (Bass & Riggio, 2006). While conceptualised as two different dimensions on a theoretical level, existing research shows that these two first dimensions tend to load on a single factor in factor analysis, which sometimes leads to a combination of the two dimensions into a single factor (Avolio, Bass & Jung, 1999). The third dimension, *intellectual stimulation*, refers to leaders, who enable and encourage their followers to question the status quo, their assumptions, perceptions and values (Weng et al., 2015). This enables both leaders and followers to approach situations from new perspectives, enhances creativity and innovation and hence

improves problem-solving (Bass, 1990; Bass, 1999). To enable followers to do so, followers are involved in problem solving and decision making and leaders are open to new ideas that might differ from their own (Bass & Riggio, 2006). Finally, transformational leaders are said to be *individually considerate*, which implies, that they are able and willing to differentiate between each followers individual needs, aspirations and development needs (Bass, 1999). Leaders react to those needs and support each individual by creating tailored opportunities for development, individual coaching or mentoring or developmental sessions (Bass & Riggio, 2006; Jung, Wu & Chow, 2008).

Most commonly, these four dimensions are measured using the Multifactor Leadership Questionnaire (MLQ) (Singh & Krishnan, 2007) which exists in various forms including more or fewer items and collecting leaders' self-ratings or followers' leader ratings. Through its extensive use it has been applied in different contexts and cultures, and has demonstrated internal consistency (Bass & Riggio, 2006). However, questions have been raised as to whether or not the MLQ adequately captures the concepts it means to measure, or if it can be applied to different cultures (Singh & Krishnan, 2007). These doubts have led to the emergence of alternative conceptualisations of transformational leadership.

Podsakoff et al. (1990) observe, that with the growing interest in transformational leadership, the concept is interpreted in slightly different ways and develop their own transformational leadership scale based upon a review of the literature. Their scale includes six leader behaviours, attributed to a transformational leader: identifying and articulating a vision; providing an appropriate model; fostering the acceptance of team goals; high performance expectations; providing individual support; and intellectual stimulation. These six dimensions largely overlap with Avolio et al.'s (1999) dimensions. Intellectual stimulation remains the same and

"providing individual support" clearly overlaps with the individualised consideration dimension, while "being an appropriate role model" and the setting of high standards aligns with the idealised influence dimension. Finally, the introduction of shared team goals ties in with the common goals of the inspirational motivation dimension. Even though Podsakoff et al. (1990) show a more differentiated picture of transformational leadership, the topics and concepts remain largely the same. A similar pattern can be seen in Rafferty & Griffin's (2004) research. Their scale of transformational leadership included five dimensions all of which are aligned to the 4 I's of transformational leadership. In line with this, Carless, Wearing and Mann (2000) align with the general idea of the 4 I's of transformational leadership. However, they argue, that the MLQ, while being highly relevant, is too long. Their intent was therefore to create a shorter measure that would take less time and effort to answer and they developed a seven item scale including one item only for each of their seven dimensions. Their Global Transformational Leadership (GTL) scale shows strong correlations with the MLQ and Carless et al. (2000) report good reliability as well as internal and external validity.

Drawing on the 4 I's, Khatri (2005) argues that charisma and vision are part of all 4 I's of transformational leadership and suggests, that theoretically, charisma and vision can replace the other four dimension, leaving the transformational leadership concept with only two underlying dimensions. However, this view has not been widely accepted in the literature.

The studies discussed so far, focus on developing a scale to measure transformational leadership globally. They were not customised to fit any particular environment or context. This, however fuelled the question if the essentially Western concept of transformational leadership is applicable or

appropriate in other parts of the world. Both Alimo-Metcalfe and Alban-Metcalfe (2001) and Singh and Krishnan (2007) address this question and develop culture specific transformational leadership models and questionnaires for the UK and India. It is argued, that in order to understand followers' real values and needs, a more culturally sensitive concept is necessary (Singh & Krishnan, 2007). For the UK, the Transformational Leadership Questionnaire – Local Government Version (TLQ-LGV) scale was introduced which consists of six factors, three of which overlap with Bass & Avolio's MLQ while three factors are unique to this scale (Alimo-Metcalfe & Alban-Metcalfe, 2001). The factors that overlap with the MLQ are "encourages critical and strategic thinking" (intellectual stimulation and to a lesser extent individualised consideration), "accessible and approachable" (individualised consideration), "integrity" (idealised influence/charisma). To a lesser extent, the factor "decisiveness, determination and self-confidence" is also argued to overlap with the charismatic dimension of the MLQ, however, the dimensions "inspirational networker and promoter" and "clarifies boundaries, involves others in decisions" are argued to be unique to this scale (Alimo-Metcalfe & Alban-Metcalfe, 2001). Similarly, Singh & Krishnan's (2007) Indian transformational leadership scale represents a mixture of common transformational leadership dimensions and culturally unique additions such as the "performance-oriented and humane dimension". An overview of different conceptualisations and the respective dimensions is displayed in table 2.2.

Table 2.2: Different Conceptualisations of Transformational Leadership

	Largely in line with 4 I's							Underlying dimensions of 4 I's	Different from 4 I's		
Author	**Bass (1999)**	**Bass & Riggio (2006)**	**Avolio et al. (1999)**	**Carless et al. (2000)**	**Podsakoff et al. (1990)**	**Rafferty & Griffin (2004)**	**Posner & Kouzes (1993)**	**Khatri (2005)**	**Conger & Kanungo (1998)**	**Alimo-Metcalfe & Alban-Metcalfe, (2001)**	**Singh & Krishnan (2007)**
Number of Dimensions	3	4	3	7	6	5	5	2	5	6	6
Scale		MLQ	MLQ	GTL						TKQ-LGV	
Dimensions	idealised influence (charisma) and inspirational leadership	Idealised influence	inspiration/ charisma	leading by example charisma	providing an appropriate model	vision	modelling	Charisma	creating attention through unconventional and creative actions	genuine concern for others political sensitivity and skills	performance-oriented and humane openness and nurturing
		Inspirational motivation		communicate vision	identifying a and articulating a vision	inspirational communication,	inspiring	vision	effective interpersonal communication demonstrating trustworthiness	decisiveness, determination and self-confidence	sensitive and conscientious
	intellectual stimulation	intellectual stimulation	intellectual stimulation	innovative	intellectual stimulation	intellectual stimulation,	challenging		showing self-respect and respect towards others	integrity, trustworthy, honest and open	personal touch
				empower staff					taking personal risk	clarifies boundaries, involves others	conviction in self
	individualised consideration	individualised consideration	individualised consideration	provide support develop staff	providing individual support	personal recognition	enabling;			encourages critical and strategic thinking	non-traditional
					fostering the acceptance of group goals high performance expectations	supportive leadership	encouraging				

2.2.3 Links with Socialised Charismatic Leadership

The concept of charismatic leadership is often discussed in the context of transformational leadership. It can be split into socialised charismatic leadership or personalised charismatic leadership. Socialised charismatic leadership serves a common interest, is ethical, and is characterised by altruism, egalitarianism and empowerment of others, whereas personalised charismatic leadership is largely leader self-centred and manipulative (Bass & Riggio, 2006; Brown & Trevino, 2006b). Some scholars suggest that socialised charismatic leadership and transformational leadership have a lot in common (Bass & Riggio, 2006; Khatri, 2005; Yukl, 1999) or that these terms even describe the same concept with similar behavioural components (Conger & Kanungo, 1998; Feinberg, Ostroff & Burke, 2005; Felfe, Tartler & Liepmann. 2004). Comparing the description of socialised charismatic leadership with definitions of transformational leadership some similarities can be found. Garcia-Morales et al. (2008), for example, talks about a common goal as well as supporting followers to achieve this goal which can be related to the common interest and empowerment in the socialised charismatic leadership concept. Those definitions that focus on followers moving beyond their self-interest overlap with the altruism characteristic of charismatic leadership and Bass and Riggio's (2006) definition even stipulates that transformational leadership should be charismatic.

However, taking into consideration the more operationalised definitions of transformational leadership, the concept of transformational leadership seems to incorporate a wider set of behaviours and aims. Therefore, it seems more appropriate to consider charisma as one of many elements of transformational leadership (Bass & Riggio, 2006; Yukl, 1999) and indeed it can be found in

various definitions and descriptions of transformational leadership (Bass, 1999; Carless et al., 2000; Khatri, 2005).

2.2.4 Links with Self-centred and Pseudo-transformational Leadership

The other side of charismatic leadership, is the self-centred and manipulative charismatic leadership (Brown & Trevino, 2006b). This type of leadership differs fundamentally from transformational leadership as it is not rooted in ethical values, which is a key assumption of transformational leadership (Bass & Steidlmeier, 1999; Burns, 1978).

Leadership that shows the characteristics of transformational leadership but is not grounded in morality is termed pseudo-transformational leadership (Bass & Steidlmeier, 1999). In contrast to transformational leadership, pseudo-transformational leadership is based on the leader's self-interest (Barling et al., 2008). While pseudo-transformational leaders seem to show elements of transformational leadership, Bass and Steidlmeier (1999) argue that the idealised values are power and success rather than altruism; the inspirational motivation of followers is grounded in conspiracies and insecurities rather than harmony and charity; intellectual stimulation is based on the threat of uncertainty and decisions are made based on authority rather than argument and finally, individualised consideration is shown in form of favouritism for a select few rather than consideration of each team member. All these leader behaviours are based on the pseudo-transformational leader's need for power even on the expense of followers which can be considered immoral (Bass & Steidlmeier, 1999). Price (2003) builds on discussions on pseudo-transformational leadership, but contrary to Bass and Steidlmeier (1999), points out that leaders can also be immoral while working towards their understanding of the common good. He suggests that in

the light of the greater common goal, leaders might be blinded by the ends and pursue procedures to reach this goal, that might not hold the standards of general morality. They could hence sacrifice the morality in the process of achieving the common goal (Price, 2003).

What is clear from those debates, is that the leaders own attitudes and values have come in the focus of transformational leadership theory. Turner, Barling, Epitropaki, Butcher and Milner (2002) argue, that leaders with higher levels of moral reasoning are more transformational than leaders with lower levels of moral reasoning. Brandt and Edinger (2015) summarise some of the key personality characteristic transformational leaders should have. These include "creativity, being open to novelty, innovativeness, propensity to risk, courage, belief in people, being value-driven, valuing life-long learning, pragmatism, nurturing, feminine attributes and self confidence" (Brandt & Edinger, 2015, p. 48). Interestingly, these personality characteristics, don't specify the kinds of values that leaders should hold. Being nurturing indicates however that leaders should care about others and take their interests into consideration, hence this seems to be the link to altruism or morality.

2.2.5 Antecedents of Transformational Leadership

In his seminal work, Bass (1985) suggests several reasons why leaders might show more or less transformational leadership. Despite this early discussion of antecedents, there remains relatively little empirical research that explores the antecedents of transformational leadership (Jin, Seo & Shapiro, 2016). Factors included in existing research include to date mainly external factors such as organisational factors, task related factors and leader personality and leader-follower relationships.

Bass (1985) suggests that external factors might inhibit or encourage transformational leadership. In line with this, Oliver et al. (2011) look at the private environment of leaders, especially considering their upbringing and find, that a nurturing family environment in early adulthood fosters transformational leadership. Looking at the organisational rather than the private environment, peer transformational leadership increases transformational leadership (Bommer, Rubin & Baldwin, 2004). Consequently, leaders seem to learn transformational leadership from other people around them.

In terms of organisational and task related factors, openness to change and complexity seem to produce more transformational leaders. Bass (1985) suggests, that leaders in organisations that are open to change and growth are more likely to show higher levels of transformational leadership. In terms of task characteristics, the literature reports a positive relationship between cognitively challenging or complex tasks and transformational leadership (Doci & Hofmans, 2015; Nielsen & Cleal, 2011) but also that pleasant tasks (Jin et al., 2016) and meaningful tasks (Nielsen & Cleal, 2011) support the emergence of transformational leadership. This suggests that on the one hand, leaders should be challenged in their work but at the same time, tasks should not be too challenging for leaders to feel defeated. This fit between work demands and leader ability, is reported to be a prerequisite for transformational leadership in organisations (Guay, 2013).

Research further suggests that leader's personalities might be important, as for example the leader's attitude to change (Bommer et al., 2004), positive affectivity, agreeableness, and emotional intelligence (Rubin, Munz & Bommer, 2005), leaders self-concept (Oliver et al., 2011) and leader's job satisfaction (Jin et al., 2016) influence the amount of transformational leadership displayed. These

findings are again aligned with Bass' (1985) suggestion that leader personality might be important.

Finally, Gregory, Moates and Gregory (2011) investigate the impact of leader and follower perspective-taking and find that the more frequently leaders and followers try to understand each other's perspective, the more transformational leadership is shown in organisations. These findings draw somewhat on the links between transformational leadership and emotional intelligence discussed above, as the concept of perspective-taking used by Gregory et al. (2011) include both empathy and positive attributions.

From the above discussion, it becomes clear that there is a variety of different factors that can influence the emergence of transformational leadership within an organisation.

2.2.6 Outcomes of Transformational Leadership

A number of studies have investigated the effects of transformational leadership and the general finding is that transformational leadership is more effective than transactional leadership (Bass & Riggio, 2006). In their recent meta-analysis, Hoch et al. (2018) report significant effects of transformational leadership on a wide range of different outcomes. These outcomes of leadership can be categorised into attitudes, behaviours, cognition, individual effectiveness and organisational effectiveness (Hiller, DeChurch, Murase & Doty, 2011). Transformational leadership is reported to affect all of these five categories.

In terms of attitudes, studies report a positive relationship between transformational leadership and affective commitment (Bass & Riggio, 2006; Rafferty & Griffin, 2004), increased loyalty (Bass & Riggio, 2006) and follower satisfaction (Podsakoff et al., 1990, Seltzer & Bass, 1990), trust (Bass & Riggio,

2006, Podsakoff et al., 1990), empowerment (Bass & Riggio, 2006), identification with the leader (Bass & Riggio, 2006) as well as the group (Tse & Chiu, 2014) and goal and value alignment (Krishnan, 2004). Transformational leadership is further found to be negatively related to continuance commitment (Rafferty & Griffin, 2004).

In terms of behavioural outcomes, research suggests a positive relationship, both direct and indirect, between transformational leadership with organisational citizenship behaviours and dimensions thereof such as extra effort and helping (Gilmore, Hu, Wei, Tetrick & Zaccaro, 2012, Podsakoff et al., 1990; Rafferty & Griffin, 2004; Seltzer & Bass 1990; Tse & Chiu, 2014).

Cognitions that are reported to be related to transformational leadership include employees' promotion focus (Henker et al., 2015), individual differentiation (Tse & Chiu, 2014) which are positively related, and turnover intentions (Rafferty and Griffin, 2004) which is negatively related to transformational leadership.

Maybe most importantly from an organisational perspective, studies also report a positive relationship between transformational leadership and performance outcomes such as employee performance (Wang, Oh & Colbert, 2011), self-efficacy (Rafferty & Griffin, 2004), leader effectiveness (Seltzer & Bass, 1990) and creativity (Eisenbeiß, van Knippenberg & Boerner, 2008; Gilmore et al., 2012; Henker et al., 2015; Tse & Chiu, 2014). Dionne, Yammarino, Atwater and Spangler (2004) have further suggested positive links between transformational leadership and team outcomes including team shared vision, team commitment, empowered team environment and functional team conflict. These studies, while only a snapshot of the vast literature on outcomes of transformational leadership, show a wide ranging impact of transformational leadership.

2.2.7 Summary of Transformational Leadership

- The concept of transformational leadership is mainly based on seminal work by Burns (1987) in the political context and was later introduced into the organisational context by Bass (1985).

- Transformational leaders engage with and support their followers to shift follower's focus towards common higher level goals and higher levels of morality rather than self-interest and followers' individual needs (Gumusluoglu & Ilsev, 2009a).

- The concept of transformational leadership is largely defined and discussed in terms of the 4 dimensions also called the 4 I's: idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration which is also reflected in the wide use of the MLQ questionnaire to measure transformational leadership. Other conceptualisations and measurement scales are available but generally overlap with the 4 I's.

- Transformational leadership is strongly linked to charismatic leadership, however, charisma is only part of transformational leadership but does not cover all 4 dimensions (Bass & Riggio, 2006), nor does it necessarily share the focus on common goals and morality. Where charismatic leadership is used to manipulate followers to achieve leader's self-centred goals and is not grounded in morality and altruism, it is termed pseudo-transformational leadership (Bass & Steidlmeier, 1999).

- In terms of antecedents of transformational leadership, both external factors such as the organisational and private environment which leaders operate in are suggested to influence the emergence of transformational leadership. Similarly, internal factors such as leaders' personality, leaders'

job attitudes and emotional intelligence are influential in displaying higher levels of transformational leadership.

- Generally, transformational leadership is considered more effective than transactional leadership (Bass & Riggio, 2006) and is linked to a range of positive outcomes including employee attitudes such as commitment, behaviours such as organisational citizenship behaviours, cognitions and performance, including higher levels of innovation.

2.3   THE CONCEPT OF ETHICAL LEADERSHIP

The interest in ethical business practices is not new. However, the concept of ethical leadership as a distinct approach evolved from Trevino et al.'s (2000) concept of the ethical leader. Building on this initial work, research focussed on the ethical perspective of leadership and first ethical leadership scales were developed (Brown et al., 2005; Khunita & Suar, 2004) which formed the basis for a growing number of studies investigating both antecedents and outcomes of ethical leadership.

Trevino et al.'s (2000) work suggests a two dimensional concept, including the moral person and the moral manager. The dimension of the moral person relates to the leader and his or her values and behaviours. The moral person is trustworthy and honest, is seen as approachable and concerned about other people and society, and is furthermore considered fair and consistent in both professional and private situations (Brown & Mitchell, 2010). The moral manager dimension relates to the management of employees whereby ethical leaders communicate their ethical expectations to followers and reward ethical, but punish unethical behaviours among employees (Brown & Mitchell, 2010). Hence Trevino et al.'s (2000) conceptualisation of ethical leadership looks at both, the leader's own values and the way they implement ethical behaviours among their employees. Applying the concept of ethical leadership to the Chinese context, Zheng, Wang and Li (2011) suggest a three-dimensional concept including individual ethical leader characteristics, ethical decision making and the development of ethical standards. Even though they add a third dimension, there is a large overlap with Trevino et al.'s (2000) original concept. The individual leader characteristics dimension reflects the moral manager dimension and the

development of ethical standards and ethical decision making is reflected in the moral manager dimension. Hence in both, the Western and the Asian context, the understanding of what ethical leadership entails seems fairly similar. Even though the concept of ethical leadership seems well accepted in the literature, some current research seeks to extend ethical leadership, moving the focus from the leader – employee relationship to that of social responsibility (Voegtlin, 2016; Wilson & McCalman, 2017) which is usually discussed in the corporate social responsibility (CSR) literature. Links between ethical leadership and CSR are also investigated in other studies, however, largely treated as outcome of ethical leadership (Wu, Kwan, Yim, Chiu & He, 2015; Zhu, Sun & Leung, 2014), not as a dimension of the concept itself.

Given the focus on "ethical" leadership, a recognition of its links to the wider literature on ethics seems appropriate. While the terms ethics and morality are often used interchangeably in everyday life (Frankena, 1973), the literature shows a distinction between the two concepts. The term ethics is largely referred to as a branch of philosophy that attempts to introduce clear rules about what's meant by the terms right and wrong (Beauchamp & Bowie, 2001; Fisher, Lovell & Valero-Silva, 2013; Fraedrich, Ferrell & Ferrell, 2013). As such, ethics draws on ethical theory to derive principles for moral problems and justifications for moral judgments (Fisher et al., 2013; Frankena, 1973). Morality is then defined as "the principles or rules of moral conduct" (Beauchamp & Bowie, 2001, p. 1) that guide people in what they need to do or how they should behave in order to conform with society's norms of behaviour (Beauchamp & Bowie, 2001; Hampshire, Scanlon, Williams, Nagel & Dworkin, 1978). While the literature largely seems to suggest that morality is a society – wide concept with agreed norms, authors such as Frankena (1973) or Fraedrich et al. (2013) suggest, that

individuals or groups of individuals might adhere to norms that are different from those of their society. Overall, however there seems agreement to refer to morality as a value system that provides a guide of conduct (Frankena, 1973). Values which inform peoples' morality therefore play a critical role in making ethical decisions (Fraedrich et al., 2013). While values, might be influenced by academic debates, they are typically acquired through socialisation rather than study of ethical theory (Fisher et al., 2013). This is in line with the general view that morality refers to societal norms and rules, and therefore the values which form the basis of such norms are ideas about how people should live are agreed by the majority (Fisher et al., 2013).

Integrity, which is often discussed in connection with the concept of ethical leadership (Thoms, 2008) is an example of such a value (Fraedrich et al., 2013). In the organisational context it refers to "uncompromising adherence to ethical values" (Fraedrich et al., p. 107) and leaders that show alignment of their thoughts, judgments and actions (Fisher et al., 2013). A strong ethical leader should therefore have an ethical character that adheres to the "normatively appropriate conduct" (Brown et al., 2005, p. 120) which tends to be defined by the value system adopted by the community.

The ethical leadership and outcomes literature does not discuss the questions around static or dynamic approaches of ethical leadership in much depth and ethical leadership seems by and large to be conceptualised as a static construct. However, the answer to what constitutes normatively appropriate conduct is based on values and morality, which themselves might change over time (Fisher et al., 2016; MacIntyre, 1966). In fact, a minimum requirement for integrity is to follow current laws (Fraedrich et al., 2016), which indicates that the behaviours that are considered appropriate are subject to change. However, it is noteworthy,

that authors like MacIntyre (1966) who talk about such changes look at the history of ethics and morality and therefore at developments across several centuries rather to short-term, mid-term or even long-term perspectives that are typically used in the business environment where long-term perspectives refer to around five years (Grant, 2013). In business time-frames, moral codes that are agreed upon by a majority of society and guide ethical behaviour and therefore ethical leadership (Liu, 2017) seem relatively stable. Therefore, this study conceptualises ethical leadership as a static construct.

2.3.1 Definitions of Ethical Leadership

Despite the conceptual similarities, the literature shows different definitions of ethical leadership (see table 2.3). By far the most commonly used definition is provided by Brown et al. (2005, p. 120) who consider ethical leadership as "the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement and decision making".

Despite its popularity, this definition leaves a gap in the sense that it does not describe what normatively appropriate conduct might or might not be (Frisch & Huppenbauer, 2014). Price (2017) further criticizes this conceptualisation, as it focuses on normativity which he argues, does not necessarily refer to ethical conduct. Eisenbeiβ (2012) addresses this gap and identifies norms that ethical leaders can use as reference points. As for the question what normatively appropriate behaviour might be, Eisenbeiβ (2012) suggests four orientations, humane orientation, justice orientation, responsibility and sustainability orientation and moderation orientation.

Other definitions include ethical values or desirable character traits that ethical leadership should hold and they aim to describe normatively appropriate values and behaviours. They suggest that leaders in order to be ethical and make ethical decisions should genuinely hold ethical values and desirable personality characteristics such as honesty (Ruiz-Palomino, Saez-Martinez & Martinez-Canas, 2013), trustworthiness (Ruiz-Palomino et al., 2013) and integrity (Resick, Hanges, Dickson & Mitchelson, 2006) concern for other people and caring, motivating and encouraging employees (Resick et al., 2006; Ruiz-Palomino et al., 2013) ethical awareness, moral management and managing ethical accountability (Resick et al., 2006; Sabir, Iqbal, Rehman, Shah & Yameen, 2012). Despite the differences in the focus of ethical leadership definitions, most authors view ethical leadership as a largely internal effect whereby ethical leadership mainly influences the climate, culture and behaviour within the organisation. Only Tang et al. (2015) explicitly mention external stakeholders and therefore point towards the possible impact ethical leaders might have beyond their own organisation.

Table 2.3: Definitions of Ethical Leadership

Author	Year, Page	Definition	Leader Ethical Behaviour	Employee Ethical Behaviour	Leader Personality Traits
Brown et al.	2005, p. 120	"the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making"	X	X	
Arel et al.	2012, p. 352	"the type of actions an executive takes to encourage or discourage an ethical work environment"	X	X	
Beeri et al.	2013, p. 61	"first and foremost, ethical leadership entails modelling of ethical behavior (sic) by the organization's (sic) senior management"	X		
Ruiz-Palomino et al.	2013, p. 33	"ethical leadership […] features much desired personal traits, such a s honesty, trustworthiness, caring, considerateness, and concern for other people"			X
Ruiz et al.	2011, p. 590	"ethical leadership implies thoughts, values, attitudes and morally good behaviour that are directed in such way as to promote ethical behaviour in the employees"	X	X	X
Steinbauer et al.	2014, p. 382	"ethical leaders set the tone in an organisation by displaying, communicating and reinforcing appropriate behaviour (sic). They treat their followers fairly, lead by example, vigorously manage morality and have an internalized moral perspective that enables them to exert idealized influence"	X	X	X
Den Hartog and Belschak	2012, p. 36	"Ethical leadership is a value-driven form of leadership that affects the self-concept and beliefs of followers"	X	X	X
Keith et al.	2003, p. 254	"exhibit a high level of ethical behaviour"	X		
Khunita & Suar	2004, p. 14	"the ethical leader influences and changes the followers through idealized behavior (sic)(charisma), inspiration, intellectual stimulation, individualized consideration, service and looking into their development"	X		
Lu & Guy	2014, p. 5	"ethical leadership refers to the quality of guidance and role modelling provided by the worker's superior"	X		
Trevino et al.	2000, p. 128	"an executive ethical leader must also find ways to focus the organization's (sic) attention on ethics and values and to infuse the organization (sic) with principles that will guide the actions of all employees."		X	
Kacmar et al.	2013a, p. 33	"Ethical leadership refers to the display of behaviors (sic) consistent with appropriate norms, which is visible through leader actions and relationships"	X		
Tang et al.	2015, p. 398	"ethical leadership should be characterized by its emphasis on the ethical behaviors (sic) of employees internally, as well as its emphasis on CSR externally"		X	
Zheng et al.	2011, p. 181	"1) Leadership itself is ethical. It means that leaders use appropriately ethical tools, methods, and styles to influence followers; 2) The purpose of leadership is ethical: for one thing, leaders conduct their personal life in an ethical manner; for another thing, through setting high ethical standards and creating an ethical decision-making climate, they will hold employees accountable for flowing ethical standards and improve their ethical attitude and behaviour (sic)"	X	X	X
Eisenbeiβ et al.	2015, p. 637	"we see CEO ethical leadership as a higher level construct consisting of the following sub-components: people orientation, integrity, fairness, responsibility and moderation"	X		X
Brown & Trevino	2006a	ethical leadership is different from other types of leadership in its emphasis on moral management, an explicit attempt of the leaders to affect followers' ethical conduct by setting ethical standards and using reward and punishment to hold the follower accountable for the standards	X	X	

2.3.2 Measures Used in Ethical Leadership Research

The majority of studies on ethical leadership and individual or organisational outcomes take a quantitative approach and therefore make use of scales to measure ethical leadership. Even though there are a range of different scales available in the existing literature, the ELS developed by Brown et al. (2005) is highlighted as the most widely used (Ng & Feldman, 2015). An analysis of 122 studies on ethical leadership and its outcomes showed the dominance of this particular scale. Over 80 percent of studies relied on the ELS to measure ethical leadership. This scale incorporates both pillars of ethical leadership proposed by Trevino et al. (2000): the moral person and the moral manager. However, these two dimensions are frequently combined and the ethical leadership construct is most often conceptualised as a one-dimensional construct (Zhu, Trevino, Chao & Wang, 2015). Similarly, Yukl, Mahsud, Hassan and Prussia's (2013) Ethical Leadership Questionnaire (ELQ) treats ethical leadership as a one-dimensional concept, however it is much less widely accepted and used than the ELS. Other scales measure ethical leadership as a multidimensional construct, e.g. Kalshoven, Den Hartog and DeHoogh's (2011a) 7-dimensional Ethical Leadership at Work Questionnaire. Further multidimensional scales of ethical leadership that have been developed but rarely applied in the literature include Den Hartog & De Hoogh (2009), Khunita and Suar (2004), Koh and Boo (2001), Pelletier and Bligh (2006), Resick et al. (2006), and Zheng et al. (2011). Pelletier and Bligh's (2006) scale differs from other scales in that it differentiates between hierarchical levels of leaders within an organisation. It therefore allows for an investigation of differences in ethical leadership at various levels within one organisation (Beeri et al., 2013; Kottke & Pelletier, 2013).

While these scales are especially developed to measure ethical leadership, other research uses a wider range of measurement scales that are borrowed from overlapping constructs such as unethical behaviour (Craig & Gustafson, 1998), moral integrity (Hunt, Van Wood & Chonko, 1989), the multi-culture leader behaviour questionnaire (Hanges & Dickson, 2004), fairness (Moorman, 1991), responsible leadership (Maak & Pless, 2006) or paternalistic leadership (Cheng, Chang & Kuo, 2000).

Despite the existence of different scales to measure ethical leadership for different contexts and purposes, the literature shows a strong convergence around Brown et al.'s (2005) ELS measure, viewing ethical leadership as a one-dimensional concept that can be applied in various settings and cultures.

2.3.3 Antecedents of Ethical Leadership

Research around the antecedents of ethical leadership focuses on leader personality traits. Jones (1995) argues that the application or rejection of ethical standards in real actions are largely related to a person's personality. Desirable traits for ethical leaders include conscientiousness, agreeableness (Brown & Trevino, 2006a; Kalshoven, Den Hartog & DeHoogh, 2011b), moral identity (Mayer, Aquino, Greenbaum & Kuenzi, 2012), cognitive moral development (Jordan, Brown, Trevino & Finkelstein, 2013) and moral reasoning (Brown & Trevino, 2006a) as well as internal locus of control (Brown & Trevino, 2006a), political skill (Harvey, Harris, Kacmar, Buckless & Pescosolido, 2014) and honesty-humility (de Vries, 2012). Undesirable personality traits for ethical leaders include neuroticism and Machiavellianism (Brown & Trevino, 2006a)

Other research identifies factors in the organisational environment that impacts on the emergence of ethical leadership. A key point in the organisational context

seems to be other ethical leaders that act as role models for leaders in lower hierarchical levels. Several studies refer specifically to ethical leaders that are superior to the focal leader (Frisch & Huppenbauer, 2014; Mayer, Kuenzi, Greenbaum, Bardes & Salvador, 2009; Ruiz, Ruiz & Martinez, 2011), others talk more generally about career role models (Brown & Trevino, 2014) or proximate ethical career role models (Brown & Trevino, 2006a). The overall organisational context might also influence the level of ethical leadership displayed as Brown and Trevino (2006a) suggest that the ethical context will influence ethical leadership.

Outwith the organisation, role models and guidance that might encourage leaders to engage in ethical leadership, can come from different contexts such as family (Frisch & Huppenbauer, 2014; Rowe, 2014), politics or religion (Frisch & Huppenbauer, 2014). In their study, Frisch and Huppenbauer (2014) also identified governmental incentives and customer demands as drivers of ethical leadership within organisations.

Considering that ethical leadership is largely measured through employees' perceptions of their leaders, both Frisch and Huppenbauer (2014) and Jordan et al. (2013) suggest that the perceptions of ethical leadership might be influenced by employees' own ethical values and how much these overlap with the leader's values. Assuming that employees' and leaders; values overlap, the perceptions of ethical leadership will be stronger.

2.3.4 Outcomes of Ethical Leadership

The question why organisations should engage in ethical leadership is usually answered by the idea that being ethical is the right thing to do (Poff, 2010). There is however significant evidence, that ethical leadership has a positive influence

on business as well. Research on the outcomes of ethical leadership investigates a wide spread of both, individual and organisational outcomes over different levels, individual, team, group and organisation. Following Hiller et al. (2011), these outcomes can be categorised as attitudes, behaviours, cognitions, individual effectiveness or organisational effectiveness. Table 2.4 shows a selection of studies that investigate the outcomes of ethical leadership. While it is acknowledged, that this table is not a comprehensive overview of the ethical leadership and outcomes literature, it provides a good insight into the areas of research conducted to date.

What can be seen in table 2.4, is that ethical leadership has previously been linked to a range of attitudes, behaviours, and cognitions, as well as individual and organisational performance measures. Particular interest in terms of volume of studies seems to lie on attitudinal outcomes including trust (e.g. Chughtai, Byrne & Flood, 2015), commitment (e.g. Beeri et al., 2013) satisfaction (e.g. Brown et al., 2005) well-being (e.g. Harvey et al., 2014) and motivation (e.g. Frisch & Huppenbauer, 2014). Similarly, a range of studies investigates outcomes of ethical leadership on employee behaviours, with particular focus on organisational citizenship behaviour (OCB), dimensions thereof such as OCB towards organisations or OCB towards individuals (e.g. Bonner, Greenbaum & Mayer, 2014), ethical behaviours (e.g. Hannah et al., 2014) and unethical behaviours (e.g. Arel, Beaudoin & Cianci, 2012).

The literature further suggests a relationship between ethical leadership and cognitions. Of particular interest are perceptions of ethical climate, ethical culture and justice (e.g. Demirtas, 2015; Eisenbeiß, van Knippenberg & Fahrbach, 2015) but studies also show links between ethical leadership and job related cognitions

such as for example perceptions of politics (Kacmar, Andrews, Harris & Tepper, 2013) , workload (Stouten et al., 2010) or job significance (Piccolo et al., 2010).

In terms of the individual effectiveness category, ethical leadership has been linked to individual employee performance in general as well as specific performance dimensions including innovative and creative work behaviour (e.g. Ma, Cheng, Ribbens & Zhou, 2013; Tu & Lu, 2013). However, compared to research on employee attitudes, behaviours and cognitions, the outcome category individual effectiveness has attracted relatively little research. Similarly, organisational effectiveness as an outcome of ethical leadership has received only little attention so far, even though studies show generally a positive relationship between ethical leadership and organisational effectiveness.

As can be seen, there is extensive research with regards to the outcomes of ethical leadership, however, the majority of these studies focus on the individual level and the team or group level remains largely unexplored. Furthermore, there is a strong literature base for the relationship between ethical leadership and attitudes, behaviours and cognitions, however, the relationship between ethical leadership and individual and organisational effectiveness is only scarcely researched. This gap is especially large for the more specific factors of individual and organisational effectiveness that go beyond a general measure of performance.

Table 2.4: Outcomes of Ethical Leadership

Outcome	Selected References
Attitudes	
Trust in the organisation, the supervisor or co-workers	Chughtai et al., 2015; Den Hartog & De Hoogh, 2009; Kalshoven et al., 2011a; Newman, et al., 2014; Pastoriza & Arino, 2013
Affective and normative commitment to the organisation	Beeri et al., 2013; Dinc & Aydemir, 2014; Frisch and Huppenbauer, 2014; Fu, Deshpande & Zhao, 2011; Hansen, Alge, Brown, Jackson & Dunford, 2013; Harvey et al., 2014; Hassan, Wright & Yukl, 2014; Kalshoven et al., 2011a; Kottke & Pelletier, 2013; Trevino et al., 2000; Walumbwa, Avolio, Gardner, Wernsig & Peterson, 2008
Commitment to the supervisor	Hansen et al., 2013
Commitment to the team	Kalshoven et al., 2011a
Employee satisfaction	Brown et al., 2005 Frisch & Huppenbauer, 2014 Kalshoven et al., 2011a Neubert, Carlson, Kacmar, Roberts & Chonko, 2009 Pucic, 2015 Ruiz et al., 2011 Ruiz-Palomino et al., 2013 Sharif & Scandura, 2014 Toor & Ofori, 2009 Walumbwa et al., 2008
Employee well-being	Avey, Wernsing & Palanski, 2012 Chughtai et al., 2015 Frisch & Huppenbauer, 2014 Keith, Pettijohn & Burnett, 2003 Harvey et al.,2014 Trevino et al., 2000 Li, Xu, Tu & Lu, 2014 Yang, 2014 Zheng et al., 2015
Engagement and involvement	Cheng, Chang, Kuo & Cheung, 2014 Chughtai et al., 2015 Demirtas, 2015 Khunita & Suar, 2004 Qin, Wen, Ling, Zhou & Tong, 2014
Motivation and ownership	Avey et al., 2012 Bouckenooghe et al., 2015 Chughtai, 2015 Chughtai et al., 2015 Frisch & Huppenbauer, 2014 Hannah, Jennings, Bluhm, Peng & Schaubroeck, 2014 Neubert, Wu & Roberts, 2013 Park, Kim & Song, 2015 Steinbauer, Renn, Taylor & Njoroge, 2014 Walumbwa et al., 2011
Identification with the leader and the organisation	DeConinck, 2015 Walumbwa et al., 2011 Zhu et al., 2015
Behaviours	
OCBs and components thereof	Bonner et al., 2014 Kacmar et al., 2011 Kalshoven, Den Hartog & DeHoogh, 2013a, b Kim & Brymer, 2011 Liu, Kwan, Fu, Mao, 2013 Newman, Allen & Miao, 2015 Newman et al., 2014 Piccolo, Greenbaum, Den Hartog & Folger, 2010 Qi & Ming-Xia, 2014 Shin, 2012 Walumbwa & Schaubroeck, 2009 Wang & Sung, 2016 Yang, Ding & Lo, 2016

Ethical behaviours	Hannah et al., 2014
	Lu & Lin, 2014
	Schaubroeck et al., 2012
	Trevino et al., 2000
Unethical behaviours	Arel et al., 2012
	Avey, Palanski & Walumbwa, 2011
	Den Hartog & Belschak, 2012
	Khunita & Suar, 2004
	Liu & Wang, 2014
	Mayer, Kuenzi & Greenbaum, 2010
	Mayer et al., 2012
	Schaubroeck et al., 2012
Employee turnover	Demirtas & Akdogan, 2015; DeConinck, 2015
	Kim & Brymer, 2011
	Ruiz et al., 2011
Leaders behaviours such as abusive supervision	Brown et al., 2005
Autocratic leadership	Kalshoven et al., 2011a
Passive leadership or laissez-faire leadership	Kalshoven et al., 2011a
	Toor & Ofori, 2009
Transformational leadership	Kalshoven et al., 2011a
	Toor & Ofori, 2009
Transactional leadership	Kalshoven et al., 2011a
	Toor & Ofori, 2009
Lower level ethical leadership	Mayer et al., 2009
	Ruiz et al., 2011

Cognitions

Perceptions of ethical climate and ethical culture	Beeri et al., 2013
	Demirtas & Akdogan, 2015
	Eisenbeiß et al., 2015
	Lu & Lin, 2014
	Huhtala, Kangas, Lamsa & Feldt, 2013
	Mayer et al., 2010
	Schaubroeck et al., 2012
	Shin, 2012
	Shin, Sung, Choi & Kim, 2015
Perceptions of justice	Demirtas, 2015
	Li et al., 2014
	Pucic, 2015
	Xu, Loi & Ngo, 2016
Organisational fit	DeConinck, 2015
	Pastoriza & Arino, 2013
Leader-employee fit	Bouckenooghe et al., 2015
	Tang et al., 2015
Quality of work life	Beeri et al., 2013
	Frisch & Huppenbauer, 2014
	Stouten et al., 2010
Job autonomy	Chughtai, 2015
	Piccolo et al., 2010
Perceived organisational politics	Kacmar et al., 2013
Task significance	Piccolo et al., 2010
Perceived workload	Stouten et al., 2010
Leader role modelling	Ogunfowora, 2014a
Fun	Trevino et al., 2000
Optimism	De Hoogh & Den Hartog, 2008
Perceived organisational support	Loi, Lam, Ngo & Cheong, 2015
Team cohesion	Zheng et al., 2015

Individual effectiveness

Innovative and creative work behaviour	Chughtai, 2016
	Ma, Cheng, Ribbens & Zhou, 2013
	Tu & Lu, 2013
Initiative	Den Hartog & Belschak, 2012
	Kalshoven et al., 2013a
Customer orientation	Lindblom, Kajalo & Mitronen, 2015
	Qin et al., 2014
Promotability	Kacmar et al., 2013
	Rubin, Dierdorff & Brown, 2010
Effectiveness	Brown et al., 2005
	De Hoogh & Den Hartog, 2008
	Hassan et al., 2014
	Kalshoven et al., 2011a
	Toor & Ofori, 2009
	Yukl et al., 2013
Group performance	Huang & Paterson, 2017
	Walumbwa, Morison & Christensen, 2012

Organisational effectiveness

Organisational performance	Eisenbeiβ & Van Knippenberg, 2015
	Frisch & Huppenbauer, 2014
	Kim & Brymer, 2011
	Rowe, 2014
	Thoms, 2008
	Zhu et al., 2014
Financial success	Detert, Trevino, Burris & Andiappan, 2007
	Shin et al., 2015
Reputation	Frisch & Huppenbauer, 2014
	Zhu et al., 2014
Strong relationships with customers	Detert et al., 2007
	Frisch & Huppenbauer, 2014
	Zheng et al., 2011
Strong relationship with business partners	Frisch & Huppenbauer, 2014
	Mo, Wang, Akrivou & Booth, 2012
CSR	Wu et al., 2015
	Zhu et al., 2014

2.3.5 Summary of Ethical Leadership

- The current concept of ethical leadership is mainly based on Trevino et al.'s (2000) work on the moral person and the moral manager.

- Links to social responsibility are made in the literature in an attempt to extend the concept of ethical leadership, however CSR is more often treated as an outcome of ethical leadership rather than a dimension of it.

- Despite a variety of definitions and measurement scales available, Brown et al.'s (2005) definition and ELS has been widely accepted in the literature.

- Criticism of the ethical leadership definition by Brown et al. (2005) evolves around the vagueness of it with regard to what constitutes normatively appropriate behaviours and if such behaviours are necessarily ethical.

- Literature on antecedents of ethical leadership largely focus on the leader's personality and specific personality traits that support the emergence of ethical leadership (Jones, 1995; Kalshoven et al., 2011b). Furthermore, the organisational environment as well as role models within and out with the organisation seem to play a role in the extent of ethical leadership displayed by the leader.

- A wide range of employee outcomes of ethical leadership is covered in the ethical leadership literature. Studies show relationships between ethical leadership and employee attitudes, behaviours, cognitions as well as individual and organisational performance, however there is a lack of research in the area of ethical leadership and innovation.

2.4 LEADERSHIP AT THE TEAM LEVEL

The following section discusses how the transformational and ethical leadership concepts are applied to the team level in the literature. It includes an examination of the adaptations that are suggested in order to fit with the team level, issues around measuring the data at the team level and the impact that choice of level might have on related outcomes.

2.4.1 Team-focussed Transformational Leadership

As teams and teamwork have become the standard way of working in many organisations (Bass & Riggio, 2006; Dionne et al., 2004; Van Knippenberg, 2017), researching the effects of transformational leadership on teams becomes worthwhile (Feinberg et al., 2005). It is important to distinguish the leadership of teams (team-focussed leadership) from team leadership in the sense of shared leadership. Team-focussed leadership implies that there is one leader who leads the team (Burke, DiazGranados & Salas, 2011) but focuses on creating an effective team and team climate. Shared leadership on the other hand suggests that teams lead themselves, whereby all team-members share leadership responsibilities (Bass & Riggio, 2006) as well as influence and power related to those responsibilities, and therefore rely less on top-down decision making by a single leader (Ramthun & Matkin, 2012).

The underlying assumption of team-focussed transformational leadership is that transformational leaders show the characteristics, attitudes, values and behaviours to the whole team rather than just to a select few individuals (Brown & Trevino, 2006b; Dong, Bartol, Zhang & Li, 2017; Wang & Howell, 2010; Wu, Tsui & Kinicki, 2010). Burke et al. (2011, p. 338) define team leadership as "the enactment of the affective, cognitive, and behavioral (sic) processes needed to

facilitate performance management (i.e. adaptive, coordinated, integrated action) and team development". In this sense, team-focussed transformational leadership looks to inspire, motivate, and stimulate the teams as a whole rather than individuals within the team. In line with this, but focussing mainly on the shared goals, values and beliefs, rather than performance and development, Wang and Howell (2010, p. 1135) define team-focussed transformational leadership as "a behavior (sic) aiming to communicate the importance of group goals, develop shared values and beliefs, and inspire unified effort to achieve group goals". This can be achieved for example through speeches, or team-based rewards (Wu et al., 2010). While Burke et al. (2011) focus more on the outcomes of team-focussed leadership, Wang and Howell (2010) deconstruct the way in which those team outcomes can be achieved.

Avolio and Bass (1995) suggest that transformational leadership can be observed at different levels, be it organisational, team or individual level. This does not mean however, that transformational leadership is perceived similarly at all levels, nor that it has the same effects at all levels (Avolio & Bass, 1995; Brandt & Edinger, 2015). In terms of measuring transformational leadership at different levels, current literature follows varying approaches of either using a similar scale and simply aggregating data to the level investigated (e.g. Bass, Avolio, Jung & Berson, 2003), or using separate scales e.g. for individual- and team-focussed transformational leadership. Wu et al. (2010) argue, that two of the four I's of transformational leadership are primarily related to team-focussed leadership, i.e. idealised influence and inspirational motivation, whereas individualised consideration and intellectual stimulation require individually-focussed differences in leadership behaviour. Wang and Howell (2010) on the other hand develop two different scales for individual and team-focussed transformational

leadership rather than splitting common transformational leadership scales. They suggest, that individual-focussed transformational leadership includes four dimensions, communicating high expectations, follower development, intellectual stimulation and personal recognition (Wang & Howell, 2010). Team-focussed transformational leadership on the other hand is conceptualised through three dimensions, emphasising group identity, communicating a group vision and team building (Wang & Howell, 2010). These separate scales seem to overlap with the suggested split of the MLQ to a certain extent. Communicating the team vision, for example aligns with inspirational motivation, while team building and building a strong team identity seem to fit with parts of the idealised influence dimension which includes building trust and shared values.

Brandt and Edinger (2015) find that at the team level, the impact of the visioning dimension is smaller than at the individual level, and a study conducted by Yammarino and Dubinski (1994) suggests that relationships between transformational leadership and individual level outcomes, don't hold at the team level. Tse and Chiu (2014) find that while individual-focussed transformational leadership is positively related to individual differentiation, team-focussed transformational leadership is positively related to group identification, and that mediators of relationships between transformational leadership and organisational citizenship behaviours as well as creative behaviour differ between levels. Contrary to those findings, however, a meta-analysis of studies on transformational leadership and its impact on performance revealed that there is a positive relationship that holds across all levels, although with different strengths (Wang et al., 2011).

Overall, the literature seems quite fragmented and presents mixed suggestions and findings in terms of conceptualisation and relationships between transformational leadership and employee outcomes at different levels.

2.4.2 Team-focussed Ethical Leadership

The majority of research on ethical leadership and its outcomes uses ethical leadership as an individual level construct. Exceptions include for example Bouckenooghe et al. (2015); Huang and Paterson (2017); Mayer, et al. (2013); and Tu and Lu (2013) who have utilised a team level conceptualisation of ethical leadership. With the focus shifting from the individual to the work-group, the ethical leadership construct refers to the team's shared perceptions of the leader and hence to the standard leader behaviour that can be observed by all team members and not only by a few select individuals (Mayer et al., 2009; Tu & Lu, 2013). Contrary to transformational leadership where a separate construct has been introduced for the team level, the ethical leadership concept remains the same for both, individual and team level research using similar measures for data collection and aggregating individual level data to the team level (e.g. Kalshoven et al., 2013b; Mayer et al., 2009; Mayer et al., 2010; Tu & Lu, 2013).

While Ng and Feldman (2015) find that the relationships between ethical leadership and outcomes such as job motivation and counterproductive work behaviour are not significantly influenced by the level of analysis, Kalshoven et al. (2013b) suggest that the outcomes of team level ethical leadership and individual perceptions of ethical leadership are not always consistent. These mixed findings, together with the small number of studies examining team ethical leadership, highlight the need for more research in relation to the outcomes of team-focussed ethical leadership.

2.5   DISTINCTIVENESS OF TRANSFORMATIONAL AND ETHICAL LEADERSHIP

The two concepts of transformational leadership and ethical leadership sometimes lead to confusion as to their differences and similarities. The following section presents key discussions as well as empirical findings in relation to the distinctiveness of the two concepts. An overview of the key points in this debate is presented in table 2.4.

Early discussions of ethical leader behaviour largely emerged from the concept of transformational leadership (Brown et al., 2005; Brown & Trevino, 2006a; Khunita & Suar 2004; Sama & Shoaf, 2008). The reasons for this might lie in the assumption that ethics and altruism are arguably the basis for transformational leadership and the defining factor to differentiate authentic transformational leadership from dark sides of transformational leadership such as pseudo-transformational leadership (Bass & Steidlmeier, 1999; Burns, 1978). Transformational leaders, are therefore seen as ethical role models that employees can identify with (Avolio et al., 1999). This clearly overlaps with the idea that ethical leaders show ethical behaviour themselves and inspire ethical behaviour among their followers.

There are however several factors that suggest the distinctiveness of transformational and ethical leadership. First, the two leadership concepts have a different focus. While transformational leadership is concerned with uplifting their employees to higher levels of morality and developing the organisation, workforce, and themselves, and hence focusses on changing the organisation, ethical leadership is concerned with implementing or maintaining ethical behaviour in the organisation (Brown et al., 2005; Hoch et al., 2018).

Furthermore, definitions of transformational leadership have been shown to follow different purposes, some of which specifically consider the morality of leaders and followers (e.g. Burns, 1978; Bass, 1999), and others, which focus more on development, transformation and change in general (e.g. Boerner & von Streit, 2005; Bass & Riggio, 2006, Seltzer & Bass, 1990). This indicates that the concept of transformational leadership as it is used in the wider literature does not necessarily assume a higher level of ethics or morality. Second, ethical leadership does not involve expressing a corporate vision nor do ethical leaders engage in intellectual stimulation of their followers (Ng & Feldman, 2015), both of which are key characteristics of transformational leadership. Third, transformational leadership has conceptually been distinguished from transactional leadership (Bass, 1990). Ethical leadership, however, does not fit into either category, as it also incorporates transactional aspects such as rewarding desired behaviour or punishing undesirable behaviour among followers as part of the "moral manager" dimension (Anderson & Sun, 2017; Frisch & Huppenbauer, 2014; Ng & Feldman, 2015; Toor & Ofori, 2009).

Few studies have included both concepts to explore their distinctiveness. Brown et al. (2005) and Mayer et al. (2012) tested the overlap between ethical leadership and the idealised influence dimension of transformational leadership and concluded that these concepts, while overlapping are distinct. Both Toor and Ofori (2009) and Sheraz, Zaheer, ur-Rehman and Nadeem (2012) suggest that transformational leadership is positively related to ethical leadership as transformational leaders are more likely to focus on ethical behaviours. Testing the relationships of transformational leadership and ethical leadership with service quality, Schaubroeck, Lam and Peng (2016) conclude, that both concepts have a positive impact on service quality, however these relationships are

mediated by different variables and hence two distinct processes take place –
indicating that transformational leadership and ethical leadership are distinct. In
their meta-analysis, Hoch et al. (2018) examine the predictive power of
transformational and ethical leadership and find that overall, ethical leadership
does not provide significantly higher predictive power than transformational
leadership with the exception of the relationship between ethical leadership and
job satisfaction. Overall, Hoch et al. (2018) argue, that they find very strong
correlations between ethical and transformational leadership and that with regard
to organisational outcomes there is a high level of redundancy, suggesting that
ethical and transformational leadership are not conceptually distinct. This view is
supported by Anderson and Sun (2017) who question their distinctiveness as
well, and point out that a range of studies that find transformational leadership
and ethical leadership related but distinct, control for the idealised influence
dimension but not the other dimensions of transformational leadership. In
including both, transformational and ethical leadership and their outcomes at the
team level, this study aims to contribute to this discussion of the distinctiveness
of the two concepts.

Table 2.5: Debate on the Distinctiveness on Transformational and Ethical Leadership

Conceptual similarities	Source
• Discussions of the concept of ethical leadership originated in transformational leadership literature	Brown et al. (2005); Brown & Trevino (2006a); Khunita & Suar (2004); Sama & Soaf (2008)
• Altruism and ethics, which are key in ethical leadership, are defining factors to identify authentic transformational leadership	Bass & Steidlmeier (1999) Trevino et al. (2000)
• Transformational leaders, as well as ethical leaders are seen as ethical role models	Avolio et al. (1999)
Conceptual differences	
• Different focus: Transformational leadership: often focusses on change Ethical leadership: implementing or maintaining ethical behaviour in the organisation	Bass & Riggio (2006); Boerner & von Streit (2005); Seltzer & Bass (1990)
• Ethical leadership does not involve expressing a corporate vision nor intellectual stimulation of their followers	Brown et al. (2005); Ng & Feldman (2015)
• Ethical leadership uses aspects of both, transformational and transactional leadership	Frisch & Huppenbauer (2014); Ng & Feldman (2015); Toor & Ofori (2009)
Empirical findings	
• Overlap between EL and idealised influence dimension – but distinct concepts	Brown et al. (2005)
• Positive relationship between TL and EL as transformational leaders are more likely to focus on ethical behaviours	Toor and Ofori (2009); Sheraz et al. (2012)
• Relationship between TL and service quality and EL and service quality are mediated by different variables, suggesting distinctiveness	Schaubroeck et al. (2016)
• Strong correlations between TL and EL suggesting indistinctiveness	Hoch et al. (2018)

2.6   METHODS USED IN TRANSFORMATIONAL AND ETHICAL LEADERSHIP RESEARCH

A positivist research approach has dominated much work in psychology research to date, using quantitative data and statistical analysis (Arnold et al., 2005). The field of leadership research generally (Kempster & Parry, 2011), as well as the literature on ethical leadership and transformational leadership in particular, are no exception to this phenomenon. Several studies report a high tendency to use survey-based quantitative research with largely cross-sectional data (Anderson & Sun, 2017) and call for a wider variety of alternative methods in order to further the body of literature.

Common criticisms in the field are a lack of longitudinal studies (Brown et al., 2005; Den Hartog & Belschak, 2012; Kacmar et al., 2013; Kalshoven et al., 2013a, b; Mayer et al., 2010; Neves & Storey, 2015; Newman et al., 2014; Ruiz-Palomino et al., 2013) and experimental designs (Avey et al., 2011; Den Hartog & Belschak, 2012; Walumbwa et al., 2011) that could help investigate causality in the relationships investigated. While randomised experiments are most helpful to determine causality, these are uncommon and often unpractical in leadership research (Antonakis, Bendahan, Jacquart & Lalive, 2014). However, the calls for more longitudinal and experimental research seem to be heard by the research community certainly within the ethical leadership field where several longitudinal studies (Chen & Hou, 2016; Lam, Loi, Chan & Liu, 2016; Schaubroeck et al., 2016) and experiments (Belle & Cantarelli, 2017) were published in 2016 and 2017.

Furthermore, researchers demand further multi-level research to understand the impact of ethical leadership on different entities such as individuals and teams

(Brown et al., 2005; Demirtas, 2015; Neubert et al., 2009; Schaubroeck et al., 2012). Yammarino, Dionne, Chun and Dansereau (2005) also call for a more detailed discussion of the appropriate and selected level of analysis, indicating that in the field of transformational leadership there is a lack of systematic reporting of levels of analysis issues.

In terms of generalisability of the findings, there is a demand for the use of more or multiple sources in terms of industry types and sector (Kacmar et al., 2013) and cultures and cross-cultural research (Hansen et al., 2013; Kalshoven et al., 2013a,b; Liu et al., 2013; Pastoriza & Arino, 2013; Ruiz et al., 2011; Toor & Ofori, 2009; Tu & Lu, 2013). However, the two key concepts, transformational leadership and ethical leadership have been used and validated in a wide range of contexts and cultures.

Overall, the research of transformational and ethical leadership and their outcomes seems to converge largely around positivist research using survey methods and cross-sectional data. Calls for more variety of research approaches, greater rigor in reporting research and results, as well as methods that enable an informed discussion around causality (Aguinis, Ramani & Alabuduliader, 2018) are only slowly answered by current research.

2.7   THEORETICAL UNDERPINNINGS FOR THE STUDY

Research on the relationship between leadership and its outcomes draws on a variety of theoretical underpinnings in order to explain the relationships and their underlying processes. A review of the ethical leadership and outcomes literature reveals the use of social learning theory (Bouckenooghe et al., 2015; Brown et al., 2005; Khuong et al., 2015) and social cognitive theory (Huang & Paterson, 2017; Pucic, 2015; van Gils, van Quadquebeke, van Knippenberg, van Dijke & DeCremer, 2015), social exchange theory (Beeri et al., 2013; DeConinck, 2015; Neves & Story, 2015), social identity theory (Ogunfowora, 2014a; Yang, 2014; Zhu et al., 2015), social information processing theory (Eisenbeiβ & van Knippenberg, 2015; Mayer et al., 2013), attachment theory (Neubert et al., 2009; Qin et al., 2014) and equity theory (Li et al., 2014; Ruiz-Palomino et al., 2013), to name some of the more frequently used theories that potentially explain the relationship between ethical leadership and outcomes. While some of these theories are especially chosen to fit the outcomes investigated, e.g. equity theory for justice and satisfaction outcomes (Li et al., 2014; Resick, Hargis, Shao & Dust, 2013; Ruiz-Palomino et al., 2013), other theories such as social learning theory and social exchange theory seem to be used as an overarching explanation for a variety of outcomes, including employee attitudes, behaviours, and cognitions as well as individual and organisational performance outcomes.

With regard to the transformational leadership and outcomes literature, and in particular the transformational leadership and innovation literature, a clear discussion of the theoretical underpinning is often missing. On the one hand, this makes the literature and underlying processes seem less scattered. On the other hand, this frequent neglect to clearly state the theoretical underpinnings leaves

somewhat of a gap in explaining relationships between transformational leadership and its outcomes. Some of the theoretical underpinnings mentioned in this literature include social identity theory (Tse & Chiu, 2014; Zhu, Avolio, Riggio & Sosik, 2011), leader-member exchange theory (Jiang, Gu & Wang, 2015), and social learning theory (Eisenbeiß & Boerner, 2013).

Based on previous research and in line with the specific outcomes investigated, this study draws on two theoretical underpinnings: social learning theory and social information processing theory both of which suggest that employees look to their social environment in order to determine appropriate behaviour within the workplace (Bandura,1971; Chen et al., 2013; Goldman, 2001; Salancik & Pfeffer, 1978). The following section discusses the suitability of these theories for the relationships investigated in this study.

2.7.1 Social Learning Theory

Social learning theory has its origins in the 1960/1970s with Bandura (1971) being the predominant advocate in the area. Despite its "age", social learning theory is one of the dominant theories used in leadership and outcomes research. According to social learning theory, humans learn through observation of others' behaviours and the consequences of such behaviours (Bandura, 1971; Gibson, 2004; Zheng et al., 2015) as well as through their experience imitating those behaviours previously observed (Cheng et al., 2014; Latham & Saari, 1979). As such, social learning theory incorporates both behavioural aspects, i.e. the imitation of observed behaviours, and cognitive aspects (Gibson, 2004), i.e. being able to anticipate consequences and picking appropriate actions based on the context of the situation (Latham & Saari, 1979; Porras & Hargis, 1982; Sims & Manz, 1981/1982). Porras and Hargis (1982) argue that these two aspects have

two different effects on learner's behaviour. First, the informational effect, which indicates that others provide guides for how to behave, and second, the motivational effect, which relates to the outcomes of modelled behaviour which could show desirable consequences and provide motivation for others to imitate such behaviour (Porras & Hargis, 1982). This means that in order to evaluate and chose appropriate behaviour, humans don't necessarily need to experience the consequences of those behaviours themselves (Decker, 1986; Sims & Manz, 1981/1982).

Gibson (2004) on the other hand sees the social learning process as a four step process. She argues that in order to learn, humans first need to draw attention to the modelled behaviour in order to being able to observe such behaviour. Second, they must be able to process and remember the observations made. Third, the learner needs to be able to produce similar behaviour and finally, the learner needs to consider the consequences of the observed behaviour as beneficial. In line with Wood and Bandura's (1989) development of social learning and social cognitive theory, this implies, that social learning is not a one-way process, in that it is not solely a matter of one person modelling relevant behaviour and another immediately adopting such behaviour. It shows that individual factors as well as the context in which the behaviour is modelled may favour or inhibit the learning experience and the adoption of the modelled behaviour.

According to social learning theory, individuals do not behave independently, but influence each other (Davis & Luthans, 1980) through social cues and reciprocal interaction. In the workplace, such cues could come from other members within the organisation (Davis & Luthans, 1980) which act as role models for the observing employee. Typically, these role models have a stronger influence the

more they are perceived as being successful or in a powerful position (Sims & Manz, 1981/1982). As such, leaders are often considered as the dominant role model for employees to observe and imitate (Babalola, Stouten, Euwema & Ovadje, 2018). They provide guidance in terms of feedback and hence show the consequences of behaviour. While Sims and Manz (1981/1982) argue that leaders should be clear about the signals that they send out to all their employees by rewarding certain behaviours, Davis and Luthans (1980) suggest that the role modelling part might be the more important influence on employees. Even though there are different perspectives as to which aspect is the more important one for leaders to focus on, it is clear that leaders can provide cues for both, the behavioural and the motivational aspect of social learning.

Social learning theory does however have its limitations for organisational settings. With regard to the role modelling aspect, it assumes, that employees have the opportunity to observe leaders. These days, when more and more employees have flexible contracts or work in virtual teams (Gilson, Maynard, Jones Young, Vartiainen & Hakonen, 2015) this means that employees have fewer opportunities to observe their leader on a day-to-day basis. Therefore, it becomes more difficult to role model relationships and the opportunities required for social learning from leaders decrease. Furthermore, social learning theory is only appropriate to underpin the relationship between ethical leadership and outcomes where these outcomes can actually be observed (Decker, 1986). Attitudes and values are significantly more difficult to observe by followers in comparison to actual behaviours. It is therefore important to consider the applicability of the theory to the specific context and outcome of investigation.

2.7.1.1   Social Learning Theory and Transformational Leadership

Transformational leadership aligns with the idea of social learning in that role modelling is a key component of the idealised influence dimension of transformational leadership. Through showing their own values ideals, leaders will provide a role model for their employees to follow (Eisenbeiβ & Boerner, 2013). Further, Burns original definition includes not only transformation of followers but at the same time the transformation of leaders (Burns, 1978), indicating that leaders might also provide a role model for openness to such transformation.

Regarding the inspirational motivation dimension, in which transformational leaders provide a common goal for employees (Bass & Riggio, 2006), transformational leaders implement a common purpose which could lead to social reinforcement of behaviours directed at this common purpose. This social reinforcement provides employees with an indication as to what is appropriate behaviour and what is not (Gibson, 2004). Finally, the individualised consideration dimension includes individualised feedback which could be referred to as the motivational aspect of social learning through seeing the consequences of particular behaviours.

Following this line of argument, transformational leaders are particularly suited to providing role models and cues for social learning, as this is conceptually integrated in the concept of transformational leadership.

2.7.1.2   Social Learning Theory and Ethical Leadership

Social learning theory is one of the most commonly used theories in ethical leadership and outcomes research (Tu & Lu, 2016). Ethical leaders are seen to

address both the behavioural and the motivational component of social learning. On the one hand, ethical leaders are conceptualised as "moral managers" upholding high ethical standards in their own life and their personality and hence acting as ethical role models for employees (Davis & Luthans, 1980; Gibson, 2004). On the other hand, the "moral manager" aspect of ethical leadership refers to a clear communication of expectations and to feedback on behaviours and attitudes displayed by followers (Ogunfowora, 2014b; Trevino et al., 2000). While this link between ethical leadership and social learning is particularly clear for ethical values and behaviours, it has been applied to a variety of outcomes such as leader-member exchange (Dhar, 2017), OCB (Paez & Salgado, 2016) and creativity (Chen & Hou, 2016) to just name a few. Some argue that social learning theory has been overly used in this regard in terms suitability to the context and the outcomes investigated and additional theoretical underpinnings are necessary to explain the specific processes involved (Ogunfowora, 2014b; Zhu et al., 2015). However, this comprehensive use of social learning theory clearly shows the relevance of social learning theory in the ethical leadership and outcomes literature.

2.7.2 Social Information Processing Theory

Similar to social learning theory, social information processing theory suggests that individuals look at the environment (other individuals) around them to determine appropriate behaviour especially in situations that are highly uncertain, and adapt accordingly (Chen et al., 2013; Goldman, 2001; Salancik & Pfeffer, 1978). The attitudes and behaviours developed are based on the information that is gathered, however, the evaluation of information available, as relevant or not relevant, depends on each individual, their own situation as well as past

experiences (Salancik & Pfeffer, 1978). The relevance of information available is further determined by employees' judgment of the credibility of the source (Ellis, 1992). Apart from leaders that, as discussed above, might be such a credible source for information, other members within the organisation could provide helpful cues (Chen et al., 2013; Gibson, 2004; Thomas & Griffin, 1983).

A particular focus in the literature lies on the co-workers as an alternative source of information, as co-workers form an important part of an employee's social environment (Chen et al., 2013). Through their daily contact, co-workers shape a focal employee's perception though normative statements and behaviour (Chen et al., 2013; Zalseny & Ford, 1990) in the form of advice, role modelling or guiding employees through shifting their attention towards specific issues (Chen et al., 2013).

As such, communication and persuasion through credible sources is key in forming employees' attitudes and behaviours (Ellis, 1992). As a result of such co-worker influence, attitudes are transferred between employees, and between the group and individuals (Bhave, Kramer & Glomb, 2010) and lead to consensus on key issues within the group.

While this research studies group effects which are based on shared perceptions resulting from the transfer of information, attitudes and behaviours, the specific processes by which such transfer occurs are not part of this research. Referring to Chen et al.'s (2013) discussion of different approaches to co-worker research, this research hence takes an averaged approach which means that co-workers are considered as a uniform group, rather than investigating relational or networking processes.

2.7.3 Summary of Theoretical Underpinnings

- A range of theoretical underpinnings are mentioned in the literature to explain relationships between transformational leadership and ethical leadership and their respective outcomes, however, at especially in the transformational leadership and innovation literature, a clear discussion of theoretical underpinnings is often missing.

- Social learning theory suggests that employees might learn by observing and imitating other who have a strong influence on them (Bandura, 1971; Gibson, 2004; Zheng et al., 2015). They also learn what's appropriate by observing the consequences of peoples' behaviour which are often determined by the superiors. As leaders in an organisation have both, strong influence on their followers and are responsible for evaluating and enforcing appropriate behaviour, they could be a powerful role model for their followers (Babalola et al., 2018).

- Role modelling is a key component in both, transformational leadership and its idealised influence dimension, and ethical leadership with the moral person who shows appropriate behaviour him/herself and the moral manager who enforces such behaviour. As such, the use of social learning seems appropriate to explain the influence of transformational and ethical leadership on employee outcomes.

- Social information processing theory suggests similarly to social learning, that people look for credible sources for cues on what's appropriate (Chen et al., 2013; Goldman, 2001; Salancik & Pfeffer, 1978). In the organisational environment, such credible sources could be co-workers that employees deal with on a day-to-day basis. Through knowledge sharing and persuasion can lead to shared perceptions and attitudes in

the workplace and seems therefore suitable to investigate team level outcomes.

- While this research draws on social information processing theory to explain the relationship between leadership and team level outcomes, the process of forming shared perceptions is not the focus of this study.

2.8   INNOVATION AS AN OUTCOME OF TRANSFORMATIONAL AND ETHICAL LEADERSHIP

In a highly volatile and changing business environment, innovation is often considered a critical factor for a company's success (Alsalami, Beherz & Abdullah, 2014; Chen et al., 2014). As companies are forced to explore new options and develop and improve products and services in order to stay ahead of increasing competition and satisfy their customers (Sarros, et al., 2008; Widmann et al., 2016) they increasingly rely on innovative ideas created within their own workforce (Chen et al., 2014; Cheung & Wong, 2011; Khan et al., 2009).

The concept of organisational innovation has been described from different perspectives. Discussions range from the distinction between administrative and technical innovations, to product versus process innovation and radical versus incremental innovation (Damanpour, 1991; Kao, Pai, Lin & Zhong, 2015). These differences focus mainly on the outcome of the innovation, i.e. what the innovation embodies. The idea of what constitutes an innovation itself is a more comprehensive construct overarching these different types.

Various definitions seek to clarify this construct. Amabile and Conti (1999, p. 630) define innovation "as the implementation or adoption of new, useful ideas by people in organisations". Damanpour (1991) further clarifies the different forms these ideas could take. He adopts a deliberately broad definition of innovation to allow for incorporation of different types of innovation and different stages of the innovation process. He defines innovation as "a new product or service, a new production process technology, a new structure or administrative system, or a new plan or program pertaining to organizational (sic) members. Thus, innovation is defined as adoption of an internally generated or purchased device, system,

policy, program, process, product or service that is new to the adopting organization (sic)" (Damanpour, 1991, p. 556). Even though this definition is deliberately comprehensive (Damanpour, 1991), the main idea is similar to Amabile and Conti's (1999) definition, that of newness to the organisation. That is not to say, that the same concept/product/service or whichever form the innovation takes, could not have been used or produced in other contexts outwith the organisation before, or that it needs to be developed within the organisation. The key is that it is new to the organisation, but the innovation can be developed within or acquired from outside the organisation (West & Farr, 1990 cited in Eisenbeiß et al., 2008; Scott & Bruce, 1994).

The purpose of an organisational innovation varies. The innovation could be introduced in order to meet a specific marked need (Chen et al., 2014) and thus be externally oriented. Several definitions focus solely on the introduction of new or improved products or services to the market (Gumusluoglu & Ilsev, 2009a, Mokhber, bin Wan Ismail & Vakilbashi, 2015). Innovation could however also be useful to the organisation itself (West & Farr, 1990 cited in Eisenbeiß et al., 2008) and be internally oriented. Whichever purpose, Eisenbeiß et al. (2008) argue that an innovation represents an intentional act, and can only happen consciously. The unconscious introduction of new ideas would not be classed as an organisational innovation.

The innovation process is generally described in at least two stages. The first stage commonly includes the initiation, which means the recognition of a specific problem, the research into the problem area and the generation of ideas and solutions (Damanpour, 1991; Nusair, Ababneh & Bae, 2012; Reuvers, van Engen, Vinkenburg & Wilson-Evered, 2008; Scott & Bruce 1994). Damanpour (1991) further places the evaluation of ideas and decision on the way forward

within this first stage, whereas Scott and Bruce (1994) describe this as a separate step in the process. Finally, the last stage includes the implementation or production of the innovation (Damanpour, 1991; Nusair et al. 2012; Reuvers et al., 2008; Scott & Bruce 1994).

Much debate has arisen around the nature of innovation as a process (Sattayaraksa & Boon-itt, 2016) or an outcome (Gumusluoglu & Ilsev, 2009a). While process definitions of innovation are interested in how organisational innovation can be broken down into individual processes and can be operationalised, the outcome perspective is more concerned with the innovation itself, rather than the way of how to get to the outcome. Depending on the focus, innovation can be defined as either, a process or an outcome (Sarros, et al. 2008).

It is important at this stage to address a further debate in the innovation literature; namely the role of creativity. While some authors suggest, that creativity and innovation are used interchangeably in the literature, others present conceptual differences between the two (Scott & Bruce, 1994). Some see creativity as the creation of new ideas and hence as part of the first step within the innovation process (Amabile & Conti, 1999; Eisenbeiß & Boerner, 2013; Reuvers et al., 2008; Tu & Lu, 2013). Others suggest, that creativity is essentially an individual level concept while innovation applies to the whole organisation (Gumusluoglu & Ilsev, 2009b). Furthermore, creativity is suggested to be concerned with novel ideas, i.e. the creation of new knowledge, whereas innovation can also include adaptation of already existing knowledge (Scott & Bruce, 1994). It seems therefore appropriate to distinguish between the two concepts of creativity and innovation.

2.8.1 Team Innovation

Recent literature is increasingly investigating innovation at the team level. Several themes are emerging. Focusing on innovation as an outcome, Jiang et al. (2015) move away from the organisational focus whereby innovations are considered new and useful for the whole firm. Considering that innovation could happen at different levels within the organisation, they focus on innovation that influences the team processes and procedures, and introduce their definition of team level innovation as "the introduction or application of ideas, procedures, or processes within a team that are novel and useful to the team" (Jiang et al., 2015, p. 677f). The two underlying ideas of newness and usefulness, however remain the same.

A second theme around the notion of team innovation focuses on the team as the entity that creates innovation and therefore shifting the focus from individual employees to whole teams. Within the organisational setting, it is often teams that propose and implement new ideas (Huelsheger, Anderson & Salgado, 2009) and teams are often considered as more innovative as compared to individuals (van Knippenberg, 2017).

Two lines of arguments are commonly pursued. The first argument centres around the idea that teams consist of a larger number of individuals and therefore have a higher capacity for information processing, leading to a higher number of ideas and innovations (Widmann et al., 2016). Similarly, van Knippenberg (2017) argues, that teams are more innovative than individuals because every member approaches a situation or problem from a different perspective and the variety of backgrounds, knowledge and skills can lead to more innovation.

The second line of argument in the literature focuses on team processes that support innovation. This perspective therefore goes beyond an accumulation perspective and suggests team processes trigger higher levels of innovation as compared to the sum of individuals' innovation. Innovation is often based on a more chaotic and less linear process (Widmann et al. 2016) and diverse teams tend to provide more challenge and disruption, but also more integration of knowledge of several individuals which is fostered by team processes such as knowledge sharing (Jiang & Chen, 2018). In challenging each other's assumptions and integrating different perspectives, new insights may be gained and therefore higher levels of innovation can be achieved (van Knippenberg, 2017). These processes of knowledge integration for the benefit of team innovation goes beyond the simple accumulation of individuals' knowledge and creativity.

Through social information processes, teams form a common understanding of a particular problem, or the usefulness of an innovation (Widmann et al., 2016). A team that stands behind an innovation therefore has by default a bigger group of supporters of this innovation as opposed to innovation at the individual level and hence makes the implementation of new ideas more likely (Widmann et al., 2016). Similarly, where a team innovation climate emerges as a shared perception of what is appropriate and desirable within the team, shared performance standards are agreed upon and team members see the involvement with innovation as a normal, and desired part of their work. Furthermore, this creates a safe environment for everyone to contribute to innovation which invites engagement with knowledge sharing, integration and as a result team innovation (van Knippenberg, 2017).

Drawing on the discussion above, the concept of team innovation is affected by both, the accumulation of knowledge, experience and innovation of each team member, but equally, by team processes that enable teams to raise levels of innovation beyond the simple aggregation of individual ideas.

Despite these recent developments, further research on innovation at the team level is required. Researchers call for further studies of the underlying processes, mediators, and moderators that influence innovation at the team level (van Knippenberg, 2017; Widmann et al., 2016).

2.8.2 The Impact of Transformational Leadership on Innovation

Considering the impact that innovations can have on organisational success it is worth investigating the differences between organisations and their ability to be innovative (Nijstad, Berger-Selman & De Dreu, 201). Research suggests that leadership and leaders' attitudes as well as the organisational environment such as modes of communication, organisational structure or skills and knowledge of employees might play an important role in fostering innovation (Damanpour, 1991; Gumusluoglu & Ilsev 2009a). As leaders can influence their organisation to a great extent it seems appropriate to investigate these links further and the concept of transformational leadership, with its focus on change and transformation seems particularly promising (Garcia-Morales et al., 2008).

Current literature suggests a strong link between transformational leadership and innovation. Transformational leaders, through their behaviours and attitudes are at the heart of this link in that they promote new ways of thinking and challenge the status quo (Alsalami et al., 2014). Through *idealised influence*, leaders act as role models. Their focus on change and challenging the status quo as well as accepting new ideas from others and supporting innovation (Matzler, Schwarz,

Deutinger & Harms, 2008) can set an example for employees to follow. According to social learning theory employees will start to challenge their own environment and come up with new solutions and innovations.

Inspirational motivation shows followers a desirable goal to work towards. It raises followers' intrinsic motivation to work hard to achieve this goal, and consequently followers commit to this shared goal (Bass, 1985; Northouse, 2013). In being more committed and engaged, followers go beyond what is expected of them and come up with new ideas on how to realise the vision. This could lead to more creativity and innovation within the organisation.

The *intellectual stimulation* dimension of transformational leadership can be linked to enhanced innovation in several ways. First, when stimulating their followers intellectually, leaders ask them to acquire new knowledge, think outside their usual patterns and assumptions (Garcia-Morales et al., 2008). This in itself could lead to a greater number of new ideas and innovation. Second, in empowering their followers, leaders ask them to work more independently, which implies finding their own solutions for problems they face (Chen et al., 2014) as well as encouraging employee voice and initiative (Schmitt, Den Hartog & Belschak, 2016) and giving them the power to try their solutions (Bass & Avolio, 1993). Third, leaders also create an environment that is open to change, risk and new approaches which again encourages their followers to be creative (Bass & Avolio, 1993).

Individual consideration is concerned with the personalised care for, and development of each follower. Leaders constantly develop followers and allow them to acquire new knowledge and skills but also to learn from others and share ideas (Dong et al., 2017). They therefore not only broaden their horizons and

might be able to look at situations from different perspectives but will also be able to rethink old structures, processes and products and come up with new, innovative solutions.

These conceptual links between transformational leadership and innovation have triggered an avenue for research which resulted in a number of empirical studies that investigate a possible relationship between transformational leadership and innovation (see appendix 1). Indeed, Weng et al. (2015) argue, that one of the core functions of transformational leadership is to encourage and support innovation. The following section provides an overview selected studies.

Existing studies have covered a range of different innovation outcomes of transformational leadership. They largely support a positive relationship between transformational leadership and product innovation (Chen et al., 2014), and product innovativeness (Matzler et al., 2008), individual innovation (Li et al., 2016), team innovation (Eisenbeiβ et al., 2008; Jiang et al., 2015; Li et al., 2016) organisational innovation (Garcia-Morales et al., 2008; Gumusluoglu & Ilsev 2009a, b; Jung et al., 2008; Khan et al., 2009; Mokhber et al., 2015), innovation behaviour (Kao et al., 2015; Michaelis, Stegmaier & Sonntag, 2010; Nusair et al., 2012; Reuvers et al., 2008; Weng et al., 2015) and innovation propensity (Tipu et al., 2012).

The majority of studies treat transformational leadership as a one-dimensional overarching construct. There are, however, a few studies that investigate the relationship between the individual dimensions of transformational leadership and innovation (Khan et al., 2009; Mokhber et al., 2015; Nusair et al., 2012; Reuvers et al., 2008). The results suggest a positive relationship between all dimensions of transformational leadership and innovation. Exceptions are Khan

et al. (2009) who could not confirm a significant positive relationship between idealised influence and organisational innovation moderated by organisational size, and Mokhber et al. (2015) who report no significant relationship between individualised consideration and organisational innovation.

Despite having established a relationship between transformational leadership and innovation, the process of how and in which context transformational leadership impacts positively on innovation remains unclear. Several studies have argued that the relationship is at least partially mediated and have introduced a range of possible mediators in the organisational environment such as corporate entrepreneurship (Chen et al., 2014), organisational culture (Tipu et al., 2012) organisational climate (Weng et al., 2015), commitment to change (Michaelis et al., 2010), innovation climate (Kao et al., 2015; Weng et al., 2015), support for innovation (Eisenbeiβ et al., 2008) and knowledge sharing (Jiang et al., 2015). They have further investigated individual characteristics as possible mediators through which transformational leadership influences innovation. These include self-efficacy and expected image gains (Kao et al., 2015) which were supported as mediators by the data, and interestingly employee's creativity which was not supported by the data (Gumusluoglu & Ilsev, 2009b). This is surprising, given that creativity is often linked to the first steps of the innovation process and conceptually precedes innovation.

In terms of boundary conditions, research studies have investigated a variety of environmental, organisational, leader and task characteristics in the context of transformational leadership. Moderating factors that are found to strengthen the relationship between transformational leadership and innovation include organisational characteristics such as technology orientation (Chen et al., 2014), climate for excellence (Eisenbeiβ et al., 2008), external support for innovation,

but not internal support for innovation (Gumusluoglu & Ilsev, 2009a), climate for innovation (Jung et al., 2008) and climate for initiative (Michaelis et al., 2010), organisational size (Khan et al., 2009), organisational learning (Garcia-Morales et al., 2008), centralisation and formalisation (Jung et al., 2008). Environmental characteristics that strengthen the relationship between transformational leadership and innovation include competition and uncertainty (Jung et al., 2008). Similarly, the leader's gender is found to moderate this relationship such, that a gender congruence between leader and follower leads to a stronger relationship between transformational leadership and innovation (Reuvers et al., 2008). In terms of task characteristics that influence the relationship between transformational leadership and innovation, Jung et al. (2008) report that high levels of empowerment weaken the relationship. Two studies investigate interdependence as a moderating factor, however the findings are mixed (Jiang et al., 2015; Li et al., 2016).

Few studies focus specifically on team-level processes and investigate the effects of team-focussed transformational leadership on team innovation (see table 2.5). They find that team focussed transformational leadership is positively related to team innovation (Chang, 2016; Eisenbeiβ et al., 2008; Jiang et al., 2015; Jiang & Chen, 2018; Li et al., 2016). However, they further report that team-focussed transformational leadership has a negative impact on individual innovation (Li et al., 2016) which suggests that by focussing on the team level, one could sacrifice innovation at the individual level. The different effects on the individual and team level suggest that further research and a more differentiated approach to transformational leadership is necessary (Jiang et al., 2015). In terms of mediators, these studies find evidence, that knowledge sharing (Jiang et al., 2015, Jiang & Chen, 2018) and cooperative norms (Jiang & Chen, 2018) as well

as support for innovation (Eisenbeiβ et al., 2008), autonomy (Jiang & Chen, 2018) and trust (Chang, 2016), mediate the relationship between team-focussed transformational leadership and team innovation. Furthermore, these studies show the moderating effect of team interdependence (Jiang et al., 2015), climate for excellence (Eisenbeiβ et al., 2008), and knowledge acquisition (Jiang & Chen, 2018). Overall, it seems that the way that team members work together and are supported by their organisations, plays an important role in the relationship between team-focussed transformational leadership and team innovation. Attempting to shed light on further team level processes, this research focuses on the effects of team-focussed transformational leadership on team innovation.

H1: Team-focussed transformational leadership is positively related to team innovation.

Table 2.6: Empirical Studies on Transformational Leadership and Team Innovation

Empirical studies on team innovation

Selected Studies	IV	Measurement Scale	DV	Measurement Scale	Level of Analysis	Mediator	Moderator	Key Finding
Li et al. (2016)	team focussed transformational leadership	Wang & Howell (2010)	team innovation	West & Anderson (1996)	team	NA	NA	supported
	team focussed transformational leadership	Wang & Howell (2010)	team innovation	West & Anderson (1996)	team	NA	task interdependence	not supported
Eisenbeiß et al. (2008)	transformational leadership	MLQ Bass & Avolio (1995)	team innovation	Leader counting numbers of innovations	team	support for innovation	climate for excellence	supported
Chang (2016)	team focussed transformational leadership	MLQ Bass & Avolio (2000)	team innovation	Vaccaro et al. (2012)	team	NA	NA	supported
	team focussed transformational leadership	MLQ Bass & Avolio (2000)	team innovation	Vaccaro et al. (2012)	team	team level trust	NA	supported
Jiang & Chen (2018)	transformational leadership	MLQ Bass & Avolio (1995)	team innovative performance	Lovelace et al. (2001)	Team	team cooperative norms knowledge sharing team autonomy	knowledge acquisition	supported
Jiang et al. (2015)	team focussed transformational leadership	MLQ Bass & Avolio (1995)	team innovation	Lovelace et al. (2001)	team	NA	NA	supported
	team focussed transformational leadership	MLQ Bass & Avolio (1995)	team innovation	Lovelace et al. (2001)	team	knowledge sharing	NA	supported
	team focussed transformational leadership	MLQ Bass & Avolio (1995)	team innovation	Lovelace et al. (2001)	team	knowledge sharing	team interdependence	supported

2.8.4 The Impact of Ethical Leadership on Innovation

Compared to the vast amount of publications on transformational leadership and innovation, empirical evidence of the relationship between ethical leadership and innovation is very limited. Few studies have investigated the effect that ethical leadership might have on innovation or creativity. While this study conceptually distinguishes between creativity and innovation, both concepts are considered in this section due to the scarcity of research on ethical leadership and innovation. Given the links between the innovation and creativity, this seems appropriate. A systematic search of the ethical leadership literature since the emergence of the concept in 2000 revealed only three studies. These include a study by Chen and Hou (2016), Ma et al. (2013) and Tu and Lu (2013) (see table 2.6).

Similar to Tu and Lu (2013), Ma et al. (2013) assume that ethical leaders create an environment in which employees feel psychologically safe to openly voice new ideas. All three studies draw on social learning theory in suggesting that ethical leaders are being proactive in their own work and act as role models for their followers. Basing their ideas on social exchange theory, Ma et al. (2013) and Tu and Lu (2013) suggest, that ethical leaders show an increased respect for dignity which leads to a focus on employees' development, which in exchange results in increased employee motivation and therefore higher efforts of employees to be creative in the workplace (Ma et al. 2013).

However, Chen and Hou (2016) as well as Ma et al. (2013) investigate only the creativity of employees, not the implementation of creative ideas and solutions, and no observations of the effects of ethical leadership on innovation as an outcome are made in this study. Tu and Lu (2013), on the other hand, investigate the relationship between ethical leadership and employees' innovation behaviour.

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They explicitly discuss the effect of ethical leadership on employees at the team level and suggest that if employees collectively perceive their leader to be ethical, they will also as a group feel more independent, have more opportunity to learn, and feel free to discuss new or controversial ideas which leads not only to more communication with the leader but also among each other (Tu & Lu, 2013). Tu and Lu (2013) indeed find that ethical leadership is positively related to team innovative behaviour, through increased intrinsic motivation.

In line with Tu and Lu (2013) and drawing on social information processing theory, employees might not only look at the leaders for guidance but are equally influenced by their peers. As team-focussed ethical leadership focusses on the whole team, this will lead to common perceptions which in turn, because they are shared, will amplify the empowerment and openness enforced by ethical leaders as the information received from different sources of the environment is consistent rather than divergent. This leads to the hypothesis that:

H2: Team focussed ethical leadership is positively related to team innovation.

Table 2.7: Empirical Studies on Ethical Leadership and Creativity or Innovation

Empirical studies on creativity and innovation

Selected Studies	IV	Measurement Scale	DV	Measurement Scale	Level of Analysis	Mediator	Moderator	Key Finding
Chen & Hou (2016)	ethical leadership	Brown et al. (2005)	Employee Creativity	Liao et al. (2010)	individual	Voice	Climate for innovation	supported
Ma et al. (2013)	ethical leadership	Brown et al. (2005)	Employee Creativity	Farmer et al. (2003)	individual	NA	NA	supported
	ethical leadership	Brown et al. (2005)	Employee Creativity	Farmer et al. (2003)	individual	Knowledge sharing	NA	supported
	ethical leadership	Brown et al. (2005)	Employee Creativity	Farmer et al. (2003)	individual	self-efficacy	NA	supported
Tu & Lu (2013)	ethical leadership	Brown et al. (2005)	Innovation behaviour	Scott & Bruce (1994)	individual	NA	NA	supported
	ethical leadership	Brown et al. (2005)	Innovation behaviour	Scott & Bruce (1994)	individual	individual intrinsic motivation	NA	supported
	Group ethical leadership	Brown et al. (2005)	Innovation behaviour	Scott & Bruce (1994)	cross-level	NA	NA	supported
	Group ethical leadership	Brown et al. (2005)	Innovation behaviour	Scott & Bruce (1994)	cross-level	individual intrinsic motivation	NA	supported
	Group ethical leadership	Brown et al. (2005)	Innovation behaviour	Scott & Bruce (1994)	cross- level	group intrinsic motivation	NA	supported

2.8.5 Summary of Innovation

- Innovation is crucial for companies' success in a dynamic business environment

- Several definitions of innovation are presented in the literature, however, this research follows Amabile and Conti (1999, p. 630) who define innovation as the "implementation or adoption of new, useful ideas by people in organisations".

- Innovation in this sense is the outcome of the innovation process, which is generally split into 3 phases, (1) problem specification and idea generation, which refers to the creativity part of the innovation process, (2) evaluation of ideas, and (3) implementation of the innovation.

- This study looks specifically at innovation as outcome rather than the whole innovation process.

- The term team innovation is conceptualised in two ways, either as innovation that is new to the team, but not necessarily to the organisation, or, as innovation that takes place at the team level and therefore focussing on the team as the entity that creates and implements innovation. In this second sense, research suggests that teams are more innovative than individuals (van Knippenberg, 2017).

- The literature suggests positive links between transformational leadership and innovation (Chang, 2016; Eisenbeiβ et al., 2008), however the process and boundary conditions of such a relationship require further investigation.

- Very little research is available on the relationship between ethical leadership and innovation, with few studies investigating links between

ethical leadership and creativity or innovation behaviour (Chen & Hou, 2016; Ma et al., 2013; Tu & Lu, 2013), but not directly looking at innovation as an outcome.

2.9 MEDIATORS AND MODERATORS OF THE TRANSFORMATIONAL LEADERSHIP/ETHICAL LEADERSHIP AND TEAM INNOVATION RELATIONSHIP

A range of studies suggest that the transformational leadership/ethical leadership and innovation relationship is not direct, but influenced through other processes (Eisenbeiß et al., 2008; Jiang et al., 2015; Tu & Lu, 2013). These studies include mediators such as corporate entrepreneurship (Chen et al., 2014), organisational culture (Tipu et al., 2012), climate for innovation (Kao et al., 2015; Weng et al., 2015), and safety climate (Weng et al., 2015), as well as self-efficacy and expected image gains (Kao et al., 2015). Interestingly, creativity which at times is considered to be part of the innovation process, was not shown to mediate the relationship between transformational leadership and innovation (Gumusluoglu & Ilsev, 2009b).

While these studies cover largely the individual level of analysis, studies of transformational/ethical leadership and team innovation are rare and include only a handful of potential mediators such as knowledge sharing (Jiang et al., 2015) and support for innovation (Eisenbeiß et al., 2008) as well as motivation, both at the individual and group level (Tu & Lu, 2013). Both knowledge sharing and support for innovation point towards a developmental climate that could encourage innovation in a team, whereas the mediating function of motivation at individual and group level implies that personal engagement might play a role. However, research to date has not investigated a mediation of developmental climate nor that of employee engagement in the transformational/ethical leadership and team innovation relationship.

This section reviews the two concepts, employee engagement and developmental climate and suggests a possible mediating and moderating function in the transformational/ethical leadership and team innovation relationship.

2.9.1 Employee Engagement

With the recognition that employees are key to organisational success and a company's competitive advantage, organisations are showing interest in how to manage their employees to increase certain employee outcomes (Anitha, 2014; Shuck & Herd, 2012). These outcomes include individual level outcomes such as commitment (Saks & Gruman, 2014), discretionary effort or intention to leave (Shuck, 2011), and organisational level outcomes such as increased productivity (Shuck & Herd, 2012) and turnover (Saks & Gruman, 2014). They have therefore explored the impact of engagement for years and suggest that engaged employees do indeed produce better performance outcomes (MacLeod & Clarke, 2009). It is therefore not surprising, that interest in this topic has started to not only attract practitioners' but increasingly also researchers' attention (Hofslett Kopperud, Martinsen & Humborstad, 2014; Shuck, 2011; Song, Kolb, Lee & Kim, 2012). Research of academics and practitioners has emerged largely independently from each other. While practitioners mainly focus on how to use engagement to create the desired outcomes, academic research is mainly concerned with defining and exploring the validity of the concepts of engagement as well as its antecedents (Shuck, 2011).

This section follows the academic literature in more depth, while occasionally drawing on practitioner research. It presents an overview of the literature on employee engagement. It covers main themes and trends around definitions of

the concept as well as its distinctiveness from related concepts such as commitment, OCB or satisfaction. The applicability of employee engagement to the group level is discussed. The second part of this section introduces antecedents of employee engagement in general, and focuses in particular on the role of both transformational and ethical leadership on employee engagement. Third, this section discusses team innovation as one of the potential outcomes of employee engagement.

2.9.1.1 Definitions of Engagement

With a wealth of academics now exploring the field of engagement, the literature presents a range of different definitions (Dagher, Chapa & Junaid, 2015, Shuck & Herd, 2012). Commonly referred to as the academic starting point for engagement research (Dagher et al., 2015; Shuck, 2011), Kahn (1990) differentiates employee engagement from employee disengagement, describing engaged employees as those who bring their personal selves into their work and who are physically, cognitively and emotionally involved with their work. This conceptualisation is reflected in May, Gilson & Harter's (2004) engagement scale and forms the basis of later research which defines engagement as an emotional, cognitive and behavioural state that focuses employees towards an organisational goal (Saks, 2006; Shuck & Wollard, 2010). These definitions describe the way that employees tap into personal resources, values, believes and emotions and use them for the good of the organisation.

Another line of defining engagement is shown in the discussion of employee engagement as the antithesis of burnout (Shuck, 2011, Simpson, 2009). The three dimensions of engagement according to this view are firstly vigour, which relates to the resilience and energy of an employee and the persistence in

challenging situations, secondly dedication, which refers to an employee's involvement with the work including "a sense of significance, enthusiasm, inspiration, pride and challenge" (Schaufeli & Bakker, 2004, p. 295), and finally absorption, which describes the attachment to and full focus one's work (Schaufeli & Bakker, 2004).

While these dimensions of engagement are widely accepted in the literature, critics of the concept argue that while it considers emotional and behavioural absence of burnout, it does neglect the physical symptoms (Shuck, 2011). Furthermore, there seems to be some debate around the question of whether engagement is a persistent state (Schaufeli & Bakker, 2004) or if levels of engagement fluctuate within a short period of time (Breevaart et al., 2016). Breevaart et al. (2016) who generally draw on Schaufeli and Bakker's (2004) definition, argue that every job contains elements that are more or less pleasurable and that even generally highly engaged employees might drop their level of engagement with regards to those less appealing parts of their job. Their research therefore challenges the commonly proposed stability of engagement and moves the concept of engagement towards a more flexible and more externally determined concept.

The above mentioned perspectives discuss engagement as a distinct concept. There are however voices that suggest overlaps of engagement with other employee attitudes and behaviours including identification with the organisation (Armstrong & Taylor, 2014), commitment (Anitha, 2014; Armstrong & Taylor, 2014; Popli & Rizvi, 2015), involvement (Anitha, 2014), motivation and job satisfaction (Armstrong & Taylor, 2014) and organisational citizenship behaviour (Armstrong & Taylor, 2014; Popli & Rizvi, 2015; Saks, 2006). The engagement literature lacks strong empirical data with only a few studies investigating the

distinctiveness of those concepts. Saks (2006) finds evidence to suggest that engagement is different from commitment as well as discretionary effort, while Viljevac, Cooper-Thomas and Saks (2012) propose a more diversified view. They argue, that the distinctiveness of the concept depends on the definition of engagement adopted, and that engagement as per Kahn's (1990) definition can be differentiated from organisational commitment, whereas engagement as the antithesis of burnout is distinct from organisational commitment, job involvement and intentions to leave (Viljevac et al., 2012). On a theoretical level, Song et al. (2012) argue that commitment refers to an attitudinal state whereas engagement relates to behaviours. Similarly, Shuck and Herd (2012) claim that engagement is behaviour which is based on the interpretation of experiences and contexts in the workplace. However, given the above mentioned definitions of engagement, that clearly include both attitudes and behaviour (e.g. Saks, 2006; Shuck & Wollard, 2010), this distinction on the basis on attitudes and behaviours seems to be debatable.

The previous discussions focus mainly on defining the concept of engagement and differentiating it from other related concepts. However, the concept of engagement itself doesn't seem to be straightforward. The literature suggests a differentiation of at least four types of engagement (Simpson, 2009):

1. personal engagement, which relates to Kahn's (1990) definition of engagement

2. burnout/engagement which related specifically to the work task and Schaufeli and Bakker's burnout antithesis (Schaufeli & Bakker, 2010), and is characterised by high involvement, high energy and high efficacy (Simpson, 2009)

3. work engagement relates to engagement with the work in terms of a positive "state of mind that is characterized by vigor, dedication and absorption" (Simpson, 2009, p. 1018)

4. employee engagement, which defines employee engagement in the work role through involvement, satisfaction and enthusiasm (Simpson, 2009)

The wide range of definitions and the lack of consistency and agreement, reflects on the one hand the growing interest in both theory and practice. It does however, lead to a field of study that is scattered and disconnected, with a range of different definitions and scales, and can lead to confusing and inconsistent findings and outcomes (Briner, 2014; Saks & Gruman, 2014; Shuck, 2011). This study draws mainly on Kahn's definition, looking at how employees use their personal resources within the workplace and get involved in their work physically, cognitively and emotionally.

2.9.1.2   Team Engagement

Engagement is usually treated as an individual level construct (Barrick, Thurgood, Smith & Courtright, 2015; Saks, 2006) as it requires employees to invest themselves and their own values into the work and the organisation. There are however calls to investigate the idea of organisational or team engagement (Saks, 2006). Especially when considering engagement as an antecedent of team level outcomes, the processes within the team and hence the influences of team members on each other are worth considering (Saks & Gruman, 2014). Drawing on van Knippenberg's research, Song, Lim, Kang and Kim (2014) argue that engagement can be transferred from one team member to another, meaning that engagement can be spread throughout the team resulting in overall team engagement. In a similar notion, Hofslett Kopperud et al. (2014) suggest that

employees within a team are emotionally connected which enhances the engagement with and within the team. This is in line with social information processing theory, which proposes such transfer from the employee's environment to the focal employee (Salancik & Pfeffer, 1978).

As one of few studies that conceptualise engagement at the team level, Barrick et al. (2015) discuss the differences between individual level, team level and organisational level engagement. While they see individual engagement as an evaluation of one's self image, collective engagement refers to the "shared perception of organizational (sic) members" (Barrick et al., 2015, p. 112) which looks at team members' perceptions of the team's engagement. This differentiation is important as a change of level of analysis changes the focus from self-evaluation of one's own engagement to a description of perceptions of other team members' engagement. Barrick et al. (2015) move away from simply aggregating individual level data to the team level and suggest that the collective engagement is a separate concept that describes a different set of data. Based on this research, and following Saks (2006) calls to investigate the concept of engagement at the team level, this research conceptualises engagement at the team level and looking at team members perceptions of the team's engagement.

2.9.1.3   Antecedents of Employee Engagement

Current literature classifies antecedents of engagement largely in broad categories such as job resources and job demands (Saks & Gruman, 2014), contextual and interpersonal (Truss, Shantz, Soane, Alfes & Delbridge, 2013) or as leadership, job characteristics and personality (Macey & Schneider, 2008). There is however an emerging and growing body of literature that examines the antecedents of engagement in more detail. Table 2.7 provides an overview of

some selected studies. This is by no means a comprehensive list but it displays the wide range of factors that are suggested to precede or reinforce engagement.

For the purpose of organising these factors, five categories, suggested in the literature, have been selected: personal resources (Rothmann & Welsh, 2013), job features (Jenkins & Delbridge, 2013), organisational context (Kahn, 1990), team context (Kahn, 1990; Truss et al., 2013), and leader (Rothmann & Welsh, 2013; Shuck & Herd, 2012).

The first category, the personal resources, include factors such as psychological availability (Kahn, 1990), core self-evaluation (Lee & Ok, 2015; Saks & Gruman, 2014), well-being (Anitha, 2014), competence need (Kovjanic, Schuh & Jonas, 2013) as well as conscientiousness, positive effect and proactive behaviour (Saks & Gruman, 2014). In short, this category looks at the question of whether employees are both able and willing to engage with their work or organisation. Even though personal resources draw attention to the individuals within a team rather than specifying the team as the entity of interest, these personal resources can impact on team processes. Social information processing theory would suggest that the display of such resources by individual team members could be picked up upon by other team members, influence their own behaviours and attitudes (Salancik & Pfeffer, 1978) and therefore lead to higher levels of these personal resources amongst a larger number of individuals within the team. Similarly, some of the more observable behaviours such as proactive behaviour might directly affect other team members and therefore raise their awareness for the existence of such drivers of engagement within the team.

Second, the job features look at both, job fit (Crawford, Rich, Buckman & Bergeron, 2013; Rothmann & Welsh, 2013) and job design (Barrick et al., 2015;

Crawford et al., 2013; Kahn, 1990), including factors like challenge (Crawford et al., 2013), autonomy (Kovjanic et al., 2013; Saks & Gruman, 2014), variety and job enrichment (Rothmann & Welsh, 2013), meaningfulness (Kahn, 1990), orderly work environment (Strom, Sears & Kelly, 2014) and resources available (Rothmann & Welsh, 2013). These factors focus on the job and its tasks, how well they are organised and if they fit with the demands and competencies of the employee and it is suggested that the better the job design and resources available fit the employee's needs, the more engaged the employee will be.

Organisational context is the third category of antecedents, which mainly looks at human resource management (HRM) practices, organisational climate and justice within an organisation. It is suggested, that HRM practices and policies such as reward and recognition for good performance (Anitha, 2014; Barrick et al., 2015; Crawford et al., 2013; Jenkins & Delbridge, 2013; Lee & Ok, 2015; Saks, 2006), and development opportunities and feedback (Anitha, 2014; Saks & Gruman, 2014) enhance employee engagement. An organisational climate that supports employees (Rothmann & Welsh, 2013; Saks, 2006), allows them to speak up (Jenkins & Delbridge, 2013) and feels safe (Kahn, 1990), further drives employee engagement. Finally, organisational values and integrity (Jenkins & Delbridge, 2013) which lead to higher perceptions of justice (Saks, 2006; Strom et al., 2014) seem to raise levels of employee engagement. Such contextual variables have organisation-wide effects and are based on shared perceptions such as climate as well as shared policies within the organisation and within teams. As such, the organisational environment, not only the task related issues impact on team engagement.

In the team context, the fourth category, it is suggested that the feeling of relatedness, as well as the co-worker and team relationships might enhance

employee engagement (Anitha, 2014) which is in line with suggestions that team members can raise each other's levels of engagement (Saks & Gruman, 2014; Song et al., 2014). Stronger relationships between co-workers lead to stronger emotional ties between colleagues or team members, one of the factors of engagement according to Kahn (1990). Furthermore, a stronger connection with the team member enhances their credibility as role models and therefore enhances the effects of social information processing theory in terms of shared behaviours and shared perceptions. As such, these team contextual factors are crucial for the emergence of engagement at the team-level.

Finally, the literature suggests that leaders may play an important role in enabling or increasing employee engagement (Crawford et al., 2013; Macey & Schneider, 2008; Rothmann & Welsh, 2013; Shuck & Herd, 2012). Research draws on high quality leadership with increased supervisor support (Lee & Ok, 2015; Saks, 2006) and empowering leadership (Shuck & Herd, 2012) to explain how leaders influence employee engagement. Leaders also seem influential in creating some of the factors such as job features and job fit as well as shaping the organisational context. The following section will discuss the impact of two different types of leadership, transformational and ethical leadership in more detail.

Table 2.8: Antecedents of Engagement

Antecedents of Engagement	Source
personal resources/characteristics	Macey & Schneider (2008); Rothmann & Welsh (2013)
psychological availability	Kahn (1990)
core self-evaluation	Lee & Ok (2015); Saks & Gruman (2014)
well-being	Anitha (2014)
competence need	Kovjanic et al. (2013)
conscientiousness	Saks & Gruman (2014)
positive affect	Saks & Gruman (2014)
proactive personality	Saks & Gruman (2014)
job features	Jenkins & Delbridge (2013); Lee & Ok (2015); Macey & Schneider (2008); Saks (2006)
challenge	Crawford et al. (2013)
autonomy	Crawford et al. (2013), Kovjanic et al. (2013); Saks & Gruman (2014)
variety	Crawford et al. (2013)
job fit	Crawford et al. (2013); Rothmann & Welsh (2013)
job design	Barrick et al. (2015); Crawford et al. (2013); Kahn (1990)
job enrichment	Rothmann & Welsh (2013)
orderly work environment	Strom et al. (2014)
meaningfulness	Kahn (1990)
resources	Rothmann & Welsh (2013)
team context	Kahn (1990); Truss et al. (2013)
team relationship	Anitha (2014)
co-worker relationship	Anitha (2014); Rothmann & Welsh (2013); Saks & Gruman (2014)
relatedness	Jenkins & Delbridge (2013)

Table 2.7: Antecedents of Engagement (continued)

organisational context	Anitha (2014); Kahn (1990)
rewards	Anitha (2014); Crawford et al. (2013); Jenkins & Delbridge (2013); Lee & Ok (2015); Rothmann & Welsh (2013); Saks (2006)
recognition	Crawford et al. (2013); Jenkins & Delbridge (2013); Lee & Ok (2015); Saks (2006)
Human resource management practices	Barrick et al. (2015)
policies and procedures	Anitha (2014)
training, development and feedback	Anitha (2014); Crawford et al. (2013); Saks & Gruman (2014)
organisational support	Rothmann & Welsh (2013); Saks (2006)
psychological climate	Lee & Ok (2015)
employee voice	Jenkins & Delbridge (2013)
safety	Kahn (1990)
organisational values	Jenkins & Delbridge (2013)
organisational integrity	Jenkins & Delbridge (2013)
justice (procedural, distributive)	Saks (2006); Strom et al. (2014)
leader	Crawford in Armstrong & Taylor, 2014); Macey & Schneider (2008); Rothmann & Welsh (2013); Shuck & Herd (2012)
supervisor support	Lee & Ok (2015); Saks (2006)
empowering leadership	Shuck & Herd (2012)
high quality leadership	Strom et al. (2014)
supervisor relations	Rothmann & Welsh (2013)
inspiring leaders	Anitha (2014)

2.9.1.4   The Impact of Transformational Leadership on Team

Engagement

A range of empirical studies provide evidence for a positive relationship between transformational leadership and engagement (Ghadi et al., 2013; Hofslett Kopperud et al., 2014; Kovjanic et al., 2013; Schmitt et al., 2016; Vincent-Hoerper, Muser & Janneck, 2012). While the findings largely propose a positive relationship, there is evidence that questions such a relationship as Mozammel and Haan (2016) could not even find a significant positive correlation between transformational leadership and engagement in their study of employees in the Bangladeshi banking sector where they suggest that culture and communication might play an important mediating role.

Looking at the concept of transformational leadership, a number of theoretical connections to engagement can be made. Using *idealised influence*, and *inspirational motivation*, transformational leaders provide a role model for employees that not only shows them with a clear vision (Breevaart et al., 2016; Hofslett Kopperud et al., 2014), but boosts enthusiasm, energy and commitment (Barrick et al., 2015) that increases employee commitment. The clear vision furthermore focusses employees on the common group goal and this commitment to the common purpose (Barrick et al., 2015; Strom et al., 2014) creates a climate of relatedness between employees, leader and the organisation (Barrick et al., 2015; Kovjanic et al., 2013). Transformational leadership therefore refers to not only the leader category of antecedents of team engagement but also to the personal characteristics and the team context which is particularly important when considering engagement at the team level where team members relate to each other in order to define the level of engagement. The

transformational leader further provides employees with more autonomy and challenge which makes employees more involved and engaged with their work (Breevaart et al., 2014; Kovjanic et al., 2013; Tims et al., 2011).

Looking in more detail at the *intellectual stimulation* dimension, transformational leaders encourage employees to take risks (Barrick et al., 2015) and explore new ways of thinking and doing (Breevaart et al., 2016; Tims et al., 2011), while at the same time they support employees though *individualised consideration*, providing them with support, training and development which gives employees a sense of engagement.

On a theoretical basis, it seems that transformational leadership should be positively related to team engagement as it provides a range of antecedents of engagement from within all five categories of antecedents. The empirical evidence further provides support for this. It is however noteworthy, that links to team engagement seem to stem mainly from the two dimensions idealised influence and inspirational motivation, which can explicitly be linked to a greater sense of a common purpose and relatedness among team members which is in line with Wang and Howell's (2010) definition of team-focussed transformational leadership.

2.9.1.5 The Impact of Ethical Leadership on Team Engagement

While the research on ethical leadership and engagement is scarce, a range of studies investigate links between ethical leadership and antecedents of engagement. As a leadership concept, ethical leadership falls into the leader category of antecedents of engagement. Research shows, that ethical leaders empower their employees (Chughtai, 2016), and create close relationships with their employees (Hansen et al., 2013; Hassan, Mahsud, Yukl & Prussia, 2013,

Yukl et al., 2013; Yang et al., 2016). It links to both antecedents, the empowering leadership as well as the relations to the supervisor which positively impact on engagement.

However, the impact of ethical leadership on engagement goes beyond the leader category of antecedents. Ethical leader enhances their employees' well-being (Avey et al., 2012; Frisch & Huppenbauer, 2014; Li et al., 2014; Yang, 2014) in the organisation as well as their conscientiousness of issues in the organisation (Kottke & Pelletier, 2013) and hence impact on the personal characteristics that enhance employee engagement as well.

With the focus on ethical decisions and fairness, it is not surprising that ethical leadership is commonly linked to higher levels of justice (Demirtas, 2015; Li et al., 2014; Xu et al., 2016), and perceptions of fairness (Pucic, 2015) which further leads to perceptions of higher value congruence between leaders and followers (Tang et al., 2015) and fit between organisational goals and employees (Bouckenooghe et al., 2015; DeConinck, 2015). Ethical leadership further seems to provide a safe environment which enables employee voice (Avey et al., 2012; Cheng et al., 2014; Walumbwa & Schaubroeck, 2009; Zhu et al., 2015). As such, ethical leadership impacts on a range of antecedents of engagement in the organisational and team context and it further enhances trust between co-workers (Den Hartog & DeHoogh, 2009) which also shows its impact on the team context of engagement.

Drawing on the wealth of links between ethical leadership and antecedents of engagement, it is surprising that only a few empirical studies have explicitly investigated a link between ethical leadership and employee engagement. These studies have conceptualised both ethical leadership and engagement at the

individual level (Cheng et al., 2014; Chughtai et al., 2015; Demirtas, 2015; Qin et al., 2014) and find evidence to support a positive relationship between ethical leadership and employee engagement at the individual level. It is however suggested that job satisfaction at the group level might impact on such a relationship (Qin et al., 2014) which indicates that team-level processes seem to impact on engagement. This cross-level finding gives reason to suggest that this positive relationship between ethical leadership and engagement might also hold true on the team level.

2.9.1.6 The Impact of Team Engagement on Team Innovation

Highly engaged employees seem to be crucial to enhance organisational innovation. Employees that engage with their work report higher levels of creativity, a first step in the innovation process (Pieterse, van Knippenberg, Schippers & Stam, 2010), because they feel a stronger obligation towards their work (MacLeod & Clarke, 2009). This self-investment is imperative for employees to go beyond their standard work and come up with new, creative ideas. When looking at the three components of team engagement, physical, cognitive and emotional engagement (Kahn, 1990) it seems that using the personal cognitive resources for the team could lead to more creative ideas. At high levels of team engagement, employees are also emotionally invested in the team (Kahn 1990), which might trigger higher levels of persistence in pursuing new ideas. It further encourages employees to express their ideas as well as to open up to their colleagues. Employees participate in collaborative work (Song et al., 2012) in which they not only raise levels of engagement within the team (Hofslett Kopperud et al., 2014) but also share their knowledge and expertise within the team (Song et al., 2012). This knowledge sharing and the use of each individual

background and perspective is the basis for team's superior innovativeness (van Knippenberg, 2017). It therefore seems reasonable to suggest that engagement, especially at the team level, is positively related to team innovation and mediates the relationship between team focussed leadership (transformational and ethical) and team innovation.

H3: Team engagement mediates the relationship between team-focussed transformational leadership and team innovation.

H4: Team engagement mediates the relationship between team-focussed ethical leadership and team innovation

2.9.1.7 Summary of Engagement

- In the literature, there is a divide between practice which focusses on desired outcomes of engagement, and academics who are trying to define the concept as distinct from related ideas and exploring antecedents of engagement.

- Engagement is largely defined in one of two main streams. First, following Kahn's (1990) work on how employees use their personal resources for and during their work; or second, as the antithesis of burnout, looking at vigour, dedication and absorption displayed in ones work (Schaufeli & Bakker, 2004). This study follows Kahn's definition.

- Overall, the concept of engagement itself, as well as overlaps with other constructs such as commitment, involvement, job satisfaction, etc., show a somewhat inconsistent body of literature on engagement.

- When conceptualising engagement at the team level, the focus changes from one's own engagement to an evaluation of other team members' engagement with the team.

- Current literature suggests a range of antecedents of engagement, including personal resources, such as well-being, job feature, including job fit, organisational context as well as leader and team contexts (Anitha, 2014; Crawford et al, 2013; Kahn, 1990; Saks & Gruman, 2014). The two latter contexts tie in with the theoretical underpinnings which support this study in that both leaders and co-workers influence the emergence of employee engagement.

- Some empirical evidence as well as strong theoretical links suggest a positive relationship between transformational leadership and engagement.

- Little research has to date investigated the relationship between ethical leadership and engagement. However, the few studies that are available provide evidence for a positive link. Furthermore, ethical leadership is shown to be positively related to a range of antecedents of engagement including leader characteristics, personal resources and organisational context.

- The literature suggests that employees who are feeling a stronger obligation towards their jobs and tapping into their own resources as engaged employees do, trigger higher levels of creativity and more persistence in pursuing and implementing new ideas (Kahn, 1990).

2.9.2 Developmental Climate

The concept of organisational climate is commonly defined as shared perceptions of employees (Charbonnier-Voirin, El Akremi & Vandengerghe, 2010; Denison, 1996; Kuenzi & Schminke, 2009) and therefore a psychological measure that captures the attitudes of individuals towards the organisation (Burton, Lauridsen & Obel, 2004). It includes a variety of perceptions as to what kind of behaviour is expected and rewarded in the organisation (Kuenzi & Schminke, 2009) and provides a framework for employees to follow (Charbonnier-Voirin et al., 2010), but also perceptions regarding trust, conflict, morale and reward equity, leader credibility and resistance to change (Burton et al., 2004), which reflect the attitudes of employees towards policies and procedures within the organisation. While generally examined at this comprehensive concept, research has distinguished between more specific types of climate. Haakonsson, Burton, Obel and Lauridsen (2008) discuss four types of organisational climate, internal process climate, rational goal climate, group climate and developmental climate while others focus on very context specific types such as climate for innovation (Eisenbeiß et al., 2008; Scott & Bruce, 1994).

Developmental climate, as one of these more specific climates has gained some interest in the literature. Spell et al. (2014, p. 284) have currently defined developmental climate as "shared perceptions regarding the amount of support-giving and receiving that occurs among co-workers and supervisory mentors on a group". Such support giving could include instrumental support such as guidance on employees' tasks, skills or career development, emotional support such as friendships and counselling, from both supervisors and co-workers (Spell et al., 2014). In this type of climate, individuals are receptive to change and new

ideas, open to communication and knowledge sharing (Haakonsson et al., 2008). This concept of developmental climate as support giving and receiving has been further specified in the concept of human resource development (HRD) climate. Rao and Abraham's conceptualisation of HRD climate discusses three dimensions and is discussed by Chaudhary, Rangnekar & Kumar Baru (2012). First, general climate reflects the support of managers of different levels in the organisation. Second, the degree of openness, confrontation, trust, autonomy, proactivity, authenticity and collaboration (OCTAPAC) forms what is referred to as the OCTAPAC culture and defines specific characteristics of workplace interaction. Third, the implementation of HRD mechanisms, which reflects the HRD policies such as reward, appraisal or feedback (Chaudhary et al., 2012). The three-dimensional concept is widely accepted in current literature (Devi & Naga, 2014; Krishnaveni & Ramkumar, 2006; Saraswathi, 2010; Walia, et al., 2013) and includes not only managers, supervisors and co-workers, but also incorporates HR. Employees therefore feel that there is support from the whole organisation for their own development as well as organisational development (Krishnaveni & Ramkumar, 2006).

Theories that underpin the emergence of shared perceptions which form the developmental climate are based on the interaction between employees and their surroundings, particularly the people they work within the organisation. Social information processing theory, which suggests that individuals draw on the information available and the interactions with others in their environment to make sense of their surroundings (Salancik & Pfeffer, 1978), describes such processes. These interactions influence the perceptions that the individuals hold about the organisation (Haakonsson et al., 2008; Spell et al., 2014). Charbonnier-Voirin et al. (2010) however argue that social learning processes whereby employees

observe and imitate others (Bandura, 1971) could be involved in the development of developmental climate.

2.9.2.1   The Impact of Leadership on Developmental Climate

Leaders within the organisation seem to be crucial for the emergence of developmental climate (Bass & Avolio, 1993). Drawing on the three dimensions of HRD climate (Chaudhary et al., 2012), there are clear links between leaders' behaviours and developmental climate. The HRD climate dimension "general climate" specifically refers to the leaders and managers of all levels in the organisation and how they support development in the organisation. The second dimension includes a range of perceptions some of which can be influenced by leaders such as for example trust (Zhu, Newman, Miao & Hooke, 2013), proactivity (Schmitt et al., 2016) or autonomy (Piccolo et al., 2010). Finally, the third dimension refers to the HRD mechanisms, which are primarily developed and introduced by HR, requiring leaders and line managers to actually implement these policies and mechanisms in the workplace, as line managers are the ones who provide the employees with feedback on a day to day basis, evaluate employees' performance and engage in coaching or counselling (Devi & Naga, 2014; Spell et al., 2014).

2.9.2.2   The Impact of Transformational Leadership on Developmental Climate

Considering the big impact that leaders have on the emergence of developmental climate within the organisation, it is important that leadership and climate are aligned (Haakonsson et al., 2008). A leader that accepts uncertainty and new ideas such as a transformational leader is a good fit for such a climate. Transformational leaders are not only open to change as well as employee and

organisational development; they actively encourage it (Bass, 1990). They enable employees to be creative and proactive (Jyoti & Dev, 2015) and support employees in their development for example through coaching, mentoring and feedback (Anitha, 2014, Tims et al., 2011). According to social learning theory (Bandura, 1971), leaders therefore provide a role model for employees and teams to follow. Through this feedback, employees furthermore feel capable and confident to share knowledge and help each other (Song et al., 2012) which aligns with the idea of a developmental climate in that it relates not only to supervisor and organisational support but also includes the support of team members amongst each other. Overall, it seems that transformational leadership might exert a positive influence on the emergence of a developmental climate within teams.

2.9.2.3   The Impact of Ethical Leadership on Developmental Climate

Among other behaviours, ethical leaders focus on fairness, listening to the needs of followers and who support followers' interests and needs (Brown et al., 2005) which could have a positive impact on the perception of a developmental climate. First, in listening to followers, ethical leaders can more carefully determine development needs that are articulated by followers, and being generally invested in followers' well-being and supportive of followers' needs (Brown & Trevino, 2006a), these needs can be satisfied. Followers will therefore perceive the organisational climate as more supportive. Second in being perceived as fair to the members of the team (Bedi et al., 2016), team members know what they can expect and count on and a shared perception of developmental climate can evolve. Ethical leadership was further found to be positively related to knowledge sharing (Bavik, Tam, Shao & Lang, 2018) which is part of the OCTAPAC culture

in terms of openness and collaboration. It is hence suggested that ethical leadership will have a positive impact on team developmental climate.

2.9.2.4 The Impact of Developmental Climate on Innovation

Developmental climate enables employees to develop new knowledge and skills in an environment that is characterised by open communication, trust, collaboration and information sharing but also by autonomy and confrontation (Haakonsson et al., 2008). This leads on the one hand to a constant development of employees resulting in the acquisition of new knowledge and skills which enables them to respond to a changing environment (Charbonnier-Voirin et al., 2010), but which can also serve as a driver for actively identifying inefficiencies and suggesting changes within their work environment.

On the other hand, the openness to change, trust between co-workers as well as employees and their superiors, and support, perceived by employees, create an environment in which employees can share their ideas and knowledge, which is positively related to innovation (Jiang et al., 2015). An organisation that is open to change is more likely to encourage employees to come forward with new ideas (Michaelis et al., 2010) and the autonomy granted and empowerment of employees enables employees to pursue their ideas, which is positively related to innovation (Jung et al., 2008).

Taken together this suggests that developmental climate is positively related to innovation and hence mediates the relationship between transformational and ethical leadership and team innovation.

H5: Team developmental climate mediates the relationship between team-focussed transformational leadership and team innovation

H6: Team developmental climate mediates the relationship between team-focussed ethical leadership and team innovation

2.9.2.5 Summary of Developmental Climate

- The concept of developmental climate is thematically part of the wider debate of organisational climate, however little research exists on this specific form of climate.

- Developmental climate is conceptualised as the shared perceptions of team members on the degree of support given by co-workers and superiors, but also by HRD mechanisms and policies in the organisation.

- There is very limited research on the impact of transformational and ethical leadership on developmental climate, however, empirical studies suggest links between transformational and ethical leadership and leaders support, coaching, mentoring and feedback as well as fairness and knowledge sharing which are components of developmental climate.

- Developmental climate, which leads to higher levels of skills, knowledge and collaboration between co-workers, is theoretically linked to innovation, however empirical evidence is scarce to date.

2.9.3 Moderating Influences of Team Engagement and Team Developmental Climate

In section 2.9.1.6, the key link between team engagement and team innovation is discussed, and it is argued that teams that are generally more engaged are more invested in their work and create higher numbers of innovative ideas (Pieterse et al., 2010). Team developmental climate helps create an environment that is open to change and hence welcomes such new ideas, where team members feel supported and trust each other and therefore are more likely to share knowledge and discuss new ideas (Haakonsson et al., 2008). Previous research has shown, that knowledge sharing, which is conceptually part of developmental climate, is positively related to innovation (Jiang et al., 2015). The emergence of such support as a team climate and therefore shared standard for team behaviour is underpinned by both, social learning theory (Bandura, 1971) and social information processing theory (Salancik & Pfeffer, 1978). The team's leader plays an important role in the concept of developmental climate. He/she shows support for the team and as such acts as a role model for team members to follow (Bandura, 1971) and acts as a guide that shows employees that openness, collaboration, trust and supportive behaviour are expected within the team (Chaudhary et al., 2012; Haakonsson et al., 2008). Through the imitation of these standards, employees raise the level of developmental climate in the team. They further provide additional cues for their team-members which supports the emergence of a shared understanding and shared agreement on higher levels of developmental climate within the team (Salancik & Pfeffer, 1978).

Such an environment, where collective perceptions and agreed behaviours in terms of openness, collaboration and knowledge sharing exist, is likely to trigger

higher levels of engagement with the team. The supportive environment encourages team members to use their cognitive resources and hence suggest and voice their ideas. Higher levels of perceived support and trust further strengthen emotional ties and therefore engagement with the team (Chughtai et al., 2015). Therefore, it is argued that team developmental climate moderates the relationship between team engagement and team innovation which leads to the following hypotheses:

H7: Team developmental climate moderates the indirect relationship between team-focussed transformational leadership and team innovation through team engagement such that the relationship is stronger for higher levels of team developmental climate.

H8: Team developmental climate moderates the indirect relationship between team-focussed ethical leadership and team innovation through team engagement such that the relationship is stronger for higher levels of team developmental climate.

Similarly, increased levels of engagement result in higher levels of cognitive activity and therefore in more creative ideas (Fachrunnisa, Adhiatma & Tjahjono, 2018), and more engagement with discussion and evaluation of such ideas. Therefore, higher levels of team engagement lead to higher levels of knowledge sharing (Song et al., 2012). This means that higher numbers of innovative ideas are being put forward for discussion and are being more thoroughly thought through before being potentially rejected or implemented.

Furthermore, where employees are emotionally engaged with the team they are more invested in the team outcomes and are therefore more likely to show

discretionary effort and support each other (Shuck, 2011). It is therefore argued, that higher levels of team engagement strengthens the relationship between team developmental climate and team innovation, which leads to the following hypotheses:

H9: Team engagement moderates the indirect relationship between team-focussed transformational leadership and team innovation through team developmental climate such that the relationship is stronger for higher levels of team engagement.

H10: Team engagement moderates the indirect relationship between team-focussed ethical leadership and team innovation through team developmental climate such that the relationship is stronger for higher levels of team engagement.

2.10 SUMMARY AND THE CONCEPTUAL MODEL

This literature review introduces the concepts of interest to this study and presents the relationships between those. First, it discusses in detail the two leadership variables, team-focussed transformational leadership and team-focussed ethical leadership, which are considered the independent variables in this research. The literature suggests a strong impact of these leadership concepts on a wide range of employee and organisational outcomes, including organisational climate (Bass & Avolio, 1993; Bavik et al., 2018; Haakonsson et al., 2008), team innovation (Chang, 2016; Tu & Lu, 2013) and engagement (Ghadi et al., 2013; Demirtas, 2015; Vincent-Hoerper et al., 2012). It is further discussed that these two concepts, while overlapping, seem to constitute two different concepts. Second, team innovation as an outcome is introduced and distinguished from related concepts such as creativity or the innovation process. Theoretical and empirical links between the two leadership concepts and team innovation are presented. Third, the concepts of team engagement and team developmental climate are discussed and a mediating role in the relationship between the leadership concepts and innovation is suggested. Finally, the literature proposes an interaction effect between the two mediators in the indirect relationships between the independent variables and the dependent team innovation variable, which leads to four moderation hypotheses whereby higher levels of team engagement and team developmental climate strengthen the indirect relationships. The full conceptual model is presented in figure 2.2. This model results in ten research hypotheses which will guide this research (see table 2.8):

Table 2.9: Research Hypotheses

|	
H_1	*Team-focussed transformational leadership is positively related to team innovation*
H_2	Team-focussed ethical leadership is positively related to team innovation
H_3	Team engagement mediates the relationship between team-focussed transformational leadership and team innovation
H_4	Team engagement mediates the relationship between team-focussed ethical leadership and team innovation
H_5	Team developmental climate mediates the relationship between team-focussed transformational leadership and team innovation
H_6	Team developmental climate mediates the relationship between team-focussed ethical leadership and team innovation
H_7	Team developmental climate moderates the indirect relationship between team-focussed transformational leadership and team innovation through team engagement such that the relationship is stronger for higher levels of team developmental climate.
H_8	Team developmental climate moderates the indirect relationship between team-focussed ethical leadership and team innovation through team engagement such that the relationship is stronger for higher levels of team developmental climate.
H_9	Team engagement moderates the indirect relationship between team-focussed transformational leadership and team innovation through team developmental climate such that the relationship is stronger for higher levels of team engagement.
H_{10}	Team engagement moderates the indirect relationship between team-focussed ethical leadership and team innovation through team developmental climate such that the relationship is stronger for higher levels of team engagement.
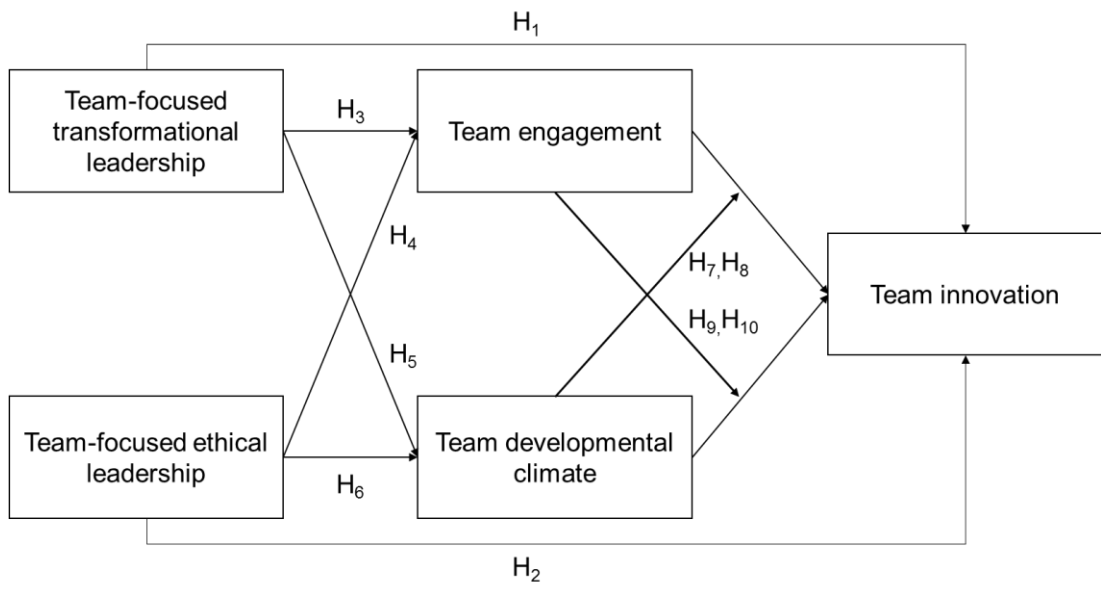
Figure 2.2: Conceptual Model

3. METHODOLOGY

3.1 INTRODUCTION TO THE METHODOLOGY

When deciding on a suitable methodology, a researcher can choose from a range of research designs. They are, however, not simply neutral tools of conducting research as different methodologies are often rooted in particular philosophical stances, and different methods enable a researcher to answer different kinds of questions and draw conclusions form the findings of the research conducted (Bryman & Bell, 2015; Scandura & Williams, 2000).

In this regard, the choice of research method applied determines the type of question that the research can answer (Ates, 2008; Blaikie, 2003; Bryman & Bell, 2015). Bryman and Bell (2007) differentiate between research that aims at developing a new theory as opposed to research which tests an existing theory and clearly, the methods for theory building and testing are quite different. Another categorisation of research purposes is provided by Patton (1990) who differentiates five different purposes of research, (1) basic research to contribute to fundamental knowledge and theory, (2) applied research to illuminate a societal concern, (3) summative evaluation to determine program effectiveness, (4) formative evaluation to improve a program, and (5) action research to solve a specific problem (Patton, 1990). Even without discussing the different categories in depth, some differences in the research focus become obvious. Basic research, for example, aims to explain general phenomena and their underpinning theories, which means, that context is less important and the aim is generalisation, whereas action research looks at a specific problem in a specific context which implies, that in-depth knowledge of this context is important (Patton, 1990). The different purposes of research therefore demand research

designs which ensure that the necessary data is collected for the respective purpose. The research purpose should therefore be a main consideration in deciding on the appropriate research design (Arbnor & Bjerke, 2009; Gaus, 2017, Grix, 2004; Patton, 1990).

Besides answering distinct research questions, the different methodological approaches also reflect a researcher's philosophical stance (Bryman & Bell, 2015). Research philosophy underpins a researcher's perspective and determines how knowledge is defined and conclusions are drawn from such knowledge (Crotty, 1998; Saunders, Lewis & Thornhill, 2016). It is therefore important to consider and discuss the research philosophy in order to allow readers of the research to assess and understand the outcomes of the study. Generally, research philosophy is introduced in terms of ontological and epistemological stances. These deal with the researcher's understanding of the nature of reality (ontology) and knowledge (epistemology) and therefore lay out the basic assumptions that influence the research (Crotty, 1998). These assumptions not only guide the kind of knowledge a researcher aims to create but also the methods that are employed collecting and analysing what is considered reliable knowledge (Gaus, 2017). As such, the research philosophy impacts on the choice of research methodology (Arbnor & Bjerke; 2009, Ates, 2008).

This chapter has three purposes. First, it discusses key research philosophies and methods. Starting from a general discussion of common ontological and epistemological stances, a range of research paradigms are introduced, before reviewing different research methods. Second, this chapter provides a rationale for the research methodology chosen in this study in line with the research aim and purpose. Third, it describes the research process in detail and introduces the

sample and measures used. In order to facilitate navigation through this methodology chapter, figure 3.1 displays the structure.
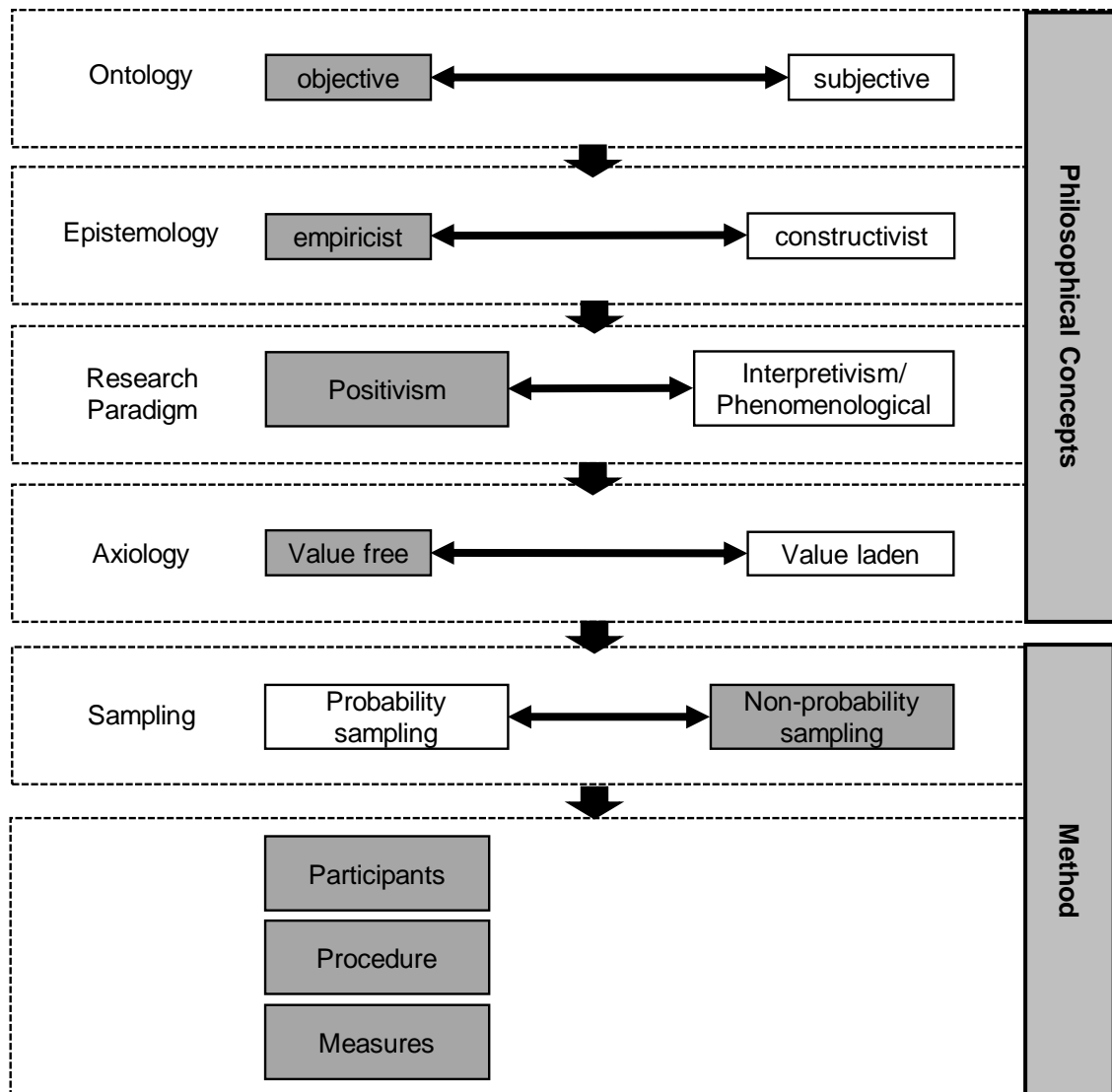

Figure 3.1: Structure of the Methodology Chapter

3.2   ONTOLOGY

The concept of ontology deals with the question of "what is the nature of reality" (Collis & Hussey; 2003, p. 49), or "what kind of things are there in the world?" as defined by Benton and Craib (2011, p.4). In other words, ontology defines what is considered as real (Hollis, 1994). Are, social phenomena and beliefs real and objective entities, or are these subjective to the perception and interpretation of each individual social actor (Bryman & Bell, 2015)? The literature shows a variety of ontological positions in social sciences, such as for example the four traditions materialism, idealism, dualism and agnosticism as discussed by Benton and Craib (2011), constructionism (Bryman & Bell, 2015) and realism (Blaikie, 2003; Crotty, 1998) as well as inconsistencies and overlaps of ontological and epistemological concepts within the literature (Crotty, 1998). However, two dominant ontological stances are evident in the literature and will be discussed in this study: objectivism and subjectivism (Ates, 2008; Flew, 1989; Morgan & Smircich, 1980).

On the one hand, the objectivist ontology sees social phenomena and the world as existing independently of the people involved which means that these phenomena are treated as objective entities implying that there is only one singular reality and the underlying laws and regularities can be researched (Bryman & Bell, 2015; Collis & Hussey, 2003).

On the other hand, subjectivism treats social phenomena as subjective to the persons involved meaning, that reality is socially constructed and based on individual perceptions and interpretations of the phenomena in question (Arbnor & Bjerke; 2009, Collis & Hussey, 2003). Some authors differentiate between subjectivism and constructionism, whereby strict subjectivism assumes that

reality is based on human imagination and hence humans create meaning which they impose on the world, whereas constructionism gives existing objects meaning through interacting with them, and therefore accepts that these objects exist as such independent from the researcher but are only assigned meaning through human interaction with the object (Crotty, 1998; Morgan & Smircich, 1980). Given the importance of human interpretation, social reality is constantly re-constructed and involves active participation of the social actors, rather than being pre-existing and independent (Bryman & Bell, 2015). Therefore, reality cannot be researched independently from the social actors.

The impact of choosing one or another ontological position can be seen at the start of a research study as it strongly linked to the purpose if the research and what kind of question a researcher is interested in. Adopting an objectivist perspective, the research question will likely focus on formal properties and regularities such as cause and effect relationships of social entities (Bryman & Bell, 2015), whereas a subjective stance results in research questions focusing on understanding people's understanding and perceptions of social phenomena (Ates, 2008). As such, the ontological stance is a key influence in selecting a research question.

3.3   EPISTEMOLOGY

The concept of epistemology attempts to explain "how we know what we know" (Crotty, 1998, p. 18) and deals with the question of what constitutes relevant knowledge (Ates, 2008). In determining one's epistemological perspective, the conditions and rules under which valid knowledge can be arrived at are established (Hindes, 1977) which distinguish such valid knowledge from beliefs or faith (Benton & Craib, 2011). This ultimately impacts on the methods employed and type of data collected in research. While the epistemological stance is not necessarily bound to a specific ontology, the two tend to align, and emerge together (Crotty, 1998; Grix, 2004). Grix (2004) argues that there is a connection between one's ontology and epistemology as the concept of what exists in the world naturally determines one's confidence in the knowledge of such entities.

Two main epistemological perspectives are discussed here, empiricism and constructivism. Following the tradition of the natural sciences, empiricism, which is often linked to positivism, suggests that valid knowledge can only be achieved through experience and evidence that can be gained through the senses (Benton & Craib, 2011; Bryman & Bell, 2015; Hussey & Hussey, 1997; Morgan & Smircich, 1980). Any knowledge claim that cannot be tested through observation and experiment is therefore rejected, which implies that non-observable entities or phenomena are excluded from empiricist research (Benton & Craib, 2011). This strict separation of testable and non-testable phenomena like value judgments, seems to link empiricism to an objective ontology, looking at more formal properties and rules to be tested.

The second perspective, constructivism, views the world from a more subjective, constructionist perspective, and assumes that valid knowledge of reality can only

be gained through social interaction with objects and therefore opposes objectivist and empiricist ideas. As objects only gain meaning through interaction with and interpretation by humans, meaningful knowledge can only be gained through such processes (Crotty, 1998; Morgan & Smircich, 1980).

Looking at these opposing views, it is obvious, that the choice of what is considered valid knowledge, determines the type of research methods employed. A researcher's epistemological stance, together with the ontological position, determines the research paradigm which guides the choice of methods.

3.4   RESEARCH PARADIGMS

The literature on research philosophy shows considerable blur between the terms epistemology and research paradigm (Ates, 2008; Saunders & Tosey, 2015). This study distinguishes between these terms, in that epistemology deals with the question of how certain knowledge can be arrived at, whereas a research paradigm incorporates both, ontological and epistemological considerations (Collis & Hussey, 2003; Gaus, 2017; Grix, 2004). A research paradigm, sometimes also called a researcher's world view (Creswell, 2014; Patton, 1990), therefore represents the underlying philosophical principles and assumptions (Arbnor & Bjerke, 2009) which guide a researcher in choosing legitimate and important research methods (Patton, 1990). Table 3.1 provides a brief overview of selected discussions of research paradigms and builds the foundation for further discussion in this study, however, it by no means represents a comprehensive overview of existing research paradigms.

Table 3.1: Selected Research Paradigms

	Arbnor & Bjerke (2009)	Ates (2008)	Bryman & Bell (2015)	Collis & Hussey (2003)	Creswell (2014)	Patton (1990)
Key Paradigms	1)Analytical View 2)Systems View 3)Actors View	1)Positivism 2)Interpretivism (Social constructivism and Phenomenology) 3)Critical Realism 4)Action Research	1)quantitative 2)qualitative	1)Positivist 2)Phenomenological	1)Positivism (quantitative) 2)Phenomenology (qualitative) alternative paradigms: 3)Post-positivism 4)Constructionism 5)Transformative Research 6)Pragmatism	1)Logical Positivism 2)Phenomenological Enquiry

Two main paradigms that are traditionally considered in the literature are positivism, and interpretivism, which emerged as an alternative to the scientific approach adopted by positivists (Crotty, 1998). While some authors discuss these paradigms mainly with regard to their methodical implications (Collis and Hussey, 2003), the link to their underlying assumptions, in terms of epistemology and ontology allows to judge research conducted and the value of its findings.

The first major paradigms discussed in the literature is **positivism**. In terms of terminology, the positivistic paradigm is largely treated consistently in the literature with only minor variations such as logical positivism, to describe specific ways of thinking within this paradigm. An exception is, Arbnor and Bjerke's (2009) discussion whereby, despite differing terminology, the analytical view fits into the positivistic paradigm.

Positivism accepts an objective ontology and thus assumes that there is one single reality which is independent of the researcher (Collis & Hussey, 2003). As such, reality is filled with facts and entities within this reality are related through general laws and regulations that can be investigated.

In terms of its epistemological stance, positivism is linked to empiricism (Benton & Craib, 2011; Creswell, 2014) and only considers observable and measurable objects in their research in order to arrive at valid knowledge (Bryman & Bell, 2015; Saunders, Lewis & Thornhill, 2012). Therefore, personal interpretations, as well as intangible and subjective phenomena are not seen as warranted data (Gill & Johnson, 2010; Saunders et al., 2012).

Stemming from the natural sciences, early positivism was largely related to inductive research (Blaikie, 2003) as observations formed the basis of any knowledge or generalisation. Popper, however introduced the hypothetico-

deductive approach into positivist research (Crotty, 1998) which suggests building hypotheses based on existing theory and knowledge and then rigorously testing these hypotheses to see if the data supported or rejected such hypotheses (Bryman & Bell, 2007; Johnson & Onwuegbuzie, 2004; Saunders et al., 2012). It is important to note that while testing hypotheses can never confirm the truth of the hypothesis, any rejection of the hypothesis implies the rejection of the underlying theory and the relationship in question (Blaikie, 2003; Crotty, 1998).

In the positivist approach, there is a clear cut between theory building and theory testing. The hypothetico-deductive approach suggested by Popper is useful in particular for theory testing. The goal of such research is to deduce general rules and relationships between objective entities in the world which allows to measure and explain behaviour and phenomena (Bryman & Bell, 2015; Hunt, 1991).

Adopting a positivist research paradigm impacts on the research methodology. In attempting to measure through observations or experiments, positivists tend to use mainly surveys including standardised, closed questions where answers can be quantified and statistically analysed (Bryman & Bell, 2015; Saunders et al., 2016). This is why sometimes the concepts of positivism and quantitative methods are used interchangeably (Benton & Craib, 2011; Creswell, 2014). In order to allow for replication and scrutiny of the findings by other researchers, positivists draw on established methods and processes and clearly describe their methodology (Arbnor & Bjerke, 2009). This allows others to judge and test the validity and reliability of the findings presented and the conclusions drawn from them.

Following the ontological assumption of an independent, objective reality, this objectivity is key and positivists distance themselves from the research. They

assume that their own values have no impact on the findings and conclusion (Collis & Hussey, 2003) and use methods that leave little room for own interpretation which might be biased by values (Arbnor & Bjerke, 2009). This assumption of independence has been cause for critique of the positivist stance not least, because, as discussed in section 3.2, even the choice of research question and topic reflects what the researcher considers valuable (Arbnor & Bjerke, 2009).

Further critique was raised with regard to the idea that general rules govern humans' actions and hence positivist determinism denies or ignores peoples' free will (Hindes, 1977). Furthermore, in devaluing the research context, positivist research is accused of being overly superficial in generalising to overall rules rather than considering individual circumstances (Arbnor & Bjerke, 2009). Even the basic epistemological assumption that all knowledge is based on experience is questioned in that the knowledge of this rule can hardly be observed by the senses (Hindes, 1977). These and other critical considerations of the positivist paradigm lead to the development of the post-positivistic worldview which by and large accepts the positivistic assumptions but weakens some of its strict claims about absolute truth of empirical and objective knowledge and focusses on theory verification rather than theory building, thus following Popper's deductive approach (Creswell, 2014).

Following Creswell (2014), Patton (1990) and others, the second main research paradigm is interpretivism. However, there seems to be more discussion around the terminology, compared to the positivistic paradigm, and some authors prefer to use the term phenomenological research (Ates, 2008; Bryman & Bell, 2015). However, interpretivist approach combines a wider range of those who oppose the scientific approach of positivism (Bryman & Bell, 2015) and therefore

interpretivism includes phenomenology amongst others such as hermeneutics, and social interactionism (Collis & Hussey, 2003, Crotty, 1998).

Contrary to positivism, interpretivism argues that the world is too complex to be reflected in a general rule (Saunders et al., 2012). This paradigm adopts a constructionist ontology in that the social phenomena have meaning because humans make sense of them and hence reality is socially constructed (Grix, 2004). Interpretivists therefore interpret actions of the research subjects based on the individual's environment and frame of reference (Williams, 2000).

The goal of interpretivist research is not to find general rules and relationships, but to understand the individual meaning of phenomena, as well as their underlying factors (Ates, 2008; Creswell, 2014; Gill & Johnson, 2010) within the real context (Patton, 1990). Instead of testing hypotheses, interpretivist research is more inductively oriented whereby researchers build theories based on the data they collect (Bryman & Bell, 2007; Creswell, 2014).

This is why interpretivists prefer a less structured methodology and small sample sizes which they use to conduct in-depth analysis with detailed and subjective descriptions (Johnson & Onwuegbuzie, 2004; Saunders et al., 2012). Hence, interpretivism is often connected to qualitative data (Creswell, 2014; Hunt, 1991; Williams, 2000) and in-depth interviews (Ates, 2008).

Choosing such an in-depth or dialogic research methodology, the researcher becomes very much part of the research and it is therefore necessary to consider the impact the researcher's actions and values might have on the data collected (Collis & Hussey, 2003).

3.5 AXIOLOGY

Axiology is the theory of values, which enquires into the goodness or badness of things and events (Bahm, 1993; Hart, 1971). One's values determine a person's judgment, which guides attention, preferences and actions (Hart, 1971). The term value is defined in relation to a person's interest, desire or emotions, or liking and Perry suggests that values are not characteristics of objects nor are they characteristics of the subject, but rather "relation between and object and an interest-taking subject" (Hart, 1971, p. 31). Bahm (1993) distinguishes six different value pairs: good and bad, ends and means, subjective and objective, apparent and real values, actual and potential values, and pure and mixed values, showing a range of different kinds of values that might influence one's judgments.

Axiology as a part of the research philosophy deals with the role of values in the research process (Saunders et al., 2016). It considers the question if and how research, and the conclusions drawn from such research, is guided or influenced by a researcher's values.

There are different views on the importance of values in academic research, which depend on the research paradigm adopted. Within the interpretivist paradigm with its more subjective ontology that says that reality exists and is created only through the interaction of social actors and therefore depends on their actions and interpretation of such (Collis & Hussey, 2009), a strong emphasis is placed on the values of those actors, which include the researcher. The positivist paradigm with its objective ontology and empiricist epistemology, considers the world to be independent from the researcher and therefore being free from subjective interpretation, valuation or recognition (Saunders et al., 2016). This reality and can be investigated through measurement and

observation, which is why positivist researchers consider their research to be value free (Collis & Hussey, 2009; Grix, 2004; Saunders et al., 2016).

Based on the different views of research paradigms, interpretivists often discuss their own values to openly reflect on how their own values affect their research and interpretations (Saunders et al., 2016). Positivists on the other hand don't consider this necessary, assuming that their own values are not related to the research. In line with this, this study adopts a positivist research paradigm and follows a value free approach (Grix, 2004), whereby the outcomes and interpretation of results are based on objective measures which are validated in previous research and which were chosen to fit the research purpose and question of this study.

3.6   CHOICE OF RESEARCH PHILOSOPHY

The starting point for the choice of research philosophy for this study is the research aim, which is to investigate the relationship between both, team-focussed transformational leadership and team-level ethical leadership, and team innovation. The purpose is therefore to test such relationships, and hence to use general rules rather than gaining an in-depth understanding of the concepts involved. Choosing this research purpose reflects an objective ontology in that it is assumed that the world consists of independent objective entities, transformational leadership, ethical leadership and innovation, which are related and organised through general laws which can be investigated and verified or falsified (Ates, 2008). In focussing on the relationships between entities, this also aligns with an empiricist epistemology which demands rigorous testing rather than rational theorising in order to gain valid knowledge. Therefore, a positivist research paradigm is adopted in this study.

While early positivism refers to a largely inductive approach, this research follows Popper's principle of falsification and hence a deductive approach whereby an initial theory or set of hypotheses are proposed and provisionally accepted until falsified (Crotty, 1998). The research therefore aims at supporting or rejecting those hypotheses (Bryman & Bell, 2007; Johnson & Onwuegbuzie, 2004; Saunders et al., 2012).

Despite this overall fit, there are issues to be addressed. In their discussion of empiricism and positivism, Benton and Craib (2011) talk about the problem that positivists might face when dealing with ethical judgments as these are considered to be based on values rather than facts. With regard to this research, which deals with teams' judgements of ethical leadership this presents a potential

misfit between the chosen research philosophy and the data collected. Benton and Craib (2011, p. 22) however suggest that despite the value based nature of ethical judgments, one might consider them as factual knowledge "by defining them in terms of observable properties", which allows for ethical judgments to be investigated in positivist research.

3.7 METHOD

The following section describes the methods applied in this study in line with the choice of research philosophy. It details the sampling procedure and provides an overview of the participants of this study. The procedure of data collection is presented and the measures used are discussed.

3.7.1 Sampling

Adopting a sample survey research design, the sampling approaches are discussed in the following section. Two terms are commonly distinguished when talking about sampling, the population and the sample. Arnold et al. (2005) define population as the whole group of interest. Usually, not all people belonging to this population will be asked to participate in the research, and the group of people that is selected from the population is called the sample (Arnold et al., 2005; Collis & Hussey, 2003). The way in which this sample is defined can influence how representative the sample is for the whole population and therefore how meaningful generalisations from the sample to the population are, the more representative, the more meaningful (Riesenhuber, 2007).

There are different methods of choosing a sample from the population, some of which aim to select a representative sample and others that "involve a compromise on this ideal" (Blaikie, 2003, p. 199) of representativeness. Bloch (2005) groups these methods into probability sampling, the techniques that aim at representative samples, and non-probability sampling techniques, which typically compromise on representativeness. Within the probability sampling three different approaches are distinguished such as simple random sampling, stratified sampling or cluster sampling (Bloch, 2005). Probability samples assume, that every member of the population has the same chance or probability

to be chosen for the sample (Riesenhuber, 2007). The idea implies, that in selecting a truly random sample, representative members of the population are chosen and hence generalisations can confidently be made (Patton, 1990). There are however, no defined criteria for the representativeness of a sample (Riesenhuber, 2007) which is why a discussion of the sampling approach is necessary in order for a reader to judge the study's value beyond the particular sample.

Non-probability sampling techniques include quota sampling, where researchers look for individuals that fit with certain characteristics in order to match characteristics of the population (Saunders et al., 2016). Another non-probability sampling technique is snowball sampling whereby participants' networks are used to recruit more participants for the research; meaning that the researcher has limited control over who the participants of the research are (Bloch 2005). Often considered the least desirable, convenience sampling neglects the sampling process and includes all available participants. In such non-probability samples, the selection criteria are often unknown or not controlled (Riesenhuber, 2007). There are, however non-probability sampling methods, that clearly state the selection criteria. Purposive sampling, sometimes called purposeful sampling, is one of these methods. The idea of purposive sampling is to select a sample that is particularly information—rich, which means that a specific sample is chosen because of its importance to the whole population (Palys, 2008), which Patton (1990) defines as a critical case. The selection of such a case is based on its appropriateness for the research purpose (Blaikie, 2003) and a common criterion is "if it happens there, it will happen anywhere," (Patton, 1990, p. 174) or, on the other hand, "if it doesn't happen there, it won't happen anywhere." (Patton, 1990, p. 174).

Overall, samples are used in order to reduce the amount of resources necessary, such as time, money or commodities, and therefore to generalise and draw conclusions on the whole population based on the research on the sample (Blaikie, 2003). In order to do so, the literature generally suggests selecting a representative sample through probability sampling (Bryman & Bell, 2007; Frankfort-Nachmias & Nachmias, 1992). There are, however non-probability sampling methods which are said to achieve at least logical generalisability to the population (Patton, 1990). Altogether, the missing criteria for judging the representativeness of a sample suggest that whichever sampling approach is used, a detailed description is necessary in order to judge the value of findings presented.

Despite the common calls for the superiority of random samples, this study adopts a purposive sampling approach. While losing some of the ability to generalise from the findings due to reduced representativeness of the sample (Blaikie, 2003), purposive sampling allows a researcher to keep control over the selection of respondents which is not the case in other non-probability sampling techniques. This enhances the quality of information gathered as the respondents/organisations chosen for the research can give relevant information on the research topics. Although using purposive sampling does not strictly speaking allow for generalisation, given the significance of the respondents for the whole population, conclusions might be drawn on the whole population (Frankfort-Nachmias & Nachmias, 1992; Patton, 1990). In practical terms, choosing particular critical organisations rather than randomly sampling from the whole population means that attempts to negotiate access to respondents can be tailored and focussed on relevant organisations rather than the whole population.

3.7.2 Participants and Procedure

Given the context and population of this study which is the Irish energy sector, the sample of this research is drawn from one of Ireland's key players in the electricity market. Data was collected from both employees and their respective managers. The data collection process as well as descriptions of employee and manager samples are presented in this section, it is however noteworthy that due to data limitations, the manager data was subsequently excluded from further analysis (for detail on this see section 3.7.3 and section 4.2.5).

The procedure chosen for this study is aligned with the positivist research paradigm on the one hand, and the field of study and research purpose on the other hand. Arbnor and Bjerke (2009) describe the research paradigm as the bridge between research philosophy and methodology. In other words, once a paradigm is identified and selected, the methodology is largely determined as it should be aligned with the paradigm (Creswell, 2014, Collis & Hussey, 2003). Positivism is largely related to quantitative research, using experiments and observations in line with an empiricist epistemology to measure the concepts in question and to investigate relationships and regularities (Crotty, 1998).

Similarly, in line with Comte's call for a unified research method (Crotty, 1998), Arbnor and Bjerke's (2009) analytical view suggests that research methods should be similar within one field of study. While the literature on leadership and outcomes doesn't explicitly discuss philosophical considerations, it largely reports survey based and cross-sectional quantitative studies linked to a positivist paradigm.

Following these arguments, this research adopts approaches and methods similar to existing literature. In line with such research, this study uses a large-

scale sample-survey approach collecting data through online questionnaires. This method aligns with the assumptions of a positivist epistemology in several ways.

First, a sample survey reports data and general laws for a sample and hence only a proportion of the whole population of interest. Compared to other research strategies, such as, e.g. field studies or experimental simulations, the sample survey provides better generalisability and it allows to generalise from the sample to the larger population (McGrath, 1981). In terms of finding general laws, this generalisation is an important feature of positivism.

Second, using a standardised questionnaire allows the researcher to collect data from a large number of respondents, but limits the scope of potential answers to pre-determined categories and concepts and hence trades quality of data for quantity of responses (Patton, 1990). It only attempts to measure the concepts contained in the conceptual model, which builds the basis for the hypothesis and theory testing. The emphasis on theory testing clearly fits with the positivistic paradigm.

Third, the pre-determined questions as well as the answer-frame of a Likert scale lead to highly structured data that can be analysed using statistical tools. Both the measurement scales and the analysis methods are determined by existing literature and leave little room for the researcher's own values to influence research conducted which shows the detachment of the researcher from the research. In a survey design, the purpose is not to interfere with the events of question but rather take a snapshot of what's happening (Arnold et al., 2005; Crano & Brewer, 2002). Following these arguments, the use of a quantitative method seems to be an appropriate choice within positivistic research.

While the author of this thesis is the main investigator in this research, the two supervisors also formed part of the research team. The role of the main investigator in collecting and analysing primary data included the definition of selection criteria for suitable organisations, designing the research instrument, communication with the organisation, conducting data screening and analysis, as well as interpreting the data. A reflection on the main investigator's development throughout the research journey is presented in appendix 2. The role of the supervisors was mainly an advisory one, providing feedback on the main investigator's work. Given their contacts to a suitable organisation, one of the supervisors initiated contact with the organisation and aided in follow-up communication with the organisation. Furthermore, one of the supervisors picked a random number for the prize draw.

Data for this study was collected between June and August 2017. The data collection was split into two phases: Phase one refers to the collection of employee data using an online questionnaire (see appendix 3A) which included measures for team-level transformational leadership, team-level ethical leadership, team developmental climate and team engagement, team innovation, as well as demographic data and a team identifier. Phase two on the other hand refers to the collection of manager data (see appendix 3B) on team innovation as well as demographics and the team identifier. This multi-source approach is chosen in order to reduce common method bias in the form of single source bias (Podsakoff, MacKenzie, Lee & Podsakoff, 2003).

Employees were contacted using their work email addresses and were invited to take part in the study. The email contained a link to the online-survey and a description of the purpose of the study. Even though the email was sent through the work-email, participants were informed that participation in the study was

voluntary. In order to increase the response rate and to reduce the risk of social desirability bias in the responses, this study followed suggestions by Podsakoff et al. (2003) and employees were informed that their responses were both anonymous and confidential. As an incentive to take part in the study, participants were entered into a prize draw for an i-Pad which was sponsored by the company. While the effect of prize draws on survey response rates is debated in the literature (Paolillo & Lorenzi, 1984; Wiseman, Schafer & Schafer, 1983), this study follows current research indicating that entering participants into prize draws increases the response rate (Bright & Smith, 2002; Gou, Kopec, Cibere, Li & Goldsmith, 2016). The winner was selected at random by members of the research team. All respondents that entered the prize draw were assigned a number by the author of this thesis, and a random number was chosen by one of the supervisors of this thesis. A month after the start of the data collection, teams with less than three respondents were reminded to take part in the study.

During the second phase, the managers of teams with at least 3 respondents were invited to take part in the survey using both, paper-based and online questionnaires. These manager responses were then matched with the respective team responses.

Questionnaires were sent to 1140 employees and a total of 571 responses were returned which represents a response rate of 50 percent. However, some respondents decided to leave the survey and are hence excluded from the analysis. Respondents were required to answer every question before proceeding to the next stage of the questionnaire, which, resulted in largely complete questionnaires for those that did not drop out. As the aim is to aggregate data to the team level, only questionnaires which included a valid team identifier were considered as complete responses which means that responses without the

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team identifier were excluded from the analysis, following a complete case analysis approach (Gothlich, 2007). Furthermore, only teams that achieved at least three employee responses were included in the analysis. This resulted in a total of 332 employee responses within 48 teams. When screening for outliers (discussed in section 4.2.1 in detail), seven datasets were excluded. Manager questionnaires were returned for all respective teams. The overall sample therefore consists of 325 employee responses and matching 48 manager responses. For an overview of the sample characteristics, see table 3.3 and 3.4 for employees and managers respectively.

The majority of employees are male (82.8 percent) with an age distribution of 5.5 percent between 18 and 24 years, 23.4 percent between 25 and 34 years, the biggest group (31.7 percent) between 35 and 44 years, 24.3 percent between 45 and 54 years and 15.1 percent over 55 years old. The majority of employees (51.4 percent) holds an undergraduate degree, a further 33.8 percent have a postgraduate degree and 3.7 percent have a PhD which overall shows a well-educated workforce. There are however 11.1 percent that have only finished primary school (0.6 percent), high school (3.7 percent) and an apprenticeship (6.8 percent). The average organisational tenure is 12.6 years while the average team tenure among employees is 5.1 years. With regard to the hierarchical level of employee respondents, the majority (62.8 percent) identify themselves as team members, 12.9 percent as front-line managers, team leaders or supervisors, 17.8 percent as middle managers and 6.2 percent as senior managers. Only one respondent (0.3 percent) is a contractor.

The manager sample consists of 72.9 percent male respondents, with the majority (68.8 percent) in the 35 to 44 age group and an average age of 39.8 years. No respondents are aged below 31 or above 54. While 43.8 percent report

that they only finished primary education, exactly half of the manager sample holds a masters degree. With average organisational and team tenure 11.2 and 8.5 years, managers have on average been in the organisation for fewer years, but have worked in their teams for longer than their employees.

Table 3.2: Employee Sample*

	Frequency	Percent
Gender		
female	49	15.1%
male	269	82.8%
prefer not to say	7	2.2%
Total	*325*	*100.0%*
Age		
18-24	18	5.5%
25-34	76	23.4%
35-44	103	31.7%
45-54	79	24.3%
55+	49	15.1%
Total	*325*	*100.0%*
Education		
Primary School	2	0.6%
High School	12	3.7%
Apprenticeship/Vocational Education	22	6.8%
Undergraduate degree (Bachelor)	167	51.4%
Postgraduate degree (Master)	110	33.8%
PhD	12	3.7%
Total	*325*	*100.0%*
Organisational Tenure (years)		
0-5	126.0	38.8%
6-10	50.0	15.4%
11-15	45.0	13.8%
16-20	37.0	11.4%
21-25	17.0	5.2%
26-30	14.0	4.3%
31-35	13.0	4.0%
36-40	20.0	6.2%
40+	3.0	0.9%
Total	*325*	*100.0%*
Team Tenure (years)		
0-5	233	71.7%
6-10	55	16.9%
11-15	19	5.8%
16-20	9	2.8%
21-25	3	0.9%
26-30	0	0.0%
30+	6	1.8%
Total	*325*	*100%*
Hierarchical Level		
contractor	1	0.3%
team member	204	62.8%
front line manager/team leader/supervisor	42	12.9%
middle manager	58	17.8%
senior manager	20	6.2%
Total	*325*	*100.0%*

*percent might not add up to 100 percent due to rounding errors

Table 3.3: Manager Sample*

	Frequency	Percent
Gender		
female	13	27.1%
male	35	72.9%
Total	*48*	*100.0%*
Age		
18-24	0	0.0%
25-34	7	14.6%
35-44	33	68.8%
45-54	8	16.7%
55+	0	0.0%
Total	*48*	*100.0%*
Education		
Diploma	2	4.2%
Masters	24	50.0%
PhD	1	2.1%
Primary	21	43.8%
Total	*48*	*100.0%*
Organisational Tenure		
0-5	6	12.5%
6-10	21	43.8%
11-15	11	22.9%
16-20	7	14.6%
21-25	2	4.2%
26+	1	2.1%
Total	*48*	*100.0*
Team Tenure		
0-5	17	35.4%
6-10	21	43.8%
11-15	4	8.3%
16-20	2	4.2%
21-25	3	6.3%
26+	1	2.1%
Total	*48*	*100.0%*

*percent might not add up to 100 percent due to rounding errors

3.7.3 Measures

The questionnaire for this survey contained measures for team focussed transformational leadership, ethical leadership, team innovation, team developmental climate and team engagement. Published and validated scales were adopted from the literature. All items were adapted to the team level and were written with a team level referent. Statements were measured on a 5-point

Likert-scale ranging from either 1 to 5 (Likert, 1932). As suggested by Greving (2007), the categories were described fully in order to avoid misinterpretations. The descriptions ranged from 1 (disagree strongly) to 5 (agree strongly) for the independent variables, and 1 (never) to 5 (a great deal) for the dependent variable. For an overview of the items, see appendix 4.

Team-focussed Transformational Leadership

Team-focussed transformational leadership was reported by employees. The 12 items representing idealised influence, inspirational motivation, individualised consideration and intellectual stimulation were taken from Bass and Avolio's Multifactor Leadership Questionnaire, Version MLQS6. The MLQ is the most widely used transformational leaderships scale (Eisenbeiß et al., 2008) and has been adopted for research in a wide range of studies including for example Eisenbeiß and Boerner (2013); Gumusluoglu and Ilsev (2009a, b); Pieterse et al. (2010) and Song et al. (2012).

Items were adapted to the team level, by changing the referent to the team as opposed to the individual. Sample items include "our leader talks to us about his/her important values and beliefs", "our leader gets us to look at problems from many different angles" and "our leader gets us to do more than expected to do". The Cronbach alpha for this measure was 0.928.

Team-focussed Ethical Leadership

The team-focussed ethical leadership measure has been adapted from Brown et al.'s (2005) ethical leadership scale which is the most commonly used scale in ethical leadership research and has been successfully used to measure ethical leadership in previous research such as Newman et al. (2014); Piccolo et al. (2010); Schaubroeck et al. (2012); Tu and Lu (2016); and Zhu et al. (2015).

All ten items were used and reported by employees. Sample items include "sets an example of how to do things the right way in terms of ethics" and "disciplines employees who violate ethical standards". The Cronbach alpha for this measure was 0.887. While this is well above the desired 0.7 cut-off point (Himme, 2007) the scale reliability could be improved by removing item 4 from the analysis. The item removed was "disciplines employees who violate ethical standards", which left a 9-item scale with an alpha of 0.895.

Team Innovation

The team innovation measure was captured in both the employee and manager questionnaire. The items were taken from Axtell et al. (2000) and were also used by Eisenbeiß et al. (2008). The original scale consists of 6 items for example "New products or product development" and "New methods to achieve work targets". As the company is also providing services, a service related item was added to the scale "new services or service development". Both, employees and managers rated the extent to which their team had implemented changes to those aspects of their work. Because of the use of the team innovation measure in both the employee and the manager questionnaire, two variable sets were created, self-reported team innovation and manager-reported team innovation. The Cronbach alpha for the self-reported team innovation measure is 0.920.

The Cronbach alpha for the manager reported team innovation measure was 0.421 which is below the satisfying score of 0.7 (Himme, 2007). Deletion of individual items does not improve the scale reliability to an extent that a 0.7 alpha score could be achieved. The team innovation scale was therefore analysed with an exploratory factor analysis, using a principal components analysis method and direct oblimin rotation. This revealed three separate factors which account for

72.3 percent of the variance explained. When treating these as three individual measures, only one factor achieved a Cronbach alpha score greater than 0.7. This factor consisted of three items, "New products or product improvement", "New services or service improvement" and "Other aspects of your work". The remaining two factors did not show satisfactory scale reliability (α=0.61, and α=0.585) and were hence excluded from further analysis.

Team Engagement

Team engagement was measured using six items that were adapted from the engagement scale developed by Rich, Lepine and Crawford (2010), also used by Barrick et al. (2015), covering the three dimensions physical, emotional and cognitive engagement proposed by Kahn (1990). Sample items include "this team devotes a lot of effort and energy to its work" for the physical engagement dimension, "team members gain considerable pride from performing a job well done" representing the emotional engagement dimension and "team members are highly focussed when doing their jobs" for the cognitive engagement dimension. The Cronbach alpha for this measure was 0.839. The analysis of the scale reliability revealed that the removal of item 6, "performing work within the team is so absorbing that team members forget about the time" increases the scale reliability. Item 6 is therefore removed from the analysis which leaves a 5-item scale with an alpha of 0.849.

Team Developmental Climate

Thirteen items were taken from Spell et al.'s (2014) developmental climate scale, which incorporates two dimensions, co-worker support and mentoring. Sample items of this scale are "my team members provide support and encouragement"

and "team leadership is always looking out to help team members develop new

skills". The Cronbach alpha for this measure was 0.922.

3.8   RESEARCH ETHICS

Ethical considerations in research deal with what is acceptable and morally suitable action in conducting research (Arbnor & Bjerke, 2009). Drawing on Tracey, Gaus (2017) discusses three types of research ethics: procedural ethics which deals with the actions undertaken to recruit participants for the study, and hence looks at protection from harm, confidentiality and voluntary participation, situation ethics, which relates to the research context, and exiting ethics which deals with data protection and information for participants. In line with the Edinburgh Napier University Code of Practice on Research Integrity, this study considers all three types of ethical procedures.

The company agreed to grant access to their employees for the purpose of this research. One of the key ethical issues is voluntary participation (Collis & Hussey, 2009). Despite sending out the survey through the work email system, participation in this research remained voluntary for employees and managers, which means that participants can freely decide if they want to take part in the survey (Frankfort-Nachmias & Nachmias, 1992). Non-participation as well as withdrawal from the study was possible without having to give any reason.

Informed consent, which refers to respondents' agreement to participate in the study after having been informed about the nature and purpose of the study (Saunders et al., 2016), was given before taking the questionnaire by actively ticking a checkbox on the first page of the survey. On this first page, participating employees were informed about the study as well as about their rights to withdraw at any time. Participants that would not agree to give informed consent were not able to progress to the survey, and were not traced or identified in any form.

Confidentiality and anonymity were assured. Anonymity, which requires a separation of identifiable data and the information they give (Frankfort-Nachmias & Nachmias, 1992), i.e. responses to the scale items, was assured and the email-addresses which some employees had given in order to be included in the prize draw were separated from the data file in the first step after data collection. No reference to individual answers is made, and information that could be used to identify participants was not disclosed. The data was stored in password protected systems and files which were accessible only to the research team which included the principal investigator and the supervisors of this thesis. Data will be destroyed no later than 10 years after collection by deleting data files and online survey data.

4. DATA ANALYSIS AND RESULTS

4.1 INTRODUCTION TO THE DATA ANALYSIS AND RESULTS

This chapter provides an overview of the data analysis as well as the results. The analysis is broken down into seven stages which are displayed in table 4.1. This table provides an overview of the analysis plan and includes key criteria used to assess the data.

The first step required in the data analysis is data preparation which describes how usable data was identified, how outliers were identified and deals with, and how basic assumptions such as normality and bias were considered. The identification of useable data is required in order to describe the sample and hence this first step of data analysis is reported within the methodology chapter in section 3.7. For the purpose of showing complete process of data analysis these steps are included in the analysis plan.

Once the data was prepared, and the useable dataset identified, the second step investigated the scales used, more precisely, the scale reliabilities (as described in section 3.7.4). As this research focuses on the team level constructs, step three considers data aggregation to the team level, before reporting descriptive statistics (step 4) and considering collinearity (step 5). Finally, the model fit is assessed in step 6 using a confirmatory factor analysis (CFA) and comparing the model to alternative models with regard to a range of model fit indices, before testing the hypotheses in step 7 using hierarchical linear regression and Sobel tests.

Data was analysed using mainly the statistical package for the social sciences (SPSS) 23 including Hayes' PROCESS 2.16.3 plug-in for the moderated

mediation analysis. As CFA is not available in SPSS 23, it was conducted using

AMOS25.

Table 4.1: Analysis Plan

	Analysis	Criteria/Action
1 DATA PREPARATION ESTABLISHING USEABLE DATA SETS	missing Data	responses need to include team ID group mean imputation for missing group size data
	team size	at least 3 member/team
OUTLIERS	univariate	z-Scores < 3.29
	multivariate	Malahanobis distance >20.151, p<0.001
NORMALITY	Shapiro-Wilk	significance indicates non-normality
	Skewness	
	Kurtosis	
	visual inspection	Histogram Q-Q-Plot
NON-RESPONSE BIAS	T-test	Sig, differences between early-vs late respondents?
	X^2 test	
SINGLE-SOURCE BIAS	Podsakoff et al., 2003	
2 SCALE RELIABILITY	Cronbach's Alpha	> 0.7
	Reliability improvement through item reduction	Improvement of α
3 DATA AGGREGATION	within-group agreement	r_{wg} <0.7
	intraclass correlations	ICC1
	reliability of means	ICC2
4 DESCRIPTIVE STATISTICS	Mean	
	Standard deviation (SD)	
	Correlations	p>0.001 expected directions
5 COLLINEARITY	Correlations	0.8 or above indicates collinearity
	Variance Inflation Factor (VIF)	5 or above indicates collinearity
	Tolerance	0.2 or below indicates collinearity
6 MODEL FIT	CFA	significant factor loadings
	Fit-indices	X^2 (sig), X^2/df < 5, RMSEA <0.07, SRMR <0.08, GFI >0.9, CFI >0.9, PCFI >0.5
	Compare alternative models	Fit indices ΔX²(Δdf) (sig)
7 HYPOTHESIS TESTING	Hierarchical Linear Regression	Sig β-value
	Sobel Test	Sig z-value

4.2   DATA PREPARATION

Before the data could be used to test the hypothesised relationships, several data cleaning and preparation procedures were conducted in order to ascertain the suitability of the data for the statistical analysis employed in the later steps. Responses with missing data are already excluded from this analysis. The first step in the data preparation process involves the screening for outliers. Second, the assumption of normally distributed data is assessed, before considering potential bias passed on non-response bias or single source bias. Finally, the data is tested for statistical justification for aggregation to the team level.

4.2.1 Dealing with Outliers

Outliers are data cases that show an extreme value compared to the rest of the data and hence can distort the analysis and conclusions drawn from the data (Aguinis, Gottfredson & Joo, 2013; Freedman, Pisani & Purves, 1998; Tabachnick & Fidell, 2007). There is a range of different definitions and identification techniques used in the literature (Aguinis et al., 2013) as well as different reasons for the emergence of outliers based on incorrect data entry, misspecification of missing data codes, sampling issues and a non-normal distribution (Tabachnick & Fidell, 2007). In this study, the data is screened for both, univariate and multivariate outliers as suggested in Tabachnick and Fidell (2007). For the identification of potential univariate outliers, this study follows Aguinis et al. (2013), and identifies potential error outliers which are the result of inaccurate sampling or data entry. While SPSS identifies potential univariate outliers as part of the box-plots within the analysis of normality in line with Emerson & Strenio (1983), this study follows Tabachnick and Fidell's (2007) approach of analysing the standardised scores (z-scores). According to

Tabachnick and Fidell (2007) outliers are cases with z-scores greater than 3.29. It is however suggested, that in datasets with large samples, some cases with z-scores above 3.29 are to be expected (Freedman et al., 1998; Tabachnick & Fidell, 2007).

An analysis of the z-scores shows only five cases with z-scores greater than 3.29, the cases 33, 208, 157, 292 and 332. All these cases are also flagged in the visual inspection of the box-plots. An investigation of potential errors in terms of sampling (not within the population of interest) or incorrect data entry, no obvious sampling errors can be found. All five respondents fit the sampling approach, and are part of different units of the company. It seems however, that in these five cases, the responses are somewhat reversed in comparison to the general trend, i.e., where the majority of respondents agrees with the items provided, these cases tend to disagree. This could on the one hand suggest a misinterpretation of the scale anchors which could lead to reverse responses. It could however also suggest, that these respondents deliberately chose to rate the statements differently. The argument for a conscientious choice of the ratings is also backed up by the fact, that the negatively worded questions were clearly identified by respondents which suggests engagement with the questionnaire and implies also that the scale in question was known. As such, these outliers don't meet the criteria for error outliers as discussed by Aguinis et al. (2013). As a follow-up data collection of these specific cases is not possible due to anonymity of the respondents, and the reason for the extreme data is not clearly identifiable, these cases are excluded from further analysis.

In order to identify multivariate outliers, the Mahalanobis distance is calculated. Drawing on Tabachnick and Fidell (2007), the relevant cut-off for the dataset of five variables at the $p<0.001$ level is 20.151. Two cases are identified as

multivariate outliers with Mahalanobis distances of 27.296 and 25.864 which are consequently removed from the dataset (Tabachnick & Fidell, 2007). This leaves a total employee sample size of 325 respondents within 48 teams.

4.2.2 Normality Assumption

After dealing with outliers, the distribution of all variables is investigated as a normal distribution is a basic assumption for regression analyses (Tabachnick & Fidell, 2007). As expected with larger sample sizes (Field, 2009), the analysis shows some skewness and kurtosis for all variables. Both independent variables, team-focussed transformational leadership and team-focussed ethical leadership as well as both mediators, team engagement and team developmental climate are negatively skewed (TTL: S=-0.276; TEL: S=-0.646; TE: S=-0.255; TDC: S=-0.353) which indicates that there are more responses towards the higher end of the scale (Tabachnick & Fidell, 2007). The dependent variable team innovation, however, is positively skewed (S=0.038) which indicates more responses towards the lower end of the scale. Considering the kurtosis, which indicates how peaked a distribution is, the analysis shows a negative kurtosis and hence a flat distribution for team-focussed transformational leadership (K=-0.275), team engagement (K=-0.519) and team innovation (K=-0.567) but a positive kurtosis which indicates a high peak, for team-focussed ethical leadership (K=0.079) and team developmental climate (K=0.606).

Further to analysing the skewness and kurtosis of the variable distributions, the Shapiro-Wilk test was conducted which indicates a potential deviation from a normal distribution. The Shapiro-Wilk test shows significant (p<0.01) differences from a normal distribution for all variables included in the model. Therefore, a visual inspection of the histograms and Q-Q-plots was necessary.

The visual inspection of the histograms shows some deviation from the normal distribution, however, contrary to the results of the statistical measures reported above, the visual inspection shows that the variable distributions roughly follow the normal curve for all variables (see appendix 5). Furthermore, the Q-Q plots, which plots the actual values against the data that would be expected if the data were normally distributed, show data on or close to the Q-Q line which suggest that the data is roughly normally distributed. Therefore, no transformation of the data is attempted.

4.2.3 Dealing with Bias

Within the process of data screening, investigating potential bias within the data is paramount. One bias that frequently concerns the leadership and outcomes literature is common method bias. Considering common method bias and its effects is necessary as it can inflate relationships between the variables, provide an alternative explanation for the measured relationships and therefore distort research findings (Hassan et al., 2013; Podsakoff et al., 2003). While there is a range of statistical approaches aimed at detecting and controlling common method bias, including Harman's one factor test which is frequently used in leadership and outcomes literature, Podsakoff et al. (2003) suggest creating a research design that decreases the possibility and probability of common method bias which makes the use of statistical measures somewhat unnecessary. This research follows Podsakoff et al.'s (2003) suggestions in terms of research design. First, independent and dependent variables were collected from different sources, i.e., independent variables were collected from employees, whereas dependent variables were collected from the respective managers. In doing so, single source bias and with it different motives for such, including the desire to be

consistent in their answers, having underlying assumptions or theories that are reflected in all answers etc, are prevented. Second, the collection of data was split into two waves which were separated by several weeks and while employees were asked to fill in an online questionnaire, managers had the option to also use a paper based questionnaire, which changes the context in which the data is collected and hence avoids common contextual cues and influences. Third, while Likert-scales were used for both the independent and the dependent variables, the scale descriptions were different. All independent variables were collected on a 1 (strongly disagree) to 5 (strongly agree) scale, whereas the dependent variables were collected using a 1(never) to 5 (a great deal) scale. Fourth, all independent measures included a reverse negatively worded item to avoid automatic response patterns and increase respondents' engagement with the questionnaire (Hinkin, 1995; Podsakoff et al., 2003) which were reverse coded for analysis. Taken these together, a range of procedural and design measures were introduced to reduce potential common method bias for both, the multi-source sample of employees and managers, but also within the employee sample as well.

Given the response rate of 50 percent, the employee data was tested for non-response bias which might arise when not all the invited associates are willing or able to answer (Adams, Kahn, Raeside & White, 2007; Couper, 2000). The fact that not all invited employees responded to the survey is not generally a problem. It is however necessary to investigate, if there is a reason for non-response, hence if the non-respondents have something in common that differentiates them from the respondents, which could influence the ratings and therefore lead to biased results (Armstrong & Overton, 1977). However, it is problematic and often impossible to compare respondents with non-respondents, as often, there is no

information on the non-respondents available. Therefore, a common method is to treat late respondents, like non-respondents, assuming that late respondents were less keen to answer and hence only responded after being reminded to do so, and compare them to early respondents (Armstrong & Overton, 1977; Etter & Perneger, 1997; Ruiz-Palomino et al., 2011).

Following this approach, the first quartile of submissions, was compared to the last quartile of survey submissions using two-sample t-tests for continuous or scales data and chi-square tests for categorical data in SPSS. For the t-test, homogeneity of variance was tested using Levene's test, whereby equal variance is assumed for $p>0.05$. In order to compare the early and late respondents, employee responses were grouped into quartiles, based on the start time of responding to the survey Responses were compared based on gender, age, organisational and team tenure and level of education, hierarchical level as well as the measurement variables of model constructs.

The two groups (first and last quartile respondents) were similar in terms of gender, team tenure, level of education, and hierarchical level, however the comparison showed significant differences in terms of age (x^2=12.271, df=4, p=0.015) and organisational tenure (t(145.265)=-2.88, p=0.005). Late respondents were older with 47.6 percent being over 45 years old as compared to 25.9 percent among early respondents (see table 4.2, 4.3), and had a longer organisational tenure that early respondents with a mean difference of over 4.7 years. In terms of the model constructs, however, no significant difference between the early- and late-respondents was found.

This indicates, that even though the late respondents are generally older and have been in the organisation for longer than early respondents, and therefore

the sample might be biased towards younger employees with shorter organisational tenure, this potential sampling bias seems to have no impact on the variables of interest in the measurement model.

Table 4.2: Age Difference between Early and Late Respondents

		Age					
		18-24	25-34	35-44	45-54	55+	Total
early respondents	Count	5	24	31	11	10	81
	%	6.2%	29.6%	38.3%	13.6%	12.3%	100.0%
late respondents	Count	6	11	26	27	12	82
	%	7.3%	13.4%	31.7%	32.9%	14.6%	100.0%

Table 4.3: Testing for Non-response Bias

		Levene's Test for Equality of Variances		t-test for Equality of Means							
										95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		Lower	Upper
TTL	Equal variances assumed	1.584	0.210	**-0.792**	**161**	**0.429**	**-0.07917**	**0.09991**		**-0.27648**	**0.11814**
	Equal variances not assumed			-0.792	157.391	0.430	-0.07917	0.10000		-0.27668	0.11835
TEL	Equal variances assumed	3.196	0.076	**-0.819**	**161**	**0.414**	**-0.07740**	**0.09445**		**-0.26393**	**0.10912**
	Equal variances not assumed			-0.819	157.530	0.414	-0.07740	0.09453		-0.26412	0.10931
TE	Equal variances assumed	0.145	0.704	**0.497**	**161**	**0.620**	**0.05071**	**0.10198**		**-0.15069**	**0.25210**
	Equal variances not assumed			0.497	160.896	0.620	0.05071	0.10196		-0.15064	0.25206
TDC	Equal variances assumed	0.540	0.463	**-0.482**	**161**	**0.630**	**-0.04582**	**0.09497**		**-0.23336**	**0.14173**
	Equal variances not assumed			-0.482	161.000	0.630	-0.04582	0.09496		-0.23335	0.14172
TI	Equal variances assumed	0.424	0.516	**-0.526**	**161**	**0.600**	**-0.07145**	**0.13581**		**-0.33965**	**0.19675**
	Equal variances not assumed			-0.526	160.687	0.599	-0.07145	0.13577		-0.33957	0.19667
Org Tenure	Equal variances assumed	13.722	0.000	-2.877	161	0.005	-4.713	1.638		-7.948	-1.478
	Equal variances not assumed			**-2.883**	**145.265**	**0.005**	**-4.713**	**1.635**		**-7.944**	**-1.483**
Team Tenure	Equal variances assumed	5.072	0.026	-1.326	161	0.187	-1.528	1.152		-3.803	0.748
	Equal variances not assumed			**-1.330**	**126.297**	**0.186**	**-1.528**	**1.148**		**-3.800**	**0.745**

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4.2.5 Data Aggregation

In line with the conceptual model and the hypotheses, the employee data was tested for statistical justification of aggregation to the team level. This is based on within-group agreement (r_{wg}), and intraclass correlations (ICC) and reliability of means which report the variance which is explained by group membership (ICC(1), ICC(2)) (Bartko, 1976; James, Demaree & Wolf, 1984; McCoach, 2010; McGraw & Wong, 1996). A within group agreement r_{wg} greater than 0.7 is generally accepted as indicating good agreement (Lance, Butts & Michels, 2006; LeBreton & Senter, 2008). The higher the ICCs, the more homogeneous are the responses within each team and the greater the variance between the teams (McCoach, 2010). The ICC(1) can be interpreted as the proportion of the variance explained through the team membership (Bliese, 2000). The higher the ICC(1) score the more variance is explained by team membership and therefore, high ICC(1) values provide justification for data aggregation. The ICC(1) reports the reliability of individual assessment of the group mean, which means that a large ICC(1) is an indicator for individual ratings being good estimates for the group mean whereas a small ICC(1) calls for multiple ratings in order to estimate the group mean (Bliese, 2000). The ICC(2) predicts the reliability of the group mean based on the group size (Bliese, 2000). The higher the ICC(2), the higher the reliability of the group mean. Generally, LeBreton and Senter (2008) suggest that an ICC(1) value below 0.1 represents a small effect, a value between 0.1 and 2.5 represents a medium effect and a value of 0.25 and above represents a large effect of team membership. For the ICC(2), a higher value of 0.7 is suggested in order to justify data aggregation (Jiang & Chen, 2018; LeBreton & Senter, 2008).

Employee data was grouped according to the team ID, in which respondents reported which team they belong to. As a basis for calculating r_{wg}, ICC(1) and ICC(2), one-way ANOVAs were conducted in SPSS23 for all four variables of interest, team-transformational leadership, team-ethical leadership, team-engagement and team developmental climate, using the team ID to identify the different groups. As teams varied in team size, the average team size was used following Bliese (2000). The aggregation indices were calculated in line with James et al. (1984) and Bliese (2000) and the respective equations are shown in table 4.4.

All aggregation indices are presented in table 4.4. All r_{wg}s exceed the cut-off point of 0.7 with r_{wg}s being 0.801 for team-focussed transformational leadership, 0.782 for team-focussed ethical leadership, 0.819 for team developmental climate and 0.818 for team engagement. The ICC indices however, were relatively low for team-focussed transformational leadership (ICC(1)=0.032; ICC(2)=0.187), team-focussed ethical leadership (ICC(1)=-0.009; ICC(2)=-0.064), team developmental climate (ICC(1)=0.026; ICC(2)=0.158), and team engagement (ICC(1)=0.011; ICC(2)=0.073), showing low reliability of means and therefore little variance explained by group membership. Negative values are interpreted similar to zero.

These results show that while the r_{wg} indicate good within group agreement of greater than 0.7 for all relevant variables, ICC(1) and ICC(2) indices did not support an aggregation of the individual data to the group level. Therefore, data is not aggregated to the team level and further data analysis is conducted at the individual level.

Table 4.4: Aggregation Indices

	r_{wg}	ICC1	ICC2
Team Transformational Leadership	0.801	0.032	0.187
Team Ethical Leadership	0.782	-0.009	-0.064
Team Developmental Climate	0.819	0.026	0.158
Team Engagement	0.818	0.011	0.073

$r_{wg(48)}$: $\underline{48}(1-(\underline{s_{x1}}^2/\sigma_{EU}^2))/(\underline{48}(1-(\underline{s_{x1}}^2/\sigma_{EU}^2)+(\underline{s_{x1}}^2/\sigma_{EU}^2))$ where $\sigma_{EU}^2=(A-1)/12$ with A=5
ICC(1): MSB-MSW/((MSB+(k-1)*MSW)), where k is 7
ICC(2):k*ICC(1)/(1+(k-1)*ICC(1)), where k is 7

4.2.6 Data Limitations

The data preparation brings up two separate data limitations. First, the manager reports of team innovation show problems with the scale reliability in terms of a low Cronbach alpha (0.421) for the overall measure. In order to achieve an acceptable scale reliability, more than half of the scale items were dropped. This means that while product and service innovations are covered under this reduced scale, process, methods and target innovations are not considered.

Second, the employee data on team-focussed transformational leadership, team-focussed ethical leadership, team developmental climate and team engagement showed acceptable r_{wg}s, but very low ICCs. There is therefore no statistical justification for the aggregation of this data to the team level.

Considering these data limitations the original plan to match manager team-level data with aggregated employee data is no longer viable. Therefore, the manager data is excluded from the analysis and only employee data is used to test the hypotheses. Potential implications in terms of common method bias that arise as a consequence of this decision are discussed in section 5.4.

4.3   RESULTS

4.3.1 Descriptive Statistics and Correlations

Descriptive statistics for all variables included in the conceptual model as well as the control variables used in the analysis were calculated. These include means, SDs and Pearson correlations and are displayed in table 4.5. With regard to the control variables, gender, age, education and hierarchical level are dummy coded, and therefore, meaningful means and SDs are not available for those variables. Organisational tenure and team tenure, however are continuous variables, and therefore mean and SD provide meaningful information. As can be seen from table 4.5, the average organisational tenure is higher (12.56 years) than the average team tenure (5.11 years). This intuitively makes sense, as employees employed by the organisation could change the team that they are working in. It is further notable, that the SD for both, organisational tenure as well as team tenure are very high, with 11.513 years and 6.498 years respectively, indicating great variance among respondents.

Looking at the model variables which are measured on a Likert-scale and can therefore theoretically vary from 1-5, all means are between 3.32 and 3.95. The mean for the two independent variables, team-focussed transformational leadership and team-focussed ethical leadership are 3.59 (SD=.678) and 3.87 (SD=.654) respectively. The highest mean is reported for one of the mediators, team engagement with a mean of 3.95 (SD=0.654) and the second mediator, team developmental climate has a mean of 3.72 (SD=.598). The dependent variable, team innovation, shows the lowest mean with 3.32 (SD=.835) among all variables of the measurement model.

Looking at the correlations part of table 4.5, it can be seen, that the respondents' gender is not significantly related to any other variable. Within the control variables, age is significantly and negatively related to education (r=-0.110, p<0.05) but positively and significantly related to organisational tenure (r=0.679, p<0.01), team tenure (r=0.400, p<0.01) and hierarchical level (r=0.459, p<0.01), which indicates, that older respondents have lower levels of education, however they have been with the company and their teams for longer and hold jobs at higher hierarchical levels that younger respondents. In line with this, the level of education is negatively related to organisational tenure (r=-0.217, p<0.001), team tenure (r=-0.173, p<0.01), however, it is positively related to hierarchical level (r=0.167, p<0.01) indicating a positive relationship between education and hierarchical level. Further correlations between organisational tenure and team tenure (r=0.476, p<0.01) and organisational tenure and hierarchical level (r=0.521, p<0.01), as well as team tenure and hierarchical level (r=0.190, p<0.01) further confirm a relationship between age, tenure and hierarchical level.

With regard to the correlations between the control variables and the variables in the conceptual model, some weak but significant correlations can be found. Education is positively related to both team-focussed ethical leadership (r=0.115, p<0.05) as well as team developmental climate (r=0.130, p<0.05), while developmental climate is further significantly, but negatively, correlated to respondents' age (r=-0.136, p<0.05) and organisational tenure (r=-0.120, p<0.05).

Correlations between the independent variables, dependent variable and mediator variables, generally support the relationships shown in the conceptual model. Team-focussed transformational leadership is positively correlated with team innovation (r=0.529, p<0.01) which is in line with H1. Similarly, supporting

H2, team-focussed ethical leadership is positively correlated with team innovation (r=0.437, p<0.01). Providing initial evidence for H3 and H4, team-focussed transformational leadership and team-focussed ethical leadership are positively correlated with team engagement, with r=0.468 (p<0.01) and r=0.494, (p<0.01) and team engagement is positively correlated to team innovation (r=0.434, p<0.01). In line with H5 and H6, both independent variables, team-focussed transformational leadership and team-focussed ethical leadership, are positively correlated with team developmental climate (r=0.677, p<0.01 and r=0.665, p<0.01 respectively), which in turn is positively correlated with team innovation (r=0.508, p<0.01). These results show that all relevant variables are significantly correlated, with correlations in the expected directions, which is an indication for the existence of the suggested relationships between the variables.

Except for the correlation between team-focussed transformational leadership and team-focussed ethical leadership, all correlations among variables in the conceptual model fall in the usual range for correlations in social sciences (Freedman et al., 1998) between 0.3 and 0.7. Team-focussed transformational leadership and team-focussed ethical leadership, however are strongly correlated with an r=0.873 (p<0.001). Such a high correlation between two variables could be indicative of large overlaps between the two leadership styles and measurement scales and collinearity where two variables measure essentially the same concept. Further analysis therefore includes collinearity tests in section 4.3.2 as well as the comparison of the model structure with a model including a combined leadership variable in section 4.3.3.

Table 4.5: Descriptive Statistics

		Descriptive Statistics		Correlations										
		Mean	Std. Deviation	Gender	Age	Education	Org. Tenure	Team Tenure	Hierarch. Level	1	2	3	4	5
Control Variables	Gender	NA	NA	1	.024	.006	-0.036	.003	.032	-0.039	-0.062	-0.004	-0.014	-0.056
	Age	NA	NA	.024	1	-.110*	.679**	.400**	.459**	-0.006	-0.007	.068	-.136*	-0.014
	Education	NA	NA	.006	-.110*	1	-.217**	-.173**	.167**	.059	.115*	.082	.130*	.033
	Organisational Tenure	12.56	11.513	-0.036	.679**	-.217**	1	.476**	.521**	-0.033	-0.043	.016	-.120*	.027
	Team Tenure	5.11	6.498	.003	.400**	-.173**	.476**	1	.190**	-0.100	-0.089	-0.063	-0.089	-0.104
	Hierarchical Level	NA	NA	.032	.459**	.167**	.521**	.190**	1	.011	.041	.076	.004	.037
1	Team Transformational Leadership	3.59	.678	-0.039	-0.006	.059	-0.033	-0.100	.011	1	.873**	.468**	.677**	.529**
2	Team Ethical Leadership	3.87	.654	-0.062	-0.007	.115*	-0.043	-0.089	.041	.873**	1	.494**	.665**	.437**
3	Team Engagement	3.95	.654	-0.004	.068	.082	.016	-0.063	.076	.468**	.494**	1	.599**	.434**
4	Team Developmental Climate	3.72	.598	-0.014	-.136*	.130*	-.120*	-0.089	.004	.677**	.665**	.599**	1	.508**
5	Team Innovation	3.32	.835	-0.056	-0.014	.033	.027	-0.104	.037	.529**	.437**	.434**	.508**	1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

4.3.2 Collinearity

Because of very high correlation between team-focussed transformational leadership and team-focussed ethical leadership, the predictor variables are tested for collinearity. Popular rules of thumb for correlations indicating collinearity are 0.9 and above (Tabachnick & Fidell, 2007, Schneider, 2007) or, more conservatively, 0.8 and above (Field, 2009). While the correlation between transformational and ethical leadership is 0.873 and hence below the 0.9 cut off, it falls into the more conservative range of correlations of 0.8 or above (Field, 2009). As collinearity can cause problems in regression analysis such as inflated error terms and non-significant coefficients (Tabachnick & Fidell, 2007), the tolerance and VIF statistics are calculated for all predictor variables (see table 4.6) to see if the variables need to be treated, e.g. centred, dropped or aggregated, for further analysis (Christophersen & Grape, 2007; Field, 2009; Stolzenberg, 2004; Tabachnick & Fidell, 2007).

The VIF shows if there is a strong linear relationship between independent variables, while tolerance is simply the reciprocal (1/VIF) (Field, 2009). There is some discussion around reasonable criteria for collinearity, with a VIF lower than 10 and a tolerance level higher than 0.1 being probably the most popular definition (O'Brien, 2007). However, more conservative criteria include a VIF below 5 and tolerance level above 0.2 as more suitable (Field, 2009).

All independent variables were included in the collinearity analysis. Both tolerance and VIF were calculated using SPSS23. The analysis reveals that the tolerance levels for all independent variables are above 0.2., with 0.0222 for team-focussed transformational leadership, 0.225 for team-focussed ethical leadership, 0.624 for team engagement and 0.432 for team developmental

climate. Consequently, the VIF values are below the criterion of a VIF of 5. Based on these criteria, both mediators, team engagement and team developmental climate, are way below the VIF cut-off and therefore above the tolerance threshold and show low degrees of collinearity. VIF values for both predictor variables, team-focussed transformational leadership and team-focussed ethical leadership, are close to, but below the threshold of 5 and therefore indicate an acceptable degree of collinearity.

Table 4.6: Collinearity

Coefficients[a]

		Collinearity Statistics	
Model		Tolerance	VIF
1	Team Focussed Transformational Leadership	0.222	4.509
	Team Focussed Ethical Leadership	0.225	4.445
	Team Engagement	0.624	1.602
	Team Developmental Climate	0.432	2.314

a. Dependent Variable: Team Innovation

4.3.3 Model Fit

In order to determine the model fit a range of CFAs were conducted in AMOS. All five variables, team-focussed transformational leadership, team-focussed ethical leadership, team engagement, team developmental climate and team innovation with their 47 items were included in the analysis. First, all 47 items were modelled into the five proposed latent constructs. All factor loadings were significant at the $p<0.001$ level and ranged from 0.469 to 0.897, indicating convergent validity of the measurement scales. The full model is shown in figure 4.1.

While CFA is a confirmatory procedure, AMOS provides a range of indices to improve the model fit. This is generally seen as problematic as it invalidates the idea that it is used to test the model which was previously defined (Blunch, 2008). However, in order to improve model fit, error terms with high covariances which

belong to items on the same factors might be covaried if a theoretical justification is available (Hooper, Coughlan & Mullen, 2008). Theoretical justifications for such a treatment could lie in the questionnaire design whereby items on the same factors lie close together. Therefore, the model fit was improved by covarying error terms belonging to items on the same factors which showed high covariances.

In terms of model fit, the chi-square test comes up as significant, however, due to the large sample size of 325, this is to be expected (Hooper et al., 2008) as the chi-square test is sensitive to sample size (Blunch, 2008). Therefore further indices are used to assess model fit. Hooper et al. (2008) report guidelines for cut-off points of model fit indices: significant x^2, $X^2/(df)<5$, RMSEA<0.07, SRMR<0.08, GFI>0.9, PCFI>0.5. Even though, a CFI above 0.95 has commonly been reported as the required cut off, several suggest that a CFI above 0.9 shows a good or acceptable fit (Hooper et al., 2008; Sattayaraksa & Boon-itt, 2016); a view that has been adopted in current leadership literature, where studies with CFI values between 0.9 and 0.95 are not uncommon (Wu et al., 2015; Yang et al., 2016; .Zheng, Liu & Gong, 2016). The 5-factor baseline model shows good fit in terms of $X^2/(df)=2.009$, RMSEA=0.056, and acceptable fit in terms of SRMR=0.0625, CFI=0.901 and PCFI=0.842. The GFI statistic is below the required cut-off point of 0.9. While the GFI is traditionally considered an important indicator of model fit, its sensitivity to sample size and model complexity make it a less suitable index for research dealing with large sample sizes and more complex models (Hooper et al., 2008). Taken these indices together, the 5-factor model shows acceptable fit.

The 5-factor baseline model was further compared to several alternative models. Firstly, a four-factor model using a combined leadership variable, which includes

both team-focussed transformational and ethical leadership. Given the high correlations between the two leadership concepts, it seems appropriate to test if a model using an aggregated leadership scale provides a better fit than the baseline model. Secondly, a 3-factor model using both a combined leadership variable and a combined mediator variable was analysed for model fit and thirdly, a single factor model where all items were loaded on one single factor is considered.

The chi-square difference test shows significantly better fit of the 5-factor model over all alternative models. Comparing the fit indices shows that all three, $X^2/(df)$, RMSEA, and SRMR are lower in the 5 factor model than in alternative models. Similarly, the GFI, CFI and PCFI indices are higher in the 5-factor model compared to all other models with the exception of a slightly higher PCFI in the 4-factor model. Taking these results together, the 5-factor baseline model was determined to have a better fit than the alternative models (see table 4.7 for details).

Table 4.7: Model Fit Indices:

Model	$X^2(df)$	$\Delta X^2(\Delta df)$	$X^2/(df)$	RMSEA	SRMR	GFI	CFI	PCFI
5-factor model	1942.497(967)		2.009	0.056	0.0625	0.789	0.901	0.842
4-factor model[a]	1976.596(971)	34.099(4)**	2.036	0.057	0.0632	0.785	0.898	0.843
3-factor model[b]	2269.465(974)	326.968(7)**	2.330	0.064	0.0670	0.749	0.869	0.818
1-factor model[c]	3761.467(977)	1818.97(10)**	3.850	0.094	0.0900	0.562	0.718	0.678

[a] obtained upon baseline model by loading TTL and TEL on one leadership factor
[b] obtained upon baseline model loading TTL and TEL on one leadership factor and TE and TDC on a common factor
[c] obtained upon baseline model loading all variables on one latent factor
** $p<0.001$
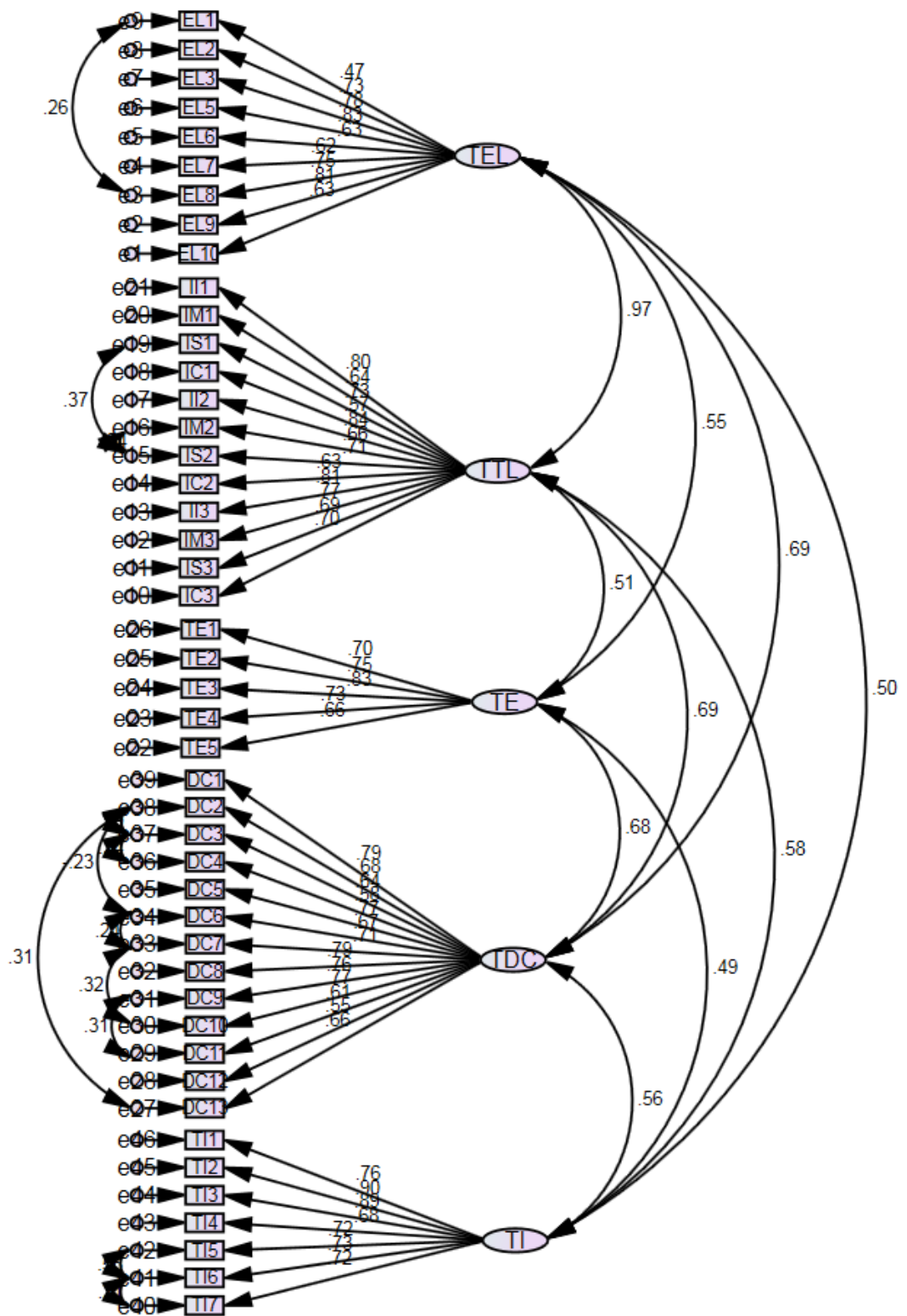
Figure 4.1: CFA of 5-factor Baseline Model

4.3.4 Testing the Hypotheses

Hierarchical linear regression was used to test the direct and mediation hypotheses, including direct effects and indirect effects through mediators following Baron and Kenny's (1986) causal steps analysis approach. While other analysis tools and processes are available to test for mediation, and criticisms to Baron and Kenny's mediation analysis, such as neglecting to measure the actual indirect effect, are noted, this approach is still the most widely used approach to statistically test for mediation in the leadership and outcomes literature (Hayes, 2009; Zhao, Lynch & Chen, 2010). Two alternative approaches were considered for the mediation analysis: structural equation modelling and mediation in PROCESS 2.16.3.

While structural equation modelling allows for the simultaneous testing of various effects within the model (Blunch, 2008; Zhao et al., 2010), in a model with various mediators, the indirect effects measured do not differentiate between the route and process through which the indirect effect occurs. This means that the indirect effect calculated in SEM would combine effects of the leadership variables on team innovation through both, team engagement and team developmental climate. However, this study aims to test specific direct and indirect effects and aims at differentiating between the indirect effects through the mediators separately, therefore Baron and Kenny's approach seems more appropriate for the mediation hypotheses in this study. In order to overcome, criticisms of neglecting the measurement of the actual indirect effect, Sobel tests were used to determine the existence and significance of such indirect effects.

Hayes' PROCESS 2.16.3 tool for SPSS is designed for mediation and moderation and tests for the specific effects described in the hypotheses and uses

bootstrapping to test for indirect effects (Zhao et al., 2010). However, it does not allow for control variables to be included in the analysis and is therefore less suitable than Baron and Kenny's approach for mediation. It does, however allow for moderated mediation analyses, which is necessary for a all moderated mediation hypotheses in the conceptual framework.

To test the direct and mediation hypotheses, variables were entered hierarchically into the regression analysis. All control variables were entered in the first step. Control variables included demographic variables such as gender, age, organisational tenure, team tenure, educational level and hierarchical level within the organisation. The independent variable was entered in step two, and the mediators were entered in step three of the regression. The regression results are shown in tables 4.8 and 4.9.

Direct Effects

Hypothesis 1 predicts that team-focussed transformational leadership is positively related to team innovation. The hierarchical regression showed that team-focussed transformational leadership is positively and significantly related to team innovation. (β=.523, p<0.001), which supports hypothesis 1.

Team-focussed transformational leadership was further positively related to both mediators, team engagement (β=.461, p<0.001) and team developmental climate (β=.676, p<0.001). These relationships are prerequisites for the mediation relationship.

Hypothesis 2 predicts a positive relationship between team-focussed ethical leadership and team innovation. Regression results showed a significant positive relationship between team-focussed ethical leadership and team innovation (β=.433, p<0.001), providing support for hypothesis 2.

In addition to this, the relationship between team-focussed ethical leadership and the mediator variables was analysed. The regression showed direct and significant relationships between team-focussed ethical leadership and team engagement (β=.488, p<0.001) and team developmental climate (β=.662, p<0.001).

Furthermore, both mediators, team engagement and team developmental climate, were positively and directly related to team innovation with β=.432, (B=0.551, SE=0.065, p<0.001) and β=.519 (B=0.724, SE=0.068, p<0.001) respectively.

Overall, the investigation of the direct effects shows significant direct effects for all relationships in question which supports hypotheses 1 and 2 and provides evidence for further testing of mediation effects. All direct effects are displayed in figure 4.2.
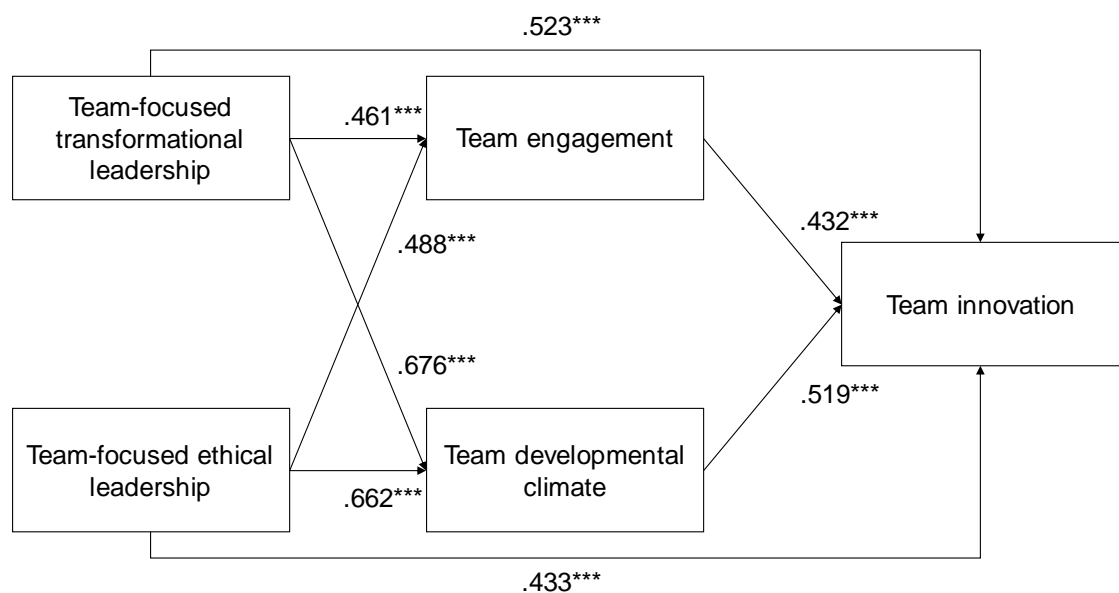
Direct effects:
β- values
*p<0.05, **p<0.01, ***, p<0.001

Figure 4.2: Direct Effects

Indirect Effects

In order to test the indirect effects predicted in hypotheses 3 to 6, a series of regressions was conducted following Baron and Kenny's (1986) line of argument. According to Baron and Kenny (1986), the independent variable must be directly and significantly related to the dependent variable. Second, the independent variables must be significantly related to the mediator, and third, when controlling to the mediator, the direct relationship between the independent variable and the dependent variable is weaker but still significant (partial mediation) or becomes insignificant (full mediation). From testing the direct effects, it can be seen that both, team-focussed transformational leadership and team-focussed ethical leadership are significantly related to the dependent variable team innovation, as well as the two suggested mediators, team engagement and team developmental climate. As such, Baron and Kenny's first two criteria are met.

Hypotheses 3 and 4 deal with the mediating effect of team engagement. According to hypothesis 3, the relationship between team-focussed transformational leadership and team innovation is mediated by team engagement. The hierarchical regression shows, that when entering team engagement into the regression, the direct relationship between team-focussed transformational leadership and team innovation became weaker, indicated by a smaller beta value, but remained significant (β = .412, p<0.001), which suggests a partial mediation through team engagement and supports hypothesis 3 (see table 4.8).

Hypothesis 4 suggests a mediating effect of team engagement in the team-focussed ethical leadership and team innovation relationship. As can be seen in table 4.9, the direct effect of team-focussed ethical leadership on team innovation

decreases (β = .291, p<0.001), but remains significant indicating a partial mediation in support of hypothesis 4.

The mediating effects of team developmental climate are predicted in hypotheses 5 and 6. Hypothesis 5 suggests that team developmental climate mediates the relationship between team-focussed transformational leadership and team innovation whereas hypothesis 6 expects team developmental climate to mediate the relationship between team-focussed ethical leadership and team innovation. The hierarchical regressions indicate that both relationships those between team-focussed transformational leadership and team innovation as well as between team-focussed ethical leadership and team innovation are partially mediated which supports hypotheses 5 and 6. The beta values decrease but remain significant for team-focussed transformational leadership and innovation (β = .323, p<0.001) and team-focussed ethical leadership and innovation (β = .160, p<0.05). It is noteworthy, however that the direct effect between team-focussed ethical leadership and innovation is only significant at the p<0.05 level as opposed to the p<0.01 or p<0.001 level when the mediator is introduced. While a significance level of 0.05 is commonly accepted within the leadership literature, Antonakis (2017) regards this as "too lax" (p. 8) and suggests rejecting findings with significance levels above 0.001. This study, however, follows the common literature and therefore suggests that both, H5 and H6 are supported by the data. Results for the mediated relationships are presented in figure 4.3, where the different colours show refer to the different hypotheses.

Table 4.8: Hierarchical Linear Regressions, IV=Team-focussed Transformational Leadership

	Team Innovation			
	M1	M2	M3	M4
Step 1: Control Variables				
Gender	-0.051	-0.030	-0.033	-0.034
Age	-0.042	-0.065	-0.086	-0.021
Education	0.027	0.005	-0.007	-0.014
Organisational Tenure	0.116	0.121	0.126	0.135
Team Tenure	-0.141*	-0.085	-0.075	-0.102
Hierarchical Level	0.020	0.015	0.005	-0.005
Step 2: Independent Variable				
Team-focussed Transformational Leadership		0.523***	0.412***	0.323***
Step 3: Mediators				
Team Engagement			0.240***	
Team Developmental Climate				0.296***
R^2	0.023	0.292	0.336	0.337

*p<0.05, **p<0.01, ***, p<0.001

Table 4.9: Hierarchical Linear Regression, IV=Team-focussed Ethical Leadership

	Team Innovation			
	M1	M5	M6	M7
Step 1: Control Variables				
Gender	-0.051	-0.023	-0.030	-0.034
Age	-0.042	-0.061	-0.086	0.000
Education	0.027	-0.012	-0.019	-0.025
Organisational Tenure	0.116	0.134	0.134	0.144
Team Tenure	-0.141*	-0.106	-0.091	-0.122*
Hierarchical Level	0.020	0.001	-0.006	-0.017
Step 2: Independent Variable				
Team-focussed Ethical Leadership		0.433***	0.291***	0.160*
Step 3: Mediators				
Team Engagement			0.160*	
Team Developmental Climate				0.411***
R^2	0.023	0.205	0.268	0.296

*p<0.05, **p<0.01, ***, p<0.001
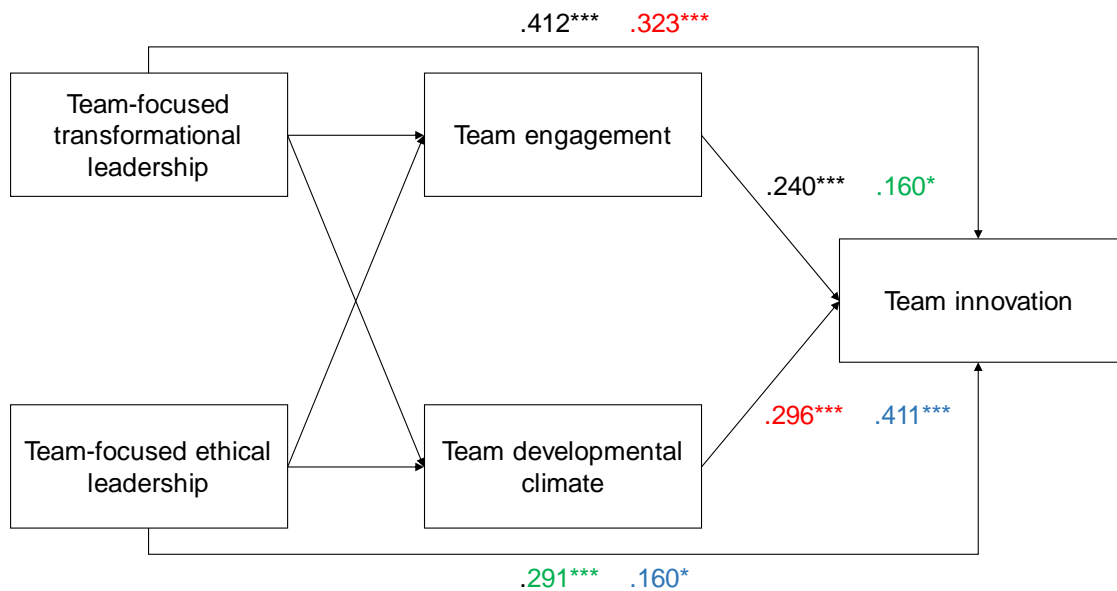
Partial mediation:
β- values, showing indirect effects, H_3 (black), H_4 (green), H_5 (red), H_6 (blue)
*p<0.05, **p<0.01, ***, p<0.001

Figure 4.3: Indirect Effects

Sobel Test

In order to determine the significance of the indirect effects, a Sobel test was conducted for all predicted indirect relationships, whereby the indirect effect is divided by Sobel's standard error approximation and compared to a normal distribution to test its significance (MacKinnon, Lockwood, Hoffman, West & Sheets, 2002). The necessary input data is taken from regression analysis which tests direct effects between IV and mediator and mediator and DV reported along other direct effects in this section.

The results are displayed in table 4.10. Supporting hypotheses 3 and 5, the Sobel test for the relationships between team-focussed transformational leadership and team innovation through team engagement (z=6.256, p<0.001) and team developmental climate (z=8.955, p<0.001) were significant. Similarly, the indirect effects of team-focussed ethical leadership on team innovation through team

engagement and team developmental climate were significant with z-values of 6.455 (p<0.001) and 8.955 (p<0.001) respectively, which provides support for hypotheses 4 and 6. Overall, the Sobel test shows significant indirect effects for all of the indirect relationships.

Table 4.10: Sobel Test

Model	a	b	s_a	s_b	Z*	SE	p-value
TTL – TE - TI	0.445	0.551	0.048	0.065	6.256	0.039	<0.001
TEL – TE - TI	0.488	0.551	0.049	0.065	6.455	0.042	<0.001
TTL – TDC – TI	0.596	0.724	0.036	0.068	8.955	0.048	<0.001
TEL – TDC - TI	0.606	0.724	0.038	0.068	8.955	0.049	<0.001

z-value = $a^*b/\mathrm{SQRT}(b^{2*}s_a^2 + a^{2*}s_b^2)$
whereby a, b are unstandardised coefficients and s_a, s_b are respective standard errors

4.3.5 Supplementary Analysis – Controlling for Other Leadership Concept

Given the potential overlap of the two leadership concepts, supplementary hierarchical linear regression analysis was conducted whereby the respective other leadership construct was controlled for, i.e. control for team-focussed ethical leadership in the team-focussed transformational leadership and team innovation relationship (both direct and indirect through the mediators) and control for team-focussed transformational leadership in the team-focussed ethical leadership and team innovation relationship (both direct and indirect through the mediators).

Direct effects

When controlling for team-focussed ethical leadership, the relationship between team-focussed transformational leadership and team innovation remained positive and significant (β = .616, p<0.001) providing additional support for H1 (see table 4.11). In fact, controlling for team-focussed ethical leadership increases the β value (from β=.523, p<0.001).

However, when controlling for team-focussed transformational leadership in the relationship between team-focussed ethical leadership and team innovation, the direct effect becomes negative and non-significant (β=-0.107, p=0.273) as compared to (β=.433, p<0.001). This means that when controlling for team-focussed transformational leadership, H2 is not supported. A non-significant direct effect further implies, that no mediation of such effect can take place, as a significant direct effect is one of the conditions in Baron and Kenny's (1986) procedure to test mediation. This implies that there is no support for H4 and H6 when controlling for team-focussed transformational leadership.

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Indirect effects

As the direct effect between team-focussed ethical leadership and team innovation becomes non-significant when controlling for team-focussed transformational leadership, only indirect effects of team-focussed transformational leadership on team innovation through the mediators are considered here.

The indirect effect of team-focussed transformational leadership on team innovation through team engagement, as hypothesised in H3 is supported by the hierarchical linear regression result which indicates, that the effect of team-focussed transformational leadership on team innovation decreases when the mediator is entered into the regression, however it remains significant (β=.0.575, $p<0.001$). This suggests a partial mediation and supports H3.

With regard to H5, which suggests a positive relationship between team-focussed transformational leadership and team innovation through team developmental climate, the regression results show a decrease in the effect of team-focussed transformational leadership on team innovation, however the β-value remains significant (β=.480, $p<0.001$) which shows a partial mediation in support for H5.

Table 4.11: Hierarchical Linear Regressions, IV=Team-focussed Transformational Leadership (controlling for TEL)

	Team Innovation				
	M8	M9	M10	M11	M12
Step 1: Control Variables					
Gender	-0.051	-0.023	-0.034	-0.039	-0.040
Age	-0.042	-0.065	-0.065	-0.087	-0.016
Education	0.027	-0.012	0.010	0.003	-0.005
Organisational Tenure	0.116	0.134	0.118	0.120	0.129
Team Tenure	-0.141*	-0.106	-0.084	-0.071	-0.101
Hierarchical Level	0.020	0.001	0.018	0.011	0.000
Step 2: Control for Team-focussed Ethical Leadership					
Team-focussed Ethical Leadership		0.433***	-0.107	-0.199*	-0.201*
Step 3: Independent Variable					
Team-focussed Transformational Leadership			0.616***	0.575***	0.480***
Step 4: Mediators					
Team Engagement				0.261***	
Team Developmental Climate					0.322***
R^2	0.023	0.205	0.295	0.345	0.346

*$p<0.05$, **$p<0.01$, ***, $p<0.001$

Sobel Test

In order to test the significance of the indirect effects, Sobel tests were conducted (see table 4.12) for indirect relationships between team-focussed transformational leadership and team innovation through team engagement and team developmental climate respectively, which correspond with H3 and H5. The Sobel test for H3, i.e. the relationship between team-focussed transformational leadership and team innovation through team engagement shows a non-significant z-value, suggesting that this indirect effect is not significant. This result does not support H3. The partial mediation between team-focussed

transformational leadership and team innovation through team developmental climate, however, is significant, with z=4.015 (p<0.001) which shows support for H5 and suggests a significant indirect effect.

Table 4.12: Sobel Test (controlling for TEL)

Model	a	b	s_a	s_b	Z^*	SE	p-value
TTL – TE - TI	0.153	0.370	0.096	0.071	1.524	0.037	0.127 (ns)
TTL – TDC – TI	0.372	0.574	0.072	0.090	4.015	0.053	<0.001

$*z$-value = a^*b/SQRT($b^{2*}s_a^2 + a^{2*}s_b^2$)
whereby a, b are unstandardised coefficients and s_a, s_b are respective standard errors

4.3.6 Moderated Mediation Effects

Hypotheses 7-10 suggest moderated mediation effects. In order to test the moderation of indirect relationships, Hayes' PROCESS (2.16.3) tool for SPSS was used. As the moderation was predicted to affect the relationship between the mediator and the dependent variable, the PROCESS model 14 was selected for data analysis. The PROCESS tool uses bootstrapping to determine statistical significance, using 5000 bootstrap samples and a confidence level of 95 percent. Confidence intervals that don't contain 0 indicate significant regression. Prior to analysis, team engagement and team developmental climate were mean centred.

Hypothesis 7 suggests that team developmental climate moderates the indirect relationship between team-focussed transformational leadership and team innovation through team engagement such, that the relationship is stronger for higher levels of team developmental climate. The results show that the interaction effect is significant (β =0.1796, p=0.0245, 95% CI [0.0233, 0.3359]) and the moderated mediation effect is also significant (95% CI [0.0109, 0.1566]). In order

to fully support H7, the moderated mediation effect should follow the predicted pattern and hence higher levels of team developmental climate should lead to a stronger positive relationship between team-focussed transformational leadership and team innovation through team engagement. A simple slopes analysis (see table 4.13) shows that the relationship was positive and stronger for high levels of team developmental climate (β=0.1540, 95% [0.0754, 0.2439]) than for medium (β=0.1055, 95% CI [0.0412, 0.1748]) or low levels (β=0.570, n.s.) of team developmental climate, which supports hypothesis 7.

According to hypothesis 8, team developmental climate moderates the indirect relationship between team-focussed ethical leadership and team innovation through team engagement such, that the relationship is stronger for higher levels of team developmental climate. The results indicate that the interaction effect is significant (β=0.2231, p=0.0064, 95% CI [0.0631, 0.3831]) and the moderated mediation effect is also significant (95% CI [0.0277, 0.1937]). The simple slopes analysis shows that the relationship was positive for all levels of developmental climate but stronger for high levels of team developmental climate (β=0.1882, 95% [0.0999, 0.2928]) than for medium (β=0.1222, 95% CI [0.0389, 0.0502]) or low levels (β=0.563, n.s.) of team developmental climate, which supports hypothesis 8.

Hypotheses 9 and 10 related to the moderating effect of team engagement. Hypothesis 9 suggests that team engagement moderates the indirect relationship between team-focussed transformational leadership and team innovation through team developmental climate such, that the relationship is stronger for higher levels of team engagement. The results show a significant interaction effect (β=0.1796, p=0.0245, 95% CI [0.0233, 0.3359]) as well as a significant moderated mediation effect (95% CI [0.0185, 0.2029]). In support of hypothesis

9, the simple slopes analysis reveals that the moderated indirect relationship is positive for all levels of team engagement, however, the effect is stronger for high levels of team engagement (β=0.2376, 95% CI [0.1113, 0.3676]) than for medium levels of team engagement (β=0.1675, 95% CI [0.0500, 0.2848]) and non-significant for low levels of team engagement (β=0.0974, n.s.).

Finally, hypothesis 10 predicts that team engagement moderates the indirect relationship between team-focussed ethical leadership and team innovation through team developmental climate such, that the relationship is stronger for higher levels of team engagement. The results show a significant interaction effect (β=0.2231, p=0.0064, 95% CI [0.0631, 0.3831]) as well as a significant moderated mediation effect (95% CI [0.0336, 0.2294]). In support of hypothesis 10, the simple slopes analysis reveals that the moderated indirect relationship is positive for all levels of team engagement, but the effect is stronger for high levels of team engagement (β=0.3485, 95% CI [0.2123, 0.4856]) than for medium levels of team engagement (β=0.2598, 95% CI [0.1431, 0.3777]) and low levels of team engagement (β=0.1711, 95% CI [0.0419, 0.3056]).

Table 4.13: Simple Slopes Analysis for Moderated Mediation

	β	SE	LLCI	ULCI
Hypothesis 7				
Low DC	0.0570	0.389	-0.0184	0.1339
Medium DC	0.1055	0.0342	0.0412	0.1748
High DC	0.1540	0.0426	0.0754	0.2439
Hypothesis 8				
Low DC	0.0563	0.0441	-0.0270	0.1450
Medium DC	0.1222	0.0389	0.0502	0.2046
High DC	0.1882	0.0484	0.0999	0.2928
Hypothesis 9				
Low Engagement	0.0974	0.0688	-0.0425	0.2294
Medium Engagement	0.1675	0.0597	0.0500	0.2848
High Engagement	0.2376	0.0653	0.1113	0.3676
Hypothesis 10				
Low Engagement	0.1711	0.0689	0.0419	0.3056
Medium Engagement	0.2598	0.0611	0.1431	0.3777
High Engagement	0.3485	0.0696	0.2123	0.4856

5. DISCUSSION

5.1 INTRODUCTION TO THE DISCUSSION

The aim of this study was to investigate the effects of team-focussed transformational and team-focussed ethical leadership on team innovation. Specifically, this study investigated the direct and indirect effects through team developmental climate and team engagement as well as the interaction effects of these two variables. The two leadership forms, team-focussed transformational leadership and team-focussed ethical leadership were conceptualised as distinct constructs and by controlling for the respective other leadership concept, this study investigated the distinctiveness and unique variance explained by each of the two leadership constructs, team-focussed transformational and team-focussed ethical leadership.

Generally, the relationships suggested in the conceptual model are supported by the data, however, when controlling for the respective other leadership construct, the results indicated non-compliance with the model. For an overview of the findings for each hypothesis, see table 5.1. This chapter discusses the findings and their contribution to both theory and practice. Section 5.2 examines the findings of this study in relation to the existing theory as well as presenting the contributions to knowledge made. Section 5.3 then suggests implications that the findings of this study might have on practice before section 5.4 outlines limitations of this study and offers suggestions for avenues for future research.

Table 5.1: Overview of Findings

Hypothesis	Correlation	Regression	Sobel Test	Regression controlling for other leadership concept	Sobel Test controlling for other leadership concept	Moderated mediation effect	Slope analysis
H1	Supported significant correlation in expected direction	Supported positive direct effect	NA	Supported positive direct effect	NA		
H2	Supported significant correlation in expected direction	Supported positive direct effect	NA	Not supported non-significant negative effect	NA		
H3	Supported significant correlation in expected direction	Supported partial mediation	Supported significant indirect effect	Supported partial mediation	Not supported non-significant indirect effect		
H4	Supported significant correlation in expected direction	Supported partial mediation	Supported significant indirect effect	Not supported	NA		
H5	Supported significant correlation in expected direction	Supported partial mediation	Supported significant indirect effect	Supported partial mediation	Supported significant indirect effect		
H6	Supported significant correlation in expected direction	Supported partial mediation	Supported significant indirect effect	Not supported	NA		

Table 5.1: Overview of Findings (continued)

Hypothesis	Correlation	Regression	Sobel Test	Regression controlling for other leadership concept	Sobel Test controlling for other leadership concept	Moderated mediation effect	Slope analysis
H7						Supported	Supported
						significant indirect effect through interaction term	positive and stronger for high levels of TDC than for medium or low levels
H8						Supported	Supported
						significant indirect effect through interaction term	positive for all levels of developmental climate but stronger for high levels of TDC than for medium or low levels
H9						Supported	Supported
						significant indirect effect through interaction term	positive for all levels of team engagement, stronger for high levels of TE than for medium levels and non-significant for low levels
H10						Supported	Supported
						significant indirect effect through interaction term	positive for all levels of team engagement, but stronger for high levels of TE than for medium and low levels

5.2   DISCUSSION OF RESULTS

5.2.1 Discussion of the Transformational Leadership and Innovation Relationship

In terms of the direct team-focussed transformational leadership and team innovation relationship, the results in this study match previous studies such as research by Gumusluoglu and Ilsev (2009b), Jiang et al. (2015), Li et al. (2016), Matzler et al. (2008) and Reuvers et al. (2008), where team-focussed transformational leadership was found to be positively related to innovation at different levels, including, as in this study, the team level. This implies that transformational leaders, with their focus on a strong shared vision, openness to change, individualised consideration and development of followers and the motivation and encouragement to pursue new and creative avenues in doing the work, really make a difference in fostering innovation within their teams. Theoretically, transformational leaders promote innovation through their actions and priorities, but they also act as role models according to social learning theory (Bandura, 1971) through which they provide guidelines and show behaviours for followers to imitate which further enhances the effect of transformational leadership on team innovation.

While some of the previous team-level studies based their research on conceptualisations and measurements of transformational leadership other than the MLQ, which is used in this study, the literature shows that the direct relationship between transformational leadership and innovation in general, and at the team level in particular is not bound to a specific definition or conceptualisation of transformational leadership. While Wang and Howell (2010) and Wu et al. (2010) suggest the use of a specific team-level measurement, this

study, in line with Eisenbeiβ et al. (2008) and Jiang et al. (2015), replicates similar results while using Bass and Avolio's MLQ.

This study also investigated an indirect effect of team-focussed transformational leadership on innovation through team engagement. The results suggest, team-focussed transformational leadership is positively related to team engagement and through this indirectly related to team innovation. In creating a more engaging team environment, transformational leaders therefore create the conditions whereby higher levels of team innovation can be achieved.

The positive relationship between team-focussed transformational leadership and engagement is well documented in the literature (e.g. Ghadi et al., 2013; Hofslett Kopperud et al., 2014; Kovjanic et al., 2013; Schmitt et al., 2016; Vincent-Hoerper, 2012) however, exceptions like Mozammel and Haan's (2016) study, which does not support claims for such a relationship, suggest further investigation is necessary. The results of this study show general support for the positive relationship between team-focussed transformational leadership and engagement, and therefore align with the main-stream findings in the existing literature.

The literature on the indirect effect of team-focussed transformational leadership on team innovation through team engagement on the other hand is limited to date. While team engagement can be conceptually linked to innovation by drawing on social information processing theory (Salancik & Pfeffer, 1978), few studies have investigated such links. The findings in this study therefore add to existing literature in that it establishes a link from transformational leadership to innovation through team engagement and therefore suggests that team level

processes and co-worker influences play an important role in generating innovation at the team level.

Furthermore, this study suggests a mediated relationship of team-focussed transformational leadership on team innovation through developmental climate. Previous studies considered a range of contextual mediators in the transformational leadership and innovation relationship, including support for innovation (Eisenbeiβ et al., 2008), leader commitment to change (Michaelis et al., 2010), organisational culture (Tipu et al., 2012), safety climate and organisational climate for innovation (Kao et al., 2015; Weng et al., 2015), and employee behaviours such as knowledge sharing (Jiang et al., 2015). However, this study specifically focussed on team level developmental climate. As discussed in the literature review, the concept of developmental climate really focuses on the perceived extent of support given and received within the team from both, supervisors and co-workers which leads to high levels of collaboration and knowledge sharing, openness to innovation, proactivity, career development and feedback, and general support and trust (Chaudhary et al., 2012; Spell et al., 2014). Using the concept of developmental climate as a mediator in the transformational leadership and innovation relationship both supports and extends existing literature.

On the one hand, developmental climate covers concepts like commitment to change, support for innovation and knowledge sharing and as such, this study supports findings by Eisenbeiβ et al. (2008), Jiang et al. (2015) and Michaelis et al. (2010) in that it finds that developmental climate acts as a mediator in the relationship between transformational leadership and innovation.

On the other hand, in specifically referring to both, supervisor and co-worker support, developmental climate widens the focus in that it stresses the role of co-workers as opposed to only the leader-employee relationship. Co-worker relationships have been shown to influence the links between leadership and employee outcomes in various studies (e.g. Boerner & von Streit, 2005; Charbonnier-Voirin et al., 2010; Keith et al., 2003; Liu et al., 2013) and hence this study shows evidence that the influence of co-workers, in line with social information processing theory, also impacts on the transformational leadership and innovation relationship.

Finally, mediated indirect effects of team-focussed transformational leadership on team innovation were investigated with regard to moderating effects of team engagement and team developmental climate. The study reveals that there is an interaction effect between the mediator and the respective other variable, meaning, that team developmental climate moderates the indirect relationship between team-focussed transformational leadership and team innovation through team engagement. Respectively, team engagement moderates the relationship between team-focussed transformational leadership and team innovation through team developmental climate. The results suggest, that a stronger developmental climate in the team leads to stronger links between engagement and innovation, and similarly, that higher levels of team engagement lead to a stronger relationship between team developmental climate and team innovation. However, it is noteworthy, that for low levels of team engagement, the relationship between team developmental climate and team innovation becomes insignificant, which stresses the importance of such boundary conditions in the transformational leadership and innovation relationship.

Current literature shows evidence for a consideration of such boundary conditions, with a range of studies considering organisational, task or leader related contexts (Jung et al., 2008; Khan et al. 2009; Li et al., 2016; Reuvers et al., 2008) and a few studies looking at climate and support, and team interdependence (Eisenbeiβ et al., 2008; Gumusluoglu & Ilsev, 2009a; Jiang et al., 2015; Jung et al., 2008; Michaelis et al., 2010). However, further team processes could be investigated and this study suggests the importance of developmental climate and support in line with Gumusluoglu and Ilsev (2009a) as well as advancing the literature by showing the importance of the moderating effects of team engagement.

5.2.2 Discussion of the Ethical Leadership and Innovation Relationship

Addressing the first knowledge gap identified in section 1.1, one of the key findings in this study is the positive relationship between team-focussed ethical leadership and team innovation. This extends the literature on ethical leadership and outcomes, which generally considers a large range of employee and organisational outcomes, but somewhat neglects innovation as an outcome of ethical leadership.

While few studies have so far investigated the relationship between ethical leadership and creativity, which is sometimes considered a precursor of innovation and part of the innovation process (Amabile & Conti, 1999; Eisenbeiß & Boerner, 2013; Reuvers et al., 2008; Tu & Lu, 2013), this study goes one step further and looks at innovation as an outcome. It means that this study really looks at changes and new ideas that have not only been raised, but have also been implemented within the team.

In showing a positive relationship between team focussed ethical leadership and team innovation, the outcomes of this study somewhat mirror related literature on ethical leadership and creativity which proposed a positive relationship (Chen & Hou, 2016; Ma et al., 2013, Tu and Lu, 2013).

Conceptually, this study therefore extends existing literature by looking at the effects of ethical leadership on the full implementation of the innovation process. While not investigating the innovation process itself, it looks at the outcome of the process, i.e. innovation as an outcome, rather than stopping at the creativity and idea generation phase.

Drawing on a social–information processing perspective, this study investigates team level processes that might impact on the relationship between ethical leadership and innovation. In addition to the direct relationship between team-focussed ethical leadership and team innovation which is suggested in the findings, the results of this study also support indirect relationships through team engagement as well as through team developmental climate, suggesting a more complex process whereby ethical leadership influences team innovation.

These results generally support findings from research on ethical leadership and creativity in that the relationship between ethical leadership and innovation is indirect through mediators and dependent on boundary conditions that moderate the relationship. Specifically, this study shows a partial mediation of the ethical leadership and innovation relationship through team engagement. In investigating group ethical leadership and innovation across different organisational levels, Tu and Lu (2013) suggest a mediation through motivation. While the literature debates the overlaps between both, innovation and creativity (Scott & Bruce, 1994), and engagement and motivation (Armstrong & Taylor,

2014), this study generally aligns with Tu and Lu (2013) and could provide a basis for further research in the area of ethical leadership and the innovation process mediated by team engagement and underpinned by social information processing theory.

The results of this study also suggest a partial mediation of the team-focussed ethical leadership and team innovation relationship through team developmental climate. As discussed in section 2.9.2, developmental climate does not only include support from leaders by which they act as role models in accordance with social learning theory but also by co-workers and HR. It also implies higher levels of the OCTAPAC culture characteristics, including openness, autonomy and collaboration. In light of these OCTAPAC characteristics, similar findings are reported in the ethical leadership and creativity literature which suggests that the relationship between ethical leadership and creativity is mediated by knowledge sharing, self-efficacy (Ma et al., 2013) and voice (Chen & Hou, 2016), which seem to overlap with the OCTAPAC characteristics and therefore with team developmental climate. Using the more comprehensive concept of developmental climate instead of sub-characteristics of it, could on the one hand aid in consolidating the mediators in the ethical leadership and innovation relationship in the longer term. Given the infancy of the literature, however, the concept of team developmental climate could on the other hand provide insights and starting points for an investigation of other, more specific mediators which are not yet in the focus of current research on ethical leadership and innovation such as the trust, authenticity, conflict or proactivity characteristics, as well as the impact of wider HRD policies and practices.

Similar to the investigation of the processes between team-focussed transformational leadership and team innovation, the relationship between team-

focussed ethical leadership and team innovation, was not only mediated by team engagement and team developmental climate, but also influenced by an interaction effect between team engagement and team developmental climate.

This interaction affects the relationship in a way that higher levels of team developmental climate strengthen the positive indirect relationship of team-focussed ethical leadership on team innovation through team engagement, and indeed show that when levels of developmental climate are low, that the positive indirect relationship between team-focussed ethical leadership and team innovation trough team engagement disappears.

Equally, higher levels of team engagement moderate the indirect relationship between team-focussed ethical leadership and team innovation through team developmental climate such that higher levels of team engagement strengthen this relationship when compared to medium or lower levels of team engagement. However, even when levels of team engagement are low, the indirect effect of team-focussed transformational leadership and team innovation through team developmental climate remains positive and significant.

The literature shows only very limited consideration for such moderating effects. However, Chen and Hou (2016) in their study suggest that higher levels of climate for innovation strengthens the relationship between ethical leadership and employee creativity through voice. While Chen and Hou's (2016) conceptualisation of climate for innovation differs from the team developmental climate concept used in this study, they seem to overlap as both look at increasing perceptions of safety, openness and trust as well as support for innovation. Therefore, Chen and Hou's (2016) research supports the findings in

this study, as it stresses the importance of organisational climates that foster support and trust in the relationship between ethical leadership and innovation.

5.2.3 Discussion of Theoretical Underpinnings

Two theoretical underpinnings were used in this study to explain the proposed relationships in this study, social learning theory and social information processing theory. Social learning theory is widely used in the leadership and outcomes literature and is particularly useful to conceptually explain the links between observable leadership behaviours and related employee outcomes. In this study these links included the relationships between transformational leadership and innovation, transformational leadership and developmental climate, ethical leadership and engagement and ethical leadership and developmental climate, as laid out in the literature review of this thesis. As such this study mirrors a wealth of leadership literature which uses social learning theory by drawing on the role modelling aspect of powerful and successful leaders (e.g. Bouckenooghe et al., 2015; Brown et al., 2005; Khuong et al., 2015).

While social learning theory does not specifically limit the focus to the leader as the only available role model, the focus on a successful and credible role model, which have the potential to enforce positive as well as negative consequences of different behaviours, somewhat narrows the focus to the leaders within an organisation. A wealth of literature uses the theory specifically for explaining the leader influence on employees. Social information processing theory, on the other hand widens this focus in placing more emphasis on co-workers (Chen et al., 2013) and the creation of shared perceptions within teams. While according to social information processing theory, individuals might perceive leader's behaviours in different ways, according to their own experiences (Eisenbeiβ &

van Knippenberg, 2015; Salancik & Pfeffer, 1978), other co-workers might influence these perceptions through guidance, cues and communication (Chen et al., 2013; Zalseny & Ford, 1990), which leads to shared perceptions within teams.

Therefore, social information processing theory is used in this study to underpin the conceptualisation of relationships between constructs at the team level. It helps explain the emergence of shared perceptions within the teams, and team-level processes that emerge on the basis of such shared perceptions such as team engagement, team developmental climate or team innovation. In acknowledging the importance of investigating team level processes and the influence of other team members on employees, some leadership literature specifically draws on social information processing theory (Bhave et al., 2010; Chen et al., 2013; Mayer et al., 2013) in line with this study. The social information processing perspective in this study, therefore supports the team-focussed leadership literature and stresses the importance of team and co-worker influence on outcomes of leadership.

5.2.4 Discussion of the Distinctiveness of Transformational and Ethical Leadership

Using two different leadership variables, team-focussed transformational leadership and team-focussed ethical leadership, this study adds to current discussions around the distinctiveness of the two concepts as well as the debate around the need for a differentiation of various positive leadership concepts.

The study shows a very high correlation between the two leadership constructs, however VIF and tolerance suggest acceptable levels of collinearity which indicates that the two concepts are related but distinct. This is in line with the

conceptual differences outlined in section 2.5 as well as empirical findings indicating relatedness (Toor & Ofori, 2009; Sheraz et al., 2012) but also distinctiveness of the concepts (Schaubroeck et al., 2016).

The strong relationship between transformational leadership and ethical leadership is not surprising given the emergence of ethical leadership as defined and conceptualised by Brown et al. (2005), is based on transformational leadership and similarly, Khunita and Suar (2004) include some items of the MLQ in their ethical leadership measure. Both leadership concepts are considered positive forms of leadership (Youssef-Morgan & Luthans, 2013) and are rooted to an extent in morality and concern for others.

In this study, the two leadership concepts are positively related to team innovation, both directly as well as indirectly through the two mediators team developmental climate and team engagement. However, when controlling for the respective other leadership variable, the effect of team-focussed ethical leadership becomes statistically non-significant. This indicates, that in the presence of team-focussed transformational leadership, team-focussed ethical leadership is redundant and does not explain any additional variance in team innovation beyond the effect of team-focussed transformational leadership. These findings mirror work by Ogunfowora (2009) as well as Hoch et al. (2018).

While these results do not imply that transformational and ethical leadership are essentially the same, they do suggest, that in terms of the leadership and innovation relationship, ethical leadership is redundant when a leader also shows transformational leadership. This supports the view that the differentiation of various forms of positive leadership, such as transformational and ethical leadership, is not helpful for explaining outcomes of leadership (Anderson & Sun,

2017; Hoch et al. 2018; Ogunfowora, 2009). However, it should be considered, that this study only investigates the relationship between the two leadership constructs and team innovation and therefore cannot make claims about other leadership and outcomes relationships.

5.3 IMPLICATIONS FOR PRACTICE

There are clear practical implications of this study for a range of different audiences including not only leaders but also HR professionals involved in leader and leadership development, as well as the wider HR function, which impacts on boundary conditions explored in this research.

First and foremost, this study provides insight for leaders themselves who lead teams in dynamic and innovative environments and therefore strive to increase levels of innovation within their teams. As both leadership styles investigated in this study, team-focussed transformational leadership and team-focussed ethical leadership are helpful in fostering innovation in organisational teams, leaders should strive to show such positive leadership styles. These positive leadership styles include being trustworthy role models for their followers, creating an open and honest environment in which followers understand the team's goals, but which also allows to challenge and change assumptions and processes and in which followers feel they are listened to and supported.

Furthermore, based on the findings in this study, leaders should strive to engage their followers and allow them to also engage with each other, hence creating a team environment which allows employees to use their personal resources and be more collaborative, proactive and creative. Similarly, the impact of team developmental climate, suggests that efforts should be made by leaders to create a supportive environment. Following the conceptualisation of Rao and Abraham's HRD climate and suggestions by Spell et al. (2014), leaders themselves need to ensure that they provide adequate support to followers, engaging for example in coaching or mentoring, career development and guidance on tasks. Similarly, they should help create a working climate in which co-workers support each other

and work together. In light of social learning theory whereby followers look to their trusted leaders, they are in a prime position to model and implement such behaviours.

The implications for leaders discussed above, similarly translate into implications for HR professionals involved in leader and leadership development within their organisations. In understanding the effects that transformational and ethical leadership can have on team innovation, both potential future leaders and leadership development initiatives can be selected and adjusted to stress the importance and meet those behaviours required to foster innovation within the teams. As such, transformational and ethical leaders could be selected or developed within the organisation, setting a standard of positive leadership which the organisation strives towards.

In terms of the question of which leadership style to focus on, transformational or ethical leadership, this study does not give a clear answer. Both, team-focussed transformational leadership and team-focussed ethical leadership are associated with team innovation. The results show that the association between transformational leadership and innovation is slightly higher than the association between ethical leadership and innovation. Similarly, in terms of fostering innovation, organisations could focus solely on transformational leadership as in the presence of this style, ethical leadership does not add any additional impulses on innovation. However, in the absence of transformational leadership, ethical leadership is helpful in fostering innovation.

In an environment where corporate scandals have created a strong demand for ethical leadership amongst society and stakeholders, this study suggests that ethical leadership does not only answer calls for higher levels of morality, but also

delivers on higher levels of team innovation. This finding could help organisations in dynamic and innovation driven sectors to make a case for more ethical leadership beyond the morality and responsibility aspect, and be therefore instrumental in implementing such leadership in the organisation and leadership development.

Finally, this study has implications for HR practices outwith the narrow focus of leadership development. There might be contexts that don't allow organisations to develop transformational or ethical leaders from within their current workforce and where instead, external recruitment is required. One example of such situations would be a lack of appropriate leaders within the internal labour market of an organisation that can be developed into ethical or transformational leaders. A focus to solely the internal labour market for future leaders implies a restriction on the pool of potential candidates (Wilton, 2016) and it is therefore less likely to really select the best person for the role (Taylor, 2019). Another example are contexts in which existing employees or leaders are unlikely to drive the required changes and innovation as they have been emerged in existing norms and organisational culture (Pilbeam & Corbridge, 2006; Taylor, 2019). In such contexts it might be useful for organisations to recruit new leaders from the external labour market which can provide fresh insight into existing issues (Taylor, 2019).

The same criteria and standards apply for external recruitment, which are laid out for the selection and development of internal candidates. However, the knowledge about external candidates is limited to that gained through the selection process as opposed to the knowledge about internal candidates that the organisation has gained during the employment and therefore internal development and promotion seems less risky (Chan, 1996). This might be

particularly true when considering the recruitment and selection of ethical leaders, where personal values are important which are often difficult to assess with traditionally popular selection methods.

Furthermore, the importance of the developmental climate demands alignment of wider HR practices with the aim of creating such a developmental climate. In line with Chaudhary et al. (2012) it is noted that reward and appraisal policies impact on the degree to which employees perceive the climate to be developmental and engage in desired supportive and helping behaviours. It is therefore imperative that the wider HR policies support rather than oppose or distract from the goal of creating a developmental and supportive climate with highly engaged employees.

5.4 LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARACH

Despite its contributions to both theory and practice, this study is not without its limitations. The following section addresses those limitations and presents avenues for future research which could advance knowledge in the field.

5.4.1 Cross-sectional Design and Causality

In line with the majority of leadership and outcomes literature, this study follows a cross-sectional quantitative design. Despite the conceptual model and the underlying theory suggesting directional relationships, it is clear, that cross-sectional designs don't enable a researcher to draw causal conclusions from the findings and can merely indicate associations between the variables in the conceptual model.

Antonakis et al. (2014) discuss the issue of endogeneity and exogeneity in cross-sectional, survey-based research which, despite not being a new issue, so far, considerations of endogeneity have not traditionally had an established place in leadership and outcomes research. Some statistical procedures have been suggested in the literature to detect and "treat" issues around endogeneity of independent variables. These include the Hausman and 2-stage-least squares regression tests, which use instrument variables which are unrelated to the error terms and variables in the model but highly correlated to the independent variable), or panel data (Antonakis et al., 2014; Proppe, 2007). Neither appropriate instruments nor panel data were available in this study.

The fact that none of these tests were possible to uncover or "treat" endogeneity of model variables is clearly a limitation of this study. However, this does not mean that the results of this study are meaningless. It implies that the effects

detected in this study cannot be claimed to be causal effects; meaning, that the direction of effect cannot be explored, however the association or relationship between variables is still valid. Therefore, while the conceptual model shows and conceptualises directional relationships, this study does not claim to find causal relationships between the study variables.

In terms of future research, more experimental designs and longitudinal studies are needed to overcome these issues, a suggestion that is made in a wide range of leadership literature (e.g. Brown et al., 2005; Kalshoven et al., 2013 a,b; Newman et al., 2014). In terms of endogeneity, cross sectional studies that are designed to include some instrumental variables, which are related to the independent variable but not the other variables and which hence allow for the appropriate use of a two-stage-least squares regression with instruments (Antonakis et al., 2014; Proppe, 2007), could further the understanding of the causal relationships between team-focussed transformational and ethical leadership and team innovation, a suggestion which applies to the wider leadership literature as such.

5.4.2 Levels Issues

A second limitation of this study is the incongruence of the level of analysis and the focal level of theory. As previously discussed, the focal level of analysis in this research is the team level which also guides the choice of measurement whereby albeit using individual respondents, the referent is the team and therefore in line with Klein, Danserearu and Hall (1994) and Rousseau (1985)'s calls for congruence between the focal level of theory and the level of measurement. However, following the analysis of the data as suggested in Klein et al. (1994) and the lack of support for data aggregation to the team level means, that the

data was analysed on the individual level rather than the focal level of this study. This incongruence, while quite common in organisational research (Rousseau, 1985), suggests caution in interpreting the results and generalising the findings to the team level.

It is therefore suggested that future research advances the literature on leadership and innovation at the team level, especially the relationship between ethical leadership and innovation, by using global team measures which don't require aggregation for a team-level analysis.

Furthermore, the data in this study shows generally strong agreement of raters within groups, but no significant between group difference which indicates a sample wide and therefore organisation-wide consistency. Previous studies have suggested trickle down effects throughout organisations whereby CEO leadership influences supervisor-level leadership (Ruiz et al., 2011; Schaubroeck et al., 2012). It seems therefore appropriate to suggest research on organisational level effects in the relationships between transformational and ethical leadership on innovation.

5.4.3 Potential Common Method Variance

The design of the data collection was based on Podsakoff et al.'s (2003) suggestions and aimed to overcome issues around method effects generally and common method variance in particular. While the elements used to reduce the general method effects with regard to questionnaire and item design still apply, the decision to drop the manager data resulted in an analysis based on data that was collected from a single source and at a single point in time. This means that common method variance, which leads to inflated relationship between variables (Spector, 2006) could be a potential problem. It means that the relationships

found could potentially be explained by the use of a single data collection method and therefore, that the real relationship between these variables could be smaller than reported in the results section.

A statistical procedure to test for common method variance was not conducted in this study. However, future cross-sectional research that collects data from a single source should use statistical tools, such as Harman's single factor test to identify potential common method variance in order to confidently eliminate concerns around common method variance (Podsakoff et al., 2003).

5.4.4 Sample and Generalisability

Generalisability determines if the results gained from the research can be transferred to other samples or situations (Crano & Brewer, 2002) and therefore covers the external validity of the study. When the sample is fairly representative of the population, one can be more confident in generalising the results to the whole sample and hence external validity is higher than for samples that are not representative (Seale, 2005).

As discussed in section 3.7, this study focuses on the Irish energy sector, using a purposive sample from a key player within the industry. This, however, does not constitute a random sample of the population and therefore the findings of this study should be generalised with caution to contexts outwith the study context. With a purposive sample, the chosen sample embodies a critical case for the Irish energy sector and therefore one might argue that generalisation of the findings to that context can reasonably be made.

However, this narrow context excludes a wide range of industries and sectors for which the relationships between transformational and ethical leadership at the team level might be of interest, including e.g. highly volatile contexts of

multinational companies and innovation driven industries that aim at increasing their innovativeness. Therefore, in line with Crano and Brewer (2002) it is suggested that future research investigates the conceptualised model in different contexts, cultures and samples.

5.4.5 Process and Boundary Conditions

This study investigated the team level processes whereby transformational and ethical leadership impact on innovation. However, the literature on ethical leadership and innovation is still in its infancy. There is therefore scope for future research to extend knowledge on this particular outcome of ethical leadership. Future research could for example incorporate creativity as a mediator of the ethical leadership and innovation relationship and by doing so, not only investigate the impact of ethical leadership on the full innovation process, but also link both the ethical leadership and creativity and ethical leadership and innovation literatures.

The results in this study show significant indirect relationships, however, the findings also suggest that the mediators used only partially mediate the relationships between team-focussed transformational leadership/team-focussed ethical leadership and team innovation, implying that more complex processes and additional mediators should be considered in future research. While this study took a social learning and social information processing perspective, other studies suggest a social exchange lens when investigating ethical leadership and innovation (Ma et al., 2013; Tu & Lu, 2013) whereby safety and voice which are often associated with higher levels of engagement and developmental climate, seem to play an important role. Furthermore, as suggested in section 5.2.2, the sub-concepts of developmental climate could trigger further avenues for

research, especially looking at the roles of trust in the ethical leadership and innovation relationship, but also at the impact of potentially not so harmonious attitudes and behaviours including authenticity, or conflict. Overall, this study points towards a greater need for investigations of indirect or moderated mediation processes in the leadership and innovation relationship.

5.4.6 Potential Collinearity

Collinearity between independent variables can lead to a range of issues during data analysis. While O'Brien (2007) lists a range of possible effects of collinearity including negative estimates that shouldn't be negative, implausible magnitudes of effects, etc., most discussions around the effects of collinearity focus on unstable and inflated estimates for the coefficients in the measurement model which can result from collinearity (Cornell & Gorman, 2003).This means that due to collinearity, the relationships between variables might be predicted as stronger than they actually are and therefore distort the analysis.

The data analysis in this study shows very high correlations between team-focussed transformational leadership and team-focussed ethical leadership ($r=0.873$, $p<0.001$). High correlations are an indication for potential collinearity and therefore concerns about collinearity were addressed by calculating the VIF and tolerance indices. These indices were considered within acceptable limits.

However some degree of collinearity was detected with particularly transformational leadership and ethical leadership showing VIF values of 4.5 and 4.4. This means that some caution is necessary in interpreting the findings due to potentially inflated parameter estimates. This is particularly the case for analyses that included both leadership constructs, i.e. analysis in section 4.3.5 which forms the basis for the discussion around the distinctiveness of

transformational and ethical leadership, but less of a concern in the analysis in sections 4.3.4 and 4.3.6 which test the hypotheses and the conceptual model.

With regard to the distinctiveness of transformational leadership and ethical leadership, a high degree of collinearity would point towards redundancy of the construct indicating, that they are essentially the same. While these high degrees of collinearity are not present in this study, future research should include collinearity indices into the analysis.

5.4.7 Distinctiveness of Leadership Concepts

This study conceptualises team-focussed transformational leadership and team-focussed ethical leadership as two distinct concepts. The data shows significantly better fit for a model including the two separate leadership concepts as opposed to a model that combines the two leadership construct into one variable. The data therefore supports such notion of distinctiveness.

While the results suggest that these leadership styles are indeed different constructs, it is also clear from the findings, that ethical leadership is somewhat redundant in the presence of transformational leadership. Based on these results, one could argue, that ethical leadership is therefore redundant and future research should focus on transformational leadership. However, this view would assume that all organisations that endeavour to increase levels of team innovation within their organisation have transformational leaders, in which case ethical leadership might be unnecessary to foster innovation. This is not necessarily the case. The finding, that ethical leadership by itself is positively associated with team innovation shows, that ethical leadership is highly useful for organisations or teams that are not lead by a transformational leader. It means that organisations with a focus on ethical leadership don't necessarily require

transformational leaders in order to create an environment that supports innovation and leads to higher levels of innovation. While this aligns with studies claiming distinctiveness of the constructs, it similarly supports research that calls for a full-range theory of leadership (Anderson & Sun, 2017). Future research might therefore investigate the effects of transformational leadership and ethical leadership in more ethics and less transformational driven contexts to further the discussion around the usefulness of distinct concepts.

Furthermore, the narrow focus of this study on team innovation, does not allow to draw conclusions on other leadership outcomes and hence future studies should endeavour to investigate the distinctiveness of transformational and ethical leadership with regard to various levels and a range of outcomes.

6.   CONCLUDING REMARKS

Both positive forms of leadership investigated in this study with a team focus, team–focussed transformational leadership and team-focussed ethical leadership, are separately positively related to team innovation; both directly and indirectly through team engagement and team developmental climate. However, this study also reveals that when transformational leadership is present, ethical leadership becomes redundant and insignificant in influencing or increasing team innovation within the organisation. For leaders and HR practitioners, this means that while both forms of positive leadership can impact on team innovation, in situations where transformational leaders are supervising teams, no further attempts or efforts are required to improve ethical leadership – with regard to improving team innovation. It is however noteworthy to consider other potential outcomes and influences of ethical leadership.

In order to provide such insights, this study aimed to investigate the relationship between both, team-focussed transformational leadership and team-level ethical leadership, and team innovation in the context of the Irish energy sector, and by doing so, to close several research gaps identified. Table 6.1 provides an overview of how each research gap is addressed.

First, with the focus of team innovation, which had been identified as an under-researched outcome particularly of ethical leadership, this study provides early support for the relationship of the two variables.

Second, showing that both these leadership concepts impact on the occurrence of innovation within the team, and looking at the team level processes that influence such a relationship, this study provides valuable insights into how organisations in general and leaders in particular can respond to the rising need

for innovation by adopting a positive leadership form and addressing the demands for such leadership. The team level focus of this study, which is followed despite the decision not to aggregate data at the team level, furthermore demonstrates the effect that these forms of leadership might have on team level processes and shared perceptions within the teams, rather than solely focussing on impact on individual perceptions of employees.

Third, the nature of the relationships between team-focussed transformational and ethical leadership with team innovation required further investigation, especially with regard to boundary conditions and the process whereby the leadership concepts influenced team innovation. The chosen mediating and moderating variables, team developmental climate and team engagement, both support and extend existing literature and depict a moderated mediation process whereby positive forms of leadership influence team innovation.

In investigating two forms of positive leadership, this study also draws conclusions on the specific leadership forms that are required in different situations in order to improve or foster team innovation and is therefore of particular interest to leaders and leadership development practitioners.

Finally, the inclusion of two positive forms of leadership, transformational and ethical leadership, also contributes to the debate around the distinctiveness of different forms of positive leadership, with statistical support for the distinctiveness of the concepts, however, redundancy of ethical leadership in the presence of transformational leadership when focussing on the leadership and innovation relationship.

Table 6.1: Addressing the Knowledge Gaps in this Study

Category	Description of Knowledge Gap	How has this been addressed in the study?
Under-researched Outcomes	There is a lack of research on the relationship between ethical leadership and innovation	• This study investigates the relationship between team-focussed ethical leadership and team innovation. *Key finding:* Positive relationship both direct and indirect through team engagement and team developmental climate.
Levels of Analysis	There is generally a lack of team level research in the ethical leadership and outcomes literature The literature on both transformational and ethical leadership and their relationship with innovation includes only a small number of studies investigating the team level	• Using social information processing theory to conceptualise team level relationships at theory level • Team referent in survey questions • Data aggregation to team level attempted – not statistically significant and therefore not conducted and individual level data is used
Nature of Relationship	The impact of specific leader behaviours on innovation is unclear	• Investigation of effects of two leadership variables, both in themselves show positive relationships with team innovation. • Controlling for respective other leadership variable shows that in presence of transformational leadership, no predictive effect of ethical leadership beyond transformational leadership.
	Moderators and mediators require further investigation	• Both team developmental climate and team engagement partially mediate the relationship between the leadership variables and team innovation. • Team developmental climate moderates (strengthens) the relationship between the leadership variables and team innovation through team engagement. • Team engagement moderates (strengthens) the relationship between the leadership variables and team innovation through team developmental climate.

Table 6.1 (continued): *Addressing the Knowledge Gaps in this Study*

Category	Description of Knowledge Gap	• How has this been addressed in the study?
Conceptual Issues	The distinctiveness of the concepts of transformational leadership and ethical leadership requires further investigation	• High correlation indicates relatedness of concepts • Low tolerance and VIF factor indicate distinctiveness of concepts • 5-factor model with distinct leadership concepts fits the data better than 4-factor model with combined leadership variable In presence of team-focussed transformational leadership, ethical leadership is redundant which supports demands for convergence for positive leadership concept

This investigation of the impact of team-focussed transformational and ethical leadership on team innovation comes at a time when organisations are striving to innovate at an ever-faster pace, in order to stay competitive and adapt to changing environments. Similarly, in light of increasing attention on ethics and organisational responsibility for social and environmental issues, investigating the impact of positive forms of leadership on innovation is timely and useful, not only in terms of advancing theory, but also to inform practice within organisations.

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APPENDICES

APPENDIX 1: EMPIRICAL STUDIES INVESTIGATING THE LINKS BETWEEN TRANSFORMATIONAL LEADERSHIP AND

INNOVATION

Selected References	IV	Measurement Scale	DV	Measurement Scale	Level of Analysis	Mediator	Moderator	Key Finding
studies on product innovation								
Chen et al. (2014)	CEO transformational leadership	MLQ Avolio et al. (1999)	product innovation	Luca & Atuahene-Gima (2007)	organisation	corporate entrepreneurship	technology orientation	supported
Matzler et al. (2008)	transformational leadership	Wang & Ahmed (2004)	product innovativeness	Wang & Ahmed (2004)	organisation	NA	NA	supported
studies on individual innovation								
Li et al. (2016)	individual focussed transformational leadership	Wang & Howell (2010)	individual innovation	Burningham & West (1995)	individual	NA	NA	supported
	group focussed transformational leadership	Wang & Howell (2010)	individual innovation	Burningham & West (1995)	multilevel	NA	task interdependence	supported
studies on team innovation								
Li et al. (2016) continued	group focussed transformational leadership	Wang & Howell (2010)	team innovation	West & Anderson (1996)	group	NA	NA	supported
	group focussed transformational leadership	Wang & Howell (2010)	team innovation	West & Anderson (1996)	group	NA	task interdependence	not supported
Eisenbeiß et al. (2008)	transformational leadership	MLQ Bass & Avolio (1995)	team innovation	Leader rating numbers of innovations	group	support for innovation	climate for excellence	supported
Jjang et al. (2015)	group focussed transformational leadership	MLQ Bass & Avolio (1995)	team innovation	Lovelace et al. (2001)	group	NA	NA	supported
	group focussed transformational leadership	MLQ Bass & Avolio (1995)	team innovation	Lovelace et al. (2001)	group	knowledge sharing	NA	supported
	group focussed transformational leadership	MLQ Bass & Avolio (1995)	team innovation	Lovelace et al. (2001)	group	knowledge sharing	team interdependence	supported

studies on organisational innovation

Study	Leadership	Instrument	Outcome	Innovation measure	Level	Mediator	Moderator	Result
Gumusluoglu & Ilsev (2009a)	transformational leadership	MLQ Bass & Avolio (1995)	organisational innovation	Gumusluoglu & Ilsev (2009a) product ratio of innovativeness tendency/success of product innovation	organisation	NA	external support for innovation	supported
							internal support for innovation	not supported
Gumusluoglu & Ilsev (2009b)	transformational leadership	MLQ Bass & Avolio (1995)	organisational innovation	Gumusluoglu & Ilsev (2009a)	organisation	NA	NA	supported
			organisational innovation	Gumusluoglu & Ilsev (2009a)	organisation	followers' creativity	NA	not supported
Garcia-Morales et al. (2008)	transformational leadership	Podsakoff et al. (1996)	organisational innovation	Garcia-Morales et al. (2008)	organisation	NA	organisational learning	supported
Khan et al. (2009)	transformational leadership	MLQ Bass & Avolio (1995)	organisational innovation	Amid et al. (2002)	organisation	NA	NA	supported
	transformational leadership	MLQ Bass & Avolio (1995)	organisational innovation	Amid et al. (2002)	organisation	NA	organisational size	supported
	attributive charisma	MLQ Bass & Avolio (1995)	organisational innovation	Amid et al. (2002)	organisation	NA	organisational size	supported
	idealised influence	MLQ Bass & Avolio (1995)	organisational innovation	Amid et al. (2002)	organisation	NA	organisational size	not supported
	inspirational motivation	MLQ Bass & Avolio (1995)	organisational innovation	Amid et al. (2002)	organisation	NA	organisational size	supported
	intellectual stimulation	MLQ Bass & Avolio (1995)	organisational innovation	Amid et al. (2002)	organisation	NA	organisational size	supported
	individualised consideration	MLQ Bass & Avolio (1995)	organisational innovation	Amid et al. (2002)	organisation	NA	organisational size	supported
Mokhber et al. (2015)	transformational leadership	MLQ Bass & Avolio (1997)	organisational innovation	Gumusluoglu & Ilsev (2009) and GEM Index	organisation	NA	NA	supported
	attributive charisma	MLQ Bass & Avolio (1997)	organisational innovation	Gumusluoglu & Ilsev (2009) and GEM Index	organisation	NA	NA	supported
	individualised consideration	MLQ Bass & Avolio (1997)	organisational innovation	Gumusluoglu & Ilsev (2009) and GEM Index	organisation	NA	NA	not supported
	idealised influence	MLQ Bass & Avolio (1997)	organisational innovation	Gumusluoglu & Ilsev (2009) and GEM Index	organisation	NA	NA	supported
	inspirational motivation	MLQ Bass & Avolio (1997)	organisational innovation	Gumusluoglu & Ilsev (2009) and GEM Index	organisation	NA	NA	supported
	intellectual stimulation	MLQ Bass & Avolio (1997)	organisational innovation	Gumusluoglu & Ilsev (2009) and GEM Index	organisation	NA	NA	supported
Jung et al. (2008)	CEO transformational leadership	MLQ Bass & Avolio (1997)	organisational innovation	Jung et al. (2008) patents, analyst evaluation, annual R&D expenditures	organisation	NA	climate for innovation	supported
							empowerment	supported
							centralisation	supported
							formalisation	supported
							uncertainty	supported

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							competition	supported

studies on innovation behaviour

Study								
Weng et al. (2015)	transformational leadership	Scandura & Williams (2004); Sosik et al. (2004)	innovation behaviour	Weng et al. (2012); Chang & Liu (2008)	individual	patient safety climate	NA	supported
	transformational leadership	Scandura & Williams (2004); Sosik et al. (2004)	innovation behaviour	Weng et al. (2012); Chang & Liu (2008)	individual	innovation climate	NA	supported
Nusair et al. (2012)	transformational leadership	Avolio et al. (1999); Sally (2006)	innovation behaviour	Scott & Bruce (1994)	individual	NA	NA	supported
	idealised influence	Avolio et al. (1999); Sally (2006)	innovation behaviour	Scott & Bruce (1994)	individual	NA	NA	supported
	inspirational motivation	Avolio et al. (1999); Sally (2006)	innovation behaviour	Scott & Bruce (1994)	individual	NA	NA	supported
	intellectual stimulation	Avolio et al. (1999); Sally (2006)	innovation behaviour	Scott & Bruce (1994)	individual	NA	NA	supported
	individualised consideration	Avolio et al. (1999); Sally (2006)	innovation behaviour	Scott & Bruce (1994)	individual	NA	NA	supported
Reuvers et al. (2008)	transformational leadership	MLQ Bass & Avolio (1994)	innovative work behaviour	West et al. (2005)	individual	NA	NA	supported
	transformational leadership	MLQ Bass & Avolio (1994)	innovative work behaviour	West et al. (2005)	individual	NA	gender of leader	supported
	idealised influence	MLQ Bass & Avolio (1994)	innovative work behaviour	West et al. (2005)	individual	NA	NA	supported
	inspirational motivation	MLQ Bass & Avolio (1994)	innovative work behaviour	West et al. (2005)	individual	NA	NA	supported
	intellectual stimulation	MLQ Bass & Avolio (1994)	innovative work behaviour	West et al. (2005)	individual	NA	NA	supported
	individualised consideration	MLQ Bass & Avolio (1994)	innovative work behaviour	West et al. (2005)	individual	NA	NA	supported
Kao et al. (2015)	transformational leadership	MLQ Bass & Avolio 1995	service innovation behaviour	Gong et al. (2009); Zhang & Bartol (2010)	individual	perceived organisational climate for innovation, self-efficacy, expected image gains	NA	supported
Michaelis et al. (2010)	transformational leadership	Felfe & Goihl (2006) German version of MLQ	innovation implementation behaviour	Choi & Price (2005)	individual	commitment to change	climate for initiative	supported
Tipu et al. (2012)	transformational leadership	MLQ Bass & Avolio (2004)	innovation propensity	Dobni (2008)	individual	organisational culture	NA	supported

APPENDIX 2: MY PERSONAL RESEARCH JOURNEY

Reflecting on one's research journey is a common practise in qualitative research, and doctoral students who are engaging with qualitative research are often encouraged to keep reflective journals to help engage with such a reflective process (Orange, 2016). This thesis is underpinned by a positivist philosophy and in line with that applies quantitative methods and assumes that the researcher is largely detached from the research. However this does by no means imply that conducting this research has not had an impact on my own personal development as a researcher and a person. In fact, since embarking on this research process, I have learned a lot about challenges and difficulties arising while conducting research, but also a lot about myself my motivations and ambitions, and about how I am able to tackle such challenges. This section provides a reflection on three key decisions on my PhD journey.

One of these challenges was no doubt the need to grow into the role of a self-directed research student that reflects a researcher that does not need to rely on others, or their supervisory team, to motivate them, tell them what to look at and what to do (Phillips & Pugh, 2002). I was aware, that the PhD was going to be my work and research conducted independently. However, having always be quite an independent learner and being used to making my own decisions at work prior to staring my PhD, I assumed that I would be fine. As it turned out, I struggled at first to make the big decisions or what I thought were big decisions in my research.

At the outset of my PhD journey, I knew that I wanted to look at impact of leadership on employee outcomes. While I was interested in innovation from the beginning, I

read much more widely in terms of both, leadership concepts as well as outcomes of such leadership concepts. Making a decision on which leadership constructs and which particular outcomes to focus my research on seems now, looking back, like my first major decision. Knowing the importance of this decision, I procrastinated for a long time and I distracted myself from making this definite decision by writing an article on the systematic literature review I had conducted. Eventually, a decision had to be made and I consulted with my supervisors on the conceptual framework for my PhD. Relying on their expertise to make this decision helped me immensely and gave me the confidence to pursue the specific focus on my research. However, I still required quite a lot of direction at this stage.

The second major decision I had to make, arose during the data analysis phase. As laid out in chapters 3.7.4 and 4.2.5, I planned to aggregate the employee data to the team level and match them with the manager data in line with my conceptual framework and level of theory. However, two problems arose. The reliability of the manager measure of team innovation was rather poor and required extensive item changes to achieve an acceptable level of reliability. When looking at the aggregation statistics, I also realised that there was not really a justification for data aggregation to the team level. As this did not match my plans I double checked the results to be sure and when the same results arose, I made an alternative plan on how to proceed. This involved abandoning the manager data and data aggregation altogether and continuing with the employee data only. I then presented the problem and my preferred solution to my supervisors. My supervisors challenged me on the statistics, but as I was confident in the results and I had backed up my decisions with other literature, in the end we decided that my proposed solution was the way

forward. Now how does this reflect my research journey? Compared to my first major decision where I felt that I should rely on my supervisors' guidance, I was much more confident in both, my analysis and my proposed solution. Of course, I hoped for feedback from my supervisors, or a potential other solution that I had missed, but I had clear arguments and felt comfortable arguing them.

A third, and actually my final major decision in the PhD process, was to recognise that my PhD was ready for submission. This, again seemed like a daunting step to go. At this stage, I had received and implemented feedback from both my supervisors and I knew it was going to be the next step. On the one hand I was relieved and really wanted to submit, on the other hand I was scared that I had missed something and asked both my supervisors for confirmation that my thesis was ready to submit. To some extent this could be seen as a step back in my development of making my own decisions. However, I believe that over the course of the PhD process, my confidence in my own work and my own arguments has grown. While I still think that feedback is very valuable in improving one's work, I have also learned to guide my own work and not rely on others to make my decisions for me.

APPENDIX 3A: EMPLOYEE QUESTIONNAIRE

In order to protect the organisation's anonymity, the introduction to the survey is not included in this appendix. The informed consent box was on the bottom of this introductory page.

1. Informed consent

☐

The purpose of this study has been explained to me and I understand that I am free to withdraw from the study without having to give a reason for withdrawing, and without prejudice.

I agree to provide information to the research team and understand that my contribution will remain anonymous and confidential.

Leadership & Innovation Questionnaire

Leadership

1. Please indicate your agreement with the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree)

   The leader in my team

	Leadership				
	strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
makes others feel good to be around him/her	☐	☐	☐	☐	☐
makes fair and balanced decisions	☐	☐	☐	☐	☐
provides others with new ways of looking at puzzling things	☐	☐	☐	☐	☐
provides appealing images about what we can do	☐	☐	☐	☐	☐
disciplines employees who violate ethical standards	☐	☐	☐	☐	☐
is OK with whatever others want to do	☐	☐	☐	☐	☐
gets others to rethink ideas that they had never questioned before	☐	☐	☐	☐	☐
gives personal attention to others who seem rejected	☐	☐	☐	☐	☐
conducts his/her personal life in an ethical manner	☐	☐	☐	☐	☐
cannot be trusted	☐	☐	☐	☐	☐
creates a culture where others are proud to be associated with him/her	☐	☐	☐	☐	☐
provides recognition/rewards when others reach their goals	☐	☐	☐	☐	☐
listens to what employees have to say	☐	☐	☐	☐	☐
helps others find meaning in their work	☐	☐	☐	☐	☐
when making decisions, asks "what is the right thing to do?"	☐	☐	☐	☐	☐
is content to let others continue working in the same ways always	☐	☐	☐	☐	☐
discusses business ethics or values with employees	☐	☐	☐	☐	☐
sets an example of how to do things the right way in terms of ethics	☐	☐	☐	☐	☐
does not help others develop themselves	☐	☐	☐	☐	☐
defines success not just by results but also the way that they are obtained	☐	☐	☐	☐	☐
expresses with a few simple words what the team could and should do	☐	☐	☐	☐	☐
has the best interests of employees in mind	☐	☐	☐	☐	☐
calls attention to what others can get for what they accomplish	☐	☐	☐	☐	☐
lets others know how he/she think they are doing	☐	☐	☐	☐	☐
asks no more of others than what is absolutely essential	☐	☐	☐	☐	☐
tells others what to do if they want to be rewarded for their work	☐	☐	☐	☐	☐

	Leadership				
	strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
Is satisfied when others meet agreed-upon standards	☐	☐	☐	☐	☐
creates a culture where others have complete faith in him/her	☐	☐	☐	☐	☐
does not try to change anything as long as things are working	☐	☐	☐	☐	☐
enables others to think about old problems in new ways	☐	☐	☐	☐	☐
tells others the standards they have to know to carry out their work	☐	☐	☐	☐	☐

Leadership & Innovation Questionnaire

Employee Engagement

1. Please indicate your agreement with the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree)

	Team Engagement				
	strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
This team devotes a lot of effort and energy to its work	☐	☐	☐	☐	☐
Nearly everyone in this team feels passionate and enthusiastic about their work	☐	☐	☐	☐	☐
All members of this team throw themselves into their work	☐	☐	☐	☐	☐
Team members gain considerable pride from performing a job well done	☐	☐	☐	☐	☐
Team members are not very focused when doing their jobs	☐	☐	☐	☐	☐
Performing work within the team is so absorbing that team members forget about the time.	☐	☐	☐	☐	☐

Leadership & Innovation Questionnaire

Developmental Climate

1. Please indicate your agreement with the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree)

	Team Developmental Climate				
	strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
My team members provide support and encouragement	☐	☐	☐	☐	☐
Team leadership is highly supportive of development	☐	☐	☐	☐	☐
Team members are assigned tasks that help in developing new skills.	☐	☐	☐	☐	☐
Team leaders view mistakes made by team members as opportunities for development	☐	☐	☐	☐	☐
Co-workers within my team are highly supportive of development	☐	☐	☐	☐	☐
Co-workers are very supportive of colleagues within this team when they make mistakes	☐	☐	☐	☐	☐
Co-workers will quickly come forward to support team members when they need help	☐	☐	☐	☐	☐
There is a sense of closeness within my team	☐	☐	☐	☐	☐
Team members continually mentor and coach each other	☐	☐	☐	☐	☐
Team members can depend on the colleagues to be supportive when required	☐	☐	☐	☐	☐
Team members are very attached to each other	☐	☐	☐	☐	☐
Team members don't like to help other team members develop new skill	☐	☐	☐	☐	☐
Team leadership is always looking out to help team members develop new skills	☐	☐	☐	☐	☐

Leadership & Innovation Questionnaire

Innovation

1. Please indicate the extent to which your team has implemented changes to the following aspects in your work in the last 12 months

	Team Innovation				
	Never	Little	Somewhat	Much	A great deal
New targets or objectives	☐	☐	☐	☐	☐
New working methods or techniques	☐	☐	☐	☐	☐
New methods to achieve work targets	☐	☐	☐	☐	☐
New information or recording systems	☐	☐	☐	☐	☐
New products or product improvement	☐	☐	☐	☐	☐
New services or service improvement	☐	☐	☐	☐	☐
Other aspects of your work	☐	☐	☐	☐	☐

2. Please indicate the extent to which you have engaged in the following activities in the last 12 months

	Individual Innovation				
	Never	Little	Somewhat	Much	A great deal
Creating new ideas for improvement	☐	☐	☐	☐	☐
Searching out new working methods, techniques or instruments	☐	☐	☐	☐	☐
Generating original solutions to problems	☐	☐	☐	☐	☐
Mobilising support for innovative ideas	☐	☐	☐	☐	☐
Acquiring approval for innovative ideas	☐	☐	☐	☐	☐
Making important organisational members enthusiastic for innovative ideas	☐	☐	☐	☐	☐
Transforming innovative ideas into useful applications	☐	☐	☐	☐	☐
Introducing innovative ideas into the work environment in a systematic way	☐	☐	☐	☐	☐
Evaluating the utility of innovative ideas	☐	☐	☐	☐	☐

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Leadership & Innovation Questionnaire

Demographic Data

1. What is your gender?

   ○ male
   ○ female
   ○ non-binary
   ○ prefer not to say

2. How old are you?

   [▼]

3. What is your highest level of education?

   ○ Primary School
   ○ High School
   ○ Apprenticeship/Vocational Education
   ○ Undergraduate degree (Bachelor)
   ○ Postgraduate degree (Master)
   ○ PhD

4. Which team are you currently part of?

   [   ]

5. How long have you been working for this organisation (years)?

   [   ]

6. How long have you been part of this team (years)?

   [   ]

7. How long has your team been in existence?

   ○ 0-3 years
   ○ 4-6 years
   ○ 7-10 years
   ○ 11+ years

8. How many employees are part of your immediate team (including yourself)?

   [   ]

9. How would you describe your role?

   ○ Apprentice
   ○ Maintenance
   ○ Student
   ○ Clerical/Admin
   ○ Operations
   ○ Trading
   ○ Engineering
   ○ Other non-technical staff
   ○ Trainee

C Undergraduate
C Other technical staff
C HR
C Finance
C Legal

10. What is your level within the organisation?

[▼]

11. Which business unit is your team part of?

[▼]

Leadership & Innovation Questionnaire

1.
Thank you again for completing the "Team Innovation" survey.

If you wish to enter in the prize draw, please provide your email address below. This will not be linked to your survey responses. If you don't wish to enter in the prize draw just exit the survey.

Thanks again for your time.

[   ]

APPENDIX 3B: MANAGER QUESTIONNAIRE

Leadership & Innovation Questionnaire

Purpose of the Study

Dear Respondent

Thank you very much for taking part in this survey.

This research aims at understanding the impact of different forms of leadership on team innovation and investigates the roles of employee engagement and developmental climate in this process. Your responses will help us gain insight into the whole topic and we very much appreciate your efforts in taking part in the survey.

The survey that you are about to complete is completely confidential. Your individual responses cannot be identified. Questions regarding your team are solely used to match data within teams and allow for aggregation and findings for the team level. Your company will not receive the raw data set and findings are not reported on an individual basis.

It is important that you complete the total survey before you submit it. If you exit the survey before it is completed, an incomplete survey is logged on the system. However, taking part in this survey is completely voluntary and you can withdraw from the survey at any time if you wish to do so by simply closing your web browser.

Thank you for your co-operation in completing the survey.

Britta Heidl, Thomas Garavan, David McGuire

1. Informed consent

☐

The purpose of this study has been explained to me and I understand that I am free to withdraw from the study without having to give a reason for withdrawing, and without prejudice.

I agree to provide information to the research team stated above and understand that my contribution will remain anonymous and confidential.

Leadership & Innovation Questionnaire

Team Innovation

1. Please indicate the extent to which your team has implemented changes to the following aspects in your work in the last 12 months

	Team Innovation				
	Never	Little	Somewhat	Much	A great deal
New targets or objectives	☐	☐	☐	☐	☐
New working methods or techniques	☐	☐	☐	☐	☐
New methods to achieve work targets	☐	☐	☐	☐	☐
New information or recording systems	☐	☐	☐	☐	☐
New products or product improvement	☐	☐	☐	☐	☐
New services or service improvement	☐	☐	☐	☐	☐
Other aspects of your work	☐	☐	☐	☐	☐

Leadership & Innovation Questionnaire

Demographic Data

1. What is your gender?

   ○ male

   ○ female

   ○ non-binary

   ○ prefer not to say

2. What is your age (years)?

   [   ]

3. How long have you been working for this organisation (years)?

   [   ]

4. Which team are you currently head of?

   [   ]

5. How long have you been head of this team (years)?

   [   ]

6. What is your highest level of education?

   ○ Primary School

   ○ High School

   ○ Apprenticeship/Vocational Education

   ○ Undergraduate degree (Bachelor)

   ○ Postgraduate degree (Master)

   ○ PhD

Leadership & Innovation Questionnaire

Thank you very much again for taking part in this survey.

APPENDIX 4: MEASURES

TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP (BASED ON BASS & AVOLIO, 1995)

The leader in my team…

1. Makes others feel good to be around him/her
2. Expresses with a few simple words what the team could and should do
3. Enables others to think about old problems in new ways
4. Helps others develop themselves
5. Tells others what to do if they want to be rewarded for their work
6. Is satisfied when others meet agreed-upon standards
7. Is content to let others continue working in the same ways always
8. Creates a culture where others have complete faith in him/her
9. Provides appealing images about what we can do
10. Provides others with new ways of looking at puzzling things
11. Lets others think how he/she thinks they are doing
12. Provides recognition/rewards when others reach their goals
13. Does not try to change anything as long as things are working
14. Is OK with whatever others want
15. Creates a culture where others are proud to be associated with him/her
16. Helps others find meaning in their work
17. Gets others to rethink ideas that they had never questioned before
18. Gives personal attention to others who seem rejected
19. Calls attention to what others can get for what they accomplish
20. Tells others the standards they have to know to carry out their work
21. Asks no more of others than what is absolutely essential

ETHICAL LEADERSHIP (BROWN ET AL., 2005)

Our leader…

1. Conducts h/h personal life in an ethical manner
2. Defines success not just by results but also the way that they are obtained
3. Listens to what employees have to say
4. Disciplines employees who violate ethical standards
5. Makes fair and balanced decisions
6. Can be trusted
7. Discusses business ethics or values with employees
8. Sets an example of how to do things the right way in terms of ethics
9. Has the best interests of employees in mind
10. When making decisions, asks "what is the right thing to do?"

TEAM INNOVATION (AXTELL ET AL., 2000)

Please indicate the extent to which your team has implemented changes to the following aspects in your work in the last 12 months.

1. New targets or objectives
2. New working methods or techniques
3. New methods to achieve work targets
4. New information or recording systems
5. New products or product improvement
6. New services or service improvement
7. Other aspects of your work

TEAM ENGAGEMENT (RICH ET AL., 2010)

1. This team devotes a lot of effort and energy to its work
2. Nearly everyone in this team feels passionate and enthusiastic about their work
3. All members of this team throw themselves into their work
4. Team members gain considerable pride from performing a job well done
5. Team members are highly focused when doing their jobs
6. Performing work within the team is so absorbing that team members forget about the time.

TEAM DEVELOPMENTAL CLIMATE (SPELL ET AL., 2014)

1. My team members provide support and encouragement
2. Team leadership is highly supportive of development
3. Team members are assigned tasks that help inn developing new skills.
4. Team leaders view mistakes made by team members as opportunities for development
5. Co-workers within my team are highly supportive of development
6. Co-workers are very supportive of colleagues within this team when they make mistakes.
7. Co-workers will quickly come forward to support team members when they need help
8. There is a sense of closeness within my team
9. Team members continually mentor and coach each other.
10. Team members can depend on the colleagues to be supportive when required.
11. Team members are very attached to each other
12. Team members like to help other team members develop new skill
13. Team leadership is always looking out to help team members develop new skills

APPENDIX 5: HISTOGRAMS AND NORMAL-CURVE FOR VARIABLES

Histogram

Mean = 3.59
Std. Dev. = .678
N = 325

TransformationalLeadership

Histogram

Mean = 3.87
Std. Dev. = .654
N = 325

ELwithout4

Histogram

Mean = 3.95
Std. Dev. = .654
N = 325

TEwithout6

Histogram

Mean = 3.72
Std. Dev. = .598
N = 325

DevelopmentalClimate

Histogram

Mean = 3.32
Std. Dev. = .835
N = 325

teaminnovation