“Authenticating” the Role of Authentic Leadership: Examining its Relationship with Trust in the Leader, Psychological Sense of Community and Engagement in the Virtual & Hybrid Workplace

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Abstract

The coronavirus pandemic (COVID-19) has changed the trajectory of the working world. As the world learnt to socially distance, the working world shifted to a virtual setting. Individuals who had to perform this shift had to adjust without preparation. Individuals leading teams, for example, often knew how to do so in face-to-face interactions while in physical proximity to others but might not have known what successful leadership would require in virtual or, later, hybrid (partly virtual, partly physical) workspaces. This dissertation considered one leadership style, authentic leadership, and its relationship with employees' work engagement through their trust in their leader because past research found relationships between these variables in a physical working environment. Therefore, this dissertation aimed to understand whether these results still stand in a virtual and hybrid work environment. Research with individuals working in office settings has shown that these variables are related. It tests the assumption that the same relationships apply in the virtual workspace but that, here, an additional variable is of importance. In the virtual space, a psychological sense of community is required for authentic leadership to create engagement via trust in the leader. To test the assumption, a descriptive, quantitative study was conducted. N = 160 employees who worked virtually or in a hybrid setting worldwide completed a survey including established scales to measure the four psychological constructs of interest. Employees who perceived their leader as authentic had greater cognitive and affective trust in their leader, but neither cognitive nor affective trust predicted work engagement. The expected mediation effect was thus not found. A psychological sense of community was found to moderate the relationship between perceived authentic leadership and one aspect of work engagement (absorption|dedication) but not the vigour aspect of work engagement. The results highlight that the relationships between work-related attitudes and behaviour might differ in virtual workspaces than when working face to face. The exploration of the four hypotheses determined that the research questions were not supported. However, this research is relevant as it explored employees' insights into hybrid or virtual workplaces, as many more organisations have migrated their working environments to these spaces.

Key words: Authentic, Community, Engagement, Leadership, Trust

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Chapter 1

1. Introduction

The world as we know it changed once the World Health Organisation (WHO) declared COVID-19 a pandemic on the 11th of March 2020 (Cucinotta & Vanelli, 2020). This resulted in a global shutdown as many countries implemented either a partial or full lockdown, which restricted most movements to curb the spread of the virus (Dunford et al., 2020). Life as we knew it changed, especially in the world of work. Many organisations had to abruptly shift to the virtual world to conduct their work. Often, this was unfamiliar territory for everyone: employees, supervisors, junior, middle, and senior management.

In many cases, more flexible working arrangements have remained. Therefore, organisations have stayed completely virtual or adapted to a partially virtual workplace, where the workers would be in the office sometimes a week (hybrid). The changes in the working environment illustrate why it would be important to understand the influences of this environmental shift on the people impacted by these changes. Thus, interesting insights could be explored, such as how leadership behaviour and team community impact an employee's level of work engagement.

The example of employee engagement illustrates why this is important. The National Flexibility Study conducted in the United States of America found that virtual teams have a greater risk of being disengaged than co-located teams (Kacher, 2016). In the Gallup State of the Global Workplace study (2021), 85% of employees were not engaged or actively disengaged in their jobs. This was attributed to the personal stressors and concerns arising from the COVID-19 pandemic and employees' sudden forced adjustment to work in the virtual world (Bernhadt, 2021).

A survey conducted in the United Kingdom by the Advanced Workplace Institute (AWI) found that the bond between team members and trust is at risk when people work virtually (Jackson, 2020a). Emerging research suggests that employees have lost trust in their leaders during the pandemic, seemingly because they either felt that leaders did not make effective decisions or that leadership visibility had decreased, as employees felt that their leaders were not appropriately available (Jackson, 2020b).

In line with these results, Deloitte (2020) reported that virtual distance can lower trust by 83% and engagement by 80%. A question yet to be answered is how leaders could adjust their behaviour to create or maintain high levels of trust and a bond between team members in virtual teams and to maintain employee engagement.

Building positive social relationships is likely important as social relationships foster employee engagement, team cohesion, and trust in the workplace (Permyakova & Lysova, 2021). However, creating and maintaining social relationships is particularly challenging in the virtual world: Employees have reported a lack of social interactions when working virtually and thus felt disconnected from their colleagues (Asheden, 2021). This is because virtual workplaces do not allow for informal interactions in the way in which they would occur in physical workplaces, for example, in the form of unplanned social interactions at the office, which help develop shared cognitions about workplace-related issues or a shared understanding between colleagues (Blanchard, 2002). These processes happen organically, while colleagues usually only come together in virtual workplaces to focus on specific tasks. Therefore, the sense of community has been threatened by the social isolation arising from enforced social distancing since 2020 (Sikali, 2020). Virtual meetings tend to lack collaborative communication, and consequently, virtual teams lack cohesion (Antsipava, 2020). It is thus not surprising that employees have indicated that they do not feel a sense of belonging at work, though they believe that they deserve to be in organisations that respect and support them (Mallick, 2021). Ferrazzi (2014) emphasised that the right type of leadership is important to foster trust and create a sense of community from the onboarding process and throughout the employee's tenure.

Authentic leadership is an existing leadership approach that could create trust in virtual workspaces. According to Kleynhans et al. (2021), authentic leaders can easily build credibility, respect, and trust with their team members by encouraging different perspectives and the ability to build synergetic relationships with their employees. Chen and Sriphon (2022) further added that authentic leaders can foster mutual trust, which encourages positive working relationships between leaders and followers and among followers. Authentic leadership has also been seen to increase employee engagement (Alok & Israel, 2012).

The work presented in this dissertation takes the empirically shown importance of authentic leadership in face-to-face work environments as a starting point. However, it seeks to explore whether this is enough to maintain and create trust and employee engagement in

their respective virtual and hybrid workplaces. It is derived from Chen and Sriphon's (2022) recent study in Thailand, which explored the relationships between authentic leadership, trust, and social exchange relationships depending on whether leaders had shown specific behaviours and had examined workers who worked virtually. They had investigated these relationships after introducing the COVID-19 social distancing protocol. However, this dissertation will explore hybrid and virtual workplaces instead of just exploring virtual ones. The addition of the concept of the hybrid workplace is included in this dissertation because it has been dubbed as the 'future world of work', as it fosters a flexible and agile workplace. This type of work environment allows employees to work from their home hub, office hub, or even co-working spaces, which leverages the advantages and disadvantages of both types of work environments (Prevot & Mägi, 2022). Furthermore, work engagement instead of social exchange relationships will be the outcome variable, as engagement has been identified as a challenge in virtual and hybrid teams. Moreover, this study explores whether a psychological sense of community would moderate the relationships between authentic leadership, trust, and engagement based on the literature outlined above; creating a sense of community tends to be challenging in virtual workspaces.

1.1 Problem Statement

In an era marked by a shifting work landscape where virtual and hybrid workspaces are becoming increasingly prevalent, it is imperative to conduct research that delves into the current dynamics of such teams. Given the challenges in creating a sense of community in virtual workspaces, understanding its role in this context can provide valuable insights into strategies for improving employee engagement and trust. This research will address the critical need to adapt leadership behaviour and foster a sense of community in virtual and hybrid workplaces to enhance employee engagement and trust. By exploring the potential of authentic leadership and its interactions with the sense of community, this study will contribute to our understanding of effective leadership strategies in the evolving landscape of work.

1.2 Study Rationale

As the world of work is changing and the rules of engagement move to either a virtual or hybrid workspace, it is essential that research explores what is currently happening in virtual and hybrid teams. Therefore, this current research aims to measure employee perceptions of their leader, their trust in their leader, and the perception of their engagement. Therefore, the researcher will have a chance to examine whether these variables are consistent with previous

research. Moreover, the researcher also adds a tentative observation of the psychological sense of community construct within their teams and aims to examine whether this strengthens the existing relationship between authentic leadership, trust in the leader, and engagement.

Therefore, the following research questions are derived:

1.3 Research questions

The main research question is outlined:

- To what extent does trust mediate the relationship between authentic leadership and engagement amongst virtual and hybrid employees?

Furthermore, an additional research question is outlined:

- Could a psychological sense of community strengthen the relationship between authentic leadership and trust in the virtual and hybrid workplace?

The dissertation consists of six chapters. The next chapter provides an overview of the literature to explore the research questions. Moreover, chapter three will contain information about how the study of this will be explored in the methods section. Furthermore, the results of this study will be presented in chapter four. Lastly, a comprehensive discussion will be presented in chapter five, which explains the results examined, future recommendations, limitations. Lastly, chapter six outlines the conclusion of the dissertation.

Chapter 2

2. Literature review

This chapter starts with key studies about the conceptualisation of virtual teams and existing literature on virtual teams about trust, authentic leadership style, and work engagement. The results of an analysis of existing literature on the key debates, themes, and gaps of authentic leadership are presented. Then, the two forms of interpersonal trust, which the trust variable in this study is based on, and trust in the leader, are conceptualised, as well as work engagement. The key literature that examines trust as a mediator between authentic leadership and work engagement is then provided. Lastly, the psychological sense of community is defined, and its potential moderating relationship is examined. The literature review ends with an overview of the study's theoretical framework developed through the literature review.

2.1 Conceptualising the Virtual Workplace and Virtual Teams

The literature describes virtual teams as working in arrangements with geographically dispersed members, having limited or no face-to-face interactions, and working interdependently through electronic communication to achieve common goals (Dulebohn & Hoch, 2017; Morrison-Smith & 2020). They thus allow for less interpersonal interaction than face-to-face contact (Zhang et al., 2020). Gilson et al. (2015) pointed out that the most consistently used dimensions to define virtual teams are geographic dispersion and technology usage for team members to interact with each other. Globalisation has been cited as a reason for the development of virtual teams since the beginning of the 21st century, as organisations seek talent from different parts of the world to remain competitive in their fields (El-Kassrawy, 2014). According to Purvanova (2014), organisations opted for virtual teams because they save money and time, as travel costs and meeting times are cut.

Many authors have distinguished two types of virtual teams: traditional virtual teams, which are teams that are interdependent and rely on information and communication technologies as there is no physical office space and hybrid virtual teams, which are teams that combine face-to-face and virtual technology to operate interdependently (Grzegorczyk et al., n.d.; Jawadi & Daassi, 2008;). With the onset of COVID-19 and the calls for social distancing, teams were pressured to move to work virtually in a short period. With this, face-to-face working teams had to equip themselves rapidly to carry out their job tasks remotely (Klonek et

al., 2021). This study aims to assess traditional virtual teams and hybrid virtual teams. Thus, it is crucial to gain an understanding of the role of trust within virtual teams within the workplace, which will be explained next.

2.1.1 Virtual Teams and Trust

Various challenges have been highlighted regarding the functioning of virtual teams. Trust has been cited as a prominent factor affecting these teams, which is ultimately essential for meaningful interactions and effective communication (Bal & Teo, 2001; Dustdar, 2004; Malhotra et al., 2007). Ishaya and Macaulay (1999) asserted that trust is essential in virtual collaboration. Mutha and Srivastava (2021) claimed that virtual teams have fewer opportunities to build trust than face-to-face teams, as trust was built based on observed past behaviour in frequent interactions. Other authors have added that due to the geographical dispersion, additional cultural differences can create misunderstandings, and social bonds can be more challenging to achieve, thus meaning that there could be difficulties in communications and emotional relationships among employees (Lin et al., 2008; Shuffler et al., 2010). Gilson et al. (2015) stated that trust has been the most studied variable in virtual team research because trust has been found to be pivotal in affecting a virtual team's success (Furumo, 2009). Jawadi and Daassi (2008) emphasised that trust is significant for leaders in the virtual space for relationship building with their subordinates. Leaders would be able to foster trust by setting mutual and clear expectations, motivating employees, and improving coherence in order to improve their teams' performance (Jarvenpaa et al., 1998; Zeuge, 2020). Therefore, according to Germain (2011), leaders must encourage continuous communication to increase trust within their teams. It is, therefore, imperative to decipher how leadership styles affect virtual teams, which will be examined next.

2.1.2 Virtual Teams and Leadership Style

Leadership behaviour and styles have been popular areas of virtual team research because leadership within these teams is essential. Leaders play a central role in how virtual teams operate as they influence how a team deals with various challenges and how it ultimately adapts to them (Garro-Abarca et al., 2021; Gilson et al., 2015). Due to the specificities of virtual teams outlined in Section 2.1.1, such as a distortion of communication processes, technological problems, and diversity (Kayworth & Leidner, 2002; Jawadi & Daassi, 2008), particular leadership behaviour might be required in the virtual space. Specific leadership styles may be required in certain environments because different problems arise. Therefore, leaders need to

augment the frequency and nature of communication, for example, to effectively adapt to a virtual environment because there is limited social context within a virtual space (Mutha & Srivastava, 2021).

Much research concerning virtual team leadership has focused on inspirational, transformational, and transactional leadership styles (Joshi et al., 2009; Huang et al., 2010). Transformational leadership has been found suitable for virtual teams because these types of leaders are said to put the interests of their team first. They show qualities that inspire others to be respectful and have pride and are role models that explore new perspectives for achieving goals or solving problems (Ruggieri, 2009; Zeuge, 2020). More recent research has explored the value of another leadership style in virtual work environments: authentic leadership. Lyubovnikova et al. (2017) believe an authentic leader can uniquely shape individual behaviour and group-level processes. Zhang et al. (2022) found that leaders adopting this leadership style had enhanced virtual team performance because of the leader's passion for self-discipline, ethics, and the focus on establishing positive relationships. However, there is still very little research considering the value of authentic leadership in virtual teams. A more detailed outline of the authentic leadership construct is provided in section 2.2. There needs to be an understanding of oneself in the virtual workplace. Therefore, the following section examines work engagement in virtual teams.

2.1.3 Virtual Teams and Work Engagement

Various studies have asserted the importance of employee engagement in virtual teams and pointed out that to do so; leaders need to cultivate a space in which employees can work collaboratively. This, in turn, enhances virtual team empowerment and retains employee engagement (Panteli et al., 2019; Shaik & Makhecha, 2019). Panteli et al. (2019) stated that work engagement in virtual teams should be cultivated differently than in face-to-face working teams, as there are different demands in the virtual space because communication is mostly mediated through communication tools. The author defined *work engagement* as a motivational concept that draws on understanding oneself in the working space. Therefore, understanding how employees are engaged in the workplace has been suggested as it contributes to virtual team effectiveness. Therefore, it has been deemed essential to understand how to maintain work engagement in the virtual workplace. Yaghmai and Boe (2021) asserted that leaders must foster and monitor work engagement in virtual teams by ensuring that employees have appropriate information and feedback. Work engagement has been defined

and further elaborated in Section 2.4. Instead, the following section focuses on this study's focal leadership style, authentic leadership.

2.2 Authentic Leadership

Authentic leadership is a leadership style rooted in positive forms of leadership, which means that the behaviour and style of this leader are classified as being positively inclined towards their subordinates and showing interest in their development.

Other forms of leadership that have been classified as positive are transformational, charismatic, servant, and spiritual (Ackerman, 2019). Specifically, authentic leadership as a theory has been said to develop trust and foster a positive work environment and thus influence employee retention in the workplace (Avolio et al., 2004; Wong & Cummings, 2009). Hoy and Henderson (1983) were the first authors to conceptualise the differences between an inauthentic and authentic leader. However, Bill George, a professor, and Chief Executive Officer (CEO) at an organisation, had significantly contributed to developing the authentic leadership concept theoretically and practically. He conceptualised authentic leadership to comprise seven dimensions: knowing one's authentic self, learning from one's life story, building supportive teams, practising personal principles, integrating all elements of life, and balancing intrinsic and extrinsic motivation (George, 2003). Thereafter, Luthans and Avolio (2003) started to formalise the concept and stated that to be considered authentic leaders; individuals must portray self-awareness, transparency in their leadership, and consistency in their values and beliefs. Since then, authentic leadership has been included in complex models, which focused on the relationship between this leadership style and employee behaviours or attitudes (Korzynski, 2013).

Walumbwa et al.'s (2008) article is a key paper in the authentic leadership literature as they developed and validated the authentic leadership construct. Various researchers have used this definition of authentic leadership: "An authentic leader displays behaviours that promote both positive psychological capacities, and a positive ethical climate, to foster greater self-awareness, an internalised moral perspective, balanced processing of information, and relational transparency by the leader when working with followers, fostering positive self-development." (Walumbwa et al., 2008, pg. 96). From this definition, four dimensions of authentic leadership have emerged: *Self-awareness,* which refers to how a leader understands their strengths and weaknesses. This allows them to understand their process to make sense of the world. Thus, this leader can understand the impact they have on others. The second

dimension is *Balanced processing,* defined as a leader who can objectively analyse information before making a decision. The third dimension is *the Internalised perspective.* It refers to the leader having a form of self-regulation driven by internal values and not external pressures. The leader's behaviour is thus aligned with their internalised values. The last dimension is *Relational transparency.* It conveys how leaders present their true selves by openly sharing and expressing emotions and information.

There has been slight variation in this definition in recent literature, as most authors have conceptualised authentic leadership using Walumbwa et al.'s (2008) definition (Agote et al., 2016; Alok & Israel, 2012; Ausar et al., 2016; Azanza et al., 2015; Diddams & Chang, 2012; Hsieh & Wang, 2015; Korzynski, 2013; Lyubovnikova et al., 2017; Towsen et al., 2020). Authentic leaders have been characterised as leaders who know and act upon their true values, beliefs, and strengths. Moreover, they have been known to be committed to their organisations and to show greater citizenship behaviour (Diddams & Chang, 2012). Hahm (2017) added that authentic leaders are open-minded individuals who are honest when sharing their ideas, emotions, achievements, and personal endeavours with their followers. Authentic leadership has been linked to several positive workplace outcomes at the individual level, including performance, work engagement, creativity, and job satisfaction (references). Moreover, authentic leaders have meaningfully influenced team processes and outcomes, such as team performance and engagement (Lyubovnikova et al., 2017).

There are also critical voices, however. Diddams and Chang (2012) explained that although authentic leadership serves as a root construct for other leadership styles, such as transformational and servant leadership, authentic leaders are not transformational leaders. This is because they are not likely to motivate through inspirational vision or developing leaders. Instead, they promote trust among their followers because of their self-awareness of strengths and weaknesses, which makes them non-defensive and transparent with their followers. Ausar et al. (2016) described authentic leadership as an over-arching concept that includes transformational, ethical, and all positive forms of leadership. Bishop (2013) contrasts these statements by stating that authentic leadership is a generic term incorporating positive forms of leadership, such as transformational, charismatic, and servant leadership. Alvesson and Einola (2019) suggested that authentic leadership is not necessarily a positive form. Authenticity might be detrimental depending on the social context in which leaders find themselves in. Authentic leadership should thus not be treated as a reflection of the noble leader

radiating the right qualities that benefit their followers and organisational outcomes. Instead, it should be considered against the social and historical context in which leadership takes place and which exerts pressure on leaders. It is said that this type of leader must adopt the appropriate behaviour for the context and thus show insight, negotiate, be pragmatic, and work with organisational culture. Although these views exist, there has been research on authentic leadership as a predictor of organisational outcomes and follower behaviour (Hsieh & Wang, 2015). The following section focuses on an outcome linked to authentic leadership: interpersonal trust.

2.3 Conceptualising the multi-dimensional construct of Interpersonal Trust

Trust has been defined as the willingness to be vulnerable to the actions of another party based on the shared expectation that the other will perform actions that are important to the trustor (Breuer et al., 2016; Breuer et al., 2020; El-Kassrawy, 2014). Therefore, the trustor can trust the trustee based on a positive expectation that the other party will not exploit the situation on their behalf (Nienaber et al., 2015). McAllister (1995) defined *trust* as a multi-dimensional construct distinguishing between affective-based and cognitive-based trust. Trust based on affect is operationalised as a social and emotional exchange-based relationship among leaders and followers. They operate based on care, concern, and mutual obligation. Cognitive-based trust is associated with the leader's character, such as their ability to do their job, the integrity they show, and the reliability they convey (Farid et al., 2020).

El-Kassrawy (2014) added that when trust has a cognitive basis, individuals do calculative assessments or look for a rationale to define how they should trust another person. Kanawattanachai and Yoo (2002) pointed out that virtual teams tend to have higher cognitive-based trust than affective-based trust. When McAllister (1995) conceptualised this multi-dimensional construct, the author suggested that cognitive and affective-based trust affect a subordinate's attitudinal response towards their leader. Therefore, it is relevant to explore trust in the leader.

2.3.1 Exploring Trust in the Leader

Cleary et al. (2011) pointed out that it is essential for employees to trust each other but that leaders have a particularly relevant role as they establish structures that support how the workplace operates, interpret, and communicate the structures and processes within the workplace, and support teams to achieve the team's goals. Depending on how they do so, they

create an environment in which trust is likely to emerge or not (Legood et al., 2021; Hungerford & Cleary, 2020). Furthermore, Hernandez et al. (2014) stated that employees who trust and have confidence in their leaders will likely follow their leader's directions, reflect their behaviours, and work effectively to achieve organisational goals.

As Nienaber et al. (2015) pointed out, it is important to consider the asymmetries that characterise leader-follower relationships when studying trust between leaders and followers. The leader has more power and higher status and thus can exercise control. Therefore, followers depend on their leaders, for example, in terms of promotions or job security, thus rendering trust salient in this relationship. Despite this, the follower is free to decide whom they trust and the degree to which to trust. Kleynhans et al. (2021) added that trust in the immediate supervisor inspires followers to perform exceptionally well (Yang & Mossholder, 2010). The following section will explore the concept of work engagement.

2.4 Conceptualising Work Engagement

Employee engagement – sometimes referred to as work engagement – is a widely researched concept in the field of positive psychology. There have been various definitions since Kahn first conceptualised the construct in 1990. Kahn (1990) stated that engaged employees could bring emotional, cognitive, and behavioural aspects of themselves at work and would thus have a higher performance because they would be seen to be displaying their complete selves in the workplace. Today, employee engagement is a multi-faceted construct related to a dedicated willingness to perform work duties and a positive state of mind. It has been considered the opposite of burnout (Mutha & Srivastava, 2021). A competing definition has been proposed by Schaufeli et al. (2002). While agreeing with Maslach and Leiter's (1998) assertion that engagement comprises three aspects: vigour, dedication, and absorption, based on their empirical data, Schaufeli et al. (2002) contested that engagement falls on a burnout-engagement continuum. Instead, they considered it related to but distinct from burnout. In their definition, work engagement is a positive work-related state where one's mind consists of vigour, dedication, and absorption. *Vigour* is defined as high energy levels, mental resilience, and a willingness to put great effort into one's work, even when faced with complex challenges. *Dedication* includes a sense of significance, pride, and enthusiasm towards one's work. Lastly, *absorption* explains the state of mind when concentrated and engrossed in one's work. Schaufeli et al. (2002) developed the Utrecht Work Engagement scale to measure engagement as a psychological state comprising vigour, absorption, and dedication. It assumes

that employees are intrinsically motivated rather than extrinsically. This is because they perceive their work as challenging and fun and do not necessarily strive to meet external standards for social approval (Schaufeli, 2012). Mutha and Srivastava (2021) assert that the definition of work engagement developed by Kahn (1990) has undergone a paradigm shift and is not exclusively built for employees who work in virtual teams. This study will use the Utrecht Work Engagement scale to measure work engagement. The following section examines trust as a mediator between authentic leadership and work engagement.

2.6 Trust as Mediator between Authentic Leadership and Work Engagement

Literature examining the relationships between authentic leadership, trust, and engagement has been growing over the last decade. Hassan and Ahmed (2011) reported that authentic leadership promoted subordinates' trust in their leader in the banking sector in Malaysia. Authentic leadership also contributed to employees' work engagement, partially mediated by trust in the leader. The same result was found by Wang and Hsieh (2013) in Taiwan's manufacturing and service industries. Wang and Hsieh (2015) found that employee trust partially mediates between *employee*-perceived authentic leadership and employee work engagement but not between leaders' self-assessed authentic leadership.

The results do not only hold in Southeast Asia: McAuliffe et al.'s (2019) study amongst library employees in the United States of America found that the perception of authentic leadership and trust in direct managers are strong predictors of engagement. This study did not explore trust as a mediator but found relationships between all three variables. Maximo (2015) explored the relationships between the three constructs in the mining sector in South Africa. Here, trust had fully mediated the relationship between authentic leadership and work engagement.

In their theory of authentic leadership, Avolio et al. (2004) suggest that authentic leaders enhance followers' engagement by strengthening the identification of the group members with each other and the organisation and promoting hope, trust, optimism, and positive emotions.

Even though existing research has found these relationships among employees working in face-to-face environments, it is assumed that these relationships apply, too, in virtual environments. Based on this evidence, the following hypotheses have been formulated for this study:

Hypothesis 1a: Virtual and hybrid working employees who perceive their leader as an authentic leader have greater cognitive trust in their leader.

Hypothesis 1b: Virtual and hybrid working employees who perceive their leader as an authentic leader have greater affective trust in their leader.

Hypothesis 2: Cognitive-based trust and affective-based trust in the leader are positively related to work engagement among virtual and hybrid working employees.

Hypothesis 3: Cognitive-based and affective-based trust in the leader mediate the relationship between perceived authentic leadership and work engagement among virtual and hybrid working employees.

The following section introduces the concept of a psychological sense of community in the workplace.

2.7 Psychological Sense of Community at Work

The Psychological Sense of Community (PSOC) concept arose in community psychology and was developed by Sarason (1974). Sarason proposed that employees must fully understand individuals' behaviour, cognitions, and emotions; their relationships to the social collectives they are associated with must be considered. McMillan and Chavis (1986) further elaborated on this concept. They conceptualised a Sense of community as a feeling that members have of belonging, that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to being together. They consequently assumed that PSOC comprised the following four components:

1. *Membership is "a* feeling of belonging or sharing a sense of personal relatedness."
2. *Influence* "a sense of mattering, of making a difference to a group, and of the group mattering to its members."
3. *Shared Emotional Connection is "*the commitment and belief that members have shared and will share history, common places, time together, and similar experiences."
4. *Integration and Fulfilment of Needs* "a feeling that members' needs will be met by the resources received through their membership in the group." (McMillan & Chavis, 1986, p. 9).

Klein and D'aunno (1986) were the first to apply PSOC to the workplace to understand employees' productivity and wellbeing. Applied to work, PSOC captures the importance of mutual attachment between organisational members, the feeling of belonging, and the feeling that the organisation is responsible for satisfying collective and individual needs (Scotto di Luzio et al., 2019). In organisations, community refers to the quality of social interactions at work (Jiménez et al., 2017).

PSOC in the workplace examines how an individual identifies with work networks (Klein & D'Aunno, 1986). PSOC has been related to organisational commitment, organisational citizenship behaviour, civic virtue, courtesy, altruism, and employee wellbeing (Damon, 2018; Blanchard et al., 2002; Boyd & Nowell, 2014). Garrett et al. (2017) argued for a focus on PSOC in the work context as it could be an essential characteristic of high-performing teams that independently affects elements like group structures, team cohesion, functioning, and effectiveness, which then affect employee attitudes and organisational outcomes, such as turnover rates.

One of the methodological concerns is based on some of the scales developed. The Sense of Community Index (SCI), which was developed by Perkins (1990), has been the most popular instrument that has been used in research in a variety of communities; the scale has been criticised for low reliability and a lack of theoretical grounding (Long & Perkins, 2003; Chavis & Pretty, 1999). Other scales include the Psychological Sense of Community at Work Scale (Burroughs & Eby's, 1998), the Italian Sense of Community Scale (Tartaglia, 2006), the Brief Sense of Community Scale (Peterson et al., 2008), the Multi-dimensional Territorial Sense of Community Scale (Prezza et al., 2009) and the Three-factor Psychological Sense of Community Scale (Jason et al., 2015). This could partly reflect that what a community means is constantly evolving (Talò et al., 2014).

Typically, communities are defined in relation to a physical 'place'. However, Wellman (1999) argued that a shared physical space is not a necessary feature of a community. When communities are viewed as what people do together rather than through what means or where they do them, they are separated from their geographical locations. It is not clear, however, if McMillan and Chavis' (1986) four dimensions of PSOC (membership, influence, emotional connection, and fulfilment of needs) require a shared physical location to develop, though, and thus if a PSOC exists in virtual work environments where employees interact via electronic means. For a sense of community to develop, it may require rich interactions in Physical

communities, such as face-to-face communication, and preformed ties before being in the virtual space (Rotman & Wu, 2015).

Conversely, the virtual space can feel safer as members in virtual communities may feel less influenced or socially sanctioned by other members compared to face-to-face groups (Rotman & Wu, 2015). It can thus create a sense of community in different ways. To account for this, Blanchard (2007) developed a Sense of Virtual Community measure to measure the psychological sense of community in virtual settings, which other scales do not explicitly measure. Even though a scale exists to measure a sense of community in virtual settings, there is still a need for theoretical frameworks and further research about PSOC in virtual settings (Blanchard, 2007; Rotman & Wu, 2015). The following section outlines a psychological sense of community theoretical model.

2.7.1 Klein and D'Aunno's Psychological Sense of Community at Work Process Model

The conceptual framework of Klein and D'Aunno's (1986) Psychological Sense of Community at Work process model is outlined to inform this study's conceptualisation of the psychological sense of community. It provides a theoretical understanding of the importance of this concept. There are three components underlying this: workplace referents for the sense of community, determinants of a workplace sense of community, and mechanisms that underlie the determinants.

Workplace Referents for the Sense of Community

These referents convey various reasons for why employees may develop a sense of community:

- *Friendship networks at work* refer to how employees can socialise inside and outside the workplace, thus feeling like one belongs to a circle of friends.

- *The functional subgroup of the organisation* refers to how employees would be united in working together towards a shared goal. PSOC is displayed here as there is an investment and commitment to the subgroup's tasks.

- Organisation *as a whole* refers to how a sense of membership, commitment, and belonging is associated with the whole organisation.

- Employees may also feel a sense of community due to their *profession, job class or even union membership*, as although they may not do the same work, they identify with others because of the similar nature of their work.

- The *worksite* refers to how the organisation's location may be the focal point for an employee's sense of community.

Determinants of a Workplace Sense of Community

The authors have hypothesised key determinants which demonstrate the extent to which employees experience a sense of community at the workplace:

- *Individual characteristics* refer to how homogenous employees that relate to their demographics, such as age, race or even tenure at the organisation, can perceive a sense of community when they identify with others in non-work areas.

- *Job characteristics* may play a role in increasing the employees' sense of community at either functional subgroup or organisational levels. If employees enjoy their work, they are more likely to value and/or identify with their co-workers. Moreover, as colleagues interact more due to the nature of their jobs, they are more likely to develop close ties.

- *Leader characteristics* refer to how supervisors define the group and cultivate a sense of purpose and identity in the organisation, as they may influence employees' loyalty and respect for the organisation.

- *Subgroup characteristics* depend on various subgroups within an organisation, such as workgroup, task group, or department. These may influence employees' perceptions and appreciation of the group and the sense of involvement. This may be influenced by whether tasks are collaborative or interdependent.

- Organisational *characteristics* refer to how employees feel a sense of community at the level of the whole organisation, which are extensions of how one feels due to either the subgroup or leader characteristics that they perceive. Moreover, company-wide participation programmes are also more likely to enhance a sense of community and involvement in the broader organisation. Furthermore, if employees feel transparency about information, it may foster trust and respect, indicating that the organisation is a cohesive environment. However,

the author conveys that there is an assumption that positive feelings at one level of the organisation will be consistent with the other levels, too.

- Extra-organisational *characteristics* refer to how a variety of extra-organisational characteristics in the organisation's environment may indirectly or directly affect the employees' sense of community. This may convey how a turbulent and/or threatening environment may have an unexpected effect, as it may heighten the sense of community amongst employees.

Mechanisms that underlie the determinants

These mechanisms had been hypothesised to predict employees' sense of community with their friendship networks, functional subgroups, and the organisation:

1. The determinant plays a role in increasing the employees' perception that a community exists, thereafter aiding in the *formation of a group or 'community' identity*. The determinant has increased an employee's *positive appraisal of the group,* which may result in their desire to *become a member of the community/group*.

2. The determinant plays a role in fostering the employee's sense of *active involvement in the group*.

(Klein & D'Aunno (1986)

The following section will explore a psychological sense of community as a moderator between authentic leadership and work engagement.

2.8 Psychological Sense of Community as a Moderator between Authentic Leadership and Work Engagement

Even though PSOC was proposed as a potentially relevant workplace concept almost four decades ago, empirical research testing its correlates is sparse. However, organisations have begun realising the importance of meaningful relationships for their employees in the workplace, suggesting that PSOC should be a concept of interest (Jiménez et al., 2017).

Mehta and Krishnan (1999) explored the role of leadership style in creating a PSOC. In their study, participative, nurturant, and task-orientated leadership styles correlated positively with PSOC, while a bureaucratic leadership style correlated negatively, and autocratic leadership was unrelated to PSOC. Purkiss and Rossi (2007) also found that the immediate

supervisor's leadership style was critical in building and maintaining a sense of community in the workplace. Takos et al. (2018) are one of the few researchers who have explored authentic leadership's role in relation to PSOC. Their study considered the role of authentic leadership in non-profit sports organisation boards and its impact on how the board functioned. The findings suggested that the relationships between the board members had a positive impact on the board's functionality, which was characterised by authentic leadership, leading to higher levels of trust, a reduced level of dishonesty, and ultimately limiting the forming of harmful subgroups, thus alluding to a higher sense of community in that environment. Another author, Damon (2018), focused on authentic leadership and a sense of community in sports organisations. It offered insights into sports employees and their sense of community in their teams through an authentic leadership lens.

In community settings, studies found positive associations between PSOC and community engagement (Talò et al., 2014). Based on these, Edmunds (2020) assumed that employee engagement and a sense of community created a feedback loop and, thus, a maintenance role for one another. However, this assumption has not yet been tested empirically.

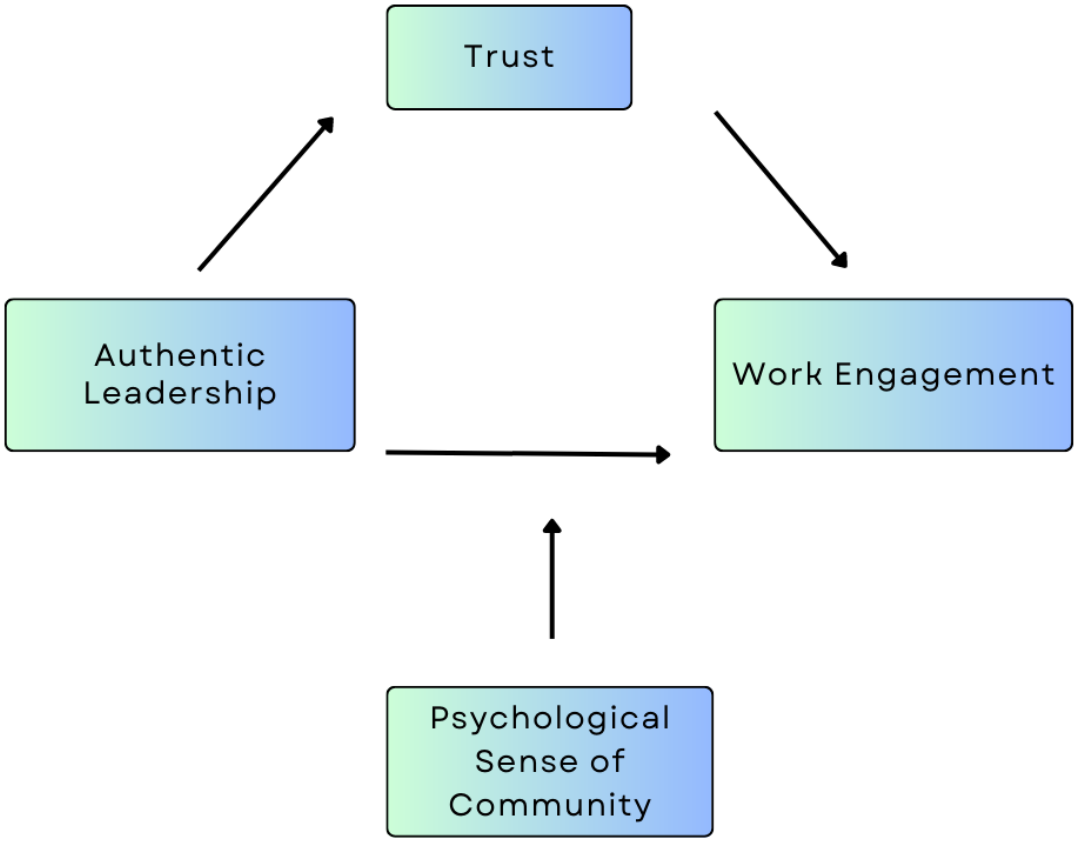
Even though authors have argued the relevance of PSOC to workplaces (Klein & D'Aunno, 1986; Nowell & Boyd, 2010), the concept has yet to be significantly integrated into management research (Edmunds, 2020). Therefore, this PSOC is relevant for this study because it aims to give insight into how employees feel they relate to their colleagues, even if there are limited or no physical interactions. Hypothesis 4 is thus a tentative proposition based on the empirical relationships found and the theoretical relationship proposed between authentic leadership, employee engagement and PSOC.

Hypothesis 4: A psychological sense of community moderates the relationship between perceived authentic leadership and work engagement among virtual and hybrid working employees.

A summary of all four study hypotheses is presented in the conceptual framework in Figure 1.

Figure 1

A theorised conceptual framework for the study



This chapter has outlined how the four hypotheses have been derived. Thereafter, empirical data was collected from employees who work in a virtual or hybrid workplace. The method that was used in this study will be outlined in the next chapter.

Chapter 3

3. Methods

The methods section consists of an outline of the methods used to test the identified hypotheses. The research design, the sampling procedure, a description of the participants, the instruments used, ethical considerations, and the data analysis of this dissertation are outlined in this chapter.

3.1 Research design

A quantitative, descriptive, and cross-sectional research design was employed to test the hypothesised relationships between the four study variables (authentic leadership, trust in leader, PSOC and work engagement) empirically. Specifically, a correlational approach was used to test the hypotheses. Using the correlational approach allows the researcher to gain insights into real-world relationships. This is an appropriate approach because it enables the researcher to detect whether there is a relationship between variables and the strength of these relationships (Curtis et al., 2016).

3.2 Sampling and Participants

Non-probability sampling was employed to obtain data for this study. Specifically, convenience and snowball sampling approaches were used. This sampling technique was used because the researcher was able to access the sample group using social media so that a large enough sample size could be obtained so that it is easier to assess how representative the sample is to the population, which would allow for the generalisation of the results (Biau et al., 2008). Moreover, the participants could share the survey link with their colleagues and their social groups that would be eligible for this study.

A total of 166 individuals completed the quantitative survey used to collect data. However, the responses of six respondents had to be discarded as they were incomplete. The final sample thus comprised $N = 160$ respondents. These included $n = 118$ individuals who identified as female, $n = 37$ who identified as male, $n = 3$ as non-binary, and $n = 2$ who preferred not to reveal a gender (see Appendix A Table 1 for a summarised visual view). Most participants were between 18-24 (43.1% $n = 69$). The remaining age groups are provided in Appendix A Table 2. Furthermore, almost all participants were from South Africa (86.9%; $n = 139$). The remaining participants were from 11 different countries. All countries of residence are provided in Appendix A Table 3. 106 (66.3%) were working in a hybrid workplace, and 54

(33.8%) were working virtually (see Appendix A Table 4). Most were in their organisations' entry-level positions (44.4%; *n* = 71). The remaining participants were associates, middle-management, and top-management positions. The breakdown of these positions is listed in Appendix A, Table 5. Lastly, most had worked with their supervisor for six months or less (33.1%; *n* = 53). The breakdown of the longevity of how long the employees have worked with their supervisor is listed in Appendix A Table 6.

3.3 Instruments

The survey to collect the study data comprised four scales, each measuring one of the variables of interest and items to assess the demographic variables presented in Figure 1 for sample description purposes.

Scales were chosen based on two criteria: They needed to have been found psychometrically sound in prior studies and to be short measures to avoid response fatigue. Participants responded to all scale items on a 5-point Likert scale ranging from 1 = "Strongly disagree" to 5 = "Strongly agree". An exception was the employee engagement scale, to which participants provided answers on a 7-point Likert scale ranging from 0 = "Never" to 6 = "Every day". The survey was preceded by a cover letter (see Appendix C Graphic 3). In formulating the letter, the researcher used simple and unambiguous English words suitable for most adult literacy levels.

The following sections present an overview of the four scales that measure the study variables.

3.3.1 Perceived Authentic Leadership

The Authentic Leadership Inventory (ALI) was used to measure how authentic participants perceived their leader. It is a 16-item scale developed by Neider and Schriesheim (2011). It measures the four dimensions of authentic leadership proposed by Walumbwa et al. (2008) through four items each. These are self-awareness, balanced processing, internalised moral perspective, and relational transparency. In Neider and Schriesheim's studies, Cronbach's alpha of the Self-awareness subscale ranged from α=.70 - .79, the Relational transparency dimension from α = .77 - .81, the Internalised moral perspectives subscale from α =.74 - .85 and of the Balanced processing subscale from α = .82 -.85. Each subscale had thus shown adequate reliabilities, as all Cronbach's alphas were above the threshold of .70 recommended by Pallant, 2016.

3.3.2 Trust in Leaders

Yang and Mossholder's (2010) 22-item Trust in Leaders scale was used to measure trust in the leader, as it measures both affective and cognitive trust in the manager and supervisor. This study only used the items related to the supervisor, as the participants had to answer based on their direct manager. Therefore, based on this, only 11 items remained for this study. Six items relate to cognitive-based trust, and the other five relate to affective-based trust. In Yang and Mossholder's research, the cognitive-based trust in the supervisor subscale had a Cronbach's alpha of α= .95 and the affective-based trust in the supervisor had a Cronbach's alpha of α = .94. Thus, conveying acceptable reliability (Field, 2018).

3.3.3 Work engagement

The UWES-9 assesses work engagement along the three dimensions: vigour, absorption, and dedication of work engagement (Schaufeli et al., 2006). Each dimension is measured through three items. The scale items are presented in Appendix B, Table 3). Schaufeli et al. (2019) presented data which shows that the UWES-9 yielded reliable and valid work engagement scores and thus performed similarly well to the original, longer version of the UWES also developed by (Schaufeli et al., 2002). Schaufeli et al. (2019) found reliability ranges for the vigour subscale of α=.75-.91, for the dedication subscale of α=.83-.93 and the absorption dimension of α=.70-.84. Lastly, the Cronbach's alpha for the total scale varied between .85 and .92 when studied across ten countries. These all convey acceptable reliability.

3.3.4 Psychological Sense of Community (PSOC)

Quite a few scales have been identified that measure PSOC. However, this study opted to use the Brief Sense of Community Scale (BSCS) (Peterson et al., 2006), which consists of eight items measuring four aspects of the sense of community (fulfilment, membership, influence, and emotional connection) (see Appendix B Table 4). This scale was chosen because it was short, aimed to reduce response fatigue and could measure multiple dimensions. The BSCS is based on the four dimensions defined in McMillan and Chavis' (1986) sense of community model. The Cronbach's alpha for the overall BSCS was α = .92 in Peterson et al. (2008) research. Petersen et al. assessed participants' sense of community in their neighbourhood. In this study, the term "neighbourhood" was replaced by "organisation" in each item.

3.4 Procedure

Before commencing with data collection, the study proposal had been presented and approved by a committee of staff members in the Organisational Psychology Section at the University of Cape Town and the University of Cape Town's Commerce Faculty Ethics in Research Committee. The approval letter is provided in Appendix C Graphic 2.

Data was collected using an online survey compiled on the survey software Qualtrics. I posted an invitation to participate and the web link to the survey on my social media accounts, i.e., Facebook, WhatsApp, LinkedIn, and Instagram. I requested friends, family, and professional and academic networks to share the same information. Once an individual clicked on the web link, they were directed to a website which presented the study cover letter (see Appendix C Graphic 3). This letter outlined the purpose of the study and the ethical considerations, which they either consented to, which took them to the questions or did not consent to, which thanked them for their interest.

It took participants, on average, nine minutes to complete the survey. Interested participants who indicated their age as below 18 or did not work virtually or in hybrid form were immediately taken to the end of the survey and thanked for their interest as they did not meet participation requirements.

Data collection lasted approximately two months between July and August of 2022. I posted the survey reminders on all my social media weekly until it was time to close the survey because of the time constraints of the dissertation.

3.5 Ethical Considerations

I needed to maintain two principles as I considered upholding the high ethical standards of the dissertation throughout the whole process. This included protecting the rights of the participants as well as maintaining both scientific and academic integrity (Bhandari, 2021). For ethical reasons, it is imperative that participants are not forced into participating but voluntarily decide to. Therefore, for this reason, it was highlighted that they were not under an obligation to do so. Additionally, if there is forced participation, it is unlikely that the answers will be truthful (Connelly, 2014).

Furthermore, participants needed to give their informed consent. This ensures they know the purpose, benefits, and any risks (if applicable) before they agree to click "I consent, begin the study". Therefore, I had to ensure that the cover page had clearly and concisely

informed them, so they knew everything beforehand. Additionally, no rewards or incentives were offered for encouragement, which could have undue influence on informed consent (Sieber & Tolich, 2012). Moreover, another way to make the participants answer comfortably was to maintain their anonymity by not asking for any personal information, such as cell phone numbers, that could be identifiable to them. Although there was anonymity, I had a duty to maintain confidentiality of the data I collected. This data was accessible solely by me as responses were recorded in the cloud on my Qualtrics account, which was only accessible with my login details. Once downloaded, the spreadsheet, including the data, was kept on my password-protected laptop. I kept the data in a password-protected folder that was only accessible to me. This ensured that the dignity of all participants was prioritised as all their responses were kept confidential (Connelly, 2014). All these activities ensured that the principles were upheld and maintained that it was my duty to ensure that my dissertation was ethically conducted.

3.6 Data analysis

Data was analysed using the IBM Statistical Package for Social Sciences (SPSS) version 28. Descriptive statistics such as means, and standard deviations were used to describe the sample and response patterns in the study variables. Reliability and validity analyses were conducted for each scale. Inferential statistics, specifically bivariate correlation, and multiple regression (including mediation and moderation) analyses were used to test the hypotheses.

This chapter outlined the methods of how this study was conducted. Therefore, the next section will present the validity and reliability analyses of the identified instruments. Furthermore, the results of the hypotheses testing will be presented.

Chapter 4

4. Results

This chapter provides the results related to the scales' validity and reliability first. This is followed by an overview of the score means and distributions for all scales. The inferential results relating to the study hypotheses are then outlined, and conclusions are drawn about whether they support the study hypotheses.

4.1 Validity

Before any hypothesis testing, it is essential to determine whether the instruments were valid. Therefore, an explanatory factor analysis (EFA) was conducted to analyse the validity. This analysis reveals the latent variables that cause the manifest variables to covary. The EFA was chosen instead of the Principal Component Analysis (PCA) because the PCA does not distinguish between the shared and unique variance, which could have inflated the variance accounted for by the components. Moreover, principal axis factoring (PAF) was used as the extraction method, providing accurate results concerning factor analysis (Costello & Osborne, 2005).

The EFA was conducted with an oblique rotation to make it easier to allocate items to factors. Oblique rotation was used because the underlying factors were expected to be related. Direct oblimin rotation was chosen as the oblique rotation method because it is the most common type of oblique rotation (Pallant, 2016). Field (2018) stated that it is scarce that the underlying dimensions would be completely unrelated. Moreover, Kaiser's criterion was used to determine which factors to retain (eigenvalues > 1), the pattern matrix used to identify which items loaded on which factors (significant loading if loading >= .30), cross-loading if loadings of >=.30 on more than one factor and difference in absolute factor loading smaller than .2 (Kaiser, 1960; Kline, 2014).

In cases where there were cross-loading items or items that did not load significantly on either factor, an EFA was rerun without these items. Before running each factor analysis, the suitability of data was checked via the Kaiser-Meyer Olkin (KMO), which measures whether the sample for the measures was adequate. Furthermore, Bartlett's tests of Sphericity tests whether the items had high correlations with each other to be deemed adequate. A KMO must be greater than .5 for the data to be adequate, and Bartlett's test score must be significant (Leech et al., 2005).

4.1.1 Authentic Leadership

The 16-item authentic leadership scale performed differently than expected in the study sample. The initial EFA revealed three cross-loading items. Three further EFAs were run, each time deleting non-loading items and/or cross-loading items until a clear factor solution was found in the fifth round of EFA, with less than half (six of the initial 16) remaining items. Table 1 shows an overview of the EFA results. A table presenting the eigenvalues associated variances is provided in Appendix D, Table 1.

Table 1

Overview of Authentic Leadership scale's Explanatory Factor Analysis

	EFA 1	**EFA 2**	**EFA 3**	**EFA 4**	**EFA 5**
Number of items in scale	16	13	10	8	6
KMO value	.80	.79	.75	.79	.79
Bartlett's test result	(χ2 (120) = 572.18, p < .001)	(χ2 (78) = 401.52, p < .001)	(χ2 (45) = 286.18, p < .001)	(χ2 (28) = 222.75, p < .001)	χ2 (15) = 164.20, p < .001)
Number of factors with eigenvalue > 1	Five	Three	Three	Two	One
Number of cross-loading items	Item 4, 11, and 15	Item 12	None	None	None
Number of items not loading on any factor	None	Item 1 and 16	Item 2	None	None
Removal due to not enough items on one factor	None	None	Item 5	Item 7, and 13	None

The factor representing the data in the final EFA conveys that one factor had an eigenvalue larger than one and explained 43% of the variance. The six authentic leadership items remaining on the scale all loaded significantly on this factor.

All these items spoke to the perception of the leader's impact on others in the organisation and their surroundings. Therefore, the authentic leadership variable was calculated as each participant's average score of the item responses to these six items and sought to precisely indicate the leader's impact on others (See Table 2 below).

Table 2

Original item number, item wording and associated loadings of the six remaining authentic leadership items in the final authentic leadership scale (derived from pattern matrix, PAF with direct oblimin rotation, 7 iterations required)

14.	My supervisor objectively analyses relevant data before making a decision.	.733
9.	My supervisor carefully listens to alternative perspectives before reaching a conclusion.	.616
10.	My supervisor expresses their ideas and thoughts clearly to others	.565
2.	My supervisor clearly states what they mean.	.501
8.	My supervisor is clearly aware of the impact they have on others.	.488
3.	My supervisor shows consistency between their beliefs and actions.	.455

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser
Normalization.[a]
a. Rotation converged in 7 iterations.

4.1.2 Trust In Leader

The 11-item trust-in-leader scale had been reduced to nine items. The initial EFA revealed that two items were removed because they were too small to be a scale. One more EFA was run until a clear factor solution was found in the second EFA round, with nine of the 11 items remaining. Table 3 shows an overview of the EFA results. A table presenting the eigenvalues associated variances is provided in Appendix E, table 1.

Table 3

Overview of Trust in Leader scale's Explanatory Factor Analysis

	EFA 1	**EFA 2**
Number of items in scale	11	9
KMO value	.73	.74
Bartlett's test result	(χ2 (55) = 540.92, p < .001)	(χ2 (36) = 374.31, p < .001)
Number of factors with eigenvalue > 1	Three	Two
Number of cross-loading items	None	None
Number of items not loading on any factor	None	None
Removal due to not enough items on one factor	Item 9 and 10	None

The factor representing the data in the final EFA two factors had an eigenvalue larger than one and explained 52.74% of the variance. The nine trust-in-leader items remaining on the scale all loaded significantly on two factors.

Therefore, factor one was represented by Cognitive-based trust, which consisted of items 6,7,8 and 11. Furthermore, factor two was represented by Affective-based trust, which consisted of items 1, 2, and 3,4,5 on the pattern matrix. Therefore, the two sub-scales were used to analyse the hypotheses (See Table 4 below).

Table 4

Original item number, item wording and associated loadings of the nine-remaining trust in leader scale items in the final trust in leader scale (derived from pattern matrix, PAF with direct oblimin rotation, 11 iterations required)

	Factor	
	1	2
7. Given this person's track record, I see no reason to doubt their competence and preparation for this job.	.955	
6. This person approaches their job with professionalism and dedication.	.567	
11. If people knew more about this individual and their background, they would be more concerned and monitor their performance more closely.	.432	
8. I can rely on this person not to make my job more difficult by careless work.	.431	

5.We have both made considerable emotional investments in our working relationship.	.638
2. I can talk freely to this individual about difficulties I am having at work and know that they are listening.	.600
3. If I shared my problems with this person, I know they would respond constructively and caringly	.592
4. We would both feel a sense of loss if one of us was transferred and we could no longer work together	.554
1. We have a sharing relationship. We can both freely share our ideas, feelings, and hopes	.466

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.[a]
a. Rotation converged in 11 iterations.

4.1.3 Work Engagement

The 9-item work engagement scale had no cross-loadings. Therefore, no items were removed from the scale. However, only two factors were retained. The EFA revealed that Work Engagement Absorption and Dedication were loaded under one factor. The Work Engagement Vigour loaded on the second factor. Table 5 shows an overview of the EFA results. A table presenting the eigenvalues associated variances is provided in Appendix F, Table 1.

Table 5

Overview of Work Engagement scale's Explanatory Factor Analysis

	EFA 1
Number of items in scale	9
KMO value	.73
Bartlett's test result	(χ2 (36) = 229.95, p < .001)
Number of factors with eigenvalue > 1	Two
Number of cross-loading items	None
Number of items not loading on any factor	None
Removal due to not enough items on one factor	None

The factor representing the data in the final EFA two factors had an eigenvalue larger than one and explained 46.25% of the variance.

Therefore, factor 1 consisted of items 4,5,6,7,8,9 and a combination of the absorption and dedication subscale. Thus, it was named Work Engagement_ Absorption|Dedication. Furthermore, factor 2 represented the Work Engagement _ Vigour subscale and consisted of items 1,2 and 3 (See Table 6 below).

Table 6

Original item number, item wording and associated loadings of the nine work engagement scale items (derived from pattern matrix, PAF with direct oblimin rotation, 5 iterations required)

	Factor	
	1	2
6. I am proud of the work that I do.	.672	
5. My job inspires me.	.622	
8. I am immersed in my work.	.499	

7. I feel happy when I am working intensely.	.483	
9. I get carried away when I am working.	.432	
4. I am enthusiastic about my job.	.343	
2. At my job, I feel strong and vigorous.		.748
1. At my work, I feel myself bursting with energy.		.592
3. When I get up in the morning, I feel like starting to work.		.394

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.[a]
a. Rotation converged in 5 iterations.

4.1.4 Psychological Sense of Community

The 8-item psychological sense of community scale had been reduced to six items. The initial EFA revealed that two items were removed because they were too small to be a scale. One more EFA was run until a clear factor solution was found in the second round of EFA, with six of the eight remaining. Table 7 shows an overview of the EFA results. A table presenting the eigenvalues associated variances is provided in Appendix G, table 1.

Table 7

Overview of Psychological Sense of Community's Explanatory Factor Analysis

	EFA 1	**EFA 2**
Number of items in scale	8	6
KMO value	.82	.82
Bartlett's test result	(χ2 (28) = 512.13, p < .001)	(χ2 (15) = 376.98, p < .001)
Number of factors with eigenvalue > 1	Two	One
Number of cross-loading items	None	None

Number of items not loading on any factor	None	None
Removal due to not enough items on one factor	Item 1 and 2	None

The factor representing the data in the final EFA one factor had an eigenvalue larger than one and explained 56.40% of the variance. The six psychological sense of community items remaining on the scale all loaded significantly on one factor.

Therefore, the factor matrix indicated that items 3,4,5,6,7 and 8 loaded on one factor. This scale was used in the analyses of this study. (See Table 8 below).

Table 8

Original item number, item wording and associated loadings of the six remaining psychological sense of community scale items (derived from pattern matrix, PAF with direct oblimin rotation, 5 iterations required)

	Factor
	1
7. I feel connected to this team.	.792
4. I belong in this team.	.763
8. I have a good bond with others in this team.	.715
3. I feel like a member of this team.	.707
6. People in this team are good at influencing each other.	.627
5. I have a say about what goes on in my team.	.525

Extraction Method: Principal Axis Factoring.
a. 1 factor extracted. 5 iterations required.

4.2 Reliability

A reliability analysis was conducted to assess the internal consistency of the items of each scale. Therefore, Cronbach's Alpha coefficient was computed for each scale. Pallant

(2016) stated that values above .7 would be acceptable; however, values above .8 would be preferable. Furthermore, Taber (2018) stated that values above .65 would be considered satisfactory. Lastly, Taber (2018) stated that values between .6 and .65 were considered moderate.

4.2.1 Perceived Authentic Leadership_Impact

A reliability analysis was conducted on the remaining six items to assess the internal consistency of the items. This scale was found to have adequate reliability (α = .73) (See Table 9 below) for the reliability statistics.

Table 9

Reliability Statistics of PAL_Impact

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.729	.731	6

4.2.2 Cognitive Trust in Leader (CTIL)

A reliability analysis was conducted on the remaining four items to assess the internal consistency of the items. This scale was found to have satisfactory reliability (α = .66) (See Table 10 below) for the reliability statistics.

Table 10

Reliability Statistics of CTIL

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.656	.686	4

4.2.3 Affective Trust in Leader (ATIL)

A reliability analysis was conducted on the remaining five items to assess the internal consistency of the items. This scale was found to have adequate reliability (α = .74) (See Table 11 below) for the reliability statistics.

Table 11

Reliability Statistics of ATIL

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.740	.747	5

4.2.4 Work Engagement Absorption | Dedication (WE_AD)

A reliability analysis was conducted on six items to assess the internal consistency of the items. This scale was found to have a satisfactory reliability (α = .69) (See Table 12 below) for the reliability statistics.

Table 12

Reliability Statistics of WE_AD

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.689	.690	6

4.2.5 Work Engagement _Vigour (WE_V)

A reliability analysis was conducted on three items to assess the internal consistency of the items. This scale was found to have a moderate reliability (α = .60) (See Table 13 below) for the reliability statistics.

Table 13

Reliability Statistics of WE_V

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.598	.601	3

4.2.6 Psychological Sense of Community

A reliability analysis was conducted on the remaining six items to assess the internal consistency of the items. This scale was found to have a preferable reliability (α = .84) (See Table 14 below) for the reliability statistics.

Table 14

Reliability Statistics of PSOC

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.840	.843	6

4.3 Descriptive Statistics

The indicators of central tendency and dispersion for all scales are shown in Table 15. The scale midpoint of all scales was 4, except for the work engagement scales, where the midpoint was 4. The sample mean for Authentic Leadership was (M =3.13, SD = .77), which indicated that, on average, participants neither agreed nor disagreed with the items which described a neutrality of employees that perceived their leaders as authentic. The sample mean for Cognitive-based trust was (M =3.42, SD = .84), which indicated that, on average, participants neither agreed nor disagreed with the items which described that employees were

neutral about the cognitive trust in their leader. The sample mean for affective-based trust was (M =3.04, SD = .88), which indicated that, on average, participants neither agreed nor disagreed with the items which described that employees were neutral about the affective trust in their leader.

The sample mean for Work Engagement Absorption | Dedication was (M = 4.56, SD = 1.26), which indicated that, on average, participants answered sometimes, which indicated that the employees were engaged a few times a month. The sample mean for Work Engagement Vigour was (M = 5.03, SD = 1.37), which indicated that, on average, participants answered often, which indicated that the employees were engaged once a week. The sample mean for Psychological Sense of Community was (M = 2.97, SD = .92), which indicated that, on average, participants somewhat disagreed with the items, which indicated that employees did not feel that there was a psychological sense of community within their teams. See Table 15 below for the Descriptive Statistics of all the measurements.

Table 15

Descriptive Statistics for the five scales PAL_Impact, CTIL, ATL, WE_AD, WE_V, PSOC (N =160)

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
PAL_Impact	160	1.17	4.83	3.1333	.77021	-.211	.192	-.823	.381
CTIL	160	1.50	5.00	3.4234	.83506	-.735	.192	-.500	.381
ATIL	160	1.20	5.00	3.0387	.88039	-.112	.192	-.835	.381
WE_AD	160	2.00	7.00	4.5594	1.25953	-.305	.192	-.757	.381
WE_V	160	1.67	7.00	5.0250	1.36828	-.800	.192	.001	.381
PSOC	160	1.00	4.33	2.9729	.91667	-.238	.192	-1.139	.381
Valid N (listwise)	160								

PAL_Impact ~ Perceived Authentic Leadership Impact, Cognitive Trust in Leader, Affective Trust in Leader, Work Engagement_Absorption|Dedication, Work Engagement_Vigour, Psychological Sense of Community

4.4 Results related to the Hypotheses

4.4.1 Hypothesis 1: Authentic leadership and Trust

A bivariate correlation is a statistical procedure that measures the strength of a relationship between two variables. It was used to compute Pearson's correlation coefficient 'r', which ranges between -1 to +1. A negative r value indicates a negative relationship between

two variables (i.e., as one variable increases, the other decreases). Furthermore, a positive r value is indicative of a positive relationship between two variables (i.e., as one variable increases, the other one increases). However, it is important to note that a correlation of zero is indicative of no relationship existing between the two variables at all. (Field, 2018). This correlation was relevant for testing this hypothesis because it allowed for a simple analysis of the relationship between authentic leadership and trust.

To test if greater authentic leadership was related to greater trust (affective and cognitive), the bivariate correlations between authentic leadership and cognitive trust and between authentic leadership and affective trust were considered. As indicated in the intercorrelation matrix shown in Table 12, there was a moderate positive relationship between authentic leadership and cognitive trust in the leader ($r = .51$, $p < .001$, $n = 160$) and between authentic leadership and affective trust in the leader ($r = .43$, $p < .001$, $n = 160$). The analysis of Pearson's coefficient conveyed that the relationships were positive and significant effect size according to Cohen's D conventions (Cohen, 2013).

The data thus supported the first hypothesis: Virtual and hybrid working employees who perceive their leader as authentic (in their impact on others) tend to have greater cognitive and affective trust in their leader.

Table 16

Intercorrelation Matrix Between All of the Scales in the Study

	1	2	3	4	5	6
1.PAL_Impact	-					
2.CTIL	.509**	-				
3.ATIL	.431**	.383**	-			
4.WE_AD	-.147	-.146	-.192*	-		
5.WE_V	-.019	-.030	.076	.325**	-	
6.PSOC	.453**	.434**	.456**	-.187*	.018	-

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

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

4.4.2 Hypothesis 2: Trust and Work Engagement

The bivariate correlations between each of the trust variables (cognitive-based and affective-based) and both types of work engagement (absorption/dedication and Vigour) indicated that the vigour aspect of work engagement was not related to cognitive- or affective-based trust (see Table 12). Low, positive correlations emerged between the absorption/dedication aspect of work engagement and trust, indicating lower dedication/absorption when the leader was trusted more. However, this relationship was only significant for dedication/absorption and affective-based trust in the leader ($r = -.19$, $p < .05$, $N = 160$).

A multiple regression analysis with cognitive and affective based trust as independent variables and the absorption/dedication aspect of work engagement as the dependent variable was significant, too ($F(2,159) = 3.536$, $p = .03$), with an R^2 of 4.3%. While significant, it indicates that the predictor variables share less than 5% of the variance with the dependent variable. Neither cognitive-based trust ($\beta = -.13$, $t_{159} = -1.009$, $p = .315$) nor significant-based trust ($\beta = -.23$, $t_{159} = -1.886$, $p = .061$) explained a significant amount of unique variance in work engagement[1].

Therefore, both CTIL and ATIL explained a significant amount of unique variance in work engagement. It was determined that both CTIL and ATIL were significant predictors of WE_A|D. However, the reverse was expected: Greater trust was related to lower absorption/dedication. Therefore, the data does not support Hypothesis 2a: Cognitive-based and affective-based trust in the leader positively relates to work engagement_ absorption| Dedication among virtual and hybrid working employees.

[1] Before conducting the multiple regression analysis, it was established that the data met the required assumptions. Assumptions of linearity, no multicollinearity, independent residuals, homoscedasticity, and normality of the prediction error distribution were fulfilled. There were no influential cases biasing the model. The respective results are presented in Appendix H.

Table 17

Multiple Regression Summary of WE\AD as the Dependent Variable and CTIL and ATIL as the Predictors

Model		Unstandardized Coefficients		Standardized Coefficients			95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	T	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	5.693	0.461		12.359	0.000	4.783	6.602		
	CTIL	-0.129	0.128	-0.085	-1.009	0.315	-0.380	0.123	0.853	1.172
	ATIL	-0.228	0.121	-0.159	-1.886	0.061	-0.467	0.011	0.853	1.172

a. Dependent Variable: WE_AD

To test Hypothesis 2b, a multiple regression was requested with CTIL and ATIL as the independent variables and WE_V as the dependent variable. However, the data had to first be tested to see if the assumptions for multiple regression would be met. Although ATIL had a linear relationship with WE_V, CTIL did not (see Appendix I Figure 1 & 2). Furthermore, no multicollinearity occurred as VIF scores were well below 10, and tolerance scores were above .2 (see Appendix I Table 1) (Field,2018). Furthermore, the residuals were homoscedastic (see Appendix I Figure 3). However, they were not independent nor normally distributed (See Appendix I Table 2, Figure 4&5 respectively). Lastly, no influential cases were biasing the model, as Cook's values were below one (see Appendix I Table 3). However, since all assumptions were unmet, a multiple regression analysis could not be run.

Therefore, the data does not support the second hypothesis. While cognitive-based trust and affective-based trust in the leader were not related to the vigour aspect of work engagement, the relationship between the two types of trust and the absorption/dedication aspect of work engagement was the reverse to what was expected: Greater trust was related to lower absorption| Dedication. The effect size of this relationship was small, however.

4.4.3 Hypothesis 3: Trust as a Mediator between Authentic Leadership and Work Engagement

As the mediators (affective-based trust and cognitive-based trust) were not related to the vigour aspect of work engagement, i.e., the outcome variable (see results related to Hypothesis 2), it was determined that trust could not be a mediator in the authentic leadership

– work engagement vigour relationship. However, trust was related to WE_A|D (though a very small correlation). In theory, trust could be a mediator between AL and WE_A|D.

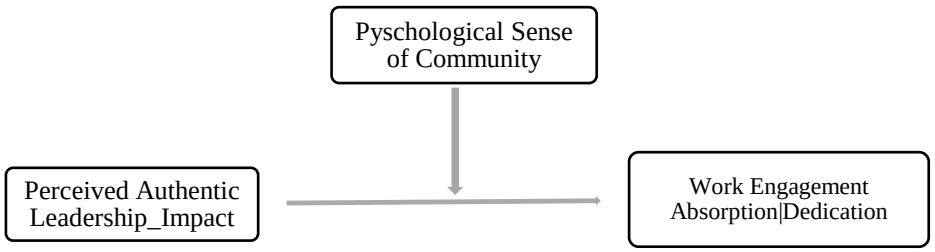
Equally, the bivariate correlations between authentic leadership and both work-engagement relationships were not significant, as shown in the intercorrelation matrix in Table 12. That is, neither perceived authentic leadership nor trust predicted the vigour aspect of work engagement.

4.4.4 Hypothesis 4: PSOC as moderator in the Authentic Leadership – Work Engagement relationship

To test Hypothesis 4, a moderation analysis was run using model 1 in the PROCESS-macro extension on SPSS developed by Hayes (2012). In the first analysis, the moderating effect of PSOC on the relationship between Perceived Authentic Leadership and Work Engagement – Absorption/Dedication was assessed (see Figure 2 for a schematic overview of this model). A second analysis was conducted to assess if PSOC moderated the relationship between Perceived Authentic Leadership and Work Engagement _Vigour (see Figure 4 for a schematic overview).

Figure 2

Moderation Model of PSOC on the relationship between PAL_Impact and WE_AD



The overall regression model was significant, as shown in Table 14 below (R = .282, $F_{(3,156)}$ = 4.507, p < .005; R^2 = .0798). Thus, 7.98% of the variance in WE_A|D was explained by PAL_Impact, PSOC and the interaction between the two variables. The interaction effect of PSOC on the relationship between PAL_Impact and WE_A|D explained a significant amount of unique variance in the dedication/absorption aspect of engagement (β = -.38, t = -2.60, p < .005), which indicated that moderation was present.

Table 18

Results of Moderation analysis with Work Engagement_Absorption|Dedication as criterion, Perceived Authentic Leadership_Impact, as predictor and psychological sense of community as moderator variable

R	R-sq	MSE	F	df1	df2	P
,2824	,0798	1,4880	4,5069	3,0000	156,0000	,0046

Model

	Coeff	Se	T	p	LLCI	ULCI
Constant	4,6815	,1072	43,6564	,0000	4,4697	4,8933
PAL_Impact	-,1971	,1433	-1,3753	,1710	-,4801	,0860
PSOC	-,2005	,1184	-1,6933	,0924	-,4344	,0334
Int_1	-,3843	,1476	,0101	,0101	-,6758	-,0928

A simple slope analysis was conducted to assess the nature of the moderation. The results are presented in Figure 3. At medium (light blue line in Figure 3) and high (purple line in Figure 3) levels of PSOC, there is a negative relationship between PAL_Impact and WE_A|D. This replicates the results found in relation to Hypothesis 2. At low levels of PSOC (dark blue), the relationship between PAL_Impact and WE_A|D was positive. However, this was what had been expected because of the relationship that was found between authentic leadership and work engagement in Hypothesis 2.

Figure 3

Interaction Graph of Work Engagement_Absorption|Dedication by Perceived Authentic Leadership_Impact by Psychological Sense of Community

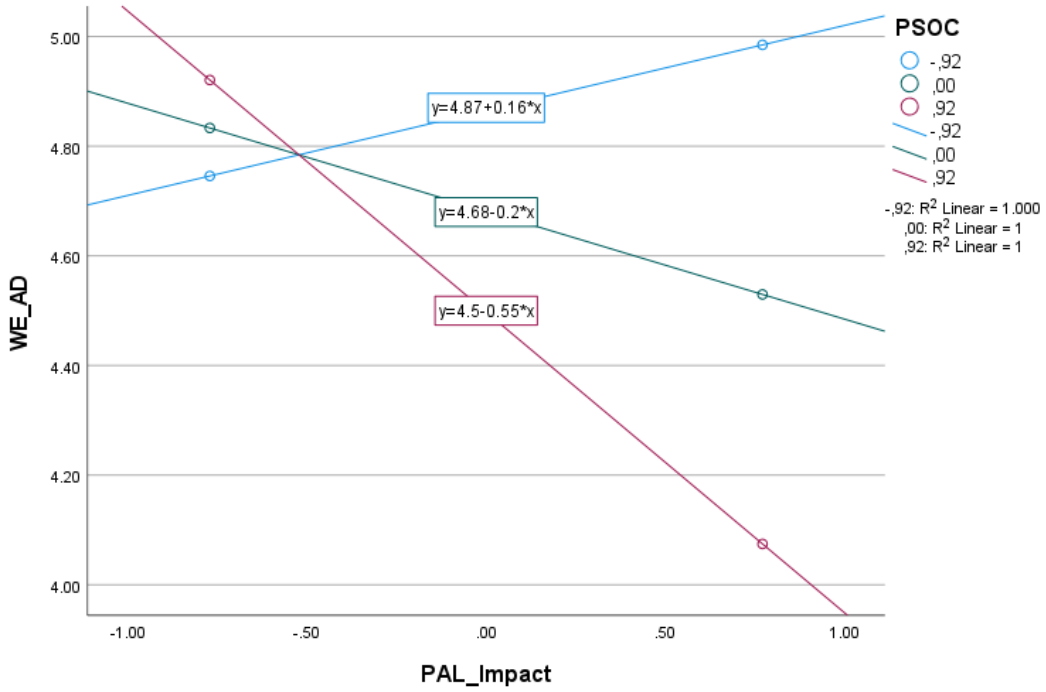
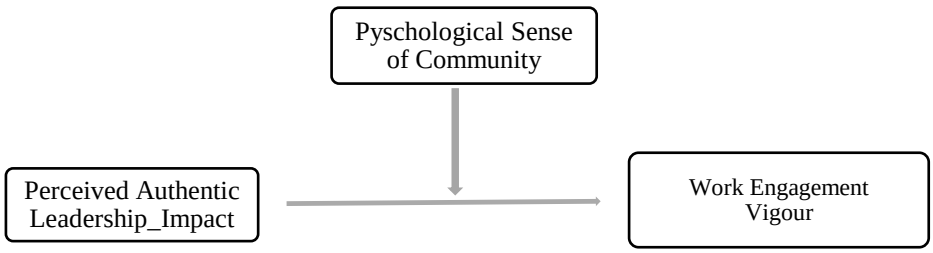


Figure 4

Moderation Model of Psychological Sense of Community on the relationship between Perceived Authentic Leadership_Impact and Work Engagement_Vigour



When running the moderation analysis with Work Engagement_ Vigour as the outcome variable instead, the overall regression model was not significant (R = .040, $F_{(3,156)}$ = .082, p = .970; R^2 = .0016), neither was the interaction between PSOC and perceived authentic leadership_Impact (β = -.04, t = -.24, p = 811), which indicated that PSOC did not moderate the authentic leadership – work engagement-vigour relationship. This is also visible in the slopes having similar gradients in the simple slope analysis (Figure 3).

Table 19

Results of Moderation analysis with Work Engagement_Vigour as criterion, Perceived Authentic Leadership_Impact, as predictor and psychological sense of community as moderator variable

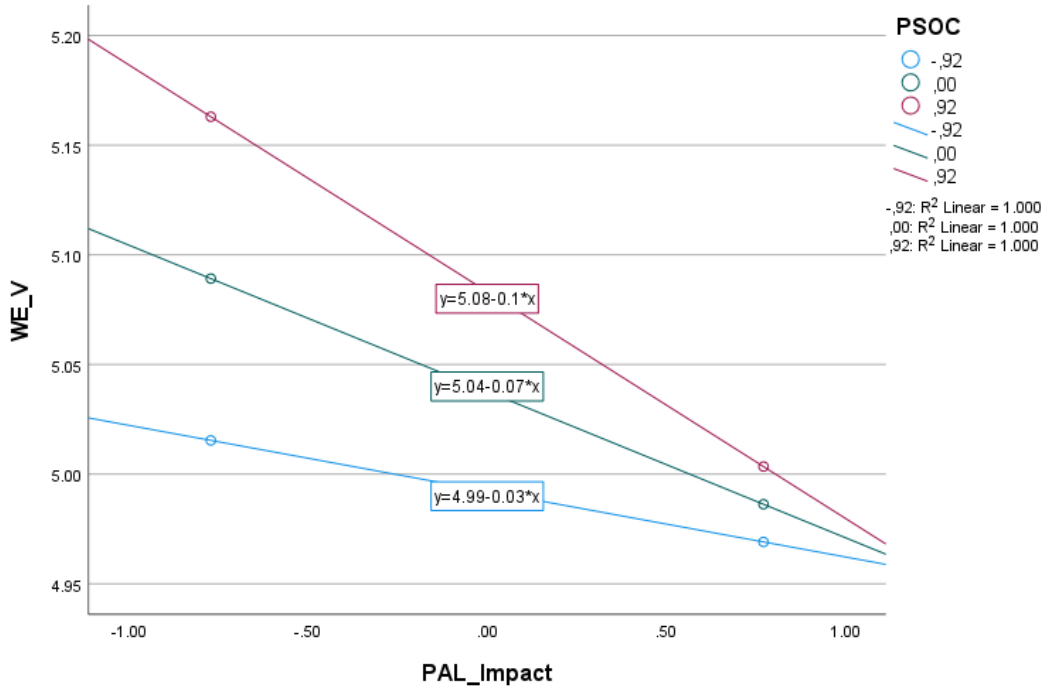
R	R-sq	MSE	F	df1	df2	p
,0397	,0016	1,9052	,0820	3,0000	156,0000	,9697

Model

	Coeff	Se	T	P	LLCI	ULCI
Constant	5,0377	,1213	41,5169	,0000	4,7981	5,2774
PAL_Impact	-,0668	,1621	-,4120	,6809	-,3781	,2535
PSOC	-,0496	,1340	,3702	,7117	-,2151	,3142
Int_1	-,0401	,1670	-,2401	,8105	-,3699	,2897

Figure 5

Interaction Graph of Work Engagement_Vigour by Perceived Authentic Leadership_Impact by Psychological Sense of Community



Therefore, based on the aforementioned analysis, it was determined that the data did not support Hypothesis 4. Hypothesis 4a conveyed that a psychological sense of community did moderate the relationship between PAL_Impact and WE_A|D. However, the relationship was positive, which was what had been expected as the relationship between authentic leadership and work engagement in Hypothesis 2. Furthermore, it was deduced that Hypothesis 4b was not supported as a psychological sense of community did not moderate the relationship between perceived authentic leadership_Impact and work engagement_ vigour among virtual and hybrid working employees.

Chapter 5

5. Discussion

The study aimed to assess the role of authentic leadership in work engagement among employees who work in virtual and hybrid workplaces through the analysis of two research questions. Firstly, this study aimed to answer the extent of trust mediating the relationship between authentic leadership and engagement amongst virtual and hybrid employees. Secondly, it further explored whether a psychological sense of community strengthens the relationship between authentic leadership and trust in the virtual and hybrid workplace. Moreover, a literature review was conducted to understand this topic further, which assessed the variables individually and in relation to each other.

This chapter outlines a comprehensive discussion of the results computed in the previous chapter in relation to existing relevant literature relevant to each of the hypotheses. Thereafter, an explanation is provided as to why the results did or did not support the hypotheses. Furthermore, contributions, limitations, and recommendations for future research related to this study are provided in this chapter.

5.1 Discussion of Results

5.1.1 Discussion of the First Hypothesis

The first hypothesis was that individuals working with leaders whom they perceive as authentic have greater trust in their leader. This was based on findings supporting this assumption among employees working together in physical offices and was also assumed to hold in virtual workspaces. The empirical results supported this assumption: Employees who perceive their leaders as authentic also tend to have greater affective-based and cognitive-based trust in the leader. This is an interesting finding, as employees who perceive their leader as having an impact as an authentic leader convey how the leader's authenticity in how they show up in their role can impact their subordinates. This was found to have brought about cognitive trust, ultimately based on how employees trust their leader's competence, which is how the leader is trusted to do their job, integrity, and reliability (Farid et al., 2020) through a virtual or hybrid or hybrid team where the relationships are mostly task oriented. Jenkins (2020) asserts that when leaders show competence, it deposits into the subordinates' cognitive trust bank. Therefore, due to the lack of opportunities to build social relationships, it is essential to cultivate cognitive-based trust because it can create authentic relationships between a leader

and their subordinate. Cognitive-based trust can be built more quickly because of observing how the leader acts in their capacity. Therefore, assessing the leadership style and the impact it has on others is important because this is something that leaders need to be cognisant of in their role and how they lead their teams because the perceptions of employees reveal that a relationship exists.

The PAL_Impact is a construct that has been derived from the Authentic Leadership scale; there are no previous findings that have examined this variable. However, it still can speak to the authentic leadership construct. This suggests that there needs to be further exploration, as it might not be easy to identify, e.g., a leader's self-awareness in virtual teams. Assessing how authentic a leader is based on this definition of authentic leadership might not be possible for employees working virtually. Therefore, this result may suggest that researchers may need to explore what authentic leadership in the virtual space looks like (how it should be defined), whether authentic leadership is relevant or applicable in virtual working, or possibly if leaders in virtual spaces need to be trained to convey self-awareness, balanced processing etc.). These results are in line with Farid et al. (2020) results about the relationship that exists between authentic leadership and cognitive and affect-based trust.

5.1.2 Discussion of the Second Hypothesis

The study's second hypothesis was that greater trust in the leader is related to greater work engagement. The three elements of work engagement conceptually assumed to make up the engagement construct (dedication, absorption, vigour) did not emerge in the sample. Instead, participants' degrees of self-described absorption and dedication were so closely related that they emerged as one, not two separate dimensions. Contrary to expectation, neither vigour nor dedication were related to the vigour element of work engagement. This indicates that virtual or hybrid working employees do not need to trust their leader to show vigour in their work. Ariyabuddhiphongs and Boonsanong (2019) conducted research in the banking sector in a face-to-face work environment. Yang and Mossholder (2010) conducted research in the healthcare sector in a face-to-face environment. These studies had reported opposite results, stating that trust in a leader is related to work engagement. This could be due to more distance between the leader and individuals working with the leader in the virtual space. It is thus more about the ability to self-motivate. Even if one does not trust their leader – they are more removed in the virtual space – an employee might still be motivated to work hard because/or they enjoy the nature of their work or because that is their personality. This might mean that

their trust in their leader does not relate to their state of mind regarding the vigour with which they approach their work. This could be due to the limited personal interactions and may also speak to how employees' vigour might be more of a function of intrinsic motivation in virtual and hybrid workspaces. This means that a lack of trust in a leader might not affect individuals as much in virtual space, which may have less detrimental effects on the vigour aspect of engagement than in physical workspaces. This may indicate that trust in a leader might be a less important variable in the virtual workspace, as the virtual nature could serve as a buffer against the detrimental effects of low trust or mistrust. These results are interesting, as previous literature emphasised the importance of trust in the leader as a critical component in the virtual workplace, which can lead to positive organisational outcomes and goals (Jarvenpaa et al., 1998; Zeuge, 2020). The results of this study might suggest that rather than lead to positive organisational outcomes, mistrust in the leader might drive adverse organisational outcomes in physical workspaces but not in virtual workspaces.

The results looked different, however, when considering the relationship between trust and the absorption-dedication aspect of employee engagement. This study suggested that greater affective-based trust in the leader was related to lower absorption-dedication, though this effect was small. It is likely that where there is affective-based trust in leaders in virtual space, leaders would interact with followers more frequently, and a greater portion of their conversations would be about non-task-related matters; this could be a distraction from tasks - thus, less dedication/absorption in work tasks. Another reason is that greater absorption/dedication would lead to greater satisfaction, intention to stay, etc. Thus, these results seem counter-intuitive at first glance, as they suggest that greater affective trust in leaders is negative. However, it could also be the case that over-engagement in the form of too much engagement/dedication has adverse effects, such as working consistently long hours, high-stress levels, and increased risk of burnout as seen during the pandemic and post-pandemic era (Chan et al., 2022). This might mean greater dedication/absorption is good - but only up to a certain point. From then on, greater dedication/absorption becomes over-engagement - with detrimental effects. The fact that there seemed to be a slight trend that greater affective trust leading to lower work engagement_absorption|dedication might thus be a positive result: If an employee trusts that their leader will have their back, then they might think it is okay not to over-dedicate/absorb in their jobs.

5.1.3 Discussion of the Third Hypothesis

The third hypothesis was that the relationship between authentic leadership behaviours and greater engagement is driven by employees with authentic leaders trusting their leaders more. The results did not support this hypothesis. The results show that neither authentic leadership nor the two types of trust (cognitive-based and affective-based) were related to the vigour aspect of work engagement. As discussed earlier in this chapter, affective-based trust is related to work engagement's absorption and dedication dimension. However, authentic leadership is not related to this type of work engagement, either. Therefore, conducting a multiple mediation analysis was not plausible, as mentioned in Section 4.4.3. This is different from other studies that have assessed these variables.

Previous literature that had examined trust as a mediator between authentic leadership and work engagement had reported mixed results, as some literature indicates that trust served as a partial mediator between authentic leadership and engagement (Wang & Hsieh, 2013; Hsieh & Wang, 2015). Moreover, Maximo (2015) found that trust had fully mediated the relationships between authentic leadership and work engagement. However, these studies worked with samples of employees who worked in face-to-face environments. The different environments might thus explain the different results in this study. As mentioned in Section 5.1.3, trust in the leader may no longer be relevant for employee engagement in the virtual environment.

5.1.4 Discussion of the Fourth Hypothesis

The fourth study hypothesis was that the degree to which a psychological sense of community exists moderates the relationship between authentic leadership and work engagement. Specifically, where employees have a greater psychological sense of community, the relationship was expected to be positive than when employees lacked a psychological sense of community. The results supported the expected moderating effect of a psychological sense of community. However, only when considering the absorption and dedication aspect of work engagement and not in the expected way: When employees perceive a high or medium level psychological sense of community, greater authentic leadership relates to lower absorption and dedication. Only when a psychological sense of community is absent is greater authentic leadership related to greater absorption and dedication. Possible explanations for the negative relationship between authentic leadership and absorption and dedication were discussed in Section 5.1.2. Furthermore, the analysis of this hypothesis suggested that a psychological sense

of community did not serve as a moderator between authentic leadership and work engagement_vigour. This could be due to employees not needing their leaders anymore to enhance the energy they put into their work or not needing to feel a psychological sense of community in their teams because this may now be intrinsically met.

5.1.4 Summary

The study presented in this dissertation sought to answer the question, "*Could a psychological sense of community strengthen the relationship between authentic leadership and trust in the virtual and hybrid workplace*?". Overall, the empirical data showed that the answer is no. Firstly, the authentic leadership construct did not emerge in this sample of employees working in a virtual or hybrid environment. Instead of the four dimensions assumed to make up authentic leadership, this study only included items that assessed the authentic leader's impact. Thus, instead of referring to the assessed leadership behaviours as authentic leadership, it might be more appropriate to label them as Perceived Authentic leadership_Impact. The dedication and absorption did not form separate dimensions for work engagement, which was unexpected.

Generally, perceived authentic leadership_Impact is not related to trust or work engagement, and trust is not related to work engagement. The only exceptions are that authentic leadership relates to cognitive-based trust and affective-based trust. Consequently, trust does not mediate the relationship between perceived authentic leadership_Impact and work engagement. Equally, a psychological sense of community played an insignificant role when considering authentic leadership, trust, and work engagement in virtual and hybrid workspaces.

The following section aims to outline the contributions this study has made to the world due to the results that were found.

5.2 Contributions

This study has contributed to literature in the Organisational Psychology field about the world of work. It provides a lens into the perceptions of virtual and hybrid employees; this has become a new way of working for most white-collar employees after the declaration of COVID-19 as a pandemic. The study reported the relationship between cognitive and affective-based trust in the leader, which corresponds with existing literature. Furthermore, the

distinction between cognitive and affective-based trust brings an interesting perspective on virtual and hybrid workplace research because it can distinguish the types of trust and how individuals relate to others. This pivotal distinction could be made in research papers about trust in a leader in the virtual and hybrid workplace. It may guide the leader and subordinate on how to develop trust. Therefore, this study contributes to that knowledge and should be built on. The results convey how these variables remain relevant in virtual and hybrid teams. Thus, portraying that empirical-based research and the measurement of perceptions of leadership styles and the trust in the leader could bring about an understanding of the new world of work, which is something that Organisational Psychology researchers need to ensure so that the research is always up to date and applied correctly in research papers going forward when using theory to make empirical-based solutions. Moreover, the analysis of existing relationships, authentic leadership, trust, and work engagement in the virtual and hybrid workplace brings a new lens to examine this relationship and assess whether this is enough in the virtual and hybrid workplace.

The study suggests that the authentic leadership concept developed in face-to-face environments might require refining when considering virtual work environments. In this sample, (a) it did not exist in the theorised way and (b) what it came out as (focus on others) had little to do with trust and engagement. Only one study and sample suggest that further research is required to establish what authentic leadership in virtual space means and if it is relevant in that environment, especially as there is little literature on these variables in virtual space.

Conversely, the results showed that both cognitive and affective trust were unrelated to work engagement. It seems to matter less than in a face-to-face context - at least about work engagement. Moreover, work engagement as a concept looked different because in this study, absorption and dedication formed as one variable, which meant that work engagement did not have the usual three dimensions but two: work engagement absorption|dedication and work engagement_vigour. Therefore, this meant that work engagement looked different in the virtual and hybrid environments. Although these results did not support the hypothesis, they raise questions about whether trust and engagement are related factors. As work engagement has been reported to be a challenge in the virtual workplace, empirical research must assess variables that may enhance work engagement in these environments, as virtual and hybrid workplaces are here to stay.

Furthermore, adding a psychological sense of community aims to assess whether this is another variable that could be examined in these environments and amongst virtual teams. This study contributes empirically by bringing in a new variable over and above what is known to have worked in previous literature. However, it has brought about an interesting revelation, as the study reports how a higher level of psychological sense of community brings about an inverse relationship between perceived authentic leadership_Impact and work engagement_Absorption|dedication, which portrays an authentic leader's impact does not provide the expected results to the employee, as their engagement rather decreases. This contributes to empirical research, as to the researcher's knowledge; this has not occurred in existing literature, so a new lens of these relationships has been brought to the forefront. Moreover, it has been reported that no relationship exists between a psychological sense of community, perceived authentic leadership_Impact and work engagement_vigour, which conveys how in literature it is important to distinguish between the types of work engagement, as they are not all affected in the same way by other variables. Therefore, this study has contributed theoretically and given a new lens of existing relationships so that when Industrial/Organisational Psychologists provide solutions, they are informed by updated knowledge to provide the necessary solutions for an engaged workforce. Therefore, there needs to be adaptations of this study going forward.

5.3 Limitations

The study's limitations must be discussed as the results must be interpreted against these. Firstly, using a quantitative survey does not give the researcher insights into why participants chose specific answers. Therefore, inferences drawn from the results were based on literature only. Furthermore, this study only measured perceptions using self-report measures. This may introduce social desirability bias, leading to participants answering based on what they believe is a more desirable answer (Larson, 2019). Although this was less likely in this study due to the participants' anonymous responses and the declaration on the cover page, it is important to note that this could still be a limitation.

Furthermore, a cross-sectional, correlational research approach was used due to the time and cost constraints. This means that the data only captured snapshots of how participants felt when they responded (Wang & Cheng, 2020). Recent events a participant may have experienced at work have unduly influenced the responses. However, over a large sample, such data errors should average each other out. In this case, the analyses were based on 160

respondents. This sample is, of course, representative of only some of the hybrid and virtually working employees. It is also smaller than Davis' (2021) recommendation of 500 to 1,000 participants as a desirable sample size in quantitative research.

Since I had yet to start my career at the time of data collection, my network of working individuals was still limited. Despite my best efforts, I was unable to obtain a larger sample. However, the size was large enough for all statistical procedures employed to provide reliable results.

Additionally, as the expected dimensionality of the Authentic Leadership Inventory (Neider & Schriesheim, 2011) did not emerge in this sample, and as more than half of the scale items needed to be deleted, the remaining items only represented a limited aspect of authentic leadership. While the study intended to explore the role of authentic leadership, the results did not present the role of authentic leadership for trust and work engagement but rather the role of the authentic leader's impact.

Lastly, due to the COVID-19 pandemic, many working individuals were forced into remote work. These employees might have opted for face-to-face work, given the chance. Many of these had also worked face-to-face before moving into a virtual space. Group dynamics and relationships had thus already been established. These factors would likely affect the relationships between different organisational behaviour variables. This study did not differentiate for what reason employees were working virtually and if they had chosen this working mode or had opted into it, and thus did not include such variables as potential moderators. The following section outlines what research could be conducted in relation to this topic.

5.4 Recommendations for Future Research

Suggestions for future research emerged from this study. Firstly, future research should investigate potential differences between individuals who chose to work virtually and those who were forced into virtual work, such as in the case of the COVID-19 pandemic. Furthermore, it would be interesting to assess what type of characteristics an employee requires for a leader to be trusted, further analyse whether these characteristics are indeed related to authentic leadership and assess whether this enhances their work engagement. Researchers could also gain insights and assess whether employees view work engagement differently in a virtual and hybrid space. Moreover, researchers could use a mixed methods approach to

contextualise why individuals have certain perceptions. Therefore, the survey could be used as well as focus groups or interviews. George (2021) states that the convergence of qualitative and quantitative data allows for data triangulation and can strengthen the validity of the conclusions.

Furthermore, there should be an exploration of why greater affective trust is related to lower work engagement absorption|dedication. For this, it might be useful to adopt qualitative research techniques as existing literature provided limited ideas for possible reasons. Lastly, the PSOC concept has the potential to be explored further in the virtual and hybrid workplace, as researchers could give insights into how employees view a sense of community in a virtual and hybrid space. Moreover, it would be interesting to explore the mechanism behind affective-based trust in the leader and dedication/absorption, as well as PSOC as a moderator, based on the results found in Section 4.4.4.

Chapter 6

6. Conclusion

This study aimed to understand the role of authentic leadership and trust in the leader on work engagement in the virtual and hybrid workplace. Previous literature conveys that these variables had relationships. The paper asserts this in the hypotheses and has added trust in the leader as a mediating variable. Moreover, a tentative hypothesis was hypothesised, which stated that a psychological sense of community was required to moderate the relationship between authentic leadership and work engagement. Although authentic leadership has been suggested to be important for trust and work engagement in face-to-face settings, the data in this study suggested that authentic leadership and trust are not particularly relevant. The authentic leadership construct, measured with the Authentic Leadership Inventory (Neider & Schriesheim, 2011), a widely used measure which had demonstrated sound psychometric properties in a variety of settings, did not measure the four dimensions of authentic leadership (self-awareness, balanced processing, internalised moral perspective, and relational transparency). This leads to the tentative conclusion that authentic leadership may not be relevant in the virtual working space, though further research is required.

The results highlight that relationships between work-related attitudes and behaviour differ in virtual workspaces than when working face to face. The number of individuals who work virtually has increased significantly since 2020, showing that research in virtual workspaces is relevant. This is especially the case when considering work engagement as low engagement has been reported because of the COVID-19 pandemic across the world (Sikali, 2020), and this study has indicated that some of the variables typically related to lower engagement - inauthentic leadership behaviour and trust - cannot explain the phenomenon.

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Appendix A: Demographics of Participants

Table 1

Gender identity

	N	%
Female	118	73.8%
Male	37	23.1%
Non-binary / third gender	3	1.9%
Prefer not to say	2	1.3%

Table 2

Age (in years)?

	N	%
18 – 24	69	43.1%
25 – 34	54	33.8%
35 - 44	23	14.4%
45 - 54	9	5.6%
55 - 64	4	2.5%
75 - 84	1	0.6%

Table 3

Current country residence

	N	%
Botswana	2	1.3%
Ethiopia	1	0.6%
Germany	1	0.6%
Malaysia	1	0.6%
Mauritius	1	0.6%
Netherlands	1	0.6%
Portugal	1	0.6%
South Africa	139	86.9%
Thailand	2	1.3%
United Kingdom of Great Britain and Northern Ireland	4	2.5%
United States of America	5	3.1%

Zimbabwe	2	1.3%

Table 4

Work setting

	N	%
Hybrid	106	66.3%
Virtually	54	33.8%

Table 5

Level in the organisation

	N	%
Associate	49	30.6%
Entry-level	71	44.4%
Middle management	25	15.6%
Top management	15	9.4%

Table 6

Time working with supervisor

	N	%
6 months or less	53	33.1%
Over 1 year, up to 3 years	42	26.3%
Over 3 years, up to 5 years	16	10.0%
Over 5 years	12	7.5%
Over 6 months, up to 1 year	37	23.1%

Appendix B: Scales Used in Study

Table 1

Perceived Authentic Leadership (PAL) scale items

Item 1	My supervisor solicits feedback for improving their dealings with others. (S)
Item 2	My supervisor clearly states what they mean. (R)
Item 3	My supervisor shows consistency between their beliefs and actions. (M)
Item 4	My supervisor asks for ideas that challenge their core beliefs. (B)
Item 5	My supervisor describes accurately the way that others view their abilities. (S)
Item 6	My supervisor admits mistakes when they occur. (R)
Item 7	My supervisor uses their core beliefs to make decisions. (M)
Item 8	My supervisor is clearly aware of the impact they have on others. (S)
Item 9	My supervisor carefully listens to alternative perspectives before reaching a conclusion. (B)
Item 10	My supervisor expresses their ideas and thoughts clearly to others. (R)
Item 11	My supervisor shows that they understand their strengths and weaknesses. (S)

Item 12	My supervisor openly shares information with others. (R)
Item 13	My supervisor resists pressures on them to do things contrary to their beliefs. (M)
Item 14	My supervisor objectively analyses relevant data before making a decision. (B)
Item 15	My supervisor is guided in their actions by internal moral standards. (M)
Item 16	My supervisor encourages others to voice opposing points of view. (B)

(S) = Self-awareness, (R)= Relational Transparency, (M) = Internalised Moral Perspective, (B) = Balanced Processing

Table 2

Trust In Leaders (TIL) scale items

Item 1	We have a sharing relationship. We can both freely share our ideas, feelings, and hopes. (AT1)
Item 2	I can talk freely to this individual about difficulties I am having at work and know that they are listening. (AT2)
Item 3	If I shared my problems with this person, I know they would respond constructively and caringly. (AT3)

Item 4	We would both feel a sense of loss if one of us was transferred and we could no longer work together. (AT4)
Item 5	We have both made considerable emotional investments in our working relationship. (AT5)
Item 6	This person approaches their job with professionalism and dedication. (CT1)
Item 7	Given this person's track record, I see no reason to doubt their competence and preparation for this job. (CT2)
Item 8	I can rely on this person not to make my job more difficult by careless work. (CT3)
Item 9	Most people, even those who aren't close friends of this individual trust them to be trustworthy. (CT4)
Item 10	Other individuals who must interact with this individual consider them trustworthy. (CT5)
Item 11	If people knew more about this individual and their background, they would be more concerned and monitor their performance more closely. (CT6) *

(AT) = Affective-based Trust, (CT) = Cognitive-based Trust

- Item with * has been reverse coded.

Table 3

Utrecht Work Engagement (UWES-9) scale items

Item 1	At my work, I feel bursting with energy. (VI1)
Item 2	At my job, I feel strong and vigorous. (VI2)
Item 3	When I get up in the morning, I feel like starting to work. (VI3)
Item 4	I am enthusiastic about my job. (DE1)
Item 5	My job inspires me. (DE2)
Item 6	I am proud of the work that I do. (DE3)
Item 7	I feel happy when I am working intensely. (AB1)
Item 8	I am immersed in my work. (AB2)
Item 9	I get carried away when I am working. (AB3)

(VI) = Vigour, (DE) = Dedication, (AB) = Absorption

Table 4

Psychological Sense of Community at Work Scale (PSOC) scale items

Item 1	I can get what I need in this team. (NF1)
Item 2	This team helps me to fulfil my needs. (NF2)
Item 3	I feel like a member of this team. (M1)

Item 4	I belong in this team. (M2)
Item 5	I have a say about what goes on in my team. (IN1)
Item 6	People in this team are good at influencing each other. (IN2)
Item 7	I feel connected to this team. (EC1)
Item 8	I have a good bond with others in this team. (EC2)

(NF) = Needs fulfilment, (M) = membership, (IN) = influence, (EC) =emotional connection

Table 5

Demographic scale items

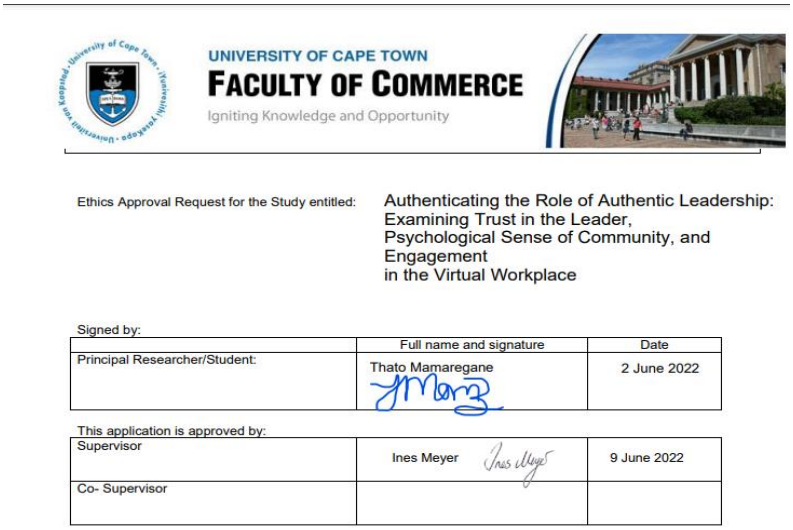
Item 1	What is your gender identity?
Item 2	What is your age (in years)?
Item 3	What country do you reside in?
Item 4	What country is your company based in?
Item 5	When did you start working at your organisation?
Item 6	Are you working? Virtually? Hybrid?
Item 7	What is your level in the organisation?

Item 8	How long have you worked with your current supervisor?

Appendix C: Ethics Documents

Graphic 1

Ethics Signatures



UNIVERSITY OF CAPE TOWN
FACULTY OF COMMERCE
Igniting Knowledge and Opportunity

Ethics Approval Request for the Study entitled: Authenticating the Role of Authentic Leadership: Examining Trust in the Leader, Psychological Sense of Community, and Engagement in the Virtual Workplace

Signed by:

	Full name and signature	Date
Principal Researcher/Student:	Thato Mamaregane	2 June 2022

This application is approved by:

Supervisor	Ines Meyer	9 June 2022
Co- Supervisor		

Graphic 2

Ethics Approval

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Internet: www.uct.ac.za
@Commerce UCT UCT Commerce Faculty Office

17 06 2022

Thato Mamaregane
School of Management Studies
University of Cape Town
REF: REC 2022/06/017

Authenticating the Role of Authentic Leadership: Examining Trust in the Leader, Psychological Sense of Community, and Engagement in the Virtual Workplace

We are pleased to inform you that your ethics application has been approved. Unless otherwise specified this ethical clearance is valid until 31-Dec-2023 .

Your clearance may be renewed upon application.

Please be aware that you need to notify the Ethics Committee immediately should any aspect of your study regarding the engagement with participants as approved in this application, change. This may include aspects such as changes to the research design, questionnaires, or choice of participants.

The ongoing ethical conduct throughout the duration of the study remains the responsibility of the principal investigator.

We wish you well for your research.

2022.06.17
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Jacques Rousseau
Commerce Research Ethics Chair
University of Cape Town
Commerce Faculty Office
Room 2.26 | Leslie Commerce Building

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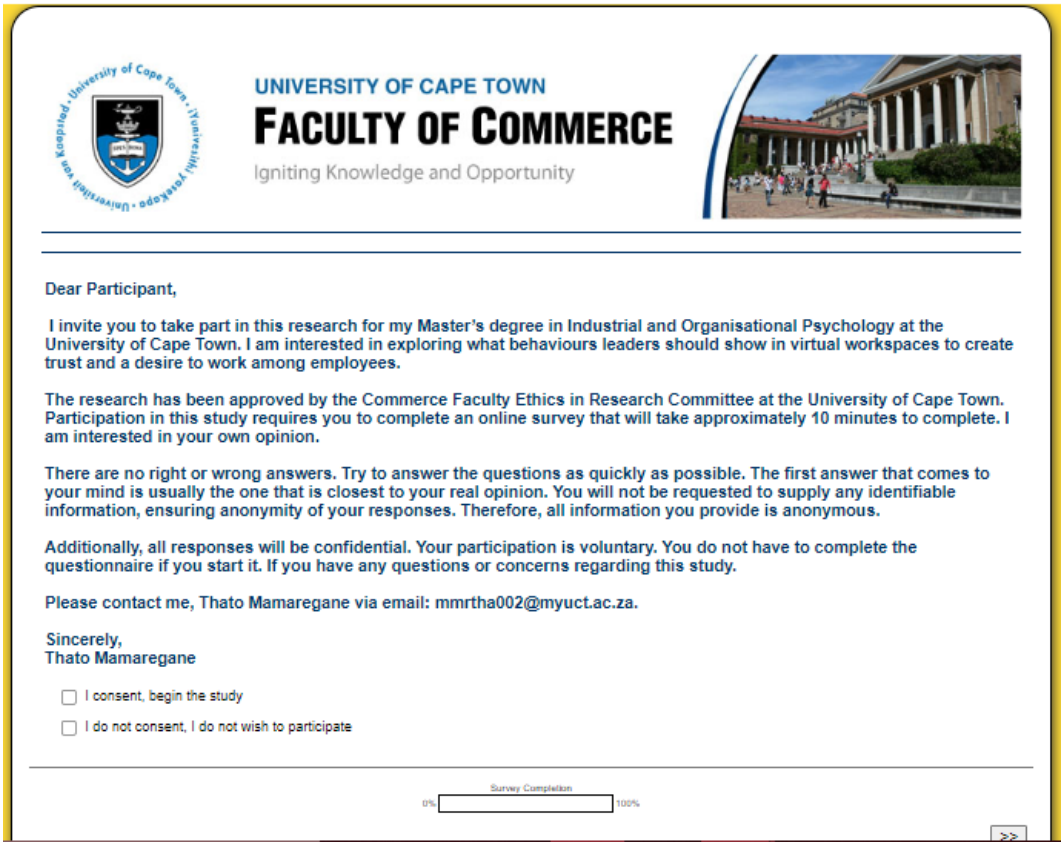
Graphic 3

Consent form/Cover page for Survey



Appendix D: Validity of Perceived Authentic Leadership_Impact Scale

Table 1

Total Variance Explained for the Perceived Authentic Leadership_Impact Scale

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.580	42.997	42.997	1.933	32.220	32.220
2	.839	13.984	56.981			
3	.812	13.535	70.515			
4	.689	11.488	82.003			
5	.595	9.924	91.927			
6	.484	8.073	100.000			

Extraction Method: Principal Axis Factoring.

Appendix E: Validity of Trust in Leader Scale

Table 1

Total Variance Explained for The Trust in Leaders Scale

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.290	36.554	36.554	2.755	30.606	30.606	2.229
2	1.457	16.190	52.744	.935	10.385	40.991	2.155
3	.948	10.530	63.274				
4	.839	9.324	72.598				
5	.683	7.586	80.185				
6	.615	6.831	87.016				
7	.467	5.193	92.209				
8	.406	4.516	96.725				
9	.295	3.275	100.000				

Extraction Method: Principal Axis Factoring.

Appendix F: Validity of Work Engagement Scale

Table 1

Total Variance Explained for the Work Engagement Scale

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	2.763	30.697	30.697	2.106	23.401	23.401	1.882
2	1.400	15.557	46.254	.792	8.799	32.200	1.471
3	.972	10.805	57.059				
4	.867	9.628	66.687				
5	.828	9.202	75.889				
6	.622	6.912	82.801				
7	.572	6.354	89.155				
8	.528	5.863	95.019				
9	.448	4.981	100.000				

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Appendix G: Validity of Psychological Sense of Community Scale

Table 1

Total Variance Explained for the Psychological Sense of Community Scale

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.384	56.404	56.404	2.890	48.174	48.174
2	.771	12.854	69.258			
3	.724	12.062	81.320			
4	.492	8.201	89.521			
5	.365	6.087	95.608			
6	.264	4.392	100.000			

Extraction Method: Principal Axis Factoring.

Appendix H: Multiple Regression and Assumptions Testing for Hypothesis 2a

Linearity

The assumption of linearity was met for both ATIL and CTIL i.e., a linear relationship was visible in both scatterplots.

Figure 1

Scatterplot depicting the linear relationship between Cognitive Trust in Leader (IV) and Work Engagement_Absorption|Dedication (DV) (N = 160)

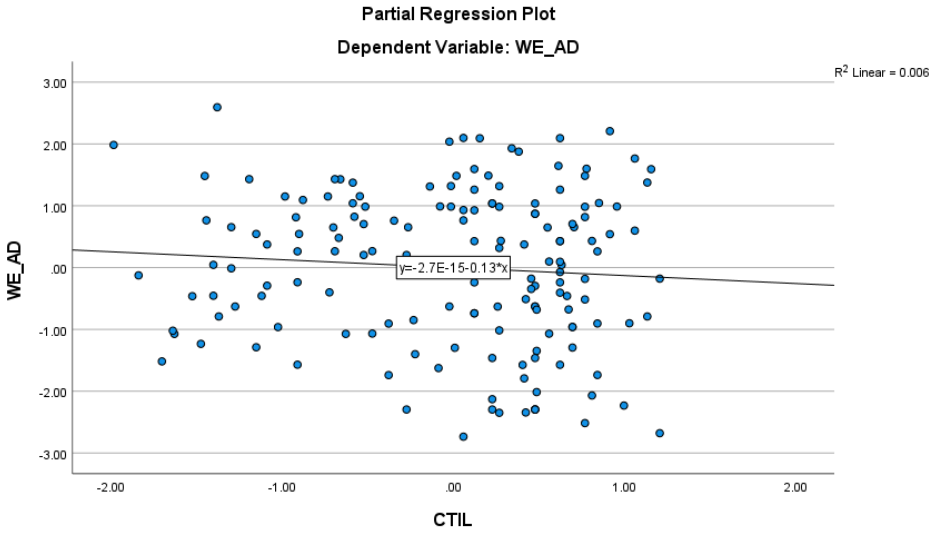
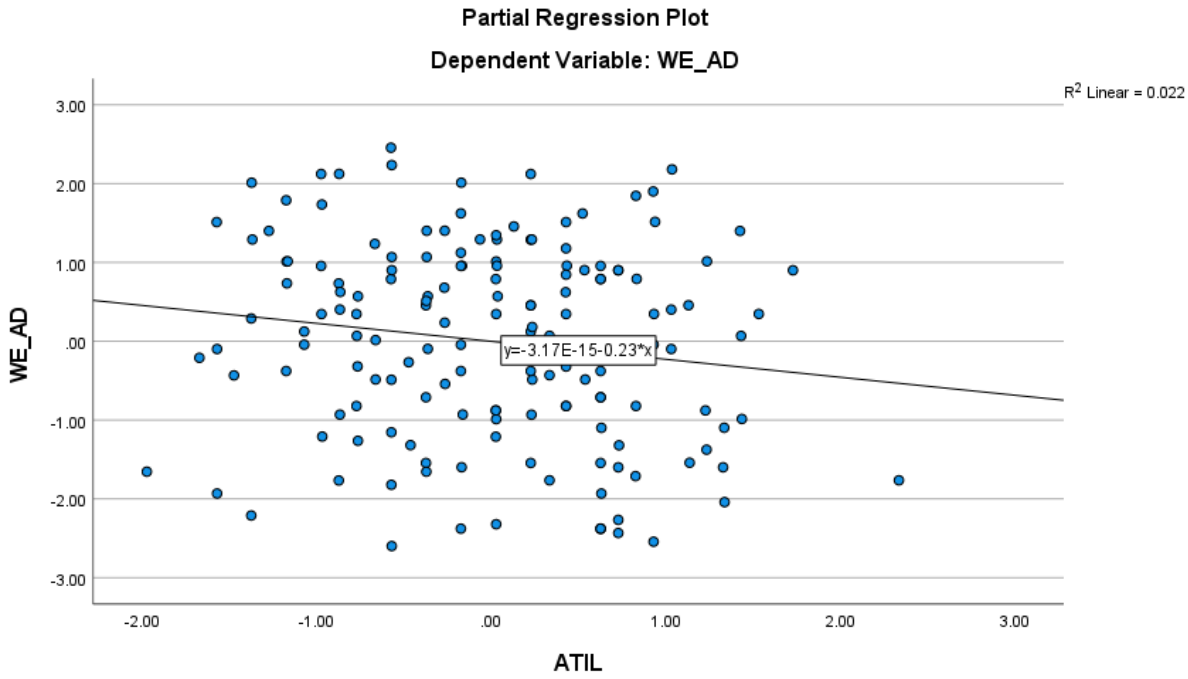


Figure 2

Scatterplot depicting the linear relationship between Affective Trust In Leader (IV) and Work Engagement_Absorption|Dedication (DV) (N = 160)



Multicollinearity

To assess collinearity statistics. The assumption had to have been met as VIF scores were well below 10 (1.172), and tolerance scores were above 0.2 (.853). Therefore, there was no multicollinearity that occurred in the data. (See table 14 above)

Independent Errors

To assess independent residual values; the Durbin Watson test is observed. Field (2018) suggested that this value needs to be close as close as possible to two. This value was 2.059. Thus, indicating that the residual terms were uncorrelated (Field, 2018).

Table 1

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.208[a]	.043	.031	1.23991	2.059

a. Predictors: (Constant), ATIL, CTIL

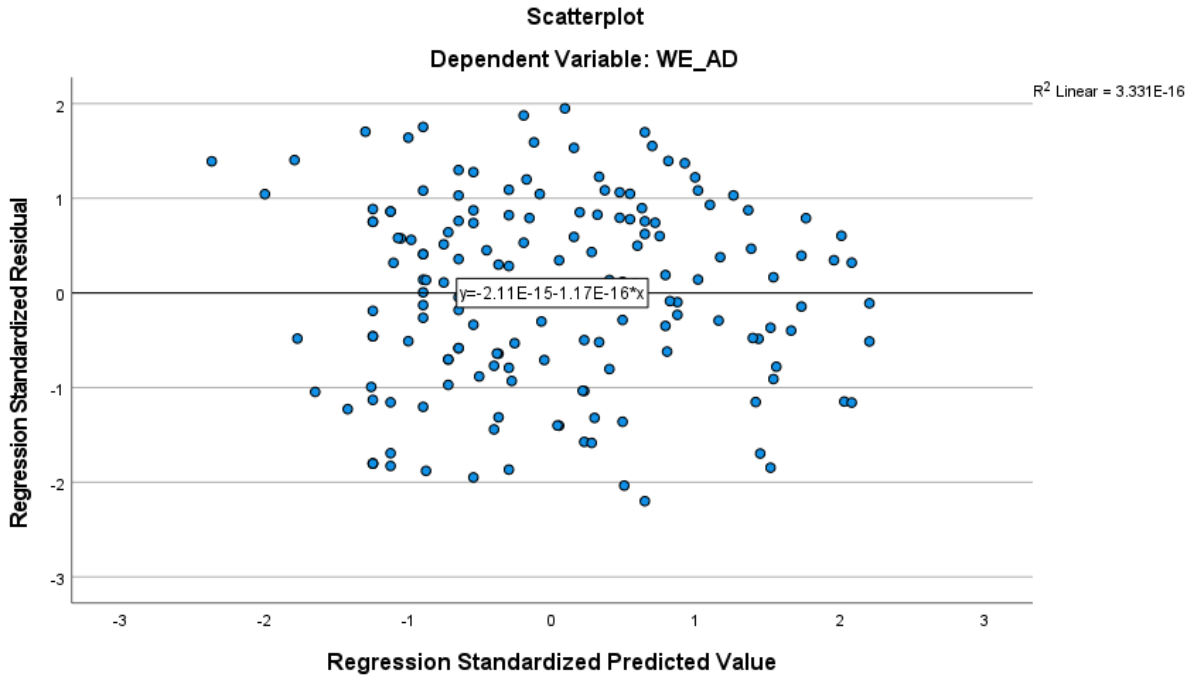
b. Dependent Variable: WE_AD

Homoscedasticity

The assumption of homoscedasticity of residuals was met. Homoscedasticity was shown through the plot of standardised residuals vs standardised predicted values. There were no obvious signs of funnelling, which suggested that the assumption of homoscedasticity had been met (Field, 2018).

Figure 3

Scatterplot depicting the dispersion homoscedasticity of the standardized residuals between ATIL(IV), CTIL (IV) and the WE_AD (DV)



Normality

The assumption of normal distribution of residuals was met. The Histogram suggested a normal distribution as there was a symmetric distribution of the graph. This conveyed that the residual points accumulated around the mean. Furthermore, the Normal PP plot suggested a normal distribution as the dots were close to the diagonal line. The closer the dots to the diagonal line, the more the residuals are normally distributed (Field, 2018).

Figure 4

Histogram depicting the normal distribution for the standardized residuals for the multiple regression model, with WE_AD as the DV

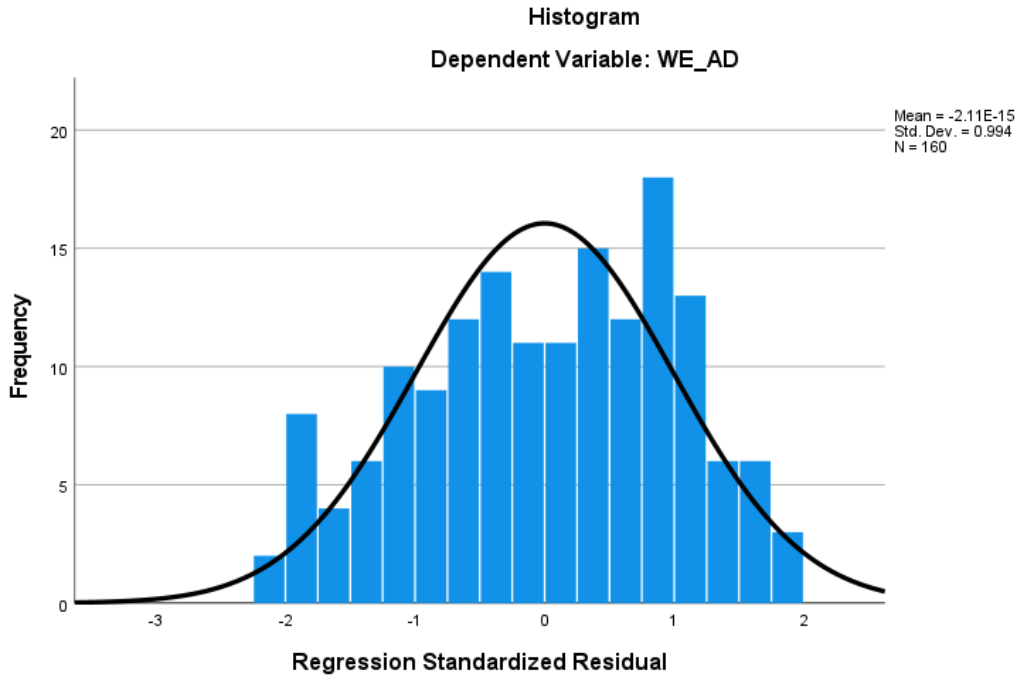
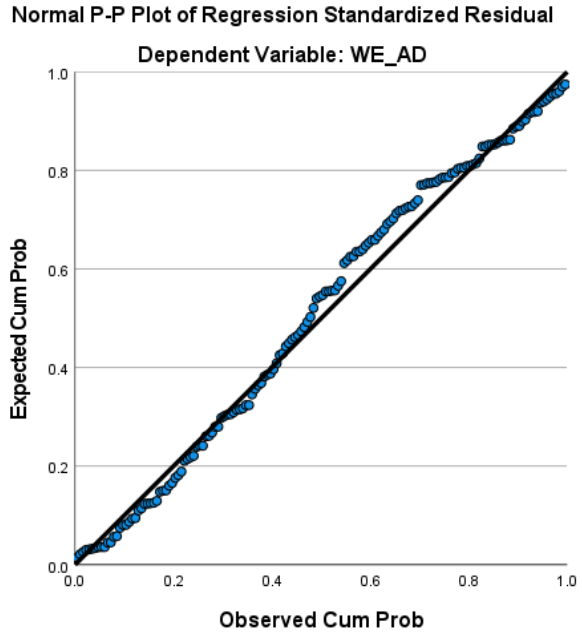


Figure 5

Normal PP plot depicting the normality of the standardized residuals for the multiple regression model, with WE_AD as the DV



Undue Influence

Any values that exceed one would be indicative of significant outliers, which may place undue influence on the model (Field, 2018). It was found that the Cook's Distance values were all under 1, suggesting individual cases were not unduly influencing the model. This was because the maximum Cook's distance being .05, which is well below one.

Table 2

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.9415	5.1348	4.5594	.26149	160
Std. Predicted Value	-2.363	2.201	.000	1.000	160
Standard Error of Predicted Value	.100	.318	.164	.043	160
Adjusted Predicted Value	3.8670	5.1639	4.5603	.26521	160
Residual	-2.72734	2.41770	.00000	1.23209	160
Std. Residual	-2.200	1.950	.000	.994	160
Stud. Residual	-2.210	1.979	.000	1.003	160
Deleted Residual	-2.75377	2.48958	-.00096	1.25577	160
Stud. Deleted Residual	-2.238	1.997	-.001	1.007	160
Mahal. Distance	.034	9.467	1.988	1.658	160
Cook's Distance	.000	.046	.006	.009	160
Centered Leverage Value	.000	.060	.013	.010	160

a. Dependent Variable: WE_AD