



The Development and Validation of a Virtuous Leadership Scale

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COMPULSORY DECLARATION:

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Abstract

There is a need for virtuous leaders that have a sound moral compass that guide their actions and decisions towards good and honourable outcomes. In particular, the current research study responded to a call in literature to address an African context perspective of virtuous leadership. Based on this, the aim was to formulate a theoretical conceptualisation of virtuous leadership that was grounded in an African contextual perspective to develop and validate a Virtuous Leadership Scale (VLS). The current research study was a descriptive research design with a cross-sectional approach. Secondary quantitative data and primary qualitative and quantitative data was utilised by means of convenience sampling strategy and snowball technique. A realised sample for the secondary quantitative data ($n = 193$) and the primary quantitative data ($n = 72$) was collected from the general working population. A conceptual/theoretical model of virtuous leadership was proposed, which captured seven virtues that encompassed an African contextual perspective: 1) courage; 2) humanity; 3) humility; 4) integrity; 5) justice; 6) prudence; and 7) temperance. Based on this model, items were generated and analysed prior to the development of the VLS. Exploratory Factor Analysis confirmed the unidimensionality of each virtue subscale. Utilising Confirmatory Factor Analysis, the measurement model was found to be a good fit. Furthermore, empirical evidence of reliability, discriminant and convergent validity was found, however, predictive validity was not supported. The current research study developed a valid and reliable scale that measures the virtuous leadership construct. There are limitations, recommendations and theoretical contributions discussed.

Keywords: virtues, leadership, virtuous leadership, scale development, validation.

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CHAPTER 1

Introduction

The basic premise of leadership theory is that leaders exert influence over followers, which they are largely able to do at will and for purposes they are able to dictate (Ciulla, 2020; Silva, 2016). Moreover, based on their motives and actions, effective leaders can choose to either have a profound positive or negative influence on followers, organisation and society at large (Ungerer, 2016; Walumbwa et al., 2016).

In the African context there are several examples of remarkable leaders, such as Nelson Mandela, Desmond Tutu and Ellen Johnson-Sirleaf, who have been lauded for the positive influence they have exerted on African lives, as well as inspiring many people across the globe (Mishra & Maiko, 2017). On the other hand, within the same context, the Steinhoff, Sasol and the State capture scandals are but some examples of where leaders have acted unethically and exerted their influence in such a manner as to profoundly negatively affect organisations and people, on a massive scale (Ungerer, 2016). Commenting specifically on the African context, Adewale (2020) suggested that there tends to be an undertone of moral decay amongst African leaders when describing African leadership challenges and scholars tend to focus on the 'actions' rather than the 'actors' when evaluating a leader's behaviour.

Given the background described above, there is a growing interest amongst both scholars and practitioners to better understand how the presence or absence of sound morals and virtues impact the decisions and behaviours of leaders, citing the need for more leaders who have a sound moral compass that guides their actions and decisions towards good and honourable outcomes. Based on this premise, several authors have proposed a virtuous leadership construct, in other words, leadership theories and approaches which are based on sound virtues (e.g., Caldwell et al., 2015; Hackett & Wang, 2012; Laloux, 2014).

Virtuous leadership is defined as a leader-follower relationship wherein followers echo the perception of the virtues that a leader overtly expresses within suitable situations (Hackett & Wang, 2012). Laloux (2014) further suggested that virtuous leaders espouse beliefs and attitudes that when expressed in their behaviour, result in positive outcomes for both followers and organisations. In support of this assertion, at least three studies have found empirical evidence that virtuous leadership can enhance the well-being of employees, as well as the economic livelihood and sustainability of organisations (Caldwell et al., 2015; Hendriks et al., 2020; Wang & Hackett, 2016). It has further been argued that leaders who espouse virtues and

virtuous leadership behaviours are those leaders who establish an ethical organisational climate and even future proof their organisations.

Although there is an extensive body of leadership research that has been amassed over decades, relatively few research studies have investigated the role of ethics in leadership, while even less studies could be found that focussed on the role virtues play in leadership behaviour and outcomes. Hackett and Wang (2012) suggested that the field of virtuous leadership is still in its infancy. Hence, it was also important to conceptually define virtuous leadership as being related, but still distinct from other closely related leadership theories, approaches and models, e.g., ethical leadership. By doing so, it was hoped that the current research study would achieve a greater level of conceptual clarity of virtuous leadership. As a result, based on the potentially positive impact virtuous leadership may have on both individuals and organisations, there has been various calls for research studies to be conducted into the virtuous leadership construct, in particular, for the development of valid and reliable instruments that measure the virtuous leadership construct (e.g., Adewale, 2020; Wang & Hackett, 2016).

It is argued that without sound virtuous leadership measures or scales, the construct cannot be properly established as a field of study and practice (Pearce et al., 2006). In the words of Peter Drucker, “What is measured is managed”. Having a reliable and valid scale to measure virtuous leadership is of key importance in studying and better understanding virtuous leadership in order to distinguish who are the leaders who espouse sound virtues and how desirable virtues can be cultivated and developed within leaders in such a way as to obtain the positive organisational outcomes this construct potentially holds. Despite the obvious benefits of having a valid and reliable measure available, there are a limited number of existing instruments that attempts to measure virtues, and only two instruments were found in scholarly literature that purports to measure virtuous leadership. It was hoped, therefore, that the current research study would contribute to academic study and practice of virtuous leadership by addressing this gap which was identified in the literature.

Moreover, several proponents of virtues and virtuous leadership have argued that virtues are context-dependent (e.g., Juurikkala, 2012; Riggio et al., 2010; Wang & Hackett, 2016). These authors have argued that the cultural context needs to be included in the definition and conceptualisation of the virtuous leadership construct, given that the espoused virtues expressed by leaders would differ across a broad range of culturally specific situations. Despite this argument, as well as no apparent counter argument against a contextually bound conceptualisation of virtues, neither the two currently available virtuous leadership instruments that were identified are explicitly grounded in an Africa context.

In response to the call to further expand the virtuous leadership construct and its measures to also include an African perspective, Adewale (2020) suggested a conceptual virtuous leadership model for the African context which, however, has not yet been empirically tested. The current research was, therefore, also an attempt to bring an indigenous African perspective to the understanding of virtues and virtuous leadership and in doing so contribute to the decolonisation of Western-based theories and models.

The aim of the proposed research study was, therefore, to formulate a theoretical conceptualisation of virtuous leadership that is grounded in an African contextual perspective, so that a virtuous leadership scale can be developed and validated. In doing so, it was hoped that the outcomes of the current research study would address a fundamental gap in the virtuous leadership literature, as well as contribute to the broader leadership domain in general. Being able to access a valid and reliable scale to measure virtuous leadership will allow for the further development of the construct, its theoretical clarification and application within organisations, as well as hopefully assist organisations to identify and develop leaders who have a strong moral compass, which currently seems to be in short supply.

Research Objectives

As described above, the current research study was an attempt to lay down the conceptual and empirical groundwork that would hopefully contribute to our understanding of the virtuous leadership construct. More specifically, the primary research objective of the current research study to develop and validate a virtuous leadership scale, which was also grounded in an African contextual perspective. To achieve this aim, the following theoretical and empirical sub-objectives were formulated:

1. Review current leadership literature that have included a virtue and/or virtuous leadership construct.
2. Propose a theoretical conceptualisation of virtuous leadership, which is also grounded in an African context;
3. Design an evidence-based instrument to measure virtuous leadership that is also applicable to the African context; and
4. Assess the proposed virtuous leadership scale's ability to predict variance and above and beyond other related measures of virtuous leadership, such as ethical leadership.

Structure of Dissertation

There are five chapters in the current research study. The context, rationale and research sub-objectives of the research study were discussed in the present chapter. Chapter 2 provides an overview of the current literature, as well as providing a critical evaluation of research conducted on the virtuous leadership construct to date. Chapter 3 details the method that was undertaken to conduct the current research study and also includes a summary of the demographic characteristics of the realised sample, the measures that were designed and used for the purpose of the current study and the statistical analyses utilised. Chapter 4 provides a summary of the results based on the various analyses that were conducted in order to assess the development and validation of the proposed virtuous leadership scale. Lastly, Chapter 5 provides a discussion of the results that were obtained and relates it back to the current field of study. In addition, the limitations of the current research study, as well as recommendations for future research is provided. Finally, the theoretical and practical contributions of the findings of the current research study are presented.

CHAPTER 2

Literature Review

In this chapter, the origin, current definitions and conceptualisations of the virtuous leadership construct will be discussed, followed by a discussion of two theoretical frameworks that attempts to explain the influence of virtuous leadership on various desirable organisational outcomes. The current measurement instruments of virtuous leadership will be discussed as well as theoretically differentiating it from related constructs, more specifically ethical and transformational leadership. Finally, virtuous leadership is further theoretically conceptualised from an African perspective.

Origin of Virtuous Leadership

Most traditional leadership theories, models and approaches, for example, authentic, ethical, servant, transformational leadership are rooted in the notion that effective leadership is a function of pre-set or normative behaviours and competencies that should be modelled by a leader in an appropriate situation. However, the role of character has often been neglected or not addressed at all. An alternative approach to leadership has emerged from some authors who argue that it is a leader's moral character that shapes their beliefs, goals and behaviours, which in turn brings about a profound positive impact on individuals and organisations (e.g., Crossan et al., 2013; Seijts et al., 2015). Similarly, it is argued by these authors that character flaws are what brings about the negative consequences caused by corrupt leaders. Kohlberg (1981) viewed an individual's character as a form of moral development. Virtues are further argued to be inextricably linked with the concept of character (Newstead et al., 2018). In a leadership capacity, good character is argued to be the product of the practice and habituation of sound or good virtues (Hendriks et al., 2020; Newstead et al., 2020).

The term virtue stems from the Greek word *arête*, which translated means excellence that is established when morally right standards are satisfied (Bunnin & Yu, 2004; Wang & Hackett, 2016). Newstead et al. (2018) used the ontology of virtue to ensure a well-constructed conceptualisation and definition of the construct, which is suggested would help build a more unified conceptualisation of virtue, virtues and virtuousness. Based on this approach, Newstead et al. (2018, p. 446) defined virtue as "...human inclination to feel, think and act in ways that express moral excellence and contribute to the common good".

Several authors have argued that virtues arise out of virtue and are expressed and enacted as behavioural incidences that build an individual's moral character once virtues are habitually practiced (Newstead et al., 2018; Sison & Ferrero, 2015). These incidences where virtues are enacted, viewed or experienced subjectively by others, are then perceived to be expressions of virtuous behaviour or virtuousness (Newstead et al., 2018). Based on this line of thinking, a leadership theory, model or approach based on sound virtues was proposed and termed virtuous leadership.

Current Definitions of Virtuous Leadership

There have been several attempts by scholars to conceptualise and define the virtuous leadership construct. Pearce et al. (2006) defined virtuous leadership as distinguishing right from wrong; taking steps to ensure justice and honesty; influencing and enabling the pursuit of righteous and moral goals; empowering followers by providing them autonomy; and connecting followers to a higher purpose. Kilburg (2012) suggested that virtuous leadership is exemplified by leaders who make appropriate choices and behaviours within the right timeframe and for the right reasons. These definitions capture aspects of virtues; however, the definitions are arguably not yet grounded within a philosophical foundation of virtue ethics. Virtue ethics is defined as the change in moral character that affects moral behaviour and, as a result, a moral society (Palanski & Yammarino, 2009).

Subsequently, Wang and Hackett (2016) defined virtuous leadership as being grounded in virtue ethics and as a leader-follower relationship wherein followers echo the perception of the virtues that a leader overtly expresses within suitable situations (Hackett & Wang, 2012). This definition of virtuous leadership is, therefore, based on both ethical components as well as behavioural aspects of virtues (Wang & Hackett, 2016). Considering the current literature that is available, there were at least two theoretical frameworks that explain the influence of virtuous leadership on follower behaviour, being 1) attribution theory and 2) social learning theory.

Attribution Theory

Attribution theory is used to argue that individuals make judgements about the cause of another person's behaviour based on perceived behavioural consistency, distinctiveness and consensus over time (Kelley, 1987). Wang and Hackett (2016) suggested that observers are most likely to attribute behaviour to internal as opposed to external causes when consistency is high and both distinctiveness and consensus are low. Additionally, they introduced a

contextual dependence to this notion in terms of follower inferences and judgments where leader virtuousness may vary based on the follower's knowledge and belief concerning virtues and virtuousness. In other words, they argue that a leader may affect followers differently.

Moreover, it has been suggested that a follower's judgement may be based on limited observation opportunities and the type of channel or mode a leader uses to communicate, such as daily life interactions or the leader's influence on company performance (Hendricks et al., 2020). The extent, to which a leader is perceived to be virtuous, therefore, seems to depend on the number of virtues attributed to the leader by the followers; the more leader virtues attributed to a leader, the more likely the leader will be perceived as virtuous.

Social Learning Theory

Bright et al. (2006, p. 255) suggested that "...virtuous actions lead to and inspire more virtuous actions". Based on this notion, leaders are viewed as role models and are a crucial source of social learning which is consistent with social learning theory (Atkinson & Butler, 2012; Bandura, 1976).

Virtuous leaders are, therefore, expected to voluntarily demonstrate a virtue intentionally, consistently and for intrinsic reasons (Wang & Hackett, 2016). Furthermore, virtuous leadership requires followers to demonstrate similar behaviours in order to strive towards excellence (Meyer et al., 2019). Wang and Hackett (2016) described the modelling process associated with virtuous leadership as followers that observe and practice virtuous behaviours that are modelled by a virtuous leader, which become habitual through practice within a supportive context. On the other hand, Wang and Hackett (2016) also argue that virtue or virtuousness can be lost in the absence of such practices being present.

Differentiating Virtuous Leadership and Other Leadership Theories

The concept of a virtuous leader that emphasises virtues that are associated with good leadership, has been referenced in various leadership styles, including ethical leadership (Riggio et al., 2010), positive leadership (Meyer et al., 2019), transformative leadership (Caldwell et al., 2012) and transformational leadership (Brown, 2011). However, no specific set of virtues are considered important in leaders, nor have been measured as being distinct from these leadership styles. The apparent lack of conceptual clarity between these related leadership styles requires a review of the differences between virtuous leadership and other moral- or ethical based leadership theories, models and approaches, which was done here and is provided below. In particular, virtuous leadership as differentiated between ethical

leadership and transformational leadership, are discussed below given that these leadership styles are seemingly closely related to one another in terms of their definitions and conceptualisation, however, are argued by many authors, as well as in the current research study, to be distinctly different from one another.

Differentiating Virtuous Leadership and Ethical Leadership

Ethical leadership requires a leaders' commitment to ethics, where ethics competence is required (van Vuuren, 2016). At least three core ethical competencies are proposed, including 1) cognitive, 2) behavioural and 3) managerial ethics, which appear to also include the virtue of courage to improve ethical behaviours within organisations (Rossouw, 2004). However, ethical leadership does not seem to consider a specific set of leader virtues, nor does it focus on aspects of character (Crossan et al., 2013; Hendriks et al., 2020). It is, therefore, suggested here that the core defining characteristics of a virtuous leader has yet to be fully considered. Furthermore, it is argued that ethical decision-making is vital in ethical leadership, whereas virtues guide ethical decision-making (Crossan et al., 2013).

In terms of its philosophical foundation, Resick et al. (2006) found that ethical leadership was mostly related to teleology and deontology, rather than virtue ethics. However, the practice of all three major philosophies is seldom reflected as there are distinct assumptions that are in some sense conflicting (Wang & Hackett, 2016). For example, teleology considers the consequence of decisions before proceeding to maximise pleasure and minimise pain, whereas deontology values rationality over pleasure (Knights & O'Leary, 2006). Contrarily, virtue ethics exemplifies character, which prompts people to perform the right thing (Resick et al., 2006).

It seems, therefore, that different aspects are emphasised in each moral philosophy and that: virtue ethics emphasises the role of leader character; deontology emphasises principles of duty, rights and justice; and teleology emphasises consequences in terms of the expected rewards and/or punishments gained (Atkinson & Butler, 2012). Based on the differences, there are conflicting recommended actions (Dawson, 2005). For instance, Crossan et al. (2013) noted the importance of virtues; however, a virtue-based orientation to ethical decision-making was introduced instead of a one-model approach.

Additionally, the nature of the leader-follower interaction in the definition of leadership styles is considered to be of central interest. For ethical leadership, the definitions are based on leaders communicating and promoting ethical values and expectations which followers should adhere to (Brown & Trevino, 2009; Rhode, 2006; van Vuuren, 2016). On the other hand,

virtuous leaders who demonstrate virtuousness is adopted by followers for intrinsic reasons, rather than a necessity (Wang & Hackett, 2016). Based on the nature of the leader-follower interaction, each leadership style would be measured differently.

The virtuous leadership construct is operationally defined and so measured in terms of specific virtues that are characteristic of virtuous leadership (Wang & Hackett, 2016). For instance, the Virtuous Leadership Questionnaire (Wang & Hackett, 2016) and it is the only measurement instrument that has been developed and validated. On the other hand, there are several ethical leadership measurement instruments available, including the Ethical Leadership Scale (Brown et al., 2005), the Ethical Leadership at Work Questionnaire (Kalshoven et al., 2011) and the Ethical Leadership Measure (Zhu et al., 2019), to name a few. Ethical leadership scales or measurement instruments do not specifically consider virtues, but rather encompass various dimensions, such as role clarification, power sharing and ethical guidance that are aligned with the definitions of ethical leadership (De Hoogh & Den Hartog, 2008; Kalshoven et al., 2011). A more recent ethical leadership measure included two dimensions that are more closely related to virtues and virtuousness, which are 1) moral characteristics and 2) moral cognition (Zhu et al., 2019). As a result, the difference between the two leadership styles is based on what is measured.

Finally, the outcome of each leadership style described above is different. For ethical leadership, the outcome was found to create sustainable ethical cultures within the organisation (van Vuuren, 2016). On the other hand, the outcome of virtuous leadership was found to be positively associated with a range of outcomes, including ethical conduct, happiness, life satisfaction and job performance (Wang & Hackett, 2016). Therefore, virtuous leadership not only strives to improve the overall ethical climate, but also strives to improve the well-being of employees (Caldwell et al., 2015; Hendriks et al., 2020; Wang & Hackett, 2016).

Differentiating Virtuous Leadership and Transformational Leadership

Burns (2004) defined transformational leadership as those leaders who demonstrate positive actions that elevate followers to realise their self-worth and self-efficacy. Bass and Riggio (2006) further suggested that, when enabling and inspiring followers, transformational leaders are able to motivate subordinates to perform beyond expectations. Current conceptualisations of transformational leadership are, however, not centred in leader virtues nor specifically include them in the definition and conceptualisation of transformational leadership. Whetstone (2001), however, suggested that transformational leadership could be

said to influence the virtues of followers in that it triggers behavioural change through character change.

There has been some emphasis on the development of leader character, which would relate to virtue ethics (Bass, 1985; Burns, 1978). Groves and LaRocca (2011), however, found that the ethical focus of transformational leadership was predicated on deontological ethics as the fundamental principle, in other words, on a commitment to the welfare of the organisation's employees and even society at large. Similarly, Warrick (2011) suggested that transformational leaders challenge the status quo to achieve unprecedented organisational outcomes that better adapt to the needs of a constantly changing world. As a result, it is evident that transformational leadership is not grounded in virtue ethics.

The dimensions that are measured in transformational leadership does not focus on virtues, but rather on four dimensions of transformational leadership, which are 1) idealised influence, 2) inspirational motivation, 3) individual consideration and 4) intellectual stimulation, e.g., Multi-Factor Leadership Questionnaire (Bass & Avolio, 1997); Survey of Transformational Leadership (Edwards et al., 2010); Transformational Leadership Measure (Reichard et al., 2011). These dimensions focus on behaviours that leaders overtly portray, however, the virtues or the character of a leader is not considered.

It is noted that statistically significant positive relationship has been found between virtues and transformational leadership. For instance, Riggio et al. (2010) found prudence, fortitude, temperance and justice to be positively related to transformational leadership behaviours. However, a critique was that leaders possess the skills to influence followers that help to inspire and motivate them rather than an innate character that showcases the ability to motivate and inspire others (Diaz-Saenz, 2011). The focus is, therefore, seemingly not on the virtues that the leaders possess, but rather on the skills that they need in order to influence others.

On the other hand, the outcomes of transformational leadership are similar to virtuous leadership. For instance, the outcome of both leadership styles was found to improve the employee performance, employee commitment and trust (Caldwell et al., 2010; Pfeffer, 1998).

The Measurement of Virtuous Leadership

There are several frameworks that have been proposed which suggest a philosophically grounded set of virtues that are coherent and parsimonious (Hendriks et al., 2020). The set of virtues suggested in such frameworks is summarised in Table 1. The overlap, in other words, where virtues are common across frameworks, seems to suggest that the set of virtues which

Table 1*Set of Virtues Frameworks Associated Across Scholars*

Virtue	Definition	Confucius ethics (Huang, 1997)	Peterson and Seligman (2004)	Riggio et al. (2010)	Hackett and Wang (2012)	Crossan et al. (2017)	Kim et al. (2016)	Adewale (2020)
Accountability	A character trait where leaders willingly accepts responsibility for decisions and actions					x		
Collaboration	A character trait where a leader values and actively supports development and maintains positive relationships among people					x		
Committed action	A character trait where leaders diligently continue to put their values into action in order to live virtuously						x	
Courage	A character trait enabling leaders to do without fear what they believe is right		x	x	x	x	x	x
Drive	A character trait where a leader strives for excellence					x		
Humanity	A character trait underlying leaders' love, care and respect of others	x	x		x			x
Humility	A character trait where leaders do not consider themselves to be more special or important than others					x		x
Integrity	A character trait where leaders holds oneself to a high standard and behaves consistently with ethical standards, even in difficult situations					x	x	x
Justice	A character trait motivating respectful recognition and protection of rights of others to be treated fairly, in accordance with uniform and objective standards	x	x	x	x	x		
Prudence	A character trait enabling leaders to make the right judgements and choose the right means to achieve the right goals	x	x	x	x	x	x	
Temperance	A character trait helping leaders control their emotional reactions and desires for self-gratification		x	x	x	x		
Transcendence	A character trait where leaders see possibility where others do not		x			x	x	
Truthfulness	A character trait that is reflected in leaders' telling the truth and keeping promises	x			x			x

Adewale (2020) found within an African context have not yet been fully captured in any other framework that can be found in the literature. It is, therefore, argued that there is a gap in the virtuous leadership construct in that it seems to not fully encompass an African perspective.

For instance, Peterson and Seligman (2004), after applying strict criteria in a survey of the ancient texts of Confucianism, Buddhism, Hinduism, Ancient Greece, Judeo-Christianity and Islam proposed six universal virtues: 1) courage; 2) humanity; 3) justice; 4) temperance; 5) transcendence; and 6) wisdom. These six universal virtues, however, did not consider an African perspective. Moreover, the virtues were utilised in the Diagnostic and Statistical Manual of Mental Disorders rather than in the leadership domain.

The Virtuous Leadership Questionnaire (VLQ) developed by Wang and Hackett (2016) has been validated and was found to demonstrate satisfactory measurement properties of the virtuous leadership construct. The VLQ is based on a conceptualisation of virtuous leadership that is grounded in virtue ethics of Confucian and Aristotelian philosophies. However, no consideration of African philosophical ways of thinking was included in the development of the VLQ. Adewale (2020) proposed a conceptual measurement model for an African-based conceptualisation of virtuous leadership and called that it be empirically investigated, which has not been done it seems – until now.

An African Perspective of Virtuous Leadership

As described above, the VLQ considers both an Eastern and Western perspective, but an African perspective has not been adequately addressed in current literature. Recently, Adewale (2020) identified four primary virtues found within an African context of communalism, which were: 1) courage; 2) truthfulness/integrity; 3) humanity; and 4) humility. Community is widely accepted as a key characteristic feature of African culture and sub-Saharan existence (Metz, 2016).

A further central virtue that characterises African communitarian practices and ideals is associated with actions related to the virtue of altruism (Adewale, 2020). In West Africa, moral virtues embraced in communities include generosity, kindness, compassion, benevolence, respect and concern for others (Gyekye, 1992). In South Africa, the communal moral virtues of Ubuntu, which refers to “I am because we are” and “A person is a person through other persons” (Mbiti, 1969). Ubuntu indicates that relationality is a crucial ingredient for human excellence (Metz, 2016). The moral virtues of Ubuntu manifested in deeds of

kindness, compassion, caring, sharing, solidarity and sacrifice are prevalent (Mnyaka & Motlhabi, 2005). Thus, the virtue of humility may play an important role in virtuous leadership.

Adewale (2020) acknowledges that the virtues espoused is only some virtues embodied by the Afro-communitarian ethics and should not be generalised as the same in every African country, since virtues may manifest differently in other African countries. Nonetheless, Adewale (2020) has provided communal moral virtues that can aid in operationally defining the virtuous leadership construct in a manner that can encompass the broadest possible range of virtues relevant to the conceptualisation of the construct.

Adewale (2020) offers a model of leadership that was derived inductively from an indigenous African context in a qualitative study and not necessarily a superimposition of western ideologies on Africa. However, as suggested above, Adewale's (2020) virtuous leadership model has not been empirically investigated and the development of a virtuous leadership scale that was grounded in an African context was recommended, which the current research study set out to achieve.

In light of the discussion of the current literature as described above, it is reasonable to expect that virtuous leadership is a promising leadership theory, model or approach that has the potential to exert positive influence on individuals and organisations. In order to expand on the current literature available on virtuous leadership, a greater conceptual clarity and a more encompassing conceptualisation of the constructs needs to be provided. Moreover, a valid and reliable measurement instrument needs to be developed, that also encompasses an African context, before the construct can move forward in its establishment and maturation.

CHAPTER 3

Method

In the method chapter, a description of the research design and approaches that were utilised in the current research study will be firstly described. Thereafter, the research procedure followed in conducting the research study will be discussed, which includes providing a summary of the realised sample, the measurement instruments employed, the data collection procedure followed, as well as the statistical analyses which were conducted. Finally, a discussion of the ethical and data management considerations will be provided.

Research Design and Approaches

To address the aim of the current research study, in other words, to formulate a theoretical conceptualisation of virtuous leadership that was also grounded in an African contextual perspective to develop and validate virtuous leadership scale, it was decided that a descriptive research design would be utilised. A descriptive research design was argued to be appropriate as the relationship of the virtues could be assessed (Rosnow & Rosenthal, 2013).

It was further decided that both secondary and primary data would be collected and used. Secondary quantitative data was obtained from a previous study in which Wang and Hackett's (2016) VLQ was used to collect data within the South African context. The secondary quantitative data was used to aid the identification of a reliable and valid set of items to be used in the development of a Virtuous Leadership Scale (VLS).

The primary qualitative and quantitative data was collected using field surveys. A cross-sectional approach was used in data collection for the purpose of the current research study, i.e., data was collected at a specific point in time. Ideally, data should be collected longitudinally, which would allow for causal inferences to be made, however, time and cost constraints did not allow for this to be done (Rosnow & Rosenthal, 2013).

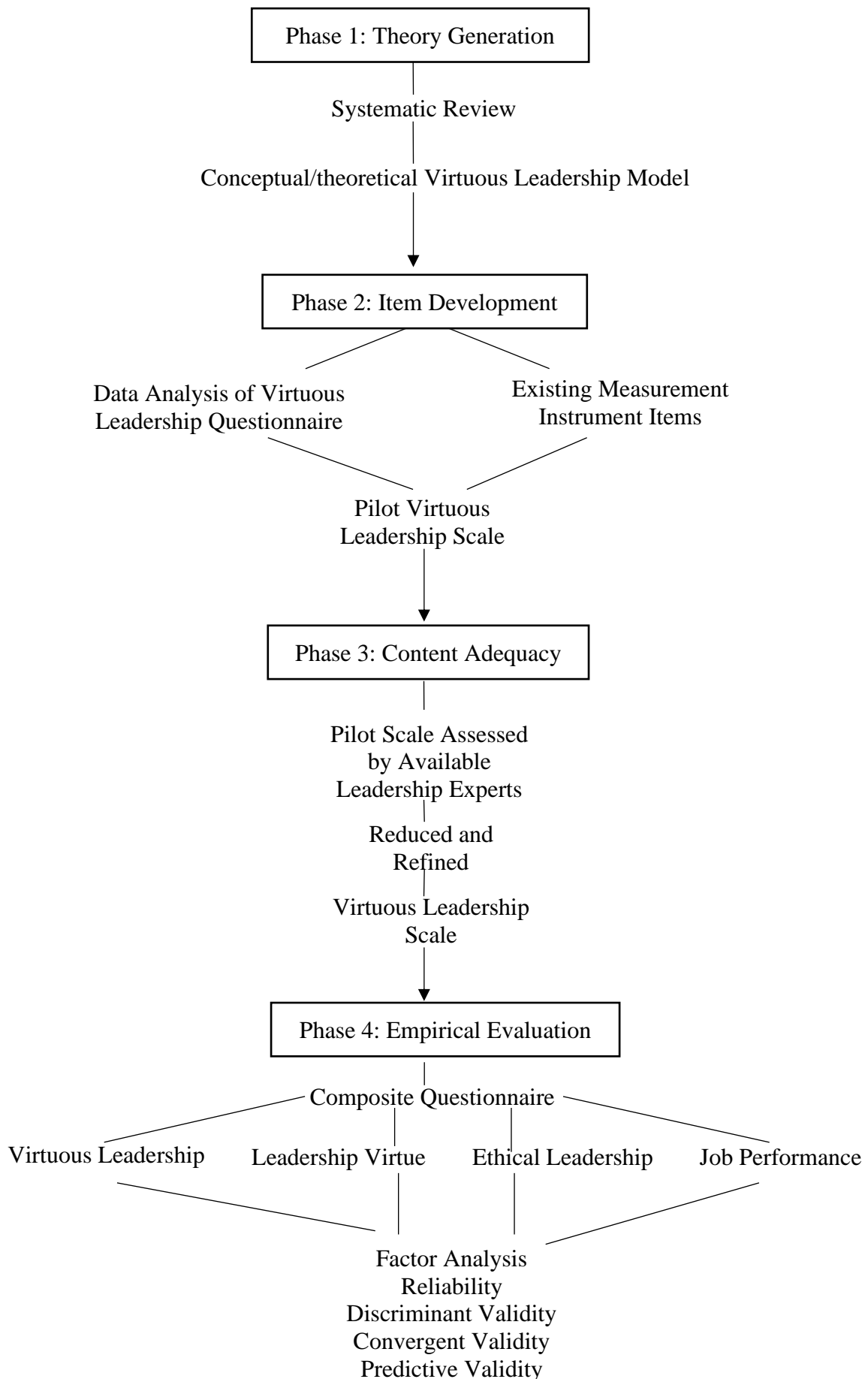
Research Procedure

In executing the current research study, the method that was used was based on four key phases, 1) Theory Generation; 2) Item Development; 3) Content Adequacy; and 4) Empirical Evaluation, in leadership scale development and validation proposed by DeVellis (2016) and the checklist described by Crawford and Kelder (2019) was incorporated, which is summarised in Table 2. A graphical summary is provided in Figure 1, which will be described in more detail.

Table 2
Checklist for Scale Development and Validation

Steps	Phase 1	Phase 2	Phase 3	Phase 4
	Theory Generation	Item Development	Content Adequacy	Empirical Evaluation
Checklist	<ol style="list-style-type: none"> 1. Specify elements that have relationships of interest; 2. Explicate clear definitions for each element and the theory; 3. Explain inter-element relationships; 4. Justify and explain the assumptions of the theory; and 5. Identify semantic relationships with other constructs. 	<ol style="list-style-type: none"> 1. Grounding in literature; 2. Separation of researcher; and 3. Face validity checks. 	<ol style="list-style-type: none"> 1. Respond to researcher bias in the content validity process; 2. Consider who should participate and how many; and 3. Use the content validity process to cull less relevant items. – use existing items 	<ol style="list-style-type: none"> 1. Use factor analysis appropriately; 2. Test internal reliability using tests designed for the model specification; 3. Report on, and factor in, assumptions of normality; 4. Report on, at least, SRMR, Chi-square test, and CFI 5. Demonstrate, at minimum predictive validity that equals or exceeds existing leadership theories; 6. Report methods and justify assumptions clearly

Figure 1
Graphical Summary of the Four Phases



Phase 1: Theory Generation

The objective of Phase 1 was Theory Generation (Crawford & Kelder, 2019). In other words, the purpose of this phase was to critique and synthesise existing virtuous leadership theories, models or approaches into a single integrated model, while ensuring construct clarity.

A systematic review of the literature was, therefore, executed to establish construct clarity following the checklist of Crawford and Kelder (2019). The steps which were followed, included: 1) identify the virtues that have relationships of interest; 2) identify clear definitions of each element and the theory; 3) consider the inter-element relationships of the virtues; 4) identify the assumptions of the virtuous leadership approach, model and theory; and 5) to identify semantic relationships with other constructs.

Peer-reviewed journal articles, written in English, were selected based on the subject or key terms of virtuous leadership measurement instruments and combined with the use of reference lists of key articles found. Data was collected using the following four online academic search databases: 1) Business Source Premier; 2) PsychINFO; 3) PsychArticles; and 4) Emerald. These databases were searched with a number of search terms, which included: “virtuous leadership”, “virtuous leadership scale”, “virtues”. Additionally, further searches were conducted to identify articles on specific virtues, which had been identified. Furthermore, a publication period was not selected as the topic of virtuous leadership has not been extensively researched. The outcome of the systematic review was to provide a conceptual virtuous leadership model, which was also grounded in an African context.

Phase 2: Item Development

Following the conceptual/theoretical virtuous leadership model developed in Phase 1, item development in Phase 2 required that scale items be identified and extracted from existing measures. In addition to the items that were found in the existing literature, secondary quantitative data that utilised Wang and Hackett’s (2016) VLQ was obtained and analysed to identify a further set of reliable and valid items which could be incorporated in developing the pilot VLS.

Based on the recommendation of Crawford and Kelder (2019), the face validity of the scale items was further assessed by comparing items against the conceptualisation and definition of the virtuous leadership construct to assess the likelihood that the items that were selected capture the overarching construct.

Sample and Procedure. Secondary quantitative data was provided by Ungerer and Schlechter (Personal communication, 2020), who made use of non-probability or convenient sampling strategy to collect data utilising the VLQ. The VLQ was distributed amongst current MBA students at a leading South African business school, as well as the alumni of the school. Moreover, a snowball sampling technique was utilised, in other words, respondents who had completed the questionnaire were requested to forward the questionnaire to other potential respondents that meet the criteria of the target sample (Rosnow & Rosenthal, 2013).

After cleaning the data, a realised sample of 193 respondents was obtained. A summary of the realised sample's demographics is provided in Table 3.

Table 3
Demographic Characteristics of the Secondary Data Sample

Demographic Characteristics	Frequency	Percentage (%)
Gender		
Male	94	48.70
Female	59	30.57
Prefer not to answer	4	2.07
Missing	36	18.65
Race		
African	32	16.58
Asian	1	.52
Coloured	20	10.36
Indian	10	5.18
White	90	46.63
Prefer not to answer	4	2.07
Missing	36	18.65
Highest Level of Education		
Grade 12 or Matric	2	1.00
First undergraduate degree or national diploma	11	5.70
First postgraduate degree or postgraduate diploma	49	25.40
Masters' degree/ MBA	90	46.60
Doctorate	5	2.60
Missing	36	18.70
Job Level		
Non-managerial/non-supervisory	13	6.70
Supervisory/team leader	11	5.70
Middle management	39	20.20
Senior management	39	20.20
Executive	33	17.10
Specialist	28	14.50
Missing	30	15.50

Note. $n = 193$.

As can be seen in Table 3, almost a fifth of the respondents (18.70%) did not complete the majority of the demographic characteristic questions. Based on the available information on gender, nearly half of the sample identified as male (48.70%). In addition, White individuals were the dominant racial group (46.60%). Furthermore, the majority of the sample was in a leadership position of middle management (20.20%) or senior management (20.20%). Although the demographic profile of the realised sample, where available, it is seemingly not representative of the general South African population, the profile is, however, in line with what is generally found amongst MBA students and individuals currently holding middle and senior management positions in South African corporate organisations.

Measure. The secondary quantitative data was provided by Ungerer and Schlechter (Personal communication, 2020). The VLQ was used to collect data from a sample of respondents. The VLQ comprised of 18 items responded to on a five-point Likert-type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”. The higher the composite score on the scale was interpreted as a respondent assessing their supervisor/line-manager as displaying more virtues and virtuous behaviours, in other words, being a virtuous leader. There were no items that were negatively worded, therefore, no items were required to be reversed-scored. An example of an item for virtuous leadership would be “*My line-manager/supervisor acts with sustained initiative, even in the face of incurring personal risk*”. Wang and Hackett (2016) found satisfactory measurement properties, revealing a Cronbach’s alpha coefficient which indicates satisfactory internal consistency ($\alpha = .96$, i.e., $> .70$, Nunnally, 1978).

Statistical Analysis. The secondary data was cleaned and examined before conducting any statistical analysis. Descriptive statistics were used to ensure that no unrealistic data values were included in the analysis. Factor Analysis was then conducted on the secondary data, i.e., utilising data reduction technique to identify a more parsimonious, yet valid and reliable cluster of items. To do this, the secondary data obtained with the VLQ was subjected to Exploratory Factor Analysis (EFA) using the Statistical Package for the Social Sciences (SPSS (version 26)). Internal consistency was assessed by calculating Cronbach alpha coefficient and utilising SPSS’s item analysis procedure. The final set of items that emerged from the EFA analyses and which were, therefore, considered to have demonstrated satisfactory construct validity and internal consistency, i.e., found to be valid and reliable, were included in the items judged by the academic leadership experts (refer to Phase 3). Additionally, utilising R Studio (version 1.3.959), the MVN (version 5.8) and lavaan (version 0.6-6) software package, Confirmatory

Factor Analysis (CFA) was conducted to further confirm whether the factor structure or the measurement model was supported by the data.

Phase 3: Content Adequacy

The objective of Phase 3 was to establish content adequacy, in other words, to identify preliminary validity and coverage of the items before a full-scale empirical assessment was conducted (Crawford & Kelder, 2019). Available academics, who are experts in the field of leadership, were identified to conduct content validity in order to minimise contextual bias and enhance the rigour of the process (Crawford & Kelder, 2019; Jeste et al., 2010). Each of the experts were provided with a set of items of the pilot VLS and asked to assess the extent to which each proposed item is relevant and useful to measure virtuous leadership. Based on the feedback of the perceived relevance of the proposed items by the leadership experts, items were reduced and refined in order to ensure the best possible domain coverage.

Sample and Procedure. Judgement sampling was employed to identify an appropriate panel of academics who were known to conduct research in the field of leadership and that were considered to be experts in the field. The researcher's professional network was utilised to identify these individuals, as well as recruiting individuals with a self-expressed interest in the topic of virtuous leadership. A sample of four academic leadership experts was recruited, which was considered adequate for the purpose of the current research study (Davis, 1992; Lam et al., 2018).

Measure. The scale items that were identified and/or developed in Phase 2, were assessed independently by the leadership academics, using a three-point Likert-type response scale where "0 = not representative", "1 = *somewhat representative*" and "2 = *completely representative*". In addition, a comment section was included where further comments and/or recommendations could be made. The survey was, therefore, designed to collect both quantitative from the closed-ended questions and qualitative data from the open-ended questions.

Statistical Analysis. A scale item was considered for elimination if an academic expert selected "0 = *not representative*". A reduced and refined final VLS was developed based on the feedback obtained from the panel of experts and were used in Phase 4.

Phase 4: Empirical Evaluation

The final VLS was distributed to a sample of respondents before various tests were performed to validate the scale (Crawford & Kelder, 2019). A number of empirical evaluations needed to be conducted, including assessing reliability and construct validity. Reliability was utilised to demonstrate the ability of an instrument to temporally and consistently discriminate scores of individuals (Drost, 2011). EFA was conducted to uncover underlying latent constructs that seem to have caused covariance among items. In addition to EFA, CFA was utilised to estimate the extent to which the items and measurement model is supported in the data and reflect a latent virtue construct.

To further investigate the validity, discriminant, convergent and predictive validity was assessed to ensure findings were accurate and that the scale measured what was intended to measure, and not another related construct (Creswell, 2013; Drost, 2011).

To assess discriminant validity, the virtues in the VLS are expected to correlate. However, they should also be distinct in some way and should not correlate excessively with each other. Based on this argument, the following hypothesis was formulated:

H₁: The virtues as measured in the VLS are distinct from one another.

To estimate convergent validity, Ghosh's (2016) Leadership Virtue Scale (LVS) and Zhu et al.'s (2019) Ethical Leadership Measure (ELM) was used to assess whether scores obtained on these scales both correlated with those obtained using the VLS which was developed for the purpose of the current research study. The VLS and LVS are both designed to measure similar virtues and, therefore, the scores should be significantly positively related. Based on this argument, the following hypothesis was formulated:

H_{2a}: Followers' ratings of their line-manager/supervisor's perceived level of virtuousness, as measured by the VLS, are statistically positively correlated with their supervisor/line-manager's perceived level of virtuousness, as measured using the LVS.

In addition, the ELM was utilised to indicate whether there was a statistically positive relationship between the ELM and the VLS developed for the purpose of the current study. If a statistically positive relationship was found between the ELM and VLS, this would be interpreted as being sufficient evidence of ethical behaviour being displayed by a virtuous leader. Based on this argument, the following hypothesis was formulated:

H_{2b}: Followers' ratings of their line-manager/supervisor's perceived level of virtuousness, as measured by the VLS, are statistically positively correlated to their supervisor/line-manager's perceived level of ethical leadership, as measured by the ELM.

Lastly, to test predictive validity, an adapted Job Performance Scale (JPS) was utilised to test whether the VLS developed for the purposes of the current research study can statistically significantly predict job performance. Based on this argument, the following hypothesis was formulated:

H₃: Followers' ratings of their line-manager/supervisor's virtuousness, as measured by the VLS, are statistically significantly positively associated with job performance.

Sample and Procedure.

A non-probability or convenience sampling strategy was utilised to collect data using the VLS. An inclusion criteria was that respondents were required to be working and have a supervisor/line-manager. Additionally, in an effort to increase the sample size a snowball sampling technique was utilised where respondents who have completed the questionnaire was requested to forward the questionnaire to other potential respondents (Rosnow & Rosenthal, 2013).

After cleaning the data, a realised sample of 72 respondents was obtained. A summary of the realised sample's demographics is provided in Table 4.

Table 4
Demographic Characteristics of the Primary Data Sample

Demographic Characteristics	Frequency	Percentage (%)
Gender		
Male	14	19.40
Female	54	75.0
Prefer not to answer	4	5.60
Race		
African	5	6.90
Asian	5	6.90
Coloured	22	30.60
Indian	4	5.60
White	30	41.70
Prefer not to answer	6	8.30
Highest Level of Education		
No formal schooling	1	1.40
Grade 12 or Matric	13	18.10
First undergraduate degree or national diploma	20	27.80
First postgraduate degree or postgraduate diploma	29	40.30
Masters' degree/ MBA	9	12.50
Job Level		
Non-managerial/non-supervisory	41	56.90
Supervisory/team leader	9	12.50
Middle management	11	15.30
Senior management	7	9.70
Executive	1	1.40
Specialist	3	4.20

Note. $n = 72$.

As seen in Table 4, more than half of the sample identified as female (75.00%). In addition, White individuals were the dominant racial group (41.70%). Furthermore, the majority of the sample was in a leadership position with a non-managerial/non-supervisory position (55.70%). The demographic profile of the realised sample is not representative of the general South African population, however, it may be somewhat representative within a non-managerial/non-supervisory position.

Measures. For the purpose of the current research study, a composite questionnaire was designed and included four measurement instruments, namely 1) VLS; 2) LVS; 3) ELM; and 4) JPS that are described in further detail below.

Virtuous Leadership. The VLS was developed in Phase 3 and was based on existing measures and a psychometric study assessing the psychometric properties of the VLQ based on data collected in South Africa. There were 30 items responded on a five-point Likert-type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”. The higher the composite score on the scale was interpreted as a respondent assessing their supervisor/line-manager as displaying more virtues and virtuous behaviours, in other words, being a virtuous leader. There were no items that were required to be reversed-scored as no items were negatively worded. An example of an item for virtues leadership would be “*My line-manager/supervisor shows concern for everyone’s needs*”.

Leadership Virtue. Leadership virtue were measured using the LVS that was developed for leadership in an educational setting (Ghosh, 2016). There were 21 items responded on a five-point Likert-type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”. The higher the composite score on the scale was interpreted as a respondent assessing their supervisor/line-manager as displaying more virtues and virtuous behaviours, in other words, being a virtuous leader. There were no items that were required to be reversed-scored as no items were negatively worded. An example of an item from the scale would be “*My line-manager/supervisor always stands up for what is morally right*”. There were six dimensions found, which were courage, humanity, justice, prudence, temperance and truthfulness. The Cronbach’s alpha coefficients ($\alpha = .88, .88, .92, .89$ and $.89$ respectively) indicated satisfactory consistency (i.e., $> .70$, Nunnally, 1978) for internal reliability (Ghosh, 2016).

Ethical Leadership. Ethical leadership was measured by means of the ELM (Zhu et al., 2019). The ELM comprised of 14 items responded to on a five-point Likert-type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”. The higher the composite score on the scale was interpreted as a respondent assessing their supervisor/line-manager as displaying more ethical behaviours, in other words, being an ethical leader. There were no items that were required to be reversed-scored as no items were negatively worded. An example of an item for ethical leadership would be “*My line-manager/supervisor thinks about the moral implications of their actions frequently*”. Zhu et al. (2019) found satisfactory measurement properties, revealing a Cronbach’s alpha coefficient which indicates satisfactory internal consistency ($\alpha = .97$, i.e., $> .70$, Nunnally, 1978).

Job Performance. Job performance was measured with a self-report job performance scale based on the Work Unit Performance Measure (Douglas & Ammeter, 2004). The 4 items were responded to on a five-point Likert-type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”. The higher the composite score, the more likely the individual perceived their work unit’s job performance to be satisfactory. There were no items that were required to be reversed-scored as no items were negatively worded. Douglas and Ammeter (2004) found satisfactory measurement properties, revealing a Cronbach’s alpha coefficient which indicates satisfactory internal consistency ($\alpha = .86$, i.e., $> .70$, Nunnally, 1978).

Demographics. A demographics section was included to collect data about respondents age, gender, race and education level. The demographic questions were optional, and respondents did not need to complete these if they did not want to. The demographic data collected was not used to address any research objectives, but rather to be able to describe the realised sample.

Data Collection Procedure. Qualtrics was utilised to design an electronic version of the composite questionnaire. The questionnaire was shared among employee groups found on social media platforms, including Facebook and LinkedIn. Additionally, respondents were asked to forward the request to individuals in their network whom they believe complied with the requirements of the target sample of the current research study. The questionnaire took approximately 10 minutes to complete. There were no incentives offered for participating in the current research study.

Statistical Analysis. Prior to conducting any statistical analysis, descriptive statistics were calculated and used to summarise the raw data and to ensure no unrealistic values were included in the analysis. The SPSS (version 26) software was used to conduct descriptive and inferential statistical analyses. The checklist for Step 5 in Table 2 was followed. Validity and reliability of the subscales were assessed by means of conducting Factor Analysis and calculating Cronbach’s alpha to assess construct validity and reliability, respectively. Additionally, the MVN package (version 5.8) and the lavaan package (version 0.6-6) in the R Studio (version 1.3.959) software package was used to conduct CFA. Pearson correlational coefficients were calculated, and Multiple Regression analysis was performed to assess discriminant, convergent and predictive validity.

Ethical Consideration

The secondary data used in Phase 1 was approved by the UCT Faculty of Commerce Ethics in Research Committee. In addition, data collection used in Phase 4 for the current research study only commenced after ethics clearance was granted by the UCT Faculty of Commerce Ethics in Research Committee. Standard ethical procedures were practised throughout the process of collecting and collating data.

The URL of the questionnaire was distributed via social media platforms, including Facebook and LinkedIn with a short description of the study and inclusion criteria to participate in the study. On clicking the URL, respondents were taken to the online survey, and a cover letter was displayed, which contained a description of the research objectives and ethical considerations, as well as all the information that is required so that informed consent may be assumed. A cover letter was provided, instead of a consent form, given that an anonymous online questionnaire was utilised for the purposes of the current study. Participation was voluntary and that there were no negative consequences if a respondent wished to refuse participation or withdraw from the research study at any point of the survey. The survey was also completed anonymously, as well as no personal identifiers being collected. No individual can, therefore, be identified from the data collected.

Data Management Considerations

Data was kept confidentially and was stored in accordance with ethical and privacy guidelines and legislation. Cloud-based storage was used to store the data, which was collected securely and was only accessible by the researcher and supervisor. No personal identifiers were present in the data file that was stored. The data files were further password protected and will not be disposed of for at least five years.

Overall, a direction for the research method was provided by following Crawford and Kelder's (2019) checklist in leadership scale development and validation. This ensured that the research process addressed all the research sub-objectives. The results of the current research study will be presented in the following chapter.

CHAPTER 4

Results

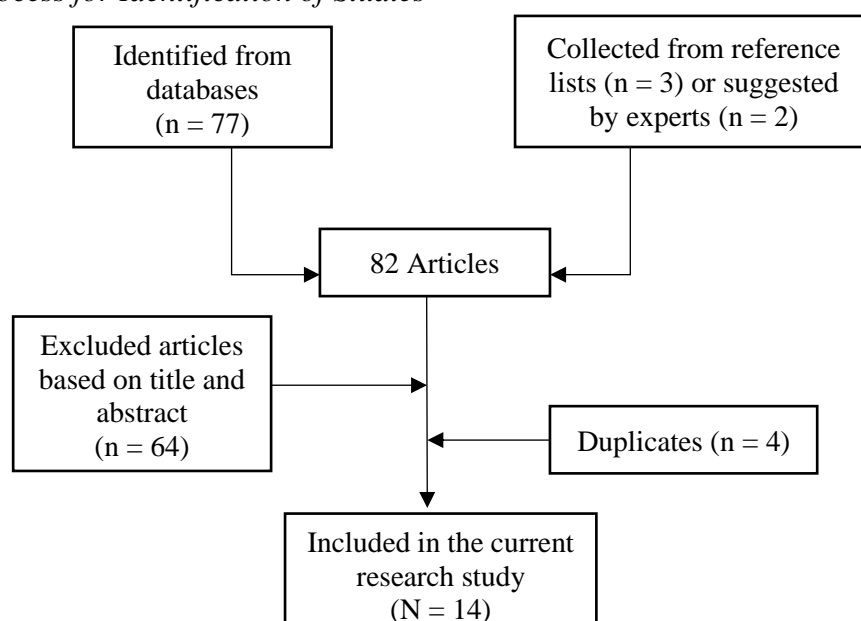
As described above, the aim of the current research study was to formulate a theoretical conceptualisation of virtuous leadership that was also grounded in an African contextual perspective in order to develop and validate a virtuous leadership scale. In conducting the current research study, a structured four-phase approach was followed, as was described in Chapter 3. The four phases were 1) Theory Generation; 2) Item Development; 3) Content Adequacy; and 4) Empirical Evaluation. In this chapter, the results from each of the four phases will be discussed.

Phase 1: Theory Generation

The purpose of Phase 1 was Theory Generation. A systematic review was conducted to critique and synthesise existing virtuous leadership theories, models and approaches into a single integrative model. In addition, the systematic review aided in establishing construct clarity by following the checklist of Crawford and Kelder (2019). The steps followed ensured 1) virtues of interest were identified; 2) clear definitions of each virtue and the theory were identified; 3) the inter-element relationship of virtues was considered; 4) assumptions of the virtuous leadership theory, model and approach were identified; and 5) semantic relationship with other constructs were identified. The systematic review procedure is graphically represented in Figure 2.

Figure 2

Selection Process for Identification of Studies



There were 77 studies identified using the online academic search database, inclusion criteria and search terms that were described in Chapter 3. There were also three additional articles collected of identified virtues and two articles suggested by experts. Articles were excluded if it was a duplicate. Moreover, articles were excluded if the title or abstract were not related to a virtuous leadership measurement instrument or identified virtues of interest. Thereafter, 14 articles were selected to propose a conceptual virtuous leadership model.

Of the 14 articles selected, three studies were based on a virtuous leadership measurement instrument, seven articles were based on a measurement instrument that captured a virtue component, three articles focused on the concept of virtuous leadership and one article focused on a specific virtue of interest that was not explored in depth.

Virtues of Interest

A total of 13 virtues were identified in the selected articles, which can be found in Table 5 along with the definitions. The virtues identified were found in existing frameworks and a summary of the set of virtue frameworks can be found in Table 6. Based on the overlap, the common virtues found across the existing frameworks were prudence (n = 9), courage (n = 7), humanity (n = 6), integrity (n = 5), justice (n = 5), temperance (n = 5) and humility (n = 4).

Table 5
Definition of Virtues

Virtue	Definition	Source
Accountability	A character trait where leaders willingly accepts responsibility for decisions and actions	Crossan et al. (2017)
Collaboration	A character trait where a leader values and actively supports development and maintain of positive relationships among people	Crossan et al. (2017)
Committed action	A character trait where leaders diligently continue to put their values into action in order to live virtuously	Kim et al. (2016)
Courage	A character trait enabling leaders to do without fear what they believe is right	Wang and Hackett (2016)
Drive	A character trait where a leader strives for excellence	Crossan et al. (2017)
Humanity	A character trait underlying leaders' love, care and respect of others	Wang and Hackett (2016)
Humility	A character trait where leaders do not consider themselves to be more special or important than others	Crossan et al. (2017)
Integrity	A character trait where leaders holds themselves to a high standard and behaves consistently with ethical standards, even in difficult situations	Wang and Hackett (2016)
Justice	A character trait motivating respectful recognition and protection of rights of others to be treated fairly, in accordance with uniform and objective standards	Wang and Hackett (2016)
Prudence	A character trait enabling leaders to make the right judgements and choose the right means to achieve the right goals	Wang and Hackett (2016)
Temperance	A character trait helping leaders control their emotional reactions and desires for self-gratification	Wang and Hackett (2016)
Transcendence	A character trait where leaders see possibility where others do not	Crossan et al. (2017)
Truthfulness	A character trait that is reflected in leaders' telling the truth and keeping promises	Wang and Hackett (2016)

Inter-Element Relationship of Virtues

The interaction of the virtues with one another was reviewed. The review considered the virtues within the virtuous leadership literature found and specific virtues that were found in an African context.

Virtuous Leadership Literature. Hackett and Wang's (2012) virtuous leadership model captured five of the seven common virtues found, i.e., 1) prudence; 2) courage; 3) humanity; 4) justice; and 5) temperance. Furthermore, Hackett and Wang's (2012) virtuous leadership model were grounded in Aristotelian and Confucian philosophies. Aristotle considered the five virtues as cardinal virtues in terms of how all other virtues are closely aligned with them (Arjoon, 2000). Similarly, Confucius held that these five cardinal virtues form the basis for all virtues (Huang, 1997).

The five virtues that were mentioned above are considered to be important in leadership. For instance, Hendriks et al. (2020) considered the five cardinal virtues as fundamental building blocks that enable leaders to do the 'right' things in a range of situations that considered the employee's best interest. Moreover, Palanski and Yammarino (2007) suggested none of these virtues are found in isolation and the cardinal virtues interact with each other to make up a good character.

Virtuous Leadership Literature in an African Context. Adewale (2020) found four primary virtues in an African context, which were 1) courage; 2) truthfulness; 3) humanity; and 4) humility. An overlap can be seen between the virtues found and the recommend virtues by Hackett and Wang (2012), besides humility. However, humility was found to be an important virtue across all leadership styles (Hackett & Wang, 2012). Humility is an important virtue within an African context due to the high power-distance (Adewale, 2020). Similarly, there is a high power-distance in Eastern culture (Qin et al., 2019). The effect of high power-distance on the leader-follower relationship was that employees fear being disrespectful, which prevented a beneficial relationship with leaders (Adewale, 2020). For power-distance to be significantly reduced, leaders have to demonstrate the virtue of humility as it allows leaders to connect with their employees without losing their power or prestige (Adewale, 2020).

In addition, humility was required for effective leadership. For instance, Qin et al. (2019) found that leader-follower congruence in humility was associated with lower negative effect levels of employee on leaders. Furthermore, Crossan et al. (2017) found humility to be a strong predictor of performance and the likelihood of derailment and recommended humility as a

dimension of leader character. Thus, humility is considered as important within virtuous leadership.

Previously, Hackett and Wang (2012) regarded truthfulness as a cardinal virtue and the virtue was found to be a primary virtue in the African context. However, truthfulness was omitted as the items intended to reflect truthfulness as a distinctive virtue (Wang & Hackett, 2016), which was also found in other empirical studies (e.g., Palanski & Yammarino, 2009). As mentioned, Adewale (2020) also found truthfulness as a virtue in an African context, however, truthfulness had manifested as integrity. As a result, integrity was considered in the current present study. Moreover, integrity is a requirement for effective leadership (Crossan et al., 2017). Thus, truthfulness was instead regarded as integrity. Lastly, the assumptions and semantic relationship of virtuous was addressed.

Assumptions and Semantic Relationship of Virtuous Leadership

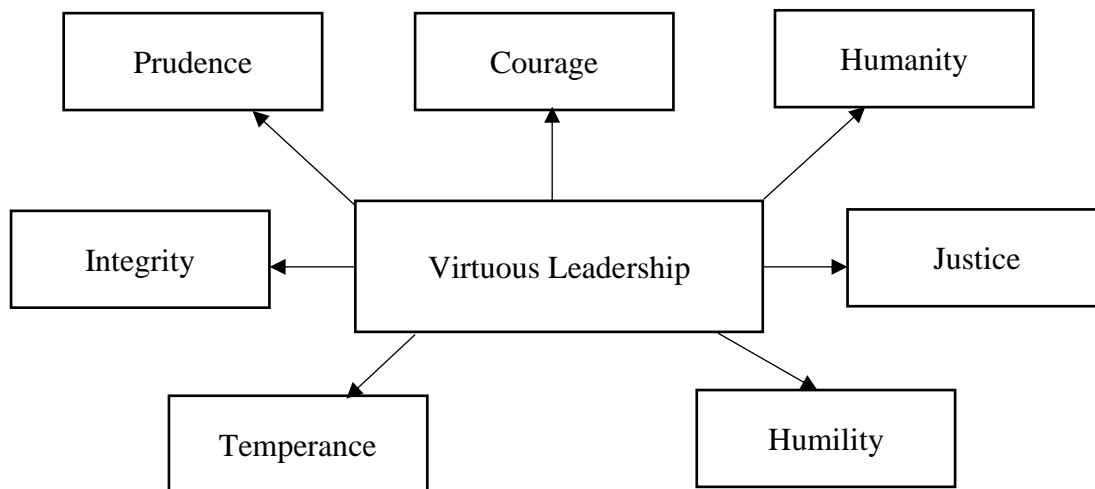
Based on existing literature, virtuous leadership takes place at the micro-individual level as the enactment of virtuous behaviours that reflect the beneficial influence of virtue on psychological processes, attitudes and behaviours of the group members under consideration. (Gotsis & Grimani, 2015). This can be seen in the definition as well, which defined virtuous leadership as a leader-follower relationship wherein followers echo the perception of the virtues that a leader expresses within suitable situations (Hackett & Wang, 2012).

Furthermore, Hackett and Wang (2012) found that virtues have been implicated within and across seven wide studies of styles of leadership. However, virtues did not encompass as the core foundation of the different leadership styles and did not address how virtues influence leader behaviours and outcomes. The literature review in Chapter 2 addressed the differences between virtuous leadership and two leadership theories, ethical and transformational leadership.

Conceptual/theoretical Virtuous Leadership Model

Despite the fact that there was no one framework that captured all the virtues that were found within an African context, the common virtues do capture the virtues found within an African context. Thus, the conceptual/theoretical virtuous leadership model was formed by integrating the common virtues, which is presented in Figure 3.

Figure 3
Conceptual/Theoretical Virtuous Leadership Model



Based on the review of the literature, as discussed above, construct clarity was established after critiquing and synthesising existing virtuous leadership theories, approach or model into a single integrative conceptual/theoretical model. The conceptual virtuous leadership model provided the virtues of interest that are thought to make up a good and effective leader character, which was different from other leadership approaches, models or theories. The identified virtues were utilised in Phase 2, which will be discussed next.

Phase 2: Item Development

Based on the proposed conceptual virtuous leadership model developed in Phase 1, a pilot VLS was developed in Phase 2. Items were extracted from existing measurement instruments. In particular, Wang and Hackett's (2016) VLQ was identified as the main measurement instrument to extract items. Secondary quantitative data using the VLQ, provided by Ungerer and Schlechter (Personal communication, 2020), was analysed. The statistical analysis result aided in the identification of a reliable and valid set of items within a South African sample to develop the VLS for the current research study that was applicable within an African context.

Item Generation

The proposed conceptual/theoretical virtuous leadership model presented in in Figure 3 was used as a foundation for a deductive approach to generate items for the pilot VLS. The scale items were generated using a combination of existing scale that measured each virtue. A

total of 33 items were utilised. A summary of the source of scale items for each virtue of the proposed conceptual virtuous leadership model is presented in Table 7.

Table 7
Summary of Virtue Items Source

Virtue	No. of items	Adapted Source
Courage	4	Wang and Hackett (2016)
Humanity	3	Wang and Hackett (2016)
Humility	9	Owens (2009)
Integrity	5	Swaim (2004)
Justice	3	Wang and Hackett (2016)
Prudence	4	Wang and Hackett (2016)
Temperance	4	Wang and Hackett (2016)
Total	32	

Psychometric Evaluation of the Virtuous Leadership Questionnaire

A detailed summary of the psychometric evaluation of the VLQ can be found in Appendix A. Based on the statistical analysis, the VLQ was concluded to be valid and reliable within a South African sample. Moreover, the five factor, 18-item VLQ measurement model indicated a good fit. All the items in the VLQ were, therefore, retained in the pilot VLS.

Phase 3: Content Adequacy

Phase 3 identified preliminary validity and converge of the 32-item pilot VLS. Four academic experts in the field of leadership assessed the extent to which each item was relevant and useful to measure virtuous leadership. Based on the feedback, items were retained, retained with changes or discarded to ensure the best domain convergence.

Item Reduction

The content validity of the initial pool of the 32 items were assessed using a preliminary judgement analysis. Items were discarded if “0 = *not representative*” was selected. As a result, there were seven items discarded, but an additional nine items were recommended by academic experts and these were included in the final scale. A summary of the list of items for content validity is depicted in Table 8. Thus, the final VLS resulted in 30 items.

Table 8*Summary of the List of Items Distributed to Academic Leadership Experts*

Item	No. of "0 = <i>not representative</i> " selected	Result
Courage		
My line-manager/supervisor acts with sustained initiative, even in the face of sacrificing personal risk.	0	Retained
My line-manager/supervisor initiates a project despite risking their personal reputation.	0	Retained
My line-manager/supervisor leads fundamental change though it may entail personal sacrifice and/or personal risk.	0	Retained
My line-manager/supervisor speaks up on matters of injustice or personal conviction, despite risking a "backlash".	0	Retained
Humanity		
My line-manager/supervisor expresses concern for the misfortune of others.	0	Retained
My line-manager/supervisor seeks/strive for the greater good.	Recommended	Retained
My line-manager/supervisor people become better after interacting with him/her.	Recommended	Retained
My line-manager/supervisor shows concern for subordinates' need.	0	Retained with changes
My line-manager/supervisor shows concern and care for peers.	1	Discarded
Humility		
My line-manager/supervisor acknowledges when others are competent.	0	Retained
My line-manager/supervisor admits when they do not know how to do something.	0	Retained
My line-manager/supervisor is open to the ideas and advice of others.	0	Retained
My line-manager/supervisor learns from others.	0	Retained
My line-manager/supervisor actively seeks feedback.	2	Discarded
My line-manager/supervisor gives credit openly for others contributions and achievements.	1	Discarded
My line-manager/supervisor takes notice of others' strengths.	1	Discarded
My line-manager/supervisor compliments others on their strengths.	1	Discarded
My line-manager/supervisor is open to the advise of others.	1	Discarded
Integrity		
My line-manager/supervisor practices what they preach.	0	Retained
My line-manager/supervisor acts as a role model.	Recommended	Retained
My line-manager/supervisor delivers on promises.	0	Retained with changes
My line-manager/supervisor does the right thing even when it would be unpopular.	0	Retained with changes
My line-manager/supervisor stands by principles no matter the price.	0	Retained with changes
My line-manager/supervisor conducts self by espoused values	1	Discarded

Table 8*Summary of the List of Items Distributed to Academic Leadership Experts (continued)*

Item	No. of "0 = not representative" selected	Result
Justice		
My line-manager/supervisor allocates valuable resources in a fair/equitable manner.	0	Retained
My line-manager/supervisor balance individual interests and rights fairly when allocating responsibilities.	0	Retained
My line-manager/supervisor keeps people informed at all times.	Recommended	Retained
My line-manager/supervisor involves people in the decisions that affect them.	Recommended	Retained
My line-manager/supervisor resolves conflict in a fair and objective manner.	0	Retained with changes
Prudence		
My line-manager/supervisor exercises sound reasoning in deciding on the optimal course of action with consideration of the associated risks.	0	Retained
My line-manager/supervisor grasps the complexity of most situations when making decisions/judgements.	0	Retained
My line-manager/supervisor optimises resources in responding to the demands of the environment.	0	Retained
My line-manager/supervisor makes the right decisions for the right reasons at the right time.	Recommended	Retained
My line-manager/supervisor efficiently and effectively assesses requirements demanded by any given situation	1	Discarded
Temperance		
My line-manager/supervisor prioritises the team and/or organisation's interests over self-interest.	0	Retained
My line-manager/supervisor delays instant gratification for long-term gain.	Recommended	Retained
My line-manager/supervisor avoids indulging desires at the expense of others.	0	Retained with changes
My line-manager/supervisor behaves unselfishly, even when there are opportunities to maximise personal gain	0	Retained with changes
My line-manager/supervisor downplays personal successes to avoid making others feel uncomfortable	1	Discarded

In addition, the academic experts provided comments in terms of the representativeness, comprehensiveness and clarity of the items, which were taken into consideration. For instance, one comment was to ensure there were equal number of items per virtue. Furthermore, a common comment was to ensure that the definitions of the virtues aligned with the items. One academic expert identified that the virtues should not be seen as a trait, but rather as a specific behaviour. As a result, the definitions were refined and can be found in Table 9.

Table 9
Refined Definition of Virtues

Virtue	Definition
Courage	A character behaviour enabling leaders to do without fear what they believe is right
Temperance	A character behaviour helping leaders control their emotional reactions and desires for self-gratification
Prudence	A character behaviour enabling leaders to do the right things at the right time with the right people
Integrity	A character behaviour where leaders holds oneself to a high standard and behaves consistently with ethical standards, even in difficult situations and to own detriment
Justice	A character behaviour motivating respectful recognition and protection of rights of others to be treated fairly and equitably , in accordance with uniform and objective standards
Humanity	A character behaviour underlying leaders' love, care and respect of others as well as seeking the greater good and common good
Humility	A character behaviour where leaders do not consider themselves to be more special or important than others; knowing and keeping to one's place under all circumstances.

Note. The changes are in bold.

Phase 4: Empirical Evaluation

Following the distribution of the pilot VLS, the primary realised data was statistically analysed. A number of empirical evaluations, reliability, factor analysis and validity, were conducted to ensure findings were accurate and that the scale measured what was intended. A focus was placed on the psychometric evaluation of the VLS in this chapter. On the other hand, a detailed psychometric evaluation of the LVS, ELM and JPS can be found in Appendix B.

Psychometric Evaluation of the VLS

Each subscale of the VLS was analysed utilising factor analysis (i.e., EFA) and reliability. Subsequently, the comprehensive VLS was analysed utilising CFA, followed by reliability of the comprehensive VLS. A short overview of the analysis technique is provided prior to the psychometric evaluation of each subscale.

Factor Analysis. The items comprising each subscale was designed to operate as a unidimensional underlying latent virtue dimension. To test this, EFA was utilised as it was considered appropriate for the modification of the scale that would account for the covariation among items (Skrondal & Rabe-Hesketch, 2004). Prior to factor analysis being conducted, the underlying assumptions were assessed to ensure that they were complied with. Gorsuch (1983)

suggested that an adequate sample size was to have five times the number of respondents per item in a scale.

In addition, the sampling adequacy and inter-item correlations was determined using the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity. The data was considered to be suitable if the KMO value was greater than .50 and Bartlett's Test of Sphericity was statistically significant with a $p < .05$ (Field, 2018). Once the data was established to be suitable, the Kaiser's criterion of one eigenvalue or more determined the number of factors to be extracted from the scale that was deemed as important (Field, 2018).

Subsequently, the factor loadings were used to determine the measurement model. Factor loadings were retained if the minimum loading was greater than .30. However, if an item loaded on more than two factors or there was a difference of less than .25 between factor loadings then the item would be omitted due to cross-loading.

Following the final measurement model based on EFA, CFA using maximum likelihood estimated was conducted to evaluate model fit. Maximum likelihood estimation assumes multivariate normality. If the assumption of multivariate normality was not met, robust maximum likelihood was utilised.

A good model fit can be determined by a non-significant Chi-square; however, a range of fit statistics were accessed as other factors can influence the Chi-square value (Tabachnick & Fidell, 2019). The fit statistics that were utilised to determine model fit is summarised in Table 10. In particular, Bryne (2010) describes the Root Mean Square Error of Approximation (RMSEA) as the most informative statistic indicator determining model fit.

Table 10
Summary of Fit Statistic Indicators for Model Fit

Fit Measure	
Chi-square	a non-significant result indicates model fit
Root Mean Square Error of Approximation (RMSEA)	values between .05 - .08 indicate reasonable fit and values that are below .05 indicate good fit
Goodness of Fit Index (GFI)	values that are less than .90 indicated lack of fit, values between .90-.95 indicate reasonable fit and values between .95 -1 indicated good fit
Tucker-Lewis Index (TFI)	values that are less than .90 indicated lack of fit, values between .90-.95 indicate reasonable fit and values between .95 -1 indicated good fit
Comparative Fit Index (CFI)	values that are less than .90 indicated lack of fit, values between .90-.95 indicate reasonable fit and values between .95-1 indicated good fit

Reliability. Item analysis was performed in order to identify, delete or reflect poor items that did not contribute to the internally consistency description of the latent virtue dimensions that the subscales were designed to measure. Reliability was analysed using Cronbach's alpha, which ideally should be more than .70 to be considered satisfactory (Nunnally, 1978). As a rule of thumb, items were deleted if the inter-item correlation was below .30 in order to improve internal consistency (Rosnow & Rosenthal, 2013).

Psychometric Evaluation of the Courage Subscale

The courage subscale consists of four items measured on a five-point Likert type response scale where "1 = *strongly disagree*" and "5 = *strongly agree*".

Factor Analysis: Courage. All four items of the courage subscale were factor analysed. The design intention was that the four items would reflect a unidimensional virtue dimension. A sample size of 72 respondents was obtained, which indicated an adequate sample size. In addition, the KMO value was found to be satisfactory (KMO = .76, i.e., > .60) and there was a statistically significant Bartlett's test of sphericity ($\chi^2 = 82.92$, $p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 61.86% of the variance (Eigenvalue = 2.47, i.e., > 1; factor loadings = .63 < r < .84). In Table 11, the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed, the factor was labelled as courage.

Table 11

Factor Matrix for the Courage Subscale

Item	Factor Loading
VLS15C: My line-manager/supervisor acts with sustained initiative, even in the face of sacrificing personal risk.	.84
VLS22C: My line-manager/supervisor leads fundamental change though it may entail personal sacrifice and/or personal risk.	.68
VLS2C: My line-manager/supervisor initiates a project despite risking their personal reputation.	.65
VLS8C: My line-manager/supervisor speaks up on matters of injustice or personal conviction, despite risking a "backlash".	.63
Eigenvalue	2.47
% of Variance	61.86

Note. $N = 72$. The extraction method was principal axis factoring. VLS = Virtuous Leadership Scale; C = Courage.

Reliability: Courage. A satisfactory Cronbach's alpha was found ($\alpha = .79$, i.e., $> .70$). This indicates that 79% of the variance in the items were systematic. The remaining 21% were random error variance.

The corrected item-total correlations, as depicted in Table 12, ranging from .54 and .70 were found to be satisfactory. None were below the rule of thumb that required items to be deleted. The results also revealed that deletion of any item would not increase the Cronbach's alpha. As a result, no items were deleted. Thus, all the items were responding to a common source of variance and were in relative union.

Table 12
Reliability Output for the Courage Subscale

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLS2C	10.19	5.85	.56	.36	.76
VLS8C	9.86	6.38	.54	.34	.76
VLS15C	9.78	6.20	.70	.50	.69
VLS22C	9.88	6.11	.60	.36	.73

Note. VLS = Virtuous Leadership Scale.

Psychometric Evaluation of the Humanity Subscale

The humanity subscale consists of four items measured on a five-point Likert type response scale where "1 = *strongly disagree*" and "5 = *strongly agree*".

Factor Analysis: Humanity. All four items of the humanity subscale were factor analysed. The design intention was that the four items would reflect a unidimensional virtue dimension. A sample size of 72 respondents was obtained, which indicated an adequate sample size. In addition, the KMO value was found to be satisfactory ($KMO = .79$, i.e., $> .60$) and there was a statistically significant Bartlett's test of sphericity ($\chi^2 = 114.73$, $p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 68.14% of the variance (Eigenvalue = 2.73, i.e., > 1 ; factor loadings = $.68 < r < .86$). In Table 13, the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed, the factor was labelled as humanity.

Table 13
Factor Matrix for the Humanity Subscale

Item	Factor Loading
VLS24HM: My line-manager/supervisor people become better after interacting with him/her.	.86
VLS17HM: My line-manager/supervisor seeks/strive for the greater good.	.77
VLS10HM: My line-manager/supervisor expresses concern for the misfortune of others.	.73
VLS1HM: My line-manager/supervisor shows concern for everyone's need.	.68
Eigenvalue	2.73
% of Variance	68.14

Note. $N = 72$. The extraction method was principal axis factoring. VLS = Virtuous Leadership Scale; HM = Humanity.

Reliability: Humanity. A satisfactory Cronbach's alpha was found ($\alpha = .84$, i.e., $> .70$). This indicates that 84% of the variance in the items were systematic variance. The remaining 16% were random error variance.

The corrected item-total correlations, as depicted in Table 14, ranging from .62 and .75 were found to be satisfactory. None were below the rule of thumb that required items to be deleted. The results also revealed that deletion of any of items would not increase the current Cronbach's alpha. As a result, no items were deleted. Thus, all the items were responding to a common source of variance and were in relative union.

Table 14
Reliability Output for the Humanity Subscale

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLS1HM	10.97	6.56	.62	.41	.83
VLS10HM	10.99	6.86	.66	.44	.81
VLS17HM	10.94	6.70	.68	.52	.80
VLS24HM	11.22	5.92	.75	.58	.77

Note. VLS = Virtuous Leadership Scale; HM = Humanity.

Psychometric Evaluation of the Humility Subscale

The humility subscale consists of four items measured on a five-point Likert type response scale where "1 = *strongly disagree*" and "5 = *strongly agree*".

Factor Analysis: Humility. All four items of the humility subscale were factor analysed. The design intention was that the four items would reflect a unidimensional virtue dimension. A sample size of 72 respondents was obtained, which indicated an adequate sample size. In addition, the KMO value was found to be satisfactory (KMO = .77, i.e., > .60) and there was a statistically significant Bartlett's test of sphericity ($\chi^2 = 97.85$, $p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 64.33% of the variance (Eigenvalue = 2.57, i.e., > 1; factor loadings = $.56 < r < .85$). In Table 15, the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed, the factor was labelled as humility.

Table 15

Factor Matrix for the Humility Subscale

Item	Factor Loading
VLS30HL: My line-manager/supervisor is open to learn from others.	.85
VLS21HL: My line-manager/supervisor admits when they do not know how to do something.	.76
VLS14HL: My line-manager/supervisor acknowledges when others are more competent.	.73
VLS7HL: My line-manager/supervisor is open to the ideas and advice of others.	.56
Eigenvalue	2.57
% of Variance	64.33

Note. $N = 72$. The extraction method was principal axis factoring. VLS = Virtuous Leadership Scale; HL = Humility.

Reliability: Humility. A satisfactory Cronbach's alpha was found ($\alpha = .81$, i.e., > .70). This indicates that 81% of the variance in the items were systematic variance. The remaining 19% was random error variance.

The corrected item-total correlations, as depicted in Table 16, ranging from .50 and .73 were satisfactory. None were below the rule of thumb that required items to be deleted. Although, the results revealed that item 7 would increase the current Cronbach's alpha, if deleted. However, item 7 was retained as the Cronbach's alpha was not drastically different and the item had statistically loaded in the EFA. As a result, no items were deleted.

Table 16
Reliability Output for the Humanity Subscale

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLS7HL	11.04	8.01	.50	.29	.82
VLS14HL	11.04	7.48	.63	.46	.76
VLS21HL	11.03	7.66	.67	.46	.75
VLS30HL	11.06	6.98	.73	.54	.71

Note. VLS = Virtuous Leadership Scale; HL = Humility.

Psychometric Evaluation of the Integrity Subscale

The integrity subscale consists of five items measured on a five-point Likert type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”.

Factor Analysis: Integrity. All five items of the integrity subscale were factor analysed. The design intention was that the five items would reflect a unidimensional virtue dimension. A sample size of 72 respondents was obtained, which indicated an adequate sample size. In addition, the KMO value was found to be satisfactory (KMO = .84, i.e., > .60) and there was a statistically significant Bartlett’s test of sphericity ($\chi^2 = 190.82$, $p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 68.66% of the variance (Eigenvalue = 3.43, i.e., > 1; factor loadings = .67 < r < .84). In Table 17, the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed, the factor was labelled as integrity.

Table 17
Factor Matrix for the Integrity Subscale

Item	Factor Loading
VLS28I: My line-manager/supervisor stands by principles no matter the price.	.84
VLS13I: My line-manager/supervisor practices what they preach.	.83
VLS29I: My line-manager/supervisor acts as a role model.	.82
VLS6I: My line-manager/supervisor delivers on promises.	.74
VLS21I: My line-manager/supervisor does the right thing even when it would be unpopular.	.67
Eigenvalue	3.43
% of Variance	68.66

Note. $N = 72$. The extraction method was principal axis factoring. VLS = Virtuous Leadership Scale; I = Integrity.

Reliability: Integrity. A satisfactory Cronbach's alpha was found ($\alpha = .89$, i.e., $> .70$). This indicates that 89% of the variance in the items were systematic variance. The remaining 11% were random error variance.

The corrected item-total correlations, as depicted in Table 18, ranging from .63 and .78 were found to be satisfactory. None were below the rule of thumb that required items to be deleted. The results also revealed that deletion of any of items would not increase the current Cronbach's alpha. As a result, no items were deleted. Thus, all the items were responding to a common source of variance and were in relative union.

Table 18

Reliability Output for the Integrity Subscale

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLS6I	14.44	13.49	.69	.55	.86
VLS13I	14.51	11.92	.77	.63	.84
VLS21I	14.46	12.59	.63	.42	.88
VLS28I	14.11	12.83	.78	.62	.85
VLS29I	14.47	11.63	.75	.62	.85

Note. VLS = Virtuous Leadership Scale; I = Integrity.

Psychometric Evaluation of the Justice Subscale

The justice subscale consists of five items measured on a five-point Likert type response scale where "1 = *strongly disagree*" and "5 = *strongly agree*".

Factor Analysis: Justice. All five items of the justice subscale were factor analysed. The design intention was that the five items would reflect a single indivisible underlying dimension. A sample size of 72 respondents was obtained, which indicated an adequate sample size was obtained. In addition, the KMO value was found to be satisfactory (KMO = .82, i.e., $> .60$) and there was a statistically significant Bartlett's test of sphericity ($\chi^2 = 150.02$, $p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 63.86% of the variance (Eigenvalue = 3.19, i.e., > 1 ; factor loadings = $.67 < r < .80$). In Table 19, the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed, the factor was labelled as justice.

Table 19
Factor Matrix for the Justice Subscale

Item	Factor Loading
VLS12J: My line-manager/supervisor balance individual interests and rights fairly when allocating responsibilities.	.80
VLS5J: My line-manager/supervisor allocates valuable resources in a fair/equitable manner.	.77
VLS26J: My line-manager/supervisor keeps people informed at all times.	.74
VLS27J: My line-manager/supervisor involves people in the decisions that affect them.	.72
VLS19J: My line-manager/supervisor resolves conflict fairly and objectively.	.67
Eigenvalue	3.19
% of Variance	63.86

Note. $N = 72$. The extraction method was principal axis factoring. VLS = Virtuous Leadership Scale; J = Justice

Reliability: Justice. A satisfactory Cronbach's alpha was found ($\alpha = .86$, i.e., $> .70$). This indicates that 86% of the variance in the items were systematic variance. The remaining 14% was random error variance.

The corrected item-total correlations, as depicted in Table 20, ranging from .60 and .72 were satisfactory. None were below the rule of thumb that required items to be deleted. The results also revealed that deletion of any of items would not increase the current Cronbach's alpha. As a result, no items were deleted. Thus, all the items were responding to a common source of variance and were in relative union.

Table 20
Reliability Output for the Justice Subscale

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLS5J	13.53	13.99	.69	.53	.82
VLS12J	13.82	12.77	.72	.55	.81
VLS19J	13.82	13.50	.60	.40	.84
VLS26J	14.07	12.38	.68	.51	.82
VLS27J	14.04	12.09	.67	.48	.83

Note. VLS = Virtuous Leadership Scale; J = Justice.

Psychometric Evaluation of the Prudence Subscale

The prudence subscale consists of four items measured on a five-point Likert type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”.

Factor Analysis: Prudence. All four items of the prudence subscale were factor analysed. The design intention was that the four items would reflect a unidimensional virtue. A sample size of 73 respondents was obtained, which indicates an adequate sample size. In addition, the KMO value was found to be satisfactory (KMO = .80, i.e., > .60) and there was a statistically significant Bartlett’s test of sphericity ($\chi^2 = 91.29$, $p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 64.67% of the variance (Eigenvalue = 2.59, i.e., > 1; factor loadings = .69 < r < .78). In Table 21, the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed, the factor was labelled as prudence.

Table 21

Factor Matrix for the Prudence Subscale

Item	Factor Loading
VLS11P: My line-manager/supervisor makes the right decisions for the right reasons at the right time.	.78
VLS25P: My line-manager/supervisor optimises resources in responding to the demands of the environment.	.75
VLS4P: My line-manager/supervisor exercises sound reasoning in deciding on the optimal course of action with consideration of the associated risks.	.70
VLS18P: My line-manager/supervisor grasps the complexity of most situations when making decisions/judgements.	.69
Eigenvalue	2.59
% of Variance	64.67

Note. $N = 72$. The extraction method was principal axis factoring. VLS = Virtuous Leadership Scale; P = Prudence.

Reliability: Prudence. A satisfactory Cronbach’s alpha was found ($\alpha = .82$, i.e., > .70). This indicates that 82% of the variance in the items were systematic variance. The remaining 18% was random error variance.

The corrected item-total correlations, as depicted in Table 22, ranging from .61 and .67 were satisfactory. None were below the rule of thumb that required items to be deleted. The

results also revealed that deletion of any of items would not increase the current Cronbach's alpha. As a result, no items were deleted. Thus, all the items were responding to a common source of variance and were in relative union.

Table 22

Reliability Output for the Prudence Subscale

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLS4P	10.82	6.83	.62	.38	.78
VLS11P	11.08	6.39	.65	.44	.76
VLS18P	10.90	6.23	.61	.37	.78
VLS25P	11.15	5.79	.67	.46	.75

Note. VLS = Virtuous Leadership Scale; P = Prudence.

Psychometric Evaluation of the Temperance Subscale

The temperance subscale consists of four items measured on a five-point Likert type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”.

Factor Analysis: Temperance. Four items of the temperance subscale were factor analysed. The design intention was that the four items would reflect a unidimensional virtue dimension. A sample size of 72 respondents was obtained, which indicated an adequate sample size was obtained. In addition, the KMO value was found to be satisfactory (KMO = .69, i.e., > .60) and there was a statistically significant Bartlett's test of sphericity ($\chi^2 = 76.23$, $p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 72.82% of the variance (Eigenvalue = 2.19, i.e., > 1; factor loadings = .25 < r < .86). In Table 23, the factor matrix revealed that three of the four items statistically loaded onto one factor. Item 16 did not load as the loading was smaller than .30 and was deleted. The EFA was performed again and similar factor loadings were found as in Table 23. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed, the factor was labelled as temperance.

Table 23
Factor Matrix for the Temperance Subscale

Item	Factor Loading
VLS23T: My line-manager/supervisor behaves unselfishly.	.86
VLS9T: My line-manager/supervisor prioritises the team and/or organisation's interests over self-interest.	.83
VLS3T: My line-manager/supervisor avoids indulging in personal work desires/preferences at the expense of others.	.63
VLS16T: My line-manager/supervisor delays instant gratification for long term gain.	
Eigenvalue	2.19
% of Variance	72.82

Note. $N = 72$. The extraction method was principal axis factoring. VLS = Virtuous Leadership Scale; T = Temperance.

Reliability: Temperance. A satisfactory Cronbach's alpha was found ($\alpha = .81$, i.e., $> .70$). This indicates that 81% of the variance in the items were systematic variance. The remaining 19% was random error variance.

The corrected item-total correlations, as depicted in Table 24, ranging from .57 and .71 were satisfactory. None were below the rule of thumb that required items to be deleted. Although, the results revealed that the deletion of item 3 would increase the current Cronbach's alpha. However, item 3 was retained as the Cronbach's alpha was not drastically different and the item had statistically loaded in the EFA. As a result, no items were deleted.

Table 24
Reliability Output for the Temperance Subscale

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLS3T	7.26	3.89	.57	.33	.83
VLS9T	6.97	3.86	.69	.53	.70
VLS23T	7.21	3.58	.71	.55	.68

Note. VLS = Virtuous Leadership Scale; T = Temperance.

CFA of the Comprehensive VLS

The fit of the VLS measurement model, in which the seven latent virtue dimensions have been operationalised with the subscale items of the VLS, is discussed. Before the main analysis was conducted, assumption of multivariate normality was checked.

Test of Multivariate Normality. The MVN package in R studio was used to check for multivariate normality and the results are presented in Table 25. The Mardia's multivariate skewness and kurtosis coefficients as well their corresponding statistical significance indicate that multivariate normality was not present as the $p < .05$. Thus, the rejection of the normality assumption led to the use of robust maximum likelihood estimation in order to estimate the freed measurement model parameters.

Table 25*Summary of the Multivariate Normality Result*

Test	Statistic	p	Result
Mardia Skewness	6725.15	.00	NO
Mardia Kurtosis	6.189	.00	NO
MVN			NO

Goodness of Fit Statistics. CFA was utilised to test the measurement model. The Chi-square, calculated in terms of the robust maximum likelihood estimation procedure, was significant ($\chi^2 = 423.30$, $p < .001$). However, the other fit indices indicated a good fit as presented in Table 26.

Table 26*Goodness of Fit Indices for CFA*

Model	χ^2	df	GFI	TLI	CFI	RMSEA	90% CI	
							Lower	Upper
Original Measurement Model (Seven factors, 29 items)	424.30***	356	.80	.93	.94	.057	.03	.08

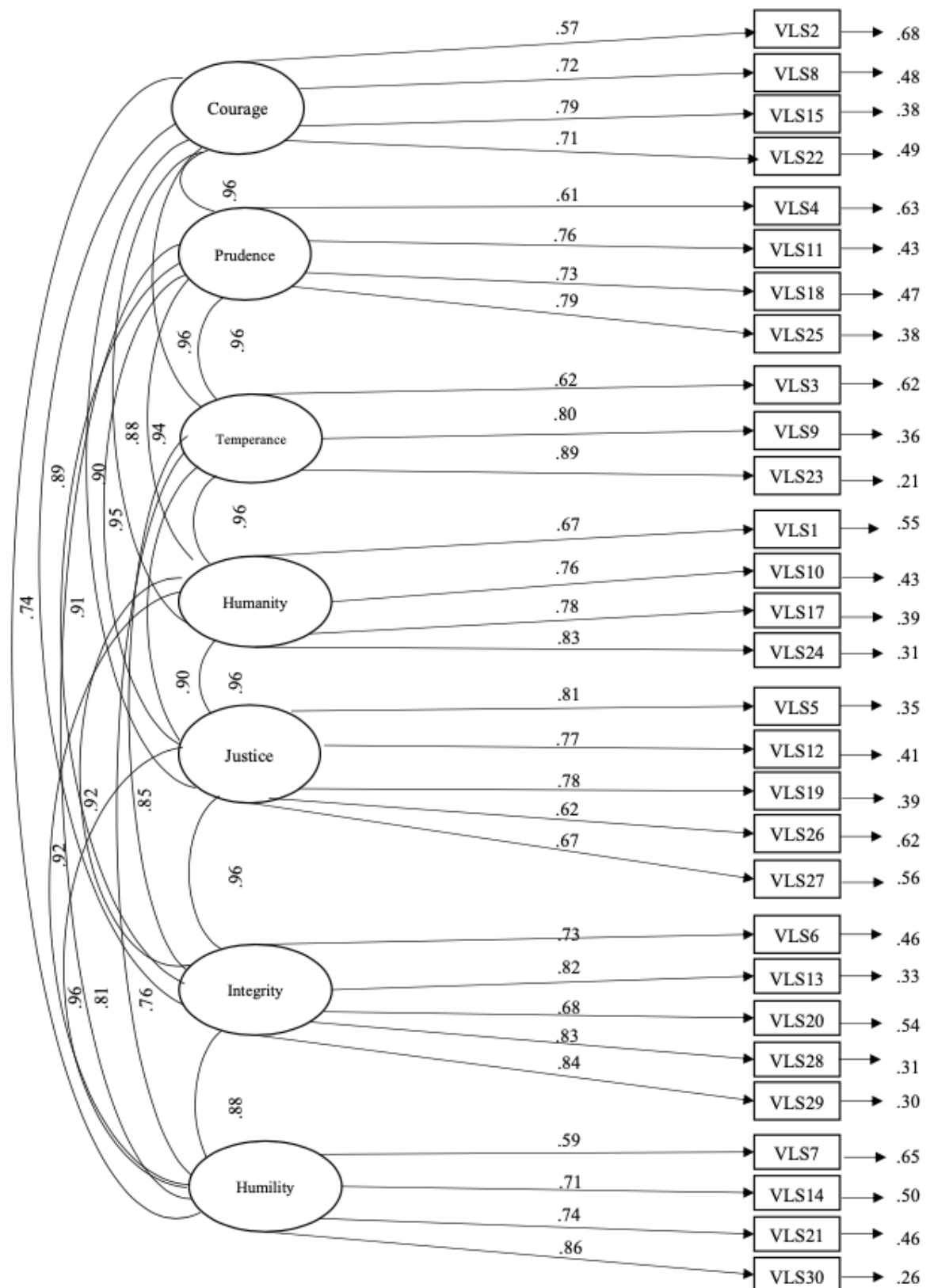
Note. df = degree of freedom; GFI = Goodness of Fit Index; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval.

*** $p < .001$

The sample estimate for RMSEA indicated a good fit (RMSEA = .047, $p > .05$) Using the 90% confidence interval for RMSEA, it can be concluded with 90% confidence that the parametric value of RMSEA lies between .03 and .08. In addition, the CFI and TLI indicated a good fit whereas the GFI indicated a reasonable fit. Overall, the VLS demonstrated a good fit and the fitted model is shown in Figure 4.

Figure 4

VLS: Seven-Factor CFA (Completely Standardised Solution)



Note. VLS = Virtuous Leadership Scale.

Reliability of the Comprehensive VLS

The internal consistency was calculated for the 29-item VLS with Item 16 deleted. The overall Cronbach's alpha was found to be satisfactory ($\alpha = .97$, i.e., $> .80$). There were no items deleted based on the rule of thumb ($.50 < r < .82$, i.e., $> .30$). The results also revealed that none of the items would increase the current Cronbach's alpha, if deleted.

Discriminant Validity

The aim of evaluation of the discriminant validity was to investigate latent virtue dimensions of the VLS that are proposed to be inter-related constructs but should also be measured as distinct constructs. The seven latent virtues of the VLS are expected to correlate with each other although not excessively high. Table 27 provides the correlation table as an indication of latent virtue inter-correlations.

Table 27
Inter-Correlations between Latent Dimensions of the VLS

Variable	1	2	3	4	5	6	7
1. Courage	1	.77***	.76***	.70***	.70***	.76***	.59***
2. Prudence		1	.79***	.77***	.76***	.70***	.66***
3. Temperance			1	.77***	.71***	.73***	.63***
4. Humanity				1	.80***	.79***	.78***
5. Justice					1	.85***	.74***
6. Integrity						1	.73***
7. Humility							1

Note. *** $p < .001$

As seen in Table 27, all the inter-latent variables correlations were statistically significant ($p < .05$). If the correlations exceeded a value of .90, they were considered to be excessively high. None of the correlations were considered to be excessively high, although the correlation between justice and integrity was relatively high, ($r = .85$, $p < .001$). Thus, Hypothesis 1 was supported.

Descriptive Statistics

The descriptive statistics of the continuous variables are presented in Table 28.

Table 28
Descriptive Analysis of Continuous Variables

Variable	Min	Max	M	SD	Skewness	Kurtosis
Virtuous Leadership	1.19	4.94	3.57	.76	-.74	.48
Virtues Leadership	1.62	5.00	3.68	.71	-.41	.12
Ethical Leadership	1.14	5.00	3.63	.82	-.76	.52
Job Performance	2.00	5.00	3.78	.82	-.30	-.39

As can be seen in Table 28, all the variables had a skewness and kurtosis value between -.76 and .48, which suggests the data was approximately normally distributed. The realised sample in the current research study perceived their line-manager/supervisor's leadership style to be relatively virtuous and ethical that resulted in high performance based on the relatively high mean. Moreover, the negative skewness scores across all the variables indicate that the "4= agree" and "5 = strongly agree" were often chosen.

Convergent Validity

The Pearson Product-Moment correlation was used to assess convergent validity (Hypothesis 2a and Hypothesis 2b) of the VLS. Preliminary assumptions based on the level of measurement, normality, linearity and no outliers were tested and met. The correlations confirmed that there were statistically significant relationships between the variables. The correlations among the variables are presented in Table 29.

Table 29
Mean, Standard Deviation and Correlation among All Variables

Variable	M	SD	1	2	3	4
1. Virtuous Leadership	3.57	.76	1	.92***	.88***	.61***
2. Leadership Virtue	3.68	.71		1	.92***	.68***
3. Ethical Leadership	3.63	.82			1	.59***
4. Job Performance	3.78	.82				1

Note. *** $p < .001$

Hypothesis 2a stated that followers' ratings of their line-manager/supervisor's perceived level of virtuousness as measured by the VLS are positively correlated to the followers' rating of their supervisor/line-manager's virtuousness as measured by the LVS. A statistically significant positive relationship was found between the followers' rating of their leader's virtuousness and leadership virtue ($r = .92, p < .001$). Based on this result, Hypothesis 2a was believed to have been supported.

Hypothesis 2b stated that followers' rating of their line-manager/supervisor's perceived level of virtuousness as measured by the VLS are positively correlated to the followers' rating of their supervisor/line-manager's ethical leadership as measured by the ELM. A statistically significant positive relationship was found between the follower's rating of their leader's virtuousness and ethical leadership ($r = .88, p < .001$). Based on this result, it was believed support for Hypothesis 2b was obtained.

Predictive Validity

Hypothesis 3 stated that followers' ratings of their line-manager/supervisor's level of virtuousness, as measured by the VLS, statistically significantly predicted job performance. In order to test the predictive ability of virtuous leadership, Multiple Regression analysis was performed to identify the relative contribution of virtuous leadership, with both the VLS and LVS, and ELM to JPS.

Preliminary analysis was performed to ensure the assumptions of Multiple Regression were not violated. Multicollinearity was checked, using the tolerance scores and the variance inflation factors (VIF). The tolerance scores were close to one and VIF-values were below 10, which indicates no multicollinearity. Furthermore, the assumption of normality, linearity, homoscedasticity and no outliers were also met. The results of the multiple regression are presented in Table 30.

As seen in Table 30, all the variables accounted for 45% (Adjusted $R^2 = .42$) of the variance in job performance. The overall model was significant and could significantly predict job performance, $F(3, 68) = 18.46, p < .001$. In particular, leadership virtue was the most significant predictor associated with job performance ($\beta = .82$). On the other hand, despite the statistically positive correlation between job performance and virtuous leadership ($r = .61, p < .001$) and ethical leadership ($r = .59, p < .001$), both did not significantly predict job performance. Thus, Hypothesis 3 was not supported as virtuous leadership was not significantly associated with job performance.

Table 30

Multiple Regression of Virtuous Leadership, Leadership Virtue and Ethical Leadership on Job Performance

Predictors	<i>B</i>	<i>SE(B)</i>	β	<i>p</i>
Virtuous Leadership	-.03	.26	-.03	.90
Leadership Virtue	.94	.33	.82***	.00
Ethical Leadership	-.13	.23	-.14	.56
<i>R</i> ²	.45***			
Adjusted <i>R</i> ²	.42***			
<i>F</i>	151.04***			

Note. ****p* < .01

A summary of the hypothesis testing result is presented in Table 31.

Table 31

Summary of the Hypothesis Testing Results

Hypotheses	Testing Results
<i>H</i> ₁ : The virtues as measured in the VLS are distinct from one another.	Supported
<i>H</i> _{2a} : Followers' ratings of their line-manager/supervisor's perceived level of virtuousness, as measured by the VLS, are statistically positively correlated with their supervisor/line-manager's perceived level of virtuous leadership, as measured using the LVS.	Supported
<i>H</i> _{2b} : Followers' ratings of their line-manager/supervisor's perceived level of virtuousness, as measured by the VLS, are statistically positively correlated to their supervisor/line-manager's perceived level of ethical leadership, as measured by the ELM.	Supported
<i>H</i> ₃ : Followers' ratings of their line-manager/supervisor's virtuousness, as measured by the VLS, are statistically significantly positively associated with job performance.	Not Supported

CHAPTER 5

Discussion

The aim of the current research study was to formulate a theoretical conceptualisation of virtuous leadership that was also grounded in an African contextual perspective and develop and validate a VLS. By doing so, the current research study attempted to lay down the conceptual and empirical groundwork that would contribute to the field of study and practice of virtuous leadership. There were four sub-objectives to further achieve this aim, which were to: 1) review current relevant literature that included a virtue and/or virtuous leadership construct; 2) propose a theoretical conceptualisation of virtuous leadership, which is also grounded in an African context; 3) design an evidence-based instrument to measure virtuous leadership that is also applicable to the African context; and 4) assess the proposed virtuous leadership scale's ability to predict variance and above and beyond other related measures of virtuous leadership, such as ethical leadership.

The sub-objectives were achieved by following Crawford and Kelder's (2019) four phases in leadership scale development and validation, 1) Theory Generation, 2) Item Development, 3) Content Adequacy, and 4) Empirical Evaluation. The results of each phase, which was presented in Chapter 4, will be discussed. In addition, limitations and recommendations are provided followed by the theoretical contributions of the current research study.

Phase 1: Theory Generation

In Phase 1, existing virtue-based and virtuous leadership theories, approach or model was critiqued and synthesised to propose a single integrative conceptual/theoretical model, which accomplished research sub-objective 1 and 2. Virtues of interest that potentially made up a good and effective leader character were found. Moreover, current definitions and conceptualisation of the virtues and virtuous leadership constructs were presented.

Based on the review of the available literature, a conceptual/theoretical model of virtuous leadership was proposed. The proposed conceptual/theoretical model of virtuous leadership also encompassed an African perspective of virtues, which was not the case in previous models that are grounded in a Western perspective, or in some instances also in an Eastern perspective (Wang & Hackett, 2016). The proposed conceptual/theoretical model included seven virtues of interest that are proposed to be key in virtuous leadership, including

1) prudence; 2) courage; 3) humanity; 4) integrity; 5) justice; 6) temperance; and 7) humility. The identified virtues were utilised in Phase 2 in developing items, which will be discussed next.

Phase 2: Item Development

A pilot VLS was developed in Phase 2, based on the conceptual/theoretical model of virtuous leadership proposed in Phase 1. Items were extracted from existing measurement instruments that captured the basket of virtues proposed in the conceptual virtuous leadership model. In particular, Wang and Hackett's (2016) VLQ was identified as the main measurement instrument to extract items as it covered five of the seven virtues, i.e., 1) courage; 2) humanity; 3) justice; 4) prudence; and 5) temperance. Secondary data that used an adapted version of the VLQ was provided by Ungerer and Schlechter (Personal communication, 2020).

The secondary quantitative data was analysed to aid in the identification of a reliable and valid set of items within a South African sample. All the five dimensions of virtue as mentioned above were found, which reinforced the use of the items for the development of the VLS. Similarly, Hendriks et al. (2020) utilised the VLQ and found all five dimensions of virtue. However, two items were excluded by Hendriks et al. (2020) whereas the current research study did not exclude any items. Based on the results of the secondary quantitative data, a pilot VLS was developed for the current research study that was applicable in an African context as per research sub-objective 3. Subsequently, content adequacy of the pilot VLS was analysed.

Phase 3: Content Adequacy

Preliminary validity and converge of the 32-item pilot VLS were identified in Phase 3. Four academic experts in the field of leadership assessed the extent to which each item was relevant and useful to measure the virtuous leadership construct. The academic experts provided meaningful feedback that assisted in refinement, recommendations and elimination of items. This was considered an important step to ensure that the definitions of the virtues aligned with the items as well as representativeness, comprehensiveness and clarity of the items. Thus, a final 30-item VLS was developed that was distributed to a sample. The last phase required empirical evaluation on the primary realised data using the 30-item VLS.

Phase 4: Empirical Evaluation

Factor analysis and reliability were performed on each of the seven-virtue subscale of the VLS and was found to be satisfactory. Each subscale was found to be unidimensional and

measured what they were designated to reflect. However, an item of the temperance dimension was deleted based on the rule of thumb. As a result, the final VLS had 29 items. All the subscales of the 29-item VLS were analysed as a whole utilising CFA. The CFA resulted in a good measurement model fit. Moreover, empirical evidence was found that support the convergent and discriminant validity of the VLS. Wang and Hackett (2016) found similar results with the VLQ. The VLS was positively correlated to job performance. However, predictive validity of the VLS was not supported unlike the predictive validity found using the VLQ (Wang & Hackett, 2016). Despite the lack of predictive validity for the VLS, another virtuous leadership scale, LVS, demonstrated predictive validity. A possible explanation could be that there was a small sample utilised in Phase 4 especially since the VLS had two more virtue dimensions in comparison to the LVS. Further investigation may be required and limitations of the current research study would need to be considered, which will be discussed next.

Limitations and Recommendations

There are several limitations in the current research study, which typically plague studies of this nature. Based on the limitations discussed below, recommendations are provided, which should be considered when conducting research in the future.

A small sample size of 72 respondents in Phase 4 was obtained in the current research study, which limited the accuracy of several analyses. Moreover, due to time and cost restraints, a non-probability sampling approach was utilised. As a result, one cannot generalise the results to the population. In addition, the demographic profile of the sample was not thought to be full representative of the population found in the African context. The limitation can be seen in the gender composition presented in Table 4 as it is skewed towards one gender (women). It is, therefore, recommended that in future research studies larger and more representative samples be obtained.

In addition, there was only one round of VLS items that was sent to academic experts for feedback before the distribution of the final questionnaire. The main reason for one round was due to time constraints. However, continuous verification, using a Delphi method, would be recommended in order to improve the reliability of the results (Jeste et al., 2010).

Moreover, the scale relied on self-reported measures, which limits the accuracy of the results and can be subjected to various biases, such as response bias. However, followers, based on the definition of virtuous leadership, are an important source for information on the leader's

virtuousness. A recommendation would be to consider a variety of measurement methods and sources, such as peers or customers, to examine the leader's virtuousness.

Theoretical Contribution

Following the recent call in literature of a virtuous leadership scale that encompasses an African perspective, designing and validating a VLS that takes this into consideration was proposed in response to the gap that was identified in the literature. As a result, the current research study contributed to the gap in an African context in the virtuous leadership literature and general leadership domain. In the process of doing so, conceptual clarity and expanding the conceptual theoretical knowledge of virtuous leadership, which is also grounded in an African context perspective was achieved. Based on this, the current research study also provides further research in the field of study and practice of virtuous leadership to be conducted.

Practical Contribution

A valid and reliable scale to measure virtuous leadership, which was also grounded in an African perspective was demonstrated and can be found in Appendix C. The development of the VLS followed Crawford and Kelder's (2019) phases and checklist in leadership scale development and validation, which can allow for the further development of the virtuous leadership construct in future research. Moreover, it is hoped that the VLS can assist organisations to identify and develop leaders who have a strong moral compass. Based on previous research, there is a likelihood that virtuous leaders can enhance the well-being of employees, as well as the economic livelihood and sustainability of organisations.

Conclusion

The current research study developed and validated a VLS by following Crawford and Kelder's (2019) phases and checklist in leadership scale development and validation, which hopes to encourage a similar method to be followed in future research that focuses on development of leadership scales. By following this, a recent call in literature to encompass an African perspective in virtuous leadership was addressed. Moreover, conceptual clarity and expanding the conceptual theoretical knowledge of virtuous leadership was achieved. The measurement model of VLS was found to show good fit. Moreover, there was empirical evidence to support the reliability, discriminant validity and convergent validity of the scale. However, predictive validity was not supported. The empirical evidence supported that a valid

and reliable VLS was developed which can measure the virtuous leadership construct. The outcome of the VLS hopes to assist organisations to identify and develop leaders who have a strong moral compass that can benefit employees and the organisation.

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Appendix A

Psychometric Evaluation of the Virtuous Leadership Questionnaire

Each subscale of the VLQ was analysed utilising factor analysis (i.e., EFA) and reliability. Subsequently, the comprehensive VLQ was analysed utilising CFA, followed by reliability of the comprehensive VLQ. A short overview of the analysis technique is provided prior to the psychometric evaluation of each subscale.

Factor Analysis. The items comprising each subscale was designed to operate as a unidimensional underlying latent virtue dimension. To test this, EFA was utilised as it was considered appropriate for the modification of the scale that would account for the covariation among items (Skrondal & Rabe-Hesketch, 2004). Prior to each factor analysis conducted, underlying assumptions were required to be satisfied. Gorsuch (1983) suggested that an adequate sample size was to have five times the number of respondents per item in a scale. In addition, the sampling adequacy and inter-item correlations was determined using the KMO and Bartlett's Test of Sphericity. The data was considered to be suitable if the KMO value was greater than .50 and Bartlett's Test of Sphericity was statistically significant with a $p < .05$ (Field, 2018). Once the data was established to be suitable, the Kaiser's criterion of one eigenvalue or more determined the number of factors to be extracted from the scale that was deemed as important (Field, 2018).

Subsequently, the factor loadings were used to determine the measurement model. Factor loadings were retained if the minimum loading was greater than .30. However, if an item loaded on more than two factors or there was a difference of less than .25 between factor loadings then the item would be omitted due to cross-loading.

Following the final measurement model based on EFA, CFA using maximum likelihood estimated was conducted to evaluate model fit. Maximum likelihood estimation assumes multivariate normality. If the assumption of multivariate normality was not met, robust maximum likelihood was utilised.

A good model fit can be determined by a non-significant Chi-square; however, a range of fit statistics were accessed as other factors can influence the Chi-square value (Tabachnick & Fidell, 2019). The fit statistics that were utilised to determine model fit are summarised in Table A1. In particular, Bryne (2010) describes the Root Mean Square Error of Approximation as the most informative statistic indicator determining model fit.

Table A1*Summary of Fit Statistic Indicators for Model Fit*

Fit Measure	
Chi-square	a non-significant result indicates model fit
Root Mean Square Error of Approximation (RMSEA)	values between .05 - .08 indicate reasonable fit and values that are below .05 indicate good fit
Goodness of Fit Index (GFI)	values that are less than .90 indicated lack of fit, values between .90-.95 indicate reasonable fit and values between .95 -1 indicated good fit
Tucker-Lewis Index (TFI)	values that are less than .90 indicated lack of fit, values between .90-.95 indicate reasonable fit and values between .95 -1 indicated good fit
Comparative Fit Index (CFI)	values that are less than .90 indicated lack of fit, values between .90-.95 indicate reasonable fit and values between .95-1 indicated good fit

Reliability. Item analysis was performed in order to identify, delete or reflect poor items that did not contribute to the internally consistency description of the latent virtue dimensions that the subscales were designed to measure. Reliability was analysed using Cronbach's alpha, which ideally should be more than .70 to be considered satisfactory (Nunnally, 1978). As a rule of thumb, items were deleted if the inter-item correlation was below .30 in order to improve internal consistency (Rosnow & Rosenthal, 2013).

Psychometric Evaluation of the Courage Subscale

The courage subscale consists of four items measured on a five-point Likert type response scale where "1 = *strongly disagree*" and "5 = *strongly agree*".

Factor Analysis: Courage. All four items of the courage subscale were factor analysed. The design intention was that the four items would reflect a unidimensional virtue dimension. A sample size of 193 respondents was obtained, which indicated an adequate sample size. In addition, the KMO value was found to be satisfactory (KMO = .82, i.e., > .60) and there was a statistically significant Bartlett's test of sphericity ($\chi^2 = 345.72, p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 70.63% of the variance (Eigenvalue = 2.83, i.e., > 1; factor loadings = .73 < r < .84). In Table A2, the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed by Wang and Hackett (2016), the factor was labelled as courage.

Table A2
Factor Matrix for the Courage Subscale

Item	Factor Loading
VLQ16C: My line-manager/supervisor leads fundamental change though it may entail personal sacrifice and personal risk.	.84
VLQ13C: My line-manager/supervisor initiates a long-term and worthwhile project, even when risking his/her personal reputation.	.82
VLQ3C: My line-manager/supervisor acts with sustained initiative, even in the face of incurring personal risk.	.74
VLQ4C: My line-manager/supervisor speaks up on matters of injustice and personal conviction, despite risking “backlash”.	.73
Eigenvalue	2.83
% of Variance	70.63

Note. $N = 193$. The extraction method was principal axis factoring. VLQ = Virtuous Leadership Questionnaire; C = Courage.

Reliability: Courage. A satisfactory Cronbach’s alpha was found ($\alpha = .86$, i.e., $> .70$). This indicates that 86% of the variance in the items were systematic. The remaining 14% was random error variance.

The corrected item-total correlations, as depicted in Table A3, ranging from .67 and .75 were satisfactory. None were below the rule of thumb that required items to be deleted. The results also revealed that deletion of any item would not increase the Cronbach’s alpha. As a result, no items were deleted. Thus, all the items were responding to a common source of variance and were in relative union.

Table A3
Reliability Output for the Courage Subscale

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLQ3C	9.71	11.52	.67	.45	.83
VLQ4C	9.71	10.91	.67	.44	.84
VLQ13C	9.82	10.71	.74	.56	.80
VLQ16C	9.87	10.71	.75	.57	.80

Note. VLQ = Virtuous Leadership Questionnaire; C = Courage.

Psychometric Evaluation of the Humanity Subscale

The humanity subscale consists of three items measured on a five-point Likert type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”.

Factor Analysis: Humanity. All three items of the humanity subscale were factor analysed. The design intention was that the three items would reflect a unidimensional virtue dimension. A sample size of 193 respondents was obtained, which indicated an adequate sample size. In addition, the KMO value was found to be satisfactory (KMO = .70, i.e., > .60) and there was a statistically significant Bartlett’s test of sphericity ($\chi^2 = 224.95, p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 74.48% of the variance (Eigenvalue = 2.23, i.e., > 1; factor loadings = .67 < r < .85). In Table A4 the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed by Wang and Hackett (2016), the factor was labelled as humanity.

Table A4

Factor Matrix for the Humanity Subscale

Item	Factor Loading
VLQ17HM: My line-manager/supervisor shows concern for the needs of subordinates.	.85
VLQ7HM: My line-manager/supervisor shows concern and cares for people.	.84
VLQ2HM: My line-manager/supervisor expresses concern for the misfortune of others.	.67
Eigenvalue	2.23
% of Variance	74.48

Note. $N = 193$. The extraction method was principal axis factoring. VLQ = Virtuous Leadership Questionnaire; HM = Humanity.

Reliability: Humanity. A satisfactory Cronbach’s alpha was found ($\alpha = .83$, i.e., > .70). This indicates that 83% of the variance in the items were systematic or true scores variance. The remaining 17% was random error variance.

The corrected item-total correlations, as depicted in Table A5, ranging from .61 and .72 were satisfactory. None were below the rule of thumb that required items to be deleted. The results also revealed that deletion of any of items would not increase the current Cronbach’s

alpha. As a result, no items were deleted. Thus, all the items were responding to a common source of variance and were in relative union.

Table A5

Reliability Output for the Humanity Subscale

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLQ2HM	7.23	5.15	.61	.37	.83
VLQ7HM	7.20	5.02	.72	.54	.72
VLQ17HM	7.55	4.48	.72	.55	.72

Note. VLQ = Virtuous Leadership Questionnaire; HM = Humanity.

Psychometric Evaluation of the Justice Subscale

The justice subscale consists of three items measured on a five-point Likert type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”.

Factor Analysis: Justice. All three items of the justice subscale were factor analysed. The design intention was that the three items would reflect a single indivisible underlying dimension. A sample size of 193 respondents was obtained, which indicated an adequate sample size. In addition, the KMO value was found to be satisfactory (KMO = .70, i.e., > .60) and there was a statistically significant Bartlett’s test of sphericity ($\chi^2 = 182.61, p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 71.65% of the variance (Eigenvalue = 2.15, i.e., > 1; factor loadings = .71 < r < .83). In Table A6, the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed by Wang and Hackett (2016), the factor was labelled as justice.

Table A6*Factor Matrix for the Justice Subscale*

Item	Factor Loading
VLQ12J: My line-manager/supervisor resolves conflict in a fair and objective manner.	.83
VLQ9J: My line-manager/supervisor allocates valued resources in a fair/equitable manner.	.74
VLQ1J: My line-manager/supervisor respects individual interests and rights when allocating responsibilities.	.71
Eigenvalue	2.15
% of Variance	71.65

Note. $N = 193$. The extraction method was principal axis factoring. VLQ = Virtuous Leadership Questionnaire; J = Justice.

Reliability: Justice. A satisfactory Cronbach's alpha was found ($\alpha = .80$, i.e., $> .70$). This indicates that 80% of the variance in the items were systematic variance. The remaining 20% was random error variance.

The corrected item-total correlations, as depicted in Table A7, ranging from .62 and .69 were satisfactory. None were below the rule of thumb that required items to be deleted. The results also revealed that deletion of any of items would not increase the current Cronbach's alpha. As a result, no items were deleted. Thus, all the items were responding to a common source of variance and were in relative union.

Table A7*Reliability Output for the Justice Subscale*

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLQ1J	6.66	4.68	.62	.39	.75
VLQ9J	6.98	5.28	.63	.41	.74
VLQ12J	7.10	4.60	.69	.47	.68

Note. VLQ = Virtuous Leadership Questionnaire; J = Justice.

Psychometric Evaluation of the Prudence Subscale

The prudence subscale consists of four items measured on a five-point Likert type response scale where "1 = *strongly disagree*" and "5 = *strongly agree*".

Factor Analysis: Prudence. All four items of the prudence subscale were factor analysed. The design intention was that the four items would reflect a unidimensional virtue. A sample size of 193 respondents was obtained, which indicated an adequate sample size. In addition, the KMO value was found to be satisfactory (KMO = .78, i.e., > .60) and there was a statistically significant Bartlett's test of sphericity ($\chi^2 = 306.48, p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 65.39% of the variance (Eigenvalue = 2.62, i.e., > 1; factor loadings = .46 < r < .84). In Table A8, the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed by Wang and Hackett (2016), the factor was labelled as prudence.

Table A8

Factor Matrix for the Prudence Subscale

Item	Factor Loading
VLQ10P: My line-manager/supervisor exercises sound reasoning in deciding on an optimal course of action.	.84
VLQ14P: My line-manager/supervisor efficiently and effectively assesses requirements demands by any given situation.	.81
VLQ11P: My line-manager/supervisor when making judgements, grasps the complexity of most situations.	.81
VLQ8P: My line-manager/supervisor uses only the resources necessary in response to the demands of any given situation.	.46
Eigenvalue	2.62
% of Variance	65.39

Note. $N = 193$. The extraction method was principal axis factoring. VLQ = Virtuous Leadership Questionnaire; P = Prudence.

Reliability: Prudence. A satisfactory Cronbach's alpha was found ($\alpha = .82$, i.e., > .70). This indicates that 82% of the variance in the items were systematic variance. The remaining 18% was random error variance.

The corrected item-total correlations, as depicted in Table A9, ranging from .43 and .74 were satisfactory. None were below the rule of thumb that required items to be deleted. Although, the results revealed that deletion of item 8 would increase the current Cronbach's alpha. However, the current Cronbach's alpha was within an acceptable range and it was decided to retain item 8.

Table A9*Reliability Output for the Prudence Subscale*

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLQ8P	10.64	9.83	.43	.20	.86
VLQ10P	10.61	7.68	.75	.55	.72
VLQ11P	10.53	7.76	.70	.56	.74
VLQ14P	10.70	8.01	.71	.54	.73

Note. VLQ = Virtuous Leadership Questionnaire; P = Prudence.

Psychometric Evaluation of the Temperance Subscale

The temperance subscale consists of four items measured on a five-point Likert type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”.

Factor Analysis: Temperance. All four items of the temperance subscale were factor analysed. The design intention was that the four items would reflect a unidimensional virtue dimension. A sample size of 193 respondents was obtained, which indicated an adequate sample size. In addition, the KMO value was found to be satisfactory (KMO = .81, i.e., > .60) and there was a statistically significant Bartlett’s test of sphericity ($\chi^2 = 334.17, p < .001$). Therefore, it was considered appropriate to conduct factor analysis.

One factor was extracted that explained 69.55% of the variance (Eigenvalue = 2.78, i.e., > 1; factor loadings = .71 < r < .88). In Table A10, the factor matrix revealed that all the items statistically loaded onto one factor since all the factor loadings were larger than .30. Thus, the scale was considered to be unidimensional as the items loaded on one factor. As proposed by Wang and Hackett (2016), the factor was labelled as temperance.

Table A10*Factor Matrix for the Temperance Subscale*

Item	Factor Loading
VLQ6T: My line-manager/supervisor behaves unselfishly, even when there are opportunities to maximise personal gain.	.88
VLQ15T: My line-manager/supervisor avoids indulging in his/her desires, at the expense of others.	.79
VLQ18T: My line-manager/supervisor prioritises the unit's/organisation's interests over self-interests.	.71
VLQ5T: My line-manager/supervisor downplays his/her personal successes to avoid making others feel uncomfortable.	.71
Eigenvalue	2.78
% of Variance	69.55

Note. $N = 193$. The extraction method was principal axis factoring. VLQ = Virtuous Leadership Questionnaire; T = Temperance.

Reliability: Temperance. A satisfactory Cronbach's alpha was found ($\alpha = .85$, i.e., $> .70$). This indicates that 85% of the variance in the items were systematic variance. The remaining 15% was random error variance.

The corrected item-total correlations, as depicted in Table A11, ranging from .65 and .78 were satisfactory. None were below the rule of thumb that required items to be deleted. The results also revealed that deletion of any of items would not increase the current Cronbach's alpha. As a result, no items were deleted. Thus, all the items were responding to a common source of variance and were in relative union.

Table A11*Reliability Output for the Temperance Subscale*

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VLQ5T	10.21	11.15	.65	.44	.83
VLQ6T	10.17	9.88	.78	.60	.77
VLQ15T	9.97	10.99	.71	.51	.80
VLQ18T	9.74	11.41	.65	.44	.83

Note. VLQ = Virtuous Leadership Questionnaire; T = Temperance.

CFA of the Comprehensive Virtuous Leadership Questionnaire

The fit of the VLQ measurement model, in which the five latent virtue dimensions have been operationalised with each subscale items, is discussed. Before the main analysis was conducted, assumption of multivariate normality was checked.

Test of Multivariate Normality. The MVN package in R studio was used to check for multivariate normality and the results are presented in Table A12. The Mardia's multivariate skewness and kurtosis coefficients as well their corresponding statistical significance indicate that multivariate normality was not present as the $p < .05$. Thus, the rejection of the normality assumption led to the use of robust maximum likelihood estimation in order to estimate the freed measurement model parameters.

Table A12

Summary of the Multivariate Normality Result

Test	Statistic	p	Result
Mardia Skewness	2231.90	.00	NO
Mardia Kurtosis	21.09	.00	NO
MVN			NO

Goodness of Fit Statistics. CFA was utilised to test the measurement model. The Chi-square calculated in terms of the robust maximum likelihood estimation procedure, was significant ($\chi^2 = 166.22$, $p < .001$). However, the other fit indices indicated a good fit as presented in Table A13.

Table A13

Comparative Fit Indices for CFA VLQ models

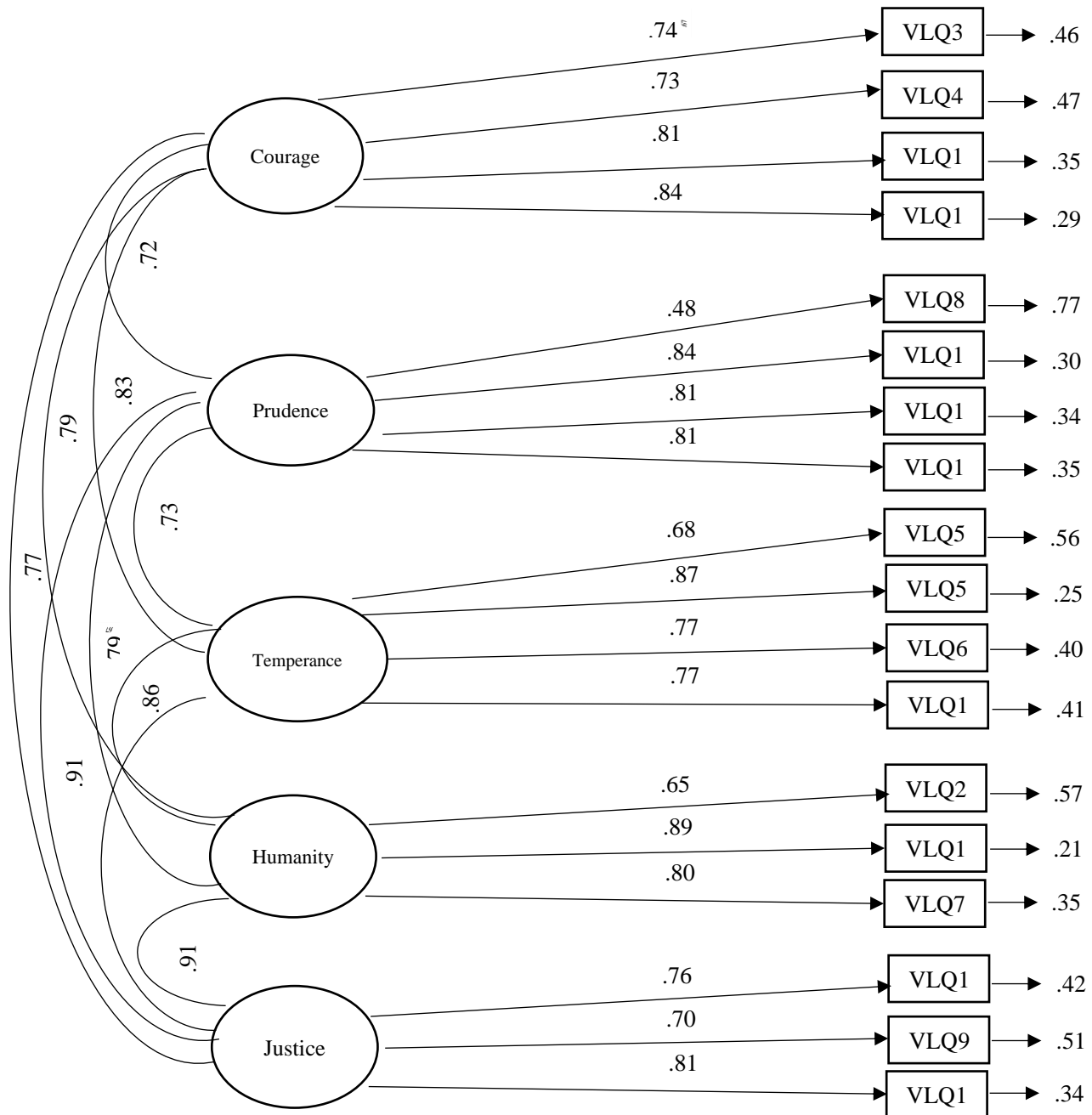
Model	Chi-square	df	GFI	TLI	CFI	RMSEA	90% CI	
							Lower	Upper
Original Measurement Model (Five factors, 18 items)	166.22	125	.89	.97	.98	.05	.03	.07

The sample estimate for RMSEA indicated a good fit (RMSEA = .05, $p > .05$) Using the 90% confidence interval for RMSEA, it can be concluded with 90% confidence that the

parametric value of RMSEA lies between .03 and .07. In addition, the CFI and TLI indicated a good fit whereas the GFI indicated a reasonable fit. Overall, the VLQ demonstrated a good fit and the fitted model is shown in Figure A1.

Figure A1

VLQ: Five-Factor CFA Model (Completely Standardised Solution)



Note. VLQ = Virtuous Leadership Questionnaire.

Reliability of the Comprehensive VLQ

The internal consistency was calculated for the 18-item VLQ. The overall Cronbach's alpha was found to be satisfactory ($\alpha = .94$, i.e., $> .80$). There were no items deleted based on the rule of thumb ($.40 < r < .77$, i.e., $> .30$). The results also revealed that none of the items would increase the current Cronbach's alpha, if deleted.

Appendix B

Psychometric Evaluation of the Leadership Virtue Scale

The LVS consists of 21 items measured on a five-point Likert type response scale where “1 = *strongly disagree*” and “5 = *strongly agree*”.

Factor Analysis. A PCA with one factor extraction was conducted to determine whether the LVS was unidimensional. The KMO values was found to be satisfactory (KMO = .90, i.e., > .60) and there was a statistically significant Bartlett’s test of sphericity ($\chi^2 = 1205.46, p < .001$). Therefore, it was considered appropriate to conduct factor analysis. The items all loaded more than .30 on one component. Therefore, the scale was deemed to be unidimensional and labelled as leadership virtue. Table B1 depicts the unidimensional PCA structure.

Table B1

Results from Principal Component Analysis for Leadership Virtue Scale

Item	Component Loading
LVS4J: My line-manager/supervisor guides his/her decisions and/or actions with ethical guidelines.	.89
LVS9TR: My line-manager/supervisor actions are guided by high ethical standards.	.87
LVS1C: My line-manager/supervisor stands up for what is morally right.	.84
LVS2T: My line-manager/supervisor is patient when dealing with a diverse group of people.	.82
LVS6HM: My line-manager/supervisor cares for the community.	.82
LVS11T: My line-manager/supervisor has developed positive habits that are used to avoid harmful actions.	.79
LVS12P: My line-manager/supervisor likes to have an overall view of the situation before making a fair decision.	.79
LVS3J: My line-manager/supervisor ensures fair implementation of rules and policies across the organisation.	.77
LVS15T: My line-manager/supervisor shows responsible behaviour to others.	.76
LVS5HM: My line-manager/supervisor actively participates in charitable activities.	.75
LVS14TR: My line-manager/supervisor owns up to their mistakes.	.74
LVS13HM: My line-manager/supervisor encourages others to participate in charitable activities.	.73
LVS18P: My line-manager/supervisor strives to achieve a balance between positive and negative outcomes of an action/decision.	.72
LVS7TR: My line-manager/supervisor keeps promises and commitments.	.69
LVS20HM: My line-manager/supervisor adheres to universal values.	.69
LVS10C: My line-manager/supervisor prepares to face resistance for any desired change.	.68
LVS17J: My line-manager/supervisor allows any aggrieved party affected by a particular decision or action to appeal to a higher authority.	.68

Note. $N = 72$. The extraction method was principal component analysis. LVS = Leadership Virtue Scale; C = Courage; HM = Humanity; J = Justice; P = Prudence; T = Temperance, TR= Truthfulness.

Table B1*Results from Principal Component Analysis for Leadership Virtue Scale (continued)*

Item	Component Loading
LVS21HM: My line-manager/supervisor helps people whenever approached to.	.66
LVS8C: My line-manager/supervisor achieves goals despite difficulties along the way.	.66
LVS19P: My line-manager/supervisor moves ahead together with all stakeholders.	.57
LVS16TR: My line-manager/supervisor encourages others to be responsible for their mistakes.	.46
Eigenvalue	11.47
% of Variance	54.63

Note. $N = 72$. The extraction method was principal component analysis. LVS = Leadership Virtue Scale; C = Courage; HM = Humanity; J = Justice; P = Prudence; T = Temperance, TR= Truthfulness.

Reliability. The internal consistency was calculated for the 21-item LVS and was found to be satisfactory ($\alpha = .96$, i.e., $> .70$). There were no items deleted based on the rule of thumb ($.43 < r < .87$, i.e., $> .30$). Moreover, Cronbach's alpha would not have increased.

Psychometric Evaluation of the Ethical Leadership Measure

The ethical leadership subscale consists of 14 items measured on a five-point Likert type response scale where "1 = *strongly disagree*" and "5 = *strongly agree*".

Factor Analysis. A PCA was conducted with one factor on the ELM to determine unidimensionality. The KMO value was found to be satisfactory ($KMO = .91$, i.e., $> .60$) and there was a statistically significant Bartlett's test of sphericity ($\chi^2 = 885.21$, $p < .001$). Therefore, it was considered appropriate to conduct factor analysis. The items all loaded more than .30 on one component. Therefore, the scale was deemed to be unidimensional and labelled as ethical leadership. Table B2 depicts the unidimensional PCA structure.

Table B2*Results from Principal Component Analysis for Ethical Leadership Measure*

Item	Component Loading
ELM14: My line-manager/supervisor sets an example of how to do things in an ethically correct way.	.88
ELM12: My line-manager/supervisor practices moral behaviours.	.88
ELM2: My line-manager/supervisor is kind hearted.	.84
ELM6: My line-manager/supervisor often considers issues from an ethical perspective.	.84
ELM11: My line-manager/supervisor often makes decisions consistent with their moral principles.	.84
ELM10: My line-manager/supervisor provides constructive feedback to subordinates regarding ethical conduct and standards.	.82
ELM4: My line-manager reflects on moral appropriateness of their decision.	.80
ELM13: My line-manager/supervisor requires subordinates to learn and understand the codes of ethics.	.79
ELM7: My line-manager/supervisor frequently thinks about ethical issues.	.77
ELM5: My line-manager/supervisor frequently thinks about the moral implications of their actions	.73
ELM3: My line-manager/supervisor often treats others mercifully.	.73
ELM9: My line-manager/supervisor ensures that proper procedures are available for subordinates to consult moral issues.	.72
ELM8: My line-manager/supervisor explains the values that guide their moral decisions to subordinates.	.71
ELM1: My line-manager/supervisor is willing to help.	.63
Eigenvalue	8.69
% of Variance	62.05

Note. $N = 72$. The extraction method was principal component analysis. EL = Ethical Leadership Measure.

Reliability. The internal consistency was calculated for the 14-item ELM and was found to be satisfactory ($\alpha = .95$, i.e., $> .70$). There were no items deleted based on the rule of thumb ($.58 < r < .85$, i.e., $> .30$). Moreover, Cronbach's alpha would not have increased.

Psychometric Evaluation of the Job Performance Scale

The job performance scale consists of four items measured on a five-point Likert type response scale where "1 = *strongly disagree*" and "5 = *strongly agree*".

Factor Analysis. PCA was used because the primary purpose was to identify and compute composite scores for the component. A PCA was conducted on the four-item Job Performance Scale. The KMO value was found to be satisfactory ($KMO = .85$, i.e., $> .60$) and there was a statistically significant Bartlett's test of sphericity ($\chi^2 = 210.06$, $p < .001$). Therefore, it was considered appropriate to conduct factor analysis. One component was

extracted that explained 81.89% of the variance, which was labelled as job performance (Eigenvalue = 3.27, i.e., > 1; factor loadings = .89 < r < .92). The scale was considered unidimensional as the items loaded on one component. The results from the PCA for job performance are depicted in Table 29.

Table B3

Results from Principal Component Analysis for Job Performance

Item	Component Loading
JPS2. My line-manager/supervisor manages a team/unit/division/company that has a track record of consistently producing excellent work.	.92
JPS4. My line-manager/supervisor manages a team/unit/division/company that is viewed as a winning team/unit/division/compony by investors.	.91
JPS1. My line-manager/supervisor manages a team/unit/division/company that has a track record of consistently meeting or exceeding expectations.	.90
JPS3. My line-manager/supervisor manages a team/unit/division/company that has a track record of consistently outperforming similar teams/units/divisions.	.89
Eigenvalue	3.28
% of Variance	81.89
Cronbach's alpha	.93

Note. $N = 72$. The extraction method was principal component analysis. JPS = Job Performance Scale.

Reliability. The internal consistency of job performance was found to be satisfactory on the four-item scale ($\alpha = .93$, i.e., > .70). There were no items deleted based on the rule of thumb (.80 < r < .86, i.e., > .30). Furthermore, the Cronbach's alpha would not have increased either.

Appendix C

Virtuous Leadership Scale

Think about your line-manager/supervisor, i.e. your superior who manages you at work.

Consider each of the statements below and indicate the extent to which you believe that each statement is indicative of the way that your line-manager/supervisor typically thinks, feels or acts at work on a response scale where “1 = Strongly Disagree” and “5 = Strongly Agree”.

Do not base your response on a unique event and/or situation. Also, do not think too long about your answers. **There are no right or wrong answers.**

Courage

My line-manager/supervisor:		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	acts with sustained initiative, even in the face of sacrificing personal risk.	1	2	3	4	5
2	speaks up on matters of injustice or personal conviction, despite risking a “backlash”.	1	2	3	4	5
3	initiates a project despite risking their personal reputation.	1	2	3	4	5
4	leads fundamental change though it may entail personal sacrifice and/or personal risk.	1	2	3	4	5

Humanity

My line-manager/supervisor:		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
5	expresses concern for everyone’s needs.	1	2	3	4	5
6	expresses concern for the misfortune of others.	1	2	3	4	5
7	seeks/strive for the greater good.	1	2	3	4	5
8	people become better after interacting with him/her.	1	2	3	4	5

Humility

My line-manager/supervisor:		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
9	is open to the ideas and advice of others.	1	2	3	4	5
10	acknowledges when others are more competent.	1	2	3	4	5
11	admits when they do not know how to do something.	1	2	3	4	5
12	is open to learn from others.	1	2	3	4	5

Integrity

My line-manager/supervisor:		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
13	delivers on promises.	1	2	3	4	5
14	practices what they preach.	1	2	3	4	5
15	does the right thing even when it would be unpopular.	1	2	3	4	5
16	stands by principles no matter the price.	1	2	3	4	5
17	acts as a role model.	1	2	3	4	5

Justice

My line-manager/supervisor:		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
18	allocates valuable resources in a fair/equitable manner.	1	2	3	4	5
19	balance individual interests and rights fairly when allocating responsibilities.	1	2	3	4	5
20	resolves conflict fairly and objectively.	1	2	3	4	5
21	keeps people informed at all times.	1	2	3	4	5
22	involves people in the decisions that affect them.	1	2	3	4	5

Prudence

My line-manager/supervisor:		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
23	exercises sound reasoning in deciding on the optimal course of action with consideration of the associated risks.	1	2	3	4	5
24	makes the right decisions for the right reasons at the right time.	1	2	3	4	5
25	grasps the complexity of most situations when making decisions/judgements.	1	2	3	4	5
26	optimises resources in responding to the demands of the environment.	1	2	3	4	5

Temperance

My line-manager/supervisor:		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
28	avoids indulging in personal work desires/preferences at the expense of others.	1	2	3	4	5
29	prioritises the team and/or organisation's interests over self-interest.	1	2	3	4	5
30	behaves unselfishly.	1	2	3	4	5