

# **Authentic leadership's influence on ambidexterity with mediators in the South African context**

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## **Abstract**

*Purpose:* The purpose of this paper is to investigate the influence of a positive form of leadership, particularly authentic leadership, on ambidexterity, as ambidexterity has shown to improve financial performance. What is less clear, however, is how to create the organisational context towards ambidexterity or balanced exploitative and explorative innovation. This study set out to fill that gap in researching the direct influence of authentic leadership as well as indirect effect through innovation climate on ambidexterity.

*Design/methodology/approach:* A quantitative research approach was followed, with an online survey to employees in South African organisations. There were 733 useable questionnaires. Structural equation modelling was used to test proposed hypotheses of direct, indirect and moderation effects.

*Findings:* The results revealed that authentic leadership has a significant and positive direct effect on ambidexterity and a significant indirect effect through an innovation climate. Environmental dynamism lessened the regression weight of the relationship between authentic leadership and ambidexterity.

*Research limitations/implications:* The data collected were cross-sectional and respondents were South African employees; therefore, caution should be exercised when generalising the results to other organisations in a broader African context.

*Practical implications:* Understanding that both authentic leadership and innovation climate are required to significantly influence ambidexterity allows organisations to direct their leadership selection and development.

*Originality/value:* The main contribution of this research lies in clarifying the influence of authentic leadership on ambidexterity in the South African context.

*Keywords:* Innovation, Leadership, Ambidexterity, Climate, Authentic leadership, Dynamism

## **1. Introduction**

Increased competition, resource limitations and shorter product life cycles require organisations to not only improve their current operations but also investigate future opportunities to survive (Floyd and Lane, 2000; Raisch and Birkinshaw, 2008). Since the nineties, scholars such as West and Rickards (1999) have urged organisations to continuously implement new and better ways of doing things, referring to this capability as

innovation. In Africa, organisations must find innovative ways of dealing with the challenges of the African context, such as resource constraints and complex political economies (George *et al.*, 2016). Africa-based research into innovation can thus contribute to the broader business literature (Kolk and Rivera-Santos, 2016). The United Nations' (UN) 2030 global aspirations to end poverty, protect the planet and ensure prosperity for all challenge traditional business practices and necessitate innovation. Indeed, fostering innovation is one of the UN's 17 Sustainable Development Goals (Goal 9) (UN Global Compact and Accenture, 2013).

In recent years, researchers have differentiated between incremental and radical innovation. Whereas incremental or exploitative innovation entails the continuous improvement of current operations, radical or explorative innovation involves fundamental changes to products and/or markets (Wu and Wu, 2016). The ability of an organisation to engage in both forms of innovation simultaneously, originally referred to as organisational ambidexterity by March (1991), results in improved financial performance (Benner and Tushman, 2015; Gibson and Birkinshaw, 2004).

Achieving an optimum balance between exploitative and explorative innovation, or demonstrating ambidexterity, is difficult (Nemanich and Vera, 2009), as it involves a paradoxical challenge and increases coordination costs (De Clercq *et al.*, 2014). For example, whereas traditional management approaches can be appropriate for exploitative innovation within current operations, this is not the case for explorative innovation, which requires entrepreneurial thinking (Danneels, 2002). Gibson and Birkinshaw (2004) emphasise that a supportive context enables ambidexterity. The question that needs to be asked, therefore, is how to create this supportive context.

Probst *et al.* (2011) declare that becoming ambidextrous is first and foremost a leadership challenge. The behaviour of leaders is regarded as the most important factor in directing follower behaviour (Day and Antonakis, 2012). Unfortunately, as Nkomo and Ngambi (2009) lament, the empirical literature on leadership and management in Africa is sparse. The current study thus endeavours to contribute to the body of research on leadership in Africa. It focuses particularly on leadership as a critical interface between people and organisational processes as well as systems to achieve balanced innovation or ambidexterity. Improved understanding of the leadership behaviours that promote ambidexterity on the African continent can assist organisations to purposefully improve the effectiveness of their exploitation and exploration efforts. Existing research, including the study by Jansen *et al.* (2009), suggests that transformational leadership, which focuses on inspiration, is conducive to explorative innovation, whereas transactional leadership, which by contrast focuses on reward, is conducive to exploitative innovation. Yet, the question remains: Which leadership style leads to the supportive context required to engage in both types of innovation simultaneously?

Gibson and Birkinshaw (2004) emphasise the importance of trust for creating a context that supports ambidexterity. A value-based leadership style, such as authentic leadership, is known to instil trust (Avolio *et al.*, 2004; Gardner *et al.*, 2011). The researchers of the present study thus hypothesised that authentic leadership would contribute to ambidexterity and reviewed the literature on the subject. However, apart from a related

study on creativity (Rego *et al.*, 2012), there is limited scholarly research into the relationship between authentic leadership and innovation. The current study therefore investigates whether authentic leadership can enhance both types of innovation at the same time. The findings could inform leadership development, which represents a huge cost for business. Focused development would provide return on investment by leading to optimally balanced innovation.

This study goes beyond the direct association of authentic leadership and ambidexterity. The researchers also investigate how certain organisational variables mediate the relationship between authentic leadership and ambidexterity. These organisational variables are an innovative climate and environmental dynamism. An innovative climate is one in which ideas of individuals are valued (Mills *et al.*, 2013), and which enables individuals and organisations to thrive (Kobau *et al.*, 2011). It is included in this study as a mediator variable. Environmental dynamism moderates the relationship between specific forms of leadership, on the one hand, and exploitation and exploration innovation, on the other hand (Jansen *et al.*, 2009), in distinct ways, and is thus included in the present study as a moderator variable.

## **2. Theoretical framework and hypotheses development**

### **2.1 Exploitative and explorative innovation**

O'Reilly and Tushman (2011) emphasise that leadership must understand very different kinds of businesses and engage in very different kinds of behaviours. On the one hand, they need to be able to cut costs through exploitative innovation, whereas, on the other hand, they must be entrepreneurial by engaging in explorative innovation. Rosing *et al.* (2011) propose that leaders must encourage employees to either increase or decrease the variance in their behaviour. These opening and closing leadership behaviours can foster exploration or exploitation. However, Lavie *et al.* (2010) warn against treating exploitation and exploration as a dichotomy. This can occur when an organisation has different business units for different types of innovation, that is, structural ambidexterity. Instead, Lavie *et al.* (2010) advise that innovation be treated as a continuum; hence, exploitation and exploration must be pursued within the same business unit, that is, contextual ambidexterity (Raisch *et al.*, 2009).

Raisch *et al.* (2009) maintain that creating the context for employees to pursue both types of innovation requires a mix of personal characteristics and organisational mechanisms. Moreover, Havermans *et al.* (2015) regard ambidexterity as a dynamic accomplishment and argue that leaders achieve ambidexterity in dynamic ways. In addition, Jansen *et al.* (2006) emphasise the importance of informal social relations coordination mechanisms to support integration across business units and promote contextual ambidexterity.

O'Reilly and Tushman (2004) highlight the positive consequences of ambidexterity for organisational performance, and financial performance in particular (He and Wong, 2004; Lubatkin *et al.*, 2006). Benner and Tushman (2015) also advocate the benefits of ambidexterity at the organisational level. They report benefits at the individual, business unit and even interorganisational level.

Havermans *et al.* (2015, p.180) point out the need for research “that takes the role of the context, specific leadership practices, and dynamics of leadership, into account in achieving ambidexterity”. The researchers of the current study thus chose to investigate the role of leadership in achieving ambidexterity. Leadership also plays an important role in knowledge flows, and Bonesso *et al.* (2014) point out that top-down knowledge flows support exploitation, whereas bottom-up and horizontal knowledge flows support exploration. Accordingly, this study investigates individual employee perceptions of leadership and, in terms of ambidexterity, employee perceptions of explorative and exploitative innovation in their work environments.

## 2.2 Authentic leadership

The most widely recognised definition of authentic leadership is that “authentic leaders act in accordance with deep personal values and convictions, to build credibility and win the respect and trust of followers” (Avolio *et al.*, 2004). Originally, Greek philosophy described “Authenticity” as “Knowing Thyself”, which was inscribed in the Temple of Apollo at Delphi (Parke and Wormell, 1956). In contemporary leadership literature, two main arguments predominate around whether authentic leadership is distinct from other leadership styles. One school of thought clearly differentiates between authentic leadership and transformational leadership. Transformational leadership is defined as “leader behaviours that transform and inspire followers to perform beyond expectations while transcending self-interest for the good of the organisation” (Avolio *et al.*, 2009, p. 423). At first glance, this seems to describe the kind of behaviours that authentic leaders display.

Bass and Steidlmeier (1999), however, refer to the phenomenon of pseudo-transformational leaders; those who lack an ethical foundation, and hence cannot be regarded as authentic leaders. Bass and Steidlmeier (1999) contrast these forms of leadership as follows:

[...] self-aggrandizing, fantasizing, pseudo-transformational leaders can be branded as immoral. But authentic transformational leaders, as moral agents, expand the domain of effective freedom, the horizon of conscience and the scope for altruistic intention (p. 211).

It can therefore be concluded that transformational leaders are not necessarily authentic leaders. In turn, this argument implies that authentic leaders are not necessarily transformational leaders.

Transactional leadership can be differentiated from transformational as well as authentic leadership. Whereas transformational leaders are concerned with uplifting the morale, motivation and morals of their followers (Avolio *et al.*, 2009), and authentic leadership focuses on an authentic sense of self and is purposefully value-driven, transactional leaders accommodate their followers’ immediate self-interests.

The second argument in the leadership discourse is represented by Avolio and Gardner (2005), who identify authentic leadership, based on humanism, as a root construct of all positive forms of leadership. According to this view, authentic leadership incorporates transformational, charismatic, servant and spiritual leadership (Avolio and Gardner, 2005, p. 329). Baron (2016) agrees that authentic leadership is emerging as an integrative concept in

the literature on positive organisational behaviour, ethical leadership and transformational leadership. In the current study, the researchers argue for a distinction between authentic leadership and other forms of leadership.

The body of scholarship on authentic leadership is regrettably dominated by studies from the West, despite the fact that Africa offers unique opportunities for leadership research. For example, Khoza (2011) describes leadership in the African context in terms of connectedness, integrity, humility and compassion. He advocates for African Humanism, known as Ubuntu. Ubuntu is an Nguni proverb, “Umuntu ngumuntu ngabantu”, which means that a person is a person because of other people. His conceptualisation of African leadership relates to authentic leadership as a construct. The authors of the current paper further argue that authentic leadership is particularly relevant in the South African context, as this kind of leadership contributes to employee perceptions of inclusion, which is vital in organisations with high levels of employee diversity (Cottrill *et al.*, 2014). Nkomo and Kriek (2011) also emphasise the requirement of South African leaders to be open and flexible under changing circumstances. Magner (2008) agrees that South African leaders have to instil trust among their peers, illustrating the need for leadership authenticity in this context. As employees feel supported by authentic leaders, they are able to use their discretion to engage in both explorative and exploitative innovation activities, or behavioural ambidexterity (Gibson and Birkinshaw, 2004).

Authentic leaders are not only highly tolerant of ambiguity but also open to change. This makes them instrumental in stimulating innovation (Busaibe *et al.*, 2017). The four components of authentic leadership are balanced processing, internalised moral perspective, relational transparency and self-awareness (Avolio *et al.*, 2009). Balanced processing refers to:

[...] objectively analysing raw data before making a decision, internalised moral perspective refers to being guided by internal moral standards that are used to self-regulate one’s behaviour, relational transparency refers to presenting one’s authentic self through openly sharing information and feelings as appropriate for situations, and self-awareness refers to demonstrated understandings of one’s strengths, weaknesses and the way one makes sense of the world (Avolio *et al.*, 2009, p. 49).

Empirical studies regarding the different moderating or mediating variables that may explain the impact of authentic leadership on outcomes relevant to organisations remain limited (Rego *et al.*, 2012). Therefore, the key research question in this study is whether authentic leadership that establishes an ethical climate (Gardner *et al.*, 2005) and work engagement (Scheepers and Elstob, 2016) is sufficient to influence employees’ perceptions of ambidexterity, or whether other variables, like a climate supportive of innovation, are also required. Hence, the first hypothesis in this study relates to the relationship between authentic leadership (on its own) and ambidexterity:

*H1.* Authentic leadership has a positive relationship with ambidexterity.

## 2.3 Innovation climate

Lavie *et al.*'s (2010) research suggests that the organisational environment is an important factor in the pursuit of ambidexterity. Whereas the classic work of Schein (2004) defines culture as the deeply-seated phenomenon of "a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration [...]" (p. 17), climate, by contrast, is defined as a perception of organisational procedures, policies and practices (Schneider *et al.*, 2017), as well as organisational rewards (Charbonnier-Voirin, 2010). Relevant to the current study is a climate conducive to innovation (Jaiswal and Dhar, 2015; Sarros *et al.*, 2008), or one in which innovation and experimentation are valued (Cerne *et al.*, 2013).

Jaiswal and Dhar (2015), as well as Damanpour and Schneider (2006), specify leadership as an antecedent, that is, a creator and maintainer, of an innovation climate. Eisenbeiss *et al.* (2008) agree that climate is a crucial enabler to improve the effectiveness of leadership for innovation. Charbonnier-Voirin *et al.* (2010) support this finding, indicating that a climate for innovation has a moderating effect on the role of transformational leadership in organisational innovation, whereas Schneider *et al.* (2017) also point to a mediating effect on innovation.

The current study hypothesises that an innovation climate is a mediating variable and not a moderating variable, as authentic leadership, which is also a positive psychology construct, may contribute to an innovation climate and is therefore not independent from an innovation climate, which is a prerequisite for moderation.

The extant literature does not make a distinction between the types of innovation that are supported by an innovation climate, and thus, it could not be used in the present study. The findings of a qualitative study into the antecedents for diversification (Roberts, 2016), where new markets and products were explored simultaneously, indicate the relevance of Arena and Uhl-Bien's (2016) concept of an adaptive space for innovation. Arena and Uhl-Bien (2016) state that an adaptive space "occurs in the interface between the operational and the entrepreneurial system" (p. 24). Their construct of an innovation climate includes both exploitative (administrative system) and explorative (entrepreneurial system) innovation and is therefore applicable to ambidexterity as a mediator in this study:

*H2. Innovation climate mediates the relationship between authentic leadership and ambidexterity.*

## 2.4 Environmental dynamism

Raisch and Birkinshaw (2008) advise that various contextual conditions must be considered when analysing exploitation and exploration innovation within organisations. Since the 1960s, researchers, for example Thompson (1967), have made classic distinctions between environments that can be defined in terms of a simple–complex continuum or a stable–static (or shifting–dynamic) continuum.

Furthermore, leadership does not occur in a vacuum. Its effectiveness is influenced by context (Osborn *et al.*, 2002; Hannah *et al.*, 2009). Some of the organisational contextual

variables influencing leadership include the culture and climate of the organisation, the goals and purposes of individuals and the state of the organisation, that is, whether it is stable or in crisis (Porter and McLaughlin, 2006). Terreberry (1968) further emphasises the accelerated rate of change in organisational environments. Environmental dynamism is a variable that specifically measures how static or dynamic the environment is (Daft, 2016). Sidhu *et al.* (2004, p. 918) state that “much of organisation theory on environment concentrates on its dynamism feature”. For example, consumer interests can change, or there can be significant changes in the industry, such as new competition, economic turmoil or innovative technologies (Daft, 2016).

Jansen *et al.* (2009) emphasise that a high level of environmental dynamism shifts the organisation’s focus to external factors, and therefore reduces the efficiency gains of exploitative innovation. In an earlier study, these scholars reveal that promoting exploratory innovation is considered more effective in dynamic environments (Jansen *et al.*, 2006). These interesting findings prompted the researchers of the current study to include environmental dynamism as a moderator:

*H3.* Environmental dynamism moderates the relationship between authentic leadership and innovation.

### **3. Research methodology**

The researchers developed three main hypotheses from the literature review. From a paradigmatic viewpoint, the study takes a pragmatic position (Saunders and Lewis, 2012). As the literature review reveals that the fields of innovation, ambidexterity and authentic leadership are relatively well understood and extensively researched, the researchers followed Creswell’s suggestion (2014) that a quantitative research methodology be adopted. Accordingly, an explanatory deductive approach was considered appropriate to best evaluate the hypotheses. The study is cross-sectional in nature, as all data were collected over a short period, using a standard questionnaire across all respondents (Babbie, 2001). The survey method also allows for a sufficiently large amount of data to be collected, as this is a crucial requirement for proper estimation of the model (Bentler and Chou, 1987).

#### **3.1 Summary of hypotheses**

Overall, the study sets out to investigate the influence of authentic leadership on ambidexterity, within the context of the mediating effect of an innovation climate, as well as the moderating effect of environmental dynamism.

The hypotheses and their sub-hypotheses are illustrated in Figure 1.

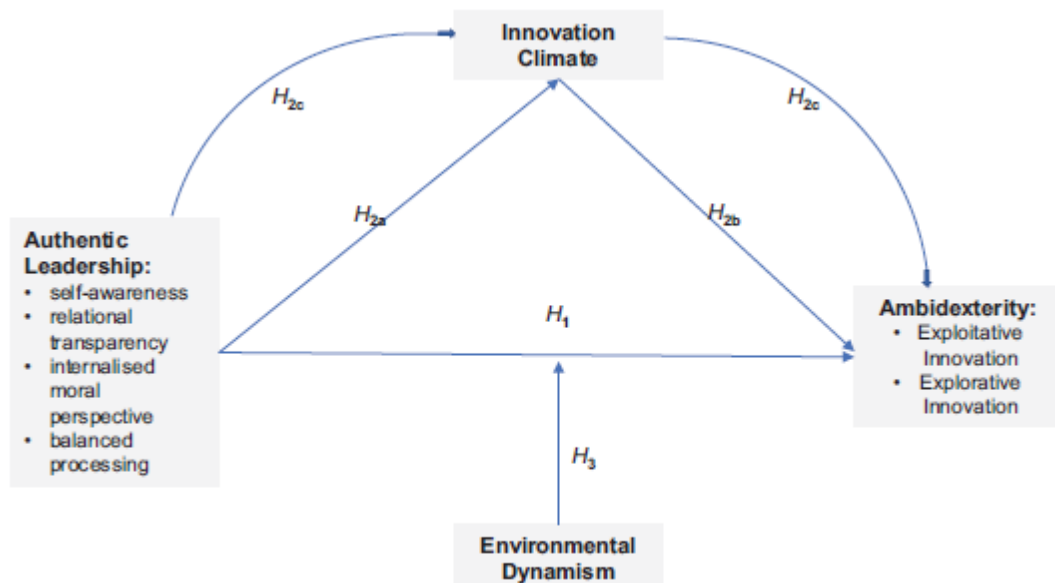


Figure 1. Conceptual model of relationships between constructs

The illustration shows the hypotheses as follows:

$H_01$ . No significant positive linear relationship exists between authentic leadership and ambidexterity.

$H_11$ . A significant positive linear relationship exists between authentic leadership and ambidexterity.

$H_02a$ . No significant positive linear relationship exists between authentic leadership and innovation climate.

$H_12a$ . A significant positive linear relationship exists between authentic leadership and innovation climate.

$H_02b$ . No significant positive linear relationship exists between innovation climate and ambidexterity.

$H_12b$ . A significant positive linear relationship exists between innovation climate and ambidexterity.

$H_02c$ . Innovation climate has no significant mediating effect on the relationship between authentic leadership and ambidexterity.

$H_12c$ . Innovation climate has a significant mediating effect on the relationship between authentic leadership and ambidexterity.

$H_03$ . Environmental dynamism has no significant moderating effect on the relationship between authentic leadership and ambidexterity.

$H_13$ . Environmental dynamism has a significant moderating effect on the relationship between authentic leadership and ambidexterity.



### **3.2 Data collection and sample**

The population for the study consists of employees in various organisations in South Africa.

A sample from this population is appropriate because the aim of the research was to consider relationships between the variables in organisations of multiple sizes and across multiple industries, and, therefore, multiple contexts. The unit of analysis is the responses of the individual employees. Individual employees offered their perspectives on their leaders and on their organisation's pursuit of ambidexterity; the level of analysis is thus individual employee perceptions. A non-probability method, judgement or purposive sampling, was used to collect the data from the population (Saunders and Lewis, 2012). Ethical clearance was obtained from the appropriate bodies at the university in South Africa, where Master in Business Administration (MBA) students, as part of an assignment, collected the data from the organisations that employed them. The students sent out a link to a Web-based survey to respondents who were able to understand the questions and who had access to the internet. The data were collected from organisations in various industries. The MBA students' colleagues were part of the sample, not the students themselves.

The survey consists of questions about biographical data and each of the measurement scales mentioned below. A five-point Likert scale was used to measure the respondents' perceptions with five anchors, from strongly agree to strongly disagree. The Likert scale has theoretically equal intervals among responses, which is used in statistical analysis, and is well tested (Creswell, 2014). An average of 20 responses was obtained from each firm, from various levels in the organisation. There were 733 useable questionnaires. The researchers did not include questionnaires in which questions were omitted, or where there were outliers. Industry-specific effects were avoided by including organisations that operated in a wide range of industries (Gibson and Birkinshaw, 2004).

### **3.3 Measures**

#### **3.3.1 Authentic leadership.**

The study uses the Authentic Leadership Questionnaire (Copyright © 2007 Authentic Leadership Questionnaire [ALQ] by Bruce J. Avolio, William L. Gardner and Fred O. Walumbwa). The ALQ is the most frequently used measure of authentic leadership (Gardner *et al.*, 2011). It is distributed by Mind Garden Inc. ([www.mindgarden.com](http://www.mindgarden.com)) and was validated in the study "Authentic Leadership: Development and Validation of a Theory Based Measure" (Walumbwa *et al.*, 2010). In this study, high Cronbach's alphas were reported on reliability (ranging from 0.70 to 0.90) as well as construct validity of the 16-item scale with four constructs of authentic leadership: self-awareness (four items), relational transparency (five items), internalised moral perspective (four items) and balanced processing (three items), with a five-point Likert scale, ranging from 0 (not at all) to 4 (frequently, if not always). Examples of items are as follows: Says exactly what he or she means; Demonstrates beliefs that are consistent with actions; Solicits views that challenge his or her deeply held positions; Seeks feedback to improve interactions with others.

### **3.3.2 Exploratory and exploitive innovation.**

Perceptions of exploratory and exploitive innovation gathered in the current study are based on an existing scale, where each innovation stream is measured using a six-item scale. This scale was originally developed by Jansen *et al.* (2006), with strong evidence for the reliability and validity of the measures (Jansen *et al.*, 2006; Jansen *et al.*, 2009). Examples of items are as follows: We frequently refine the provision of existing products and services; We regularly implement small adaptations to existing products and services.

The exploratory innovation scale, with a Cronbach's alpha of 0.86, involves the extent to which units reach outside current knowledge and pursue innovations for emerging markets or customers (Jansen *et al.*, 2006). The exploitive innovation scale, with an alpha of 0.86, captures the extent to which units build on current knowledge and meet existing customer needs (Jansen *et al.*, 2006). Examples of items are as follows: We invent new products and services; Our organisation accepts demands that go beyond existing products and services.

### **3.3.3 Environmental dynamism.**

Volberda and Van Bruggen (1997) offer an instrument to measure environmental turbulence, with 22 reliable items, measuring six dimensions of environmental turbulence, of which seven items measure environmental dynamism (Volberda and Van Bruggen, 1997). Jansen *et al.* (2006) include these items to develop a five-item measure for environmental dynamism with an alpha of 0.87. Examples of items are as follows: Environmental changes in our local market are intense; Our clients regularly ask for new products and services.

### **3.3.4 Innovation climate.**

As discussed in the literature review, existing scales on innovation climate are not relevant to the current study, as they do not consider simultaneous explorative and exploitive types of innovation, or ambidexterity. The first phase of the development of this scale was a qualitative study by Roberts (2016) that relates to the theoretical work of Arena and Uhl-Bien (2016). From the initial qualitatively coded data and a review of the literature on the complexity leadership theory of Uhl-Bien *et al.* (2007), and their research into developing an adaptive space through stimulating innovative ideas (Arena and Uhl-Bien, 2016), the researchers formulated six statements about creating an innovation climate. These items were piloted by conducting a survey with a student sample to ensure respondents understood the questions. The pilot revealed that the innovation climate questions showed face validity and construct validity. The validity and reliability of the scale were initially tested in a study by Diesel (2017). These six statements offered high Cronbach's alphas, confirming reliability. Factor analysis through rotation and exploration, as well as confirmatory factor analysis (CFA), revealed adequate discriminant and convergent validity for four out of the six items, and these four were subsequently used in the current study. Further research should be conducted to establish the predictive validity of the four items. The results of the construct of innovation climate within the context of ambidexterity, used in this study, should also be compared to results on other innovation climate scales. Examples of the four items are as follows: Our organisation has an enabling climate for innovation; Our organisation values experimentation with new ideas and processes.

### **3.4 Analysis approach**

The current study uses structural equation modelling (SEM), which enables the researchers to study the effects of latent variables on each other (Hair *et al.*, 2010). SEM is defined as “a multivariate technique that considers and estimates the linear and/or causal relationships between multiple exogenous (independent) and endogenous (dependent) constructs through a simultaneous, multiple equation estimation process” (Babin and Svensson, 2012, p. 321). SEM is appropriate for this study, as Lubatkin *et al.* (2006) used SEM in their study of top management team behaviour and ambidexterity, and Mihalache *et al.* (2014) also used it in a study of ambidexterity that included moderating and mediating variables.

## **4. Results**

### **4.1 Demographics**

The demographic information was analysed to verify that the sample structure was similar to the population structure, eliminating obvious biases. Of the 733 respondents, 451 are male and 282 are female. With regards to education levels, 12.7 per cent of the respondents hold matric (the qualification received on graduating from high school) as the highest education level, 24.7 per cent a diploma, 22.9 per cent a degree and 39.7 per cent a postgraduate degree. Respondents' age ranges from 20 to 60 years, with 70.1 per cent of them older than 30 years. The sample represents a wide range of industries, with more than 10 per cent from financial services and more than 20 per cent from the manufacturing sector. The sample consists of 43.5 per cent white and 37.5 per cent black, with the remainder coloured and Indian people. The classification of the population into four categories, namely, black, white, Indian and people of mixed race, called coloured, is a unique practice of the South African Government in reporting on the state of South Africa's population (Republic South Africa, 2000; Statistics SA, 2017).

Regarding length of employment, 47.5 per cent of the respondents have been working at their organisations for longer than three years. This implies that, on average, respondents have insight into their organisations. There is a wide range of areas of expertise among respondents, including finance, human resources, information technology, marketing and operations. The responses thus represent a broad perspective about the organisations. Pertaining to organisational level, 67.7 per cent of the respondents are at supervisory level or higher, whereas 4.4 per cent of the respondents are at executive level. In terms of organisational size, 55.5 per cent of the respondents are from organisations with more than 1,000 employees. In survey format studies, there is a risk of response bias and, as a result, the respondents were assured of confidentiality and anonymity, enabled through the Web link-based survey. As the respondents' identities could not be tracked, they were not tempted to give socially acceptable answers. The questionnaire was piloted with a sample of part-time MBA students who resembled the sample described above. They reported that the survey was understandable and not too long, which in turn also reduced potential response bias.

## 4.2 Normality

To be able to treat the Likert scale data from the research questionnaire as interval data, the researchers determined whether the data were normally distributed (Creswell, 2014). Table I indicates that all variables could be considered normally distributed, as the values of skewness and kurtosis are between  $-2.58$  and  $+2.58$  (Hair *et al.*, 2010). Adhering to a request by the publishers of the scale, the researchers have not displayed some items of the authentic leadership scale in the table.

The sample size for the current study is 733, which is more than adequate, as a minimum sample size of 100 is suggested for SEM, and greater than 500 for a robust model fit (Lei and Lomax, 2005). However, the chi-square is overly sensitive to models that have large sample sizes (Credé and Harms, 2015), and therefore, additional model indices were examined in this study.

## 4.3 Exploratory factor analysis

In this study, an exploratory factor analysis was initially conducted using maximum likelihood estimation as the means of extraction, and Promax as the method of oblimin rotation. This method was used to estimate parameters for the SEM model.

The first factor analysis was run on the items measuring the variables of authentic leadership, exploratory innovation, exploitative innovation, environmental dynamism and innovation climate. An initial principle component analysis found items on both the exploratory innovation and exploitative innovation scales were weighted under different scales. The researchers therefore did not include them in the subsequent analyses, nor did they include two of the climate items and three of the authentic leadership items. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.934 and the Bartlett's test of sphericity indicated the chi-square as 12,170.082, with degrees of freedom of 378, and significant at the smaller than 0.01 level (0.000). This indicated that the use of factor analysis was appropriate, and the items were factorable.

## 4.4 Confirmatory factor analysis (CFA)

Research by Walumbwa *et al.* (2008) suggests that authentic leadership is a second-order factor. In the current study, the researchers conducted separate CFA on the sample ( $N = 733$ ), using the AMOS 24.0 maximum likelihood procedure. According to the original theory of authentic leadership, three models were tested using this procedure. A one-factor model was tested against a first-order four-factor model and a four-factor model with a higher-order factor. As Hu and Bentler (1999) proposed, good-fitting models have a comparative fit index (CFI) of 0.95 or greater and a root mean square error of approximation (RMSEA) of equal to or less than 0.06. The current study conducted a CFA to examine whether a second-order authentic leadership factor existed and whether it explained the relationships among the four lower-order factors (Arbuckle and Wothke, 1999).

**Table I.** Assessment of normality and exploratory factor analysis

Items	Skewness	Kurtosis
Environmental Dynamics 5: In our market, the volumes of products and services to be delivered change fast and often	-0.436	-0.668
Environmental Dynamics 3: In our local market, changes are taking place continuously	-0.986	0.395
Environmental Dynamics 2: Our clients regularly ask for new products and services	-0.452	-0.252
Exploitative Innovation 4: We improve our provision's efficiency of products and services	-0.862	0.382
Exploitative Innovation 3: We introduce improved, but existing products and services for our local market	-0.919	0.331
Exploitative Innovation I2: We regularly implement small adaptations to existing products and services	-0.993	0.635
Exploitative Innovation 1: We frequently refine the provision of existing products and services	-0.793	0.044
Explorative Innovation 4: We commercialise products and services that are completely new to our organisation	-0.449	-0.811
Exploitative Innovation 3: We experiment with new products and services in our local market	-0.775	-0.364
Exploitative Innovation 2: Our organisation accepts demands that go beyond existing products and services	-0.820	-0.136
Exploitative Innovation 1: We invent new products and services	-0.830	-0.344
Innovation Climate 6: Our organisation protects innovative groups and processes against the bureaucratic organisational forces	-0.113	-0.883
Innovation Climate 5: Our organisation values experimentation with new ideas and processes	-0.582	-0.669
Innovation Climate 4: Our organisation involves employees on the frontline and customers to innovate our products and services	-0.351	-0.888
Innovation Climate 3: Our organisation has an enabling climate for innovation	-0.556	-0.736
Authentic Leadership Self-awareness 4: Shows he or she understands how specific actions impact others	-0.423	-0.673
Authentic Leadership Self-awareness 3: Not displayed	-0.297	-0.703
Authentic Leadership Self-awareness 2: Not displayed	-0.196	-0.782
Authentic Leadership Self-awareness 1: Seeks feedback to improve interactions with others	-0.350	-0.799
Authentic Leadership Balanced Processing 3: Not displayed	-0.489	-0.756
Authentic Leadership Balanced Processing 2: Not displayed	-0.664	-0.425
Authentic Leadership Balanced Processing 1: Solicits views that challenge his or her deeply held positions	-0.404	-0.521
Authentic Leadership Internalised Moral Perspective 3: Not displayed	-0.619	-0.463
Authentic Leadership Internalised Moral Perspective 2: Not displayed	-0.819	0.105
Authentic Leadership Internalised Moral Perspective 1: Demonstrates beliefs that are consistent with actions	-0.609	-0.416
Authentic Leadership Relational Transparency 4: Not displayed	-0.684	-0.412
Authentic Leadership Relational Transparency 3: Not displayed	-0.640	-0.560
Authentic Leadership Relational Transparency 2: Admits mistakes when they are made	-0.253	-1.028

The fit statistics for the three models are shown in Table II. The results illustrate that the best-fitting model is the first-order factor model. Two other studies found the first-order factor to be superior to the second-order factor model (Peus *et al.*, 2012; Clapp-Smith, Vogelgesang and Avey, 2009). However, Walumbwa *et al.* (2008) and Clapp-Smith *et al.* (2009) use the second-order model. Although they sourced their data from employees working at a high-tech manufacturer and small retail stores, the current study involves various disciplines in various industries in South Africa. The researchers thus investigated how the second-order factor model would measure in this particular context. As there are multiple variables in the conceptual model (mediators and moderators) to report on, the researchers chose to refer to the second-order model of authentic leadership, as it

combines the sub-constructs and is thus best suited to answer the research question posed by this study. The exploratory factor analysis also influenced the decision, as the items of authentic leadership all weight under one factor, as Appendix 1 illustrates. The study thus endeavours to estimate the effect of authentic leadership as a holistic construct, instead of the sub-constructs, and thus the second-order model is best suited.

**Table II.** CFA results: summary of measurement model parameters

Structure	$\chi^2$	df	$\chi^2/df$	CFI	RMSEA	PCLOSE
One-factor model	1143.975	340	3.365	0.933	0.057	0.001
First-order factor model	846.926	322	2.630	0.956	0.047	0.881
Second-order factor model	888.912	328	2.630	0.954	0.047	0.887

As previous studies, such as that by Lubatkin *et al.* (2006), discovered that the measurement of ambidexterity as the sum of all items from the exploitative and explorative innovation scales is the best fit for the data, this study too uses this higher-order factor of ambidexterity. The four-factor model with a higher-order factor of authentic leadership, including the two-factor model of exploitative and explorative innovation, with a higher-order factor of ambidexterity, and the first-order factors of environmental dynamism and innovation climate were entered into a SEM measurement model.

#### 4.5 Measurement model

The fit statistics for the sample were as follows: the chi-square of the measurement model was  $\chi^2 = 888.912$ , whereas degrees of freedom was  $df = 328$ ,  $\chi^2/df = 2.630$ . However, the chi-square is overly sensitive to models that have large sample sizes (Credé and Harms, 2015); therefore, additional model indices were examined, such as CFI = 0.954, RMSEA = 0.047 and closeness-of-fit (PCLOSE) statistic = 0.887. Based on their experience with RMSEA, Browne and Cudeck (1993) suggest that an RMSEA of 0.05 or less indicates a close fit. Using this definition, PCLOSE gives a test of close fit, whereas the *p*-value (assists in determining the significance of results and is a value between 0 and 1), gives a test of an exact fit. All factor loadings are significant at  $p < 0.001$ . This suggests that the model fits the data well and regression imputation is appropriate to create composite variables.

In this study, the average variance extracted (AVE) is above 0.5, and thus, the convergent validity measured for the SEM is acceptable, where AVE measures the amount of variance in a construct in relation to the amount of variance due to measurement error (Fornell and Larcker, 1981).

Table III indicates that the maximum shared squared variance (MSV) – calculated for a construct using the maximum shared variance of a construct and squaring that value (Hair *et al.*, 2010) – of all constructs is lower than AVE, which indicates acceptable discriminant validity (Fornell and Larcker, 1981).

**Table III.** Construct validity

	Cronbach's alphas	CR	AVE	MSV	Environmental dynamism	Innovation climate	Authentic leadership	Ambidexterity
Environmental dynamism	0.766	0.775	0.537	0.377	<i>0.733</i>			
Innovation climate	0.892	0.892	0.674	0.630	0.413	<i>0.821</i>		
Authentic leadership	0.932	0.958	0.851	0.130	0.109	0.353	<i>0.922</i>	
Ambidexterity	0.892	0.819	0.694	0.630	0.614	0.794	0.360	<i>0.833</i>

Composite reliability (CR) in the present data is above 0.7, which is acceptable (Hair *et al.*, 2010). As Cronbach's alpha may underestimate true reliability (Peterson and Kim, 2013), the CR used in SEM strengthens the reliability analysis.

Curve estimation was run as well as a multicollinearity test. All VIF loadings are below 3 and all estimations are linear. Table III illustrates that the square roots of AVEs (in italic in the table) are higher than the correlation coefficients, confirming discriminant validity. Table III shows environmental dynamism, innovation climate, authentic leadership and ambidexterity.

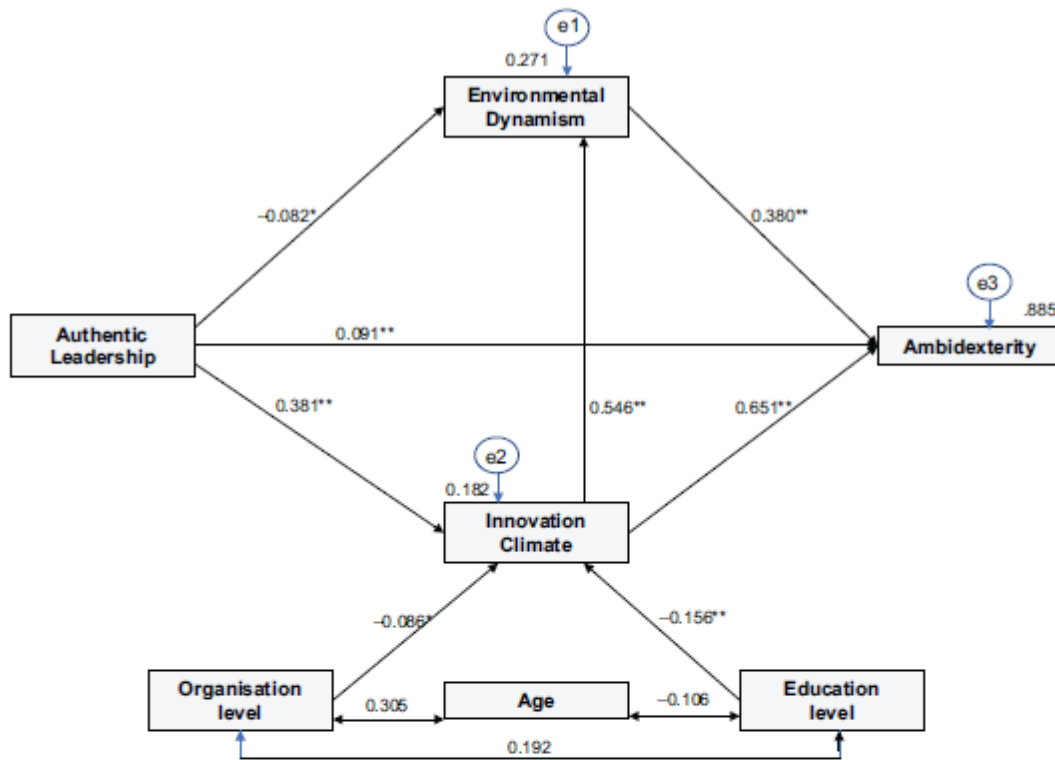
All factor loadings in the measurement model are acceptable with a value above 0.5, with the majority being ideal and above 0.7 (Hair *et al.*, 2010). All the factor loadings are also significant at a 95 per cent confidence interval. The researchers therefore conclude that the measures used are acceptable.

Most of the correlation estimates are below 0.7 and are considered acceptable. All estimates are significant at a 95 per cent confidence interval. The correlation estimate between innovation climate and ambidexterity is 0.79, and thus slightly above the known threshold of 0.7 and is significant. This indicates a possible discriminant validity concern. This is explained later in the discussion about the researchers' insights and current theory.

#### 4.6 Structural model and hypotheses testing

The structural model illustration in Figure 2 shows correlation coefficients, but also illustrates the structural dependence relationships, or path estimates or regression coefficients, between the variables. The control variables, organisational level, age and education levels are significant in the structural model.

The structural model analysis thus includes the variance explained for the structural dependent relationship. The relationships are all significant; therefore, the researchers used the variance explained to add further insight into these relationships. The variance explained is not causal but can be used to predict the effect that variance, in the independent variable called the predictor, can have on the dependent variable (Hill and Lewicki, 2006; Kline, 2011).



Notes: \*\* $p < 0.01$ ; \* $p < 0.05$

Figure 2. Structural model

Table IV. Estimated path regression coefficients, standard errors and significance

			Regression coefficient estimate	Standard error	$p$
Innovation climate	<—	Authentic leadership	0.381	0.029	***
Innovation climate	<—	Organisation Level	-0.086	0.019	**
Innovation climate	<—	Education	-0.156	0.025	***
Environmental dynamism	<—	Authentic leadership	-0.082	0.022	**
Environmental dynamism	<—	Innovation climate	0.546	0.025	***
Ambidexterity	<—	Authentic leadership	0.091	0.011	***
Ambidexterity	<—	Environmental dynamism	0.380	0.019	***
Ambidexterity	<—	Innovation climate	0.651	0.015	***

Notes: \*\* $p$  value significant at smaller than 0.05 significance level or 95 per cent confidence interval; \*\*\* $p$  value significant at smaller than 0.01 significance level or 99 per cent confidence interval

The regression weights in Table IV indicate that authentic leadership did indeed have a significant effect on innovation climate. That is, when authentic leadership increased by 1 SD, the innovation climate also went up by 0.337 of its own standard deviation. The two control variables, organisational level and education level, also influenced the climate, and in their case, this was a negative influence. This means that, in this sample, respondents at higher levels of management, as well as better qualified, are more critical of the climate and perceive it more negatively than those with lower qualifications and at lower levels of management. Those employees with lower qualifications and management levels experience the climate as more supportive of innovation. Authentic leadership has a slight, albeit significant, influence on the perception around environmental dynamism. The influence is negative, as the presence of authentic leaders could offer psychological safety, and thus act as a buffer between external volatility and how respondents perceive it. Of



interest is that the innovative climate influences the environmental dynamism, and perhaps allows employees to be more aware of changes in their external environment.

In relation to *H1*, authentic leadership does indeed have a significantly positive relationship with ambidexterity; a 1 SD increase in authentic leadership influences ambidexterity to go up by 0.079. However, an increase in environmental dynamism has an even greater influence on ambidexterity (0.490), whereas the most significant influence is on the innovation climate, at 0.632.

#### 4.7 Mediation effect analysis

The SEM analysis included analysing three alternative structural equation models: with direct effects only, with mediation effects and with moderation effects. To determine whether the indirect effect was significant, the researchers used the bootstrap samples, as they do not assume normal distribution of the sample to determine the standard error of the indirect effect (Preacher and Hayes, 2008). SEM was used because it offers advantages over multiple regression methods by accommodating for measurement error, therefore making SEM approaches for mediation superior to others (Strasheim, 2014). The number of resamples was set high at 2,000, as suggested by the literature (Cheung and Lau, 2007). The structural model was developed and tested with maximum likelihood in AMOS 24.

Table V shows the mediation results. The results confirm that both innovation climate and environmental dynamism act as mediators when analysing the interaction of authentic leadership with ambidexterity. The results suggest that innovation climate partially mediates the interaction between authentic leadership and ambidexterity. In addition, they show support for a new insight: that environmental dynamism acts as a mediator. Environmental dynamism has a partially mediating interaction effect between authentic leadership and ambidexterity, as it reduces the regression weight.

**Table V.** Mediator SEM results

Relationship	Total effect	Direct effect	Indirect effect
<i>Mediating effect of innovation climate</i>			
Authentic leadership and ambidexterity	0.413 (0.001)	0.091 (0.001)	0.322 (0.001)
<i>Mediating effect of environmental dynamism</i>			
Authentic leadership and ambidexterity	0.062 (0.005)	0.093 (0.001)	-0.032 (0.025)
Innovation climate and ambidexterity	0.881 (0.001)	0.690 (0.001)	0.191 (0.001)

**Notes:** The factor loadings in parentheses are for significance. Extraction method: maximum likelihood. Indirect effect was tested using the bias-corrected bootstrap method with a two-tailed significance

The table above indicates that the innovation climate partially mediates the effect of authentic leadership on ambidexterity. The direct effect of authentic leadership on ambidexterity is significant, whereas the indirect effect is also significant (coefficient was 0.322) and indicates partial mediation.

Environmental dynamism as a mediator also indicates a significant effect on the authentic leadership and ambidexterity relationship. The effect is negative, and thus reduces the regression weight. With regard to the mediating effect of environmental dynamism on

innovation climate and ambidexterity, there is a partial mediation effect. As path strengths that are smaller than 0.2 have to be treated with caution, even when they are significant, the results indicate that environmental dynamism has a slight mediating function in the relationship between authentic leadership and ambidexterity. Interaction moderation was also tested using environmental dynamism and authentic leadership standardised scores. All of the modification indices are non-significant, suggesting that environmental dynamism is not a moderator when comparing authentic leadership and ambidexterity.

The measurement model fit is significant at  $\chi^2 = 16.772$ ,  $df = 10$ ,  $\chi^2/df = 1.667$ , RMSEA = 0.030, PCLOSE = 0.911, GFI = .995. From the fit indices, the researchers conclude that the structural model fit the data satisfactorily, and therefore, the structural model may be used for hypothesis analysis. All the correlations estimates are below 0.7, and significant. Therefore, the correlations are satisfactory and not alarming. As the original paper by Clapp-Smith *et al.* (2009) used a linear regression model to test for moderation, the current study, using SEM, positions environmental dynamism as a mediator and not a moderator.

## **5. Discussion and implications**

This study, first, explores the relationship between authentic leadership and ambidexterity and, second, the interaction of authentic leadership and ambidexterity with other variables in their context, that is, organisation innovation climate as mediator and environmental dynamism as moderator.

### **5.1 Discussion and theoretical implications**

#### ***5.1.1 Positive relationship between authentic leadership and ambidexterity.***

Authentic leadership has a significant positive relationship with ambidexterity, albeit a small influence (0.091). This slight influence may be related to the argument in the literature review that authentic leadership is not necessarily transformational, and thus not moving or inspiring others to explore new frontiers. Jansen *et al.* (2009) emphasise that transformational leadership drives explorative innovation. However, in the present study, explorative and exploitative innovation are combined in the second-order factor, namely, ambidexterity, and as a result, this study cannot differentiate which aspect of innovation is influenced more or less by authentic leadership. Future research may include explorative and exploitative innovation as first-order constructs to investigate this influence separately.

Bass and Streidmeier's (1999) notion of transformational leaders that may not be authentic is also relevant here. The finding that authentic leadership accounts for a percentage of ambidexterity points to the importance of including other types of leadership, in addition to the several traditional studies on transformational leadership's influence on innovation and more recent studies on ambidexterity (Nemanich and Vera, 2009). Hsieh and Wang (2015) state that organisations must "treasure and develop authentic leaders" (p. 2342).

Avolio *et al.* (2009) maintain that authentic leadership includes the ability of leaders to be transparent with their employees, to be consistent and to act in the best interests of the company. In the present study, the presence of authentic leadership has a much larger significant influence (0.337) on the innovation climate, which is the mediator in the model,

than a direct influence on ambidexterity. This finding supports the contention by Damanpour and Schneider (2006) that organisational leaders are responsible for creating and maintaining the innovation climate to enable contextual ambidexterity. Although Jaiswal and Dhar (2015) point to transformational leadership as an antecedent of climate in organisations that provide support for innovation, the current study shows that authentic leadership has a similar influence, but on ambidexterity in particular. Together with the innovation climate, authentic leadership and environmental dynamism are strong predictors of ambidexterity, as they explain 88.5 per cent of the variance.

Previous authentic leadership studies carried out in the West include some in the USA (Clapp-Smith *et al.*, 2009; Lubatkin *et al.*, 2006) and others in Europe (Rego *et al.*, 2012 – Portugal; Peus *et al.*, 2012 – Germany). The positive relationship between employee positive psychological capital and performance in these studies seems to be similar to the current study in South Africa. A previous study in this country (Scheepers and Elstob, 2016) also found a positive relationship between authentic leadership and employee work engagement, moderated by beneficiary contact. In addition, a comparison study by Petan and Bocarnea (2015) between Romania – which also has a national culture of high power distance – and the USA – with low power distance – reveals that there are no significant differences between the two groups with regards to the four dimensions of authentic leadership. It appears that positive consequences of authentic leadership are being found in different parts of the world, and therefore, the findings of the current study contribute to our understanding of the generalisability of the consequences of authentic leadership.

### **5.1.2 Innovation climate mediating authentic leadership and ambidexterity.**

Authentic leadership has an indirect effect on ambidexterity through the innovation climate. Other studies, such as that by Charbonnier-Voirin *et al.* (2010), establish climate as a moderator between leadership and innovation, whereas the current study revealed innovation climate as more than merely strengthening the relationship; it actually forms an interface between authentic leadership and ambidexterity specifically. These findings are therefore more consonant with those of Berson *et al.* (2006), who suggest a mediating effect by the organisational context on both exploration and exploitation, as well as with those of Schneider *et al.* (2017), who also establish the mediating role of climate on innovation. Therefore, leaders must create the context if they want to enable ambidexterity.

Jaiswal and Dhar (2015) argue that the nature of an innovation climate logically leads to increased innovation in an organisation, an argument supported by the findings of this research. The findings on innovation climate further support the notion of Jansen *et al.* (2006) that informal social relations coordination mechanisms support contextual ambidexterity.

The finding that both the personal characteristics of leaders (authenticity) as well as an innovative climate influence ambidexterity supports the study by Raisch *et al.* (2009), which emphasises that contextual ambidexterity is obtained by a mix of personal characteristics and organisational mechanisms. Cerne *et al.* (2013) agree that leadership and a favourable climate are needed for innovation. This can be described as an adaptive space that entails conditions as well as contexts that enable innovation (Uhl-Bien and Arena, 2017), occurring

at the interface of exploitation and exploration (Arena and Uhl-Bien, 2016). This conceptualisation is further reinforced by the current research. This study thus confirms Porter and McLaughlin's (2006) declaration that research was neglecting the organisation as the context for leadership. They report that only 16 per cent of 373 peer-reviewed articles on leadership take the organisational context into account. Uhl-Bien *et al.* (2007) emphasise that leadership is embedded in a complex interplay of numerous interacting forces and warn against underestimating the complexity of the context in which organisations must function and adapt.

### ***5.1.3 Environmental dynamism slightly mediating authentic leadership and ambidexterity.***

In this study, environmental dynamism has no significant moderation effect on the specific leadership type, that is, authentic leadership, and ambidexterity. Environmental dynamism refers to how stable or unstable (turbulent) the environment is (Daft, 2016), which in turn increases uncertainty (Dess and Beard, 1984). A surprising finding in this study is that environmental dynamism actually plays a role as mediator, albeit a slight one, and thus, this finding must be treated with caution.

On the one hand, environmental dynamism as mediator has a slight, but significant, negative effect on the authentic leadership and ambidexterity relationship. That is, with an increase in environmental dynamism, authentic leadership has slightly less influence on ambidexterity. On the other hand, a significant partial mediation effect exists between innovation climate and ambidexterity. That is, with an increase in environmental dynamism, the innovation climate improves the ambidexterity in the organisation even more. Organisations must take note of the impact of this mediator as an influence, due to frequent changes in the external market. Seeing that it slightly positively influences the impact of the climate on the ultimate ambidexterity, it would benefit organisations to ensure that employees are aware of changing market or customer needs. This would prompt them to find innovative ways of addressing these changes. Authentic leaders can offer psychological safety and thus act as buffers between external volatility and how respondents perceive it. However, the impact of this mediator playing a negative role in the authentic leadership aspect of the model should caution organisations to refrain from overdoing it when bringing in this external information. Further research is required on the role of environmental dynamism in the relationship between leadership, climate and ambidexterity in organisations.

## **5.2 Limitations and future research opportunities**

The first limitation relates to the selection of the sample. As non-probability sampling is used, namely, convenience and snowball sampling, only certain individuals and organisations are included. This may have resulted in a population unrepresentative of the true population. The context of the study is South African organisations, which may limit the applicability to a broader African context. Future studies must test the model by using samples from different countries in Africa.

The data collected are cross-sectional, which does not allow for the depth that a longitudinal study can contribute. Moreover, cross-sectional studies can cause problems

with regards to the interpretation of results, as concurrent measurement of variables does not capture directional influences that require a finite amount of time to be exposed (MacCallum and Austin, 2000). For example, the authentic leadership construct needs time to be established, and followers need time to trust their leaders.

Authentic leadership relates conceptually to the African Humanism construct (Khoza, 2011). The Western version of authentic leadership is used in this study, however, without customising it for the African context. Future scholarly work could investigate the similarities between the constructs and develop a new scale for Africa's unique context. As data collection was in electronic format, only individuals with access to technology could be targeted. Confirmation bias on the part of the researchers could cause a fixation with model fit, thus diminishing the meaning of the results, as Babin and Svensson (2012) warn.

African leadership has much to offer scholarly research, with its focus on human values and the connectedness between corporate vision and community spirit, as emphasised by Khoza (2011). Future research may explore its alignment with the idea of authentic leadership used in the current study, as the foundation of both constructs is the humanistic philosophy. According to the global leadership and organizational behaviour effectiveness studies (House *et al.*, 2004), referring to the power distance construct of Hofstede (1984), the African context is characterised by high power distance. The question may be asked whether the perception of leaders' authenticity would be different in this context. The comparison study by Petan and Bocarnea (2015) mentioned earlier, however, reveals no significant differences between high and low power distance groups with regards to the four dimensions of authentic leadership. In this study, the second-order authentic leadership construct is used, due to several other constructs in the conceptual model. Future research could focus on the four dimensions as factors with limited mediating and moderating variables.

The present study uses the second-order factor of ambidexterity. Future research can separate the two types of innovation and investigate the strength of authentic leadership as a predictor of these two. As mentioned in the discussion of environmental dynamism as a mediator, it is important for organisations to take note of the impact of this variable. Jansen *et al.* (2009) indicate that environmental dynamism has a varied influence on types of leadership. The current study, where environmental dynamism again has a varied influence, points to the need for more research on this variable. It is proposed that future research use the original 22-item instrument of Volberda and Van Bruggen (1997) to investigate all six dimensions of environmental turbulence, which would offer organisations a better understanding and alternative ways to treat volatility in their contexts. It is further recommended that future studies use objective measures of ambidexterity, instead of employee perceptions of ambidexterity. The four items on innovation climate may be used in future research to establish predictive validity, as discussed under measurement instruments.

### **5.3 Implications for organisations**

An individual's ability to use both hands with equal skill is an appropriate metaphor to describe organisations capable of exploiting existing competencies as well as exploring new

opportunities with equal dexterity (Lubatkin *et al.*, 2006). The current study confirmed that an improvement in innovation climate can greatly enhance this kind of organisational ambidexterity. Hence, organisations must identify and recognise a climate that will support the innovation process (Uhl-Bien *et al.*, 2007) and that is positively related to various organisational outcomes leading to superior financial performance (Gibson and Birkinshaw, 2004; He and Wong, 2004). The current study reveals that an innovation climate includes involvement of employees on the frontline and even customers to innovate products and services (see list of items on innovation climate in Appendix 1). As more than 10 per cent of the organisations in the current study are from the financial services sector, and more than 20 per cent from manufacturing, where meeting customer needs is essential, organisations would benefit from taking note of the findings in this study. Organisations in these industries should take special care to involve their frontline employees and even their customers in driving innovation, for example, by inviting customers and frontline employees (from branches or customer contact centres) to participate in workshops such as hackathons (Seravalli and Simeone, 2016) on improving products and services. A hackathon is an event where

[...] programmers and subject field specialists collaborate intensively in teams with the ultimate aim to create and design fresh ICT (information and communication technology) based solutions to a given task in a limited time (Kolog *et al.*, 2016, p. 1).

As it is shown that authentic leadership positively relates to an innovation climate and leads to ambidexterity, organisations should include authenticity as a criterion in their selection of leaders. Organisations should also invest in leadership development to increase authenticity. For example, self-awareness is increased by reflecting through introspection, where authentic leaders gain insight when examining their core values, identity, emotions, motives and goals (Gardner *et al.*, 2005). Opportunity for introspection has to be created, for example, by offering leaders executive coaching, which creates a space for reflection (Scheepers, 2012).

The reverse, that self-awareness enhances coaching effectiveness, has also been found. For example, the study by Gatling *et al.* (2013) indicates that authentic leadership's dimension of self-awareness promotes coaching effectiveness, where the leader demonstrates to others a genuine honest desire to understand their leadership to serve others more effectively. The organisational climate (Gardner *et al.*, 2005) can also assist in the development of authentic leaders; for example, an inclusive, caring, ethical and strength-based climate is important to facilitate authentic relationships (Gardner *et al.*, 2011).

Moreover, leadership development should involve programmes focused on not only behaving in an authentic manner but also creating an innovation climate, such as by exposing employees to new developments in the market. Authentic leaders can focus their attention on creating the innovation climate in their organisations by explicitly encouraging experimentation with new ideas. For example, authentic leaders could align reward and recognition processes towards offering recognition to those employees who try out new ideas.

In this regards, Jackson (2004) advocates for the development of all leadership talent to lead organisations and institutions on the African continent to prosperity. As organisational

ambidexterity has been shown in other studies to result in improved financial performance, organisations, particularly in Africa, would thus benefit from taking notice of the findings of this study. Authentic leadership involves more than capable management, as the relational transparency, for instance, allows employees to identify with the leader, and this positive relationship in turn fosters trust in the leader (Wong and Laschinger, 2012). When organisations develop authentic leaders who employees can identify as being trustworthy and with whom they can build trust, employees are more likely to exhibit ambidextrous behaviour, generating new ideas for products and markets while simultaneously improving current products and services to current clients.

Erkutlu and Chafra (2013) posit that it is essential to consider the key organisational factors that facilitate authentic leadership development, such as strong support from senior management (e.g. through role modelling and providing resources) or through incorporating authentic leadership in performance evaluations and metrics.

In closing, authentic leaders can model human-centred behaviours within their organisations that are likely to lead to more positive work environments; these in turn create innovative climates while also increasing levels of ambidexterity (Appendix 2).

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### **Further reading**

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## Appendix 1

**Table AI.** Pattern matrix<sup>a</sup>

	1	2	Factor 3	4	5
Authentic Leadership Relational Transparency 2	0.776				
Authentic Leadership Relational Transparency 3	0.756				
Authentic Leadership Relational Transparency 4	0.565				
Authentic Leadership Internalised Moral Perspective 1	0.689				
Authentic Leadership Internalised Moral Perspective 2	0.544				
Authentic Leadership Internalised Moral Perspective 3	0.718				
Authentic Leadership Balanced Processing 1	0.630				
Authentic Leadership Balanced Processing 2	0.697				
Authentic Leadership Balanced Processing 3	0.796				
Authentic Leadership Self-awareness 1	0.769				
Authentic Leadership Self-awareness 2	0.725				
Authentic Leadership Self-awareness 3	0.822				
Authentic Leadership Self-awareness 4	0.809				
Innovation Climate 1		0.771			
Innovation Climate 2		0.779			
Innovation Climate 2		0.864			
Innovation Climate 4		0.777			
Explorative Innovation 1				0.778	
Explorative Innovation 2				0.697	
Explorative Innovation 3				0.841	
Explorative Innovation 4				0.701	
Exploitative Innovation 1			0.769		
Exploitative Innovation 2			0.784		
Exploitative Innovation 3			0.785		
Exploitative Innovation 4			0.701		
Environmental Dynamics 2					0.657
Environmental Dynamics 3					0.842
Environmental Dynamics 5					0.644

**Notes:** Extraction method: maximum likelihood. Rotation method: Promax with Kaiser normalisation.  
<sup>a</sup>Rotation converged in five iterations

## Appendix 2

**Table AII.** KMO and Bartlett's test

Kaiser–Meyer–Olkin measure of sampling adequacy		0.934
Bartlett's test of sphericity	Approx. $\chi^2$	12,170.082
	Df	378
	Sig.	0.000