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How do Authentic Leaders facilitate Innovation?

The roles of Psychological Capital, Work Engagement and Creativity

Håkon Tveiterås

Master Thesis in Psychology May 2017





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Supervisor: Benedicte Langseth-Eide

Co-supervisor: Joar Vittersø

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Abstract

The aim of the present study is to examine how Authentic Leadership might facilitate innovation through the mechanisms of Psychological Capital, Work Engagement and Creativity. We surveyed a sample of leaders and employees (N=79) in three middle sized Norwegian companies, who all share HR-department. They are operating in the fields of banking, real-estate and accounting. We analysed the data using correlational analysis and Path Modelling Analysis to uncover the paths that best could explain how the Authentic Leader influence the innovation process. Our model revealed that Authentic Leaders influence Innovation, not directly but indirectly through Creativity and PsyCap. We did not find the direct link between Work Engagement and Innovation we expected. Instead we found that Work Engagement is influenced indirectly by Authentic Leadership through PsyCap, and is influencing Innovation indirectly through Creativity. The results suggest that developing Authentic Leadership could be a promising and sustainable way to boost the innovative capabilities of organizations by building the employees own resources.

Keywords: Innovation, Creativity, Authentic Leadership, Work Engagement, JD-R Model, Psychological Capital

Sammendrag

Dette studiets mål var å undersøke hvordan Autentisk Ledelse kunne tilrettelegge for innovasjon gjennom mekanismene Psykologisk Kapital, Jobbengasjement og Kreativitet. Vi samlet inn data fra ledere og ansatte (N=79) i 3 mellomstore norske selskap som hadde felles HR-avdeling. Disse selskapene opererte innen bransjene bank, eiendomsmegling og regnskapsføring. Vi analyserte dataene gjennom korrelasjonsanalyse og stianalyse for å avdekke hvilke stier som best kunne forklare hvordan autentiske ledere påvirket innovasjonsprosessen. Modellen vår avdekket at autentiske ledere påvirket ikke innovasjon direkte, men indirekte via Kreativitet og Psykologisk Kapital. Vi fant ikke den direkte sammenhengen mellom Autentisk Ledelse og Jobbengasjement som vi forventet. Derimot fant vi at Jobbengasjement var indirekte påvirket av Autentisk Ledelse via Psykologisk Kapital og at Jobbengasjement påvirket Innovasjon indirekte gjennom Kreativitet. Resultatene antyder at utvikling av Autentisk Ledelse kan være en lovende måte å forsterke bedriftens Innovasjonsevne gjennom å bygge de ansattes egne ressurser.

Nøkkelord: Innovasjon, Kreativitet, Ledelse, Autentisitet, Autentisk Ledelse, Jobbengasjement, JD-R Modellen, Psykologisk Kapital

Preface

The idea to my study came from the first conversation with my supervisor Benedicte Langseth-Eide. Her research interests on positive psychological resources and work engagement inspired an idea on connecting these factors to leadership and innovation.

During my exchange stay at UC Berkeley, spring 2016, I did a field study on the changes in professional identity when product developers at Yammer San Francisco were promoted to management positions. The focus on development of leader identity led to an interest in the concept of Authentic Leadership. I reviewed the literature on this form of Leadership connected to Creativity and Innovation, and developed a model inspired by the JD-R Model.

It has been an interesting and developing journey to work so focused on one complex project over almost two years. My interest in Psychology, Leadership and Innovation have just been growing. I really look forward to applying this knowledge in real business organizations!

I would never have been able to complete this project on my own, and there is quite a list of people that I owe big thanks to!

First, I want to thank my supervisor Benedicte Langseth-Eide and valuable help with the collection and analysing of data, along with feedback on my writing and motivational feedback along the way. I also want to thank Joar Vittersø, my co-supervisor for help with complex data analysis, and Kelsey and George for helping with improvements on the English-Norwegian translation of some of the scales!

Big thanks go to the HR-Advisor that helped with the recruitment of participants and data collection, and thanks to all the participants in the study as well.

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I want to thank my three wonderful kids, Markus, Nora and Live for being patient with their busy and absent dad the last two years! A big thank goes to Hannah, the mother of my kids and a true friend, for all your help and support

I want to thank Tove Irene Dahl, Jon Andre Dahlbak and all the other fantastic staff at The Department of Psychology at UiT – The Arctic University of Tromsø! You are awesome!

Finally, I want to thank all my amazing friends at The Office, for being so supportive, funny and friendly! We have laughed until we cried, and cried until we laughed again!



Håkon Tveiterås
Master Student



Benedicte Langseth-Eide
Supervisor



Joar Vittersø
Co-supervisor

Working conditions have changed rapidly in the last years. The advancement of technology has brought forward opportunities that was hard to imagine just recent years ago. Robotizing and automatization have replaced humans with machines in many traditional jobs. The internet revolution has made it possible to sell almost anything online from anywhere on the globe to anywhere, connecting people and globalizing the marketplace. The sharing of information, news, videos and cultural content over global social media have made new trends diffusing globally in an extremely high pace. High technological mobile devices that constantly gather user data, and interact online through countless applications, has both changed consumer behaviour, consumer preferences and the available information some companies have about these customers. To adapt and adjust to these rapid changes in market demands and respond quickly and accurately to the increasingly harder competition, organizations need to work constantly to improve their creative and innovative ability (Anderson, Potocnik, & Zhou, 2014; Jong & Hartog, 2010).

A changing working life

All industries are affected by these new working conditions, although in different ways and with different impact. This apply to the businesses included in the present study as well. The bank industry has already seen drastic changes in their customers' preferences. Due to technological changes, everyone can have the bank in their pocket so to say. We spend less time in the bank but have more access to the bank than ever (Shaikh & Karjaluo, 2016). With most transactions being electronical and most accounting documents digitalized the accounting business are constantly being challenged to development and change (Bask, Merisalo-Rantanen, Tinnila, & Lauraeus, 2011; Batiz-Lazo, Maixé-Altés, & Thomes, 2010). Real estate agencies are still helping people to selling and buy houses, and making sure that prizes are satisfactory for everyone involved, including themselves. But the customer's way of searching for houses, finding houses, navigating around in the houses in 360' 3D with HD-

quality are relatively new opportunities made possible through advanced technology (Nilsen, Almås, & Hansen, 2016)

High end technology is now made available to everyone at a fair price. This access to technology and information might bring about even greater changes to the way we are using bank services, how we do accounting and how we will transfer houses in the future. It is crucial that the strategic actors of such business organizations know what the threats to their existence are and which opportunities they might exploit. Furthermore, it has raised the need to better understand and manage employee competence. It is widely recognized that employees' voluntary development and continuous learning is crucial for organizations effectiveness and survival (Wright & McMahan, 2011). Hence, it is valuable to identify factors that contribute to performance and ability to adapt and drive change, and to facilitate and strengthen the impact of those factors. We aim to identify some of the antecedent factors of employee innovative performance and investigate their relationship.

Several studies argue that some of the most important keys for organizations to prosper and succeed today is to have employees that are creative and innovative (Amabile & Pillemer, 2012; Jong & Hartog, 2010). Creativity has often been defined as the production of new and useful ideas concerning products, services, processes and procedures and Innovation is the implementation of these ideas that is expected to have an innovative output (Amabile, 1988, 1997; Amabile & Pillemer, 2012). In their recent review of the Creativity and Innovation literature, Anderson et al. (2014, p. 1298) propose this integrative definition of Creativity and Innovation: "Creativity and Innovation at work are the process, outcomes, and products of attempts to develop and introduce new and improved ways of doing things. The Creativity stage of this process refers to idea generation, and Innovation refers to the subsequent stage of implementing ideas toward better procedures, practices, or products. Creativity and Innovation can occur at the level of the individual, work team, organization, or

at more than one of these levels combined but will invariably result in identifiable benefits at one or more of these levels of analysis”.

The motivational process of the Job Demands-Resources Model

The present study is inspired of the theoretical framework of the motivational process in the well-established Job Demands-Resources Model (JD-R model). According to the JD-R model, access to important job resources and personal resources might lead to Work Engagement, which again might lead to desired work outcomes, such as Creativity and Innovative Performance (Bakker & Demerouti, 2007).

Job resources can be referred to as the “physical, social, or organization aspects of the job that may (a) reduce job demands and the associated physiological and psychological costs; (b) be functional in achieving work goals; or (c) stimulate personal growth, learning and development” (Bakker, 2011, p. 266). Examples of such job resources can be social support, autonomy, performance feedback or supervision (Bakker, 2011). Personal resources are “positive self-evaluations that are linked to resiliency and refer to individuals’ sense of their ability to successfully control and have an impact on their environment (Bakker, 2011, p. 266).

The JD-R Model have been tested and validated in a wide range of cultures, businesses and industries, supporting its theoretical assumptions (Bakker, 2011; Bakker, Albrecht, & Leiter, 2011; Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004; Schaufeli, Bakker, & Salanova, 2006). Although the present study focuses on the motivational process within the model, it should be noted that the complete JD-R model also consists of a health impairment process characterized by too high and hindering job-demands, causing stress and leading to strain and possibly burnout. However, and in line with several other studies, we investigate relationships within parts of the model (i.e., the motivational process). Moreover, several studies have revealed also a direct impact of job resources and personal resources on

performance (Abbas & Raja, 2015; Demerouti, Cropanzano, Bakker, & Leiter, 2010). Hence, job resources and personal resources might be considered as important antecedents for improved performance, both directly and indirectly through Work Engagement. Thus, additional and direct paths between job resources, personal resources and performance will be included in the theoretical model to investigate these relationships. For an overview of the JD-R model see: Figure 1.

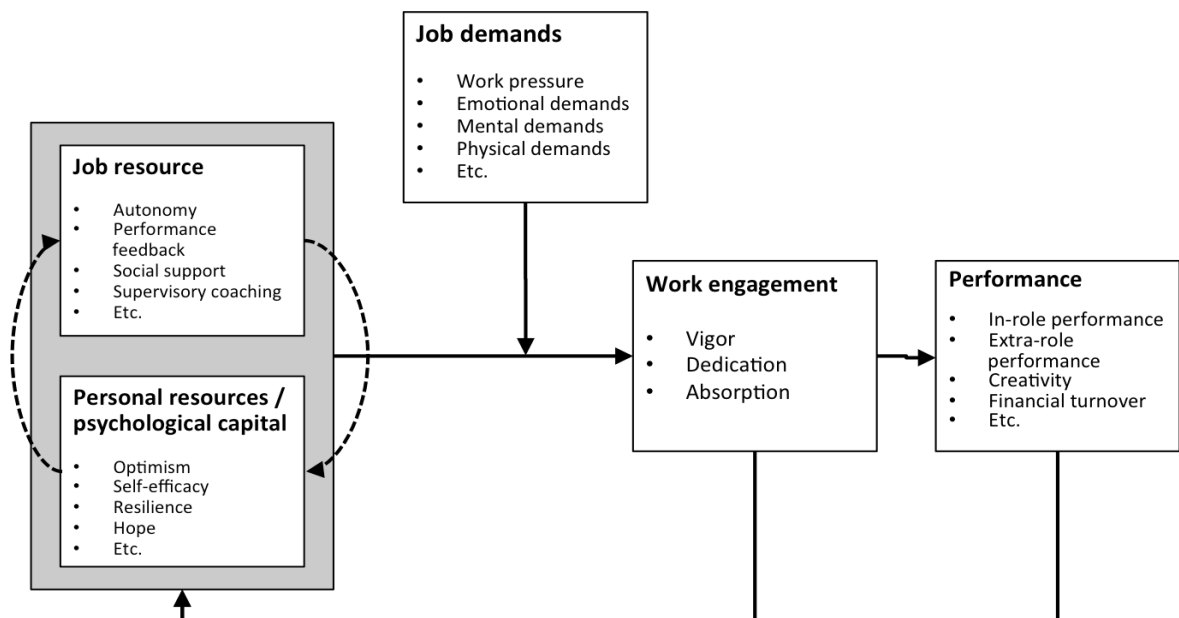


Figure.1. The motivational process of the Job Demands-Resources model (Bakker & Leiter, 2010, p. 187)

Moreover, several studies have also revealed a direct impact of job resources and personal resources on performance (Abbas & Raja, 2015; Demerouti et al., 2010). Hence, job resources and personal resources might be considered as important antecedents for improved performance, both directly and indirectly through Work Engagement. Thus, there are reasons for exploring also additional and direct paths between job resources, personal resources and performance, which may be considered an expansion of the JD-R model. We will outline our

reasoning and arguments from both theoretical and empirical points of view and present our model to be tested (see Figure 2) based on those.

The present study investigates the possible mechanisms between the job resource Authentic Leadership (AL), the personal resource Psychological Capital (PsyCap), Work Engagement (WE), and the two desirable performance outcomes; Innovation and Creativity. The aim of the study is to explore how the leaders can influence important conditions for both individual Creativity and individual Innovation. Leadership is one of the contextual factors that most clearly has been related to creative generation of ideas and Innovation in businesses and organizations (Li, Luo, & Huang, 2012). Hence, we wanted to identify whether a certain type of leadership (i.e. Authentic Leadership) facilitates Innovation and through which mechanisms.

Authentic Leadership

Good leadership is one of the proposed job resources that might contribute to work engagement, which in turn, could increase performance. However, there is a need for more empirical research to better understand how leadership influence Work Engagement and performance outcomes (Bakker, 2011). Different aspects and types of leadership have been linked directly to Innovation and Creativity. Among these are Transformational Leadership (TL) (Eisenbeiss, van Knippenberg, & Boerner, 2008; Li, Mitchell, & Boyle, 2016), Leaders Emotional Intelligence (Khalili, 2016) and Ethical Leadership (Chen & Hou, 2016). A validation study of the Authentic Leadership construct revealed that AL predicted outcome variables better than Transformational Leadership, and Ethical Leadership (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008). There are far more studies using TL than AL in the investigation of the role of leadership linked to Creativity, hence it is highly relevant to investigate how AL might be linked to creativity.

AL has been found as a useful construct in describing underlying mechanisms leading to positive forms of leadership. Walumbwa et al. (2008, p. 98) define AL: “as a pattern of leader behaviour that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relation transparency on the part of leaders working with followers, fostering positive self-development”. It is a second order construct consisting of the constructs self-awareness, relational transparency, internalized moral perspective and balanced processing. Authenticity can be defined as knowing, accepting and remaining true to ones’ own self and such authenticity is the common core factor among the four dimension of the second order construct authentic leadership (Peterson, Walumbwa, Avolio, & Hannah, 2012).

Self-awareness here means that leaders demonstrate an understanding of how they derive and make meaning of the world and how that meaning making process impacts the way they view their self over time. It also means that they show an understanding of their strengths and weaknesses. This includes gaining insight into the self through exposure to others, and an awareness of their impact on other people. Relational transparent leaders present their authentic self to others, openly shares information and expressions of their true thoughts and feelings while trying to minimize displays of inappropriate emotions. Balanced processing refers to leaders who objectively analyse all relevant data before coming to a decision. Such leaders also listen to views that challenge their deeply held positions. Internalized moral perspective refers to an internalized and integrated form of self-regulation guided more by internal moral standards and values than by group, organizational, and societal pressures. As a result, the leaders’ decision-making and behaviour is consistent with these internalized values. Walumbwa et al. (2008, p. 96) summarize the content of authentic leaders as follows: “(...) Authentic leaders show to others that they genuinely desire to

understand their own leadership to serve others more effectively. They act in accordance with deep personal values and convictions to build credibility and win the respect and trust of followers. By encouraging diverse viewpoints and building networks of collaborative relationships with followers, they lead in a manner that followers perceive and describe as authentic”.

One reason one could expect Authentic Leaders to influence Innovation is that the perceived authenticity could make employees feel more comfortable and emotional safe to promote unconventional ideas (Avolio, Gardner, Walumbwa, Luthans, & May, 2004; Cerne, Jaklic, & Skerlavaj, 2013). Furthermore, Cerne et al. (2013) found that employees’ report of their leaders AL influenced Creativity at the individual level and Innovation at the team level. Perceived support for Innovation mediated the relation. High support strengthened the relationship, but low support weakened it. Zhou, Ma, Cheng, and Xia (2014) proposed that Authentic Leaders would stimulate Innovation through evoking positive emotions, and reducing negative emotions. In other words, the emotions will mediate the relation between AL and Creativity or Innovation. Their results supported this hypothesis. Muceldili, Turan, and Erdil (2013) linked AL to Innovation through the mediating effect of Creativity. Authentic leaders raise the positive emotions of employees by creating positive, supportive, fair and transparent interactions (Peterson et al., 2012).

Evidence indicates that there is a clear relationship between AL and Innovation, but that this relationship often is best explained through other mediating factors. We therefore expect the main effects AL have on Innovation to be indirect, through ALs direct impact on the other variables included in this study (i.e., Psychological Capital, Work Engagement and Creativity). Hence, we hypothesize that:

H1: Authentic Leadership has a weak or no direct positive effect on Innovation

Authentic Leadership and Creativity

Creativity can be defined as the production of new and useful ideas concerning products, services, processes and procedures (Amabile, 1997; Joo, McLean, & Yang, 2013). Creativity can be influenced by complex interactions between individual and contextual factors (George & Zhou, 2001). One such contextual factor is leadership, which previous studies has revealed as one of the factors most clearly related to creative generation of ideas and innovation in businesses and organizations (Li et al., 2012). There are multiple reasons why leadership might influence employee Creativity. Leaders have formal and informal power in organizations (Greenleaf & Spears, 2002), meaning they can influence multiple factors that impact employees' motivation and behaviour. If these leaders directly or indirectly encourage sharing of ideas, this should be shown in employees' Creativity. In our investigation of how Authentic Leadership might influence the Innovative behaviour, Creativity is one of the most obvious indirect routes, because the link between Creativity and Innovation is so clear (Amabile, 1988). Several studies have found that AL positively correlated with employees' Creativity (Cerne et al., 2013; Muceldili et al., 2013; Rego, Sousa, Marques, & Cunha, 2012a; Rego, Sousa, Marques, & e Cunha, 2014; Sousa, Rego, & Marques, 2011; Zhou et al., 2014; Zubair & Kamal, 2015). One of these studies used both the leaders self-report of their own AL and the employees rating of their leaders AL (Cerne et al., 2013). This revealed that leaders self-report did not give significant correlations between AL and Creativity, but employees report of leaders AL did. This means that it is mainly the expressed Authenticity as perceived of the employees, that has an impact on their Creativity. Rego et al. (2014) found that AL predicted employees' Creativity both directly and through the mediating role of positive affect and hope. Muceldili et al. (2013) found support of the direct link between AL and Creativity, but they also found that AL predicted Innovativeness through the mediating effect of Creativity. Ethical and moral perspective, one of the

underlying dimensions of AL, have also been found to relate to employee Creativity (Valentine, Godkin, Fleischman, & Kidwell, 2011). Hence, we hypothesize that:

H2a: Authentic Leadership has a direct positive effect on Creativity

Creativity is said to be the first step to innovation (Amabile, 1988). Creativity covers the generation and sharing of new and useful ideas, whereas innovation covers the implementation of these ideas. Not all generated ideas are implemented into innovation, but having an innovation process with no ideation stage makes no sense (Anderson et al., 2014). The innovation must start with ideas and we therefore hypothesize that:

H2b: Creativity has a direct positive effect on Innovation

Creativity has also been found to mediate the relation between AL and Innovation (Cerne et al., 2013; Muceldili et al., 2013). With H2a and H2b supported, we hypothesize that:

H2c: Authentic Leadership has an indirect positive effect on Innovation through Creativity

Work Engagement

Schaufeli and Bakker (2004) defines Work Engagement (WE) as an active, positive work-related state that is characterized by vigor, dedication, and absorption. Vigor refers to high levels of energy and mental resilience while working, willingness to invest effort in the work and persistence through difficult phases. Dedication is characterized by being strongly involved in one's work and experiencing a sense of significance, enthusiasm, and challenge. Absorption refers to being fully concentrated and happily engaged in the work, such that time passes quickly and one has difficulties detaching. May, Gilson, and Harter (2004) May,

Gilson and Harter (2004) operationalize Work Engagement in a similar three-dimensional concept. Even though their labels differ slightly, their physical component, emotional component and cognitive component correspond to vigor, dedication and absorption. Moreover, Harter, Schmidt, and Hayes (2002) Harter, Schmidt and Hayes (2002) argue that Work Engagement include both cognitive and emotional components to improve performance and affective work-related outcomes. Previous studies have shown that both job resources and personal resources are important correlates of Work Engagement (Bakker et al., 2011).

According to the JD-R Model, AL would work as a job-resource elevating employee WE. AL has been related to WE in several studies (Bamford, Wong, & Laschinger, 2013; Giallonardo, Wong, & Iwasiw, 2010; Hsieh & Wang, 2015; Joo, Lim, & Kim, 2016; Mehmood, Nawab, & Hamstra, 2016; Wang & Hsieh, 2013), but often as a mediator between other variables. Hence, we hypothesize that:

H3a: Authentic Leadership has a moderate direct positive effect on Work Engagement

WE could influence Innovation directly because being vigorous, dedicated and absorbed are all important states for performance in general (Demerouti et al., 2010) and Innovation can be conceptualized as a kind of performance. WE has been specifically related to Innovation in several studies supporting this understanding (Agarwal, 2014; Agarwal, Datta, Blake-Beard, & Bhargava, 2012; De Spiegelaere, Van Gyes, De Witte, Niesen, & Van Hootegem, 2014; Kim & Park, 2017; Park, Song, Yoon, & Kim, 2014). Each of the dimensions of Work Engagement - dedication, vigour and absorption - can contribute to Innovation. We therefore expect Work Engagement to be positively related to Innovation, hence we hypothesize:

H3b: Work Engagement have a direct positive effect on Innovation.

WE has also been linked to employee Creativity, of many of the same reasons as its link to Innovation (Bae, Song, Park, & Kim, 2013; Bakker & Xanthopoulou, 2013; Chen, 2016). We therefore hypothesize that:

H3c: WE have a direct positive effect on Creativity.

The relation between AL and Innovation have also been found mediated by WE (Peus, Wesche, Streicher, Braun, & Frey, 2012). With H3a and H3b supported, we therefore hypothesize that:

H3d: Authentic Leadership has an indirect positive effect on Innovation through Work Engagement

Hakanen, Perhoniemi, and Toppinen-Tanner (2008) found that Job resources influenced WE, WE influenced personal initiative and personal initiative influenced work unit innovation. Our study has a similar design, with Authentic Leadership as a Job resource, Creativity as a form of personal initiative and Innovative output similar to work unit Innovativeness. With H3a, H3c and H2b supported, we hypothesize that:

H3e: Authentic Leadership has a positive indirect effect on Innovation through Work Engagement and Creativity

Psychological Capital

Psychological Capital (PsyCap) is a developable individual resource related to performance. PsyCap is founded on solid research and theory. For extensive and meta-analytical reviews see: (Avey, Reichard, Luthans, & Mhatre, 2011; Dawkins, Martin, Scott, & Sanderson, 2013; Newman, Ucbasaran, Zhu, & Hirst, 2014). PsyCap represents the positive appraisal of circumstances and probability for success based on motivated effort and perseverance. A more extensive definition is: an individual's positive psychological state of development characterized by: (1) having confidence (efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success. (F. Luthans, Luthans, & Luthans, 2004).

Authentic Leaders are associated with high levels of PsyCap (Clapp-Smith, Vogelgesang, & Avey, 2009; Peus et al., 2012) and Leaders high PsyCap has been found to elevate followers PsyCap (Avey, Richmond, & Nixon, 2012). This should imply that AL would predict employee PsyCap, which is also what Rego, Sousa, Marques, and Pina e Cunha (2012) found support for in their study. Hence, we hypothesize that:

H4a: AL has a direct positive effect on PsyCap

Luthans, Youssef, and Rawski (2011) found through a quasi-experimental design that PsyCap was positively related to reported Innovation. They highlight that positive environments in general and PsyCap in particular, might enhance an innovative climate by allowing people to generate ideas without getting negative feedback. The four constructs

making up PsyCap can also individually explain and predict employee Innovation. People with high self-efficacy tend to have a stronger drive to achieve desired Innovative goals and may try alternative paths until success. Hope is necessary in Innovative performance and individuals with hope tend to have an intense desire to succeed. They therefore might prioritize and put more effort into innovative activities. Optimistic individuals tend to attribute the good results to their own good effort. They are more likely to have good predictions of the future outcome and have stronger capabilities to solve the problems that occur during Innovation. Resilient employees can quickly adjust to the risk and frustration, leading to better performance in Innovative activities. We therefore hypothesize that:

H4b: PsyCap has a direct positive effect on Innovation

Sweetman, Luthans, Avey, and Luthans (2011) found that each of the components of PsyCap – hope, self-efficacy, optimism and resilience, was related to Creative Performance, but gathered as a second order construct PsyCap was connected to Creative Performance stronger than any of the individual components. It was especially the generation of ideas component that was related to PsyCap. Rego, Sousa, Marques, and Cunha (2012b) found that retail employees' hope and self-efficacy predict their Creativity both directly and through the mediating role of positive affect. Positive affect can also directly predict Creativity. Hence, we hypothesize that:

H4c: PsyCap has a direct positive effect on Creativity

According to the JD-R Model PsyCap is an important individual resource leading to Work Engagement. Wingerden, Bakker, and Derks (2016) found that a JD-R intervention

aimed at developing the employees PsyCap and job-crafting behaviour levelled up PsyCap and Work Engagement in the intervention group, both compared to their prior level of PsyCap and compared to a control group. They also found that Work Engagement worked as a mediator between PsyCap and performance. Having high levels of PsyCap means the employees make optimistic appraisal of their own probabilities for success, and persist towards their goals and find creative ways around obstacles. When these employees are working on complex work tasks, they are more prone to work with the vigor, dedication and absorption associated with WE, than employees with lower levels of PsyCap. Hence, we hypothesize that:

H4d: PsyCap has a direct positive effect on Work Engagement

He (2013) showed that PsyCap partially mediated the influence of organizational Innovative climate on individual Innovative behaviour and on idea generation. PsyCap fully mediated the relationship between organizational Innovative climate and idea implementation. Zubair and Kamal (2015) found that both work-related flow and mediated the relation between AL and Creativity. Rego et al. (2014) hypothesized that AL promotes employees' Creativity because Authentic Leaders encourages employees' PsyCap, and they found support for their hypotheses. Since we expect AL to influence PsyCap positively (H4a), PsyCap to influence Innovation positively (H4b) and PsyCap to influence Creativity Positively (H4d) and Creativity to influence Innovation positively (H2b), we hypothesize that:

H4e: AL has an indirect positive effect on Innovation, through PsyCap

H4g: AL has a positive indirect effect on Innovation through PsyCap and Creativity

There is a possibility that AL won't affect WE directly as stated in H3a. If the main effect of AL on WE is through building employee PsyCap, the effect of WE on Innovation and Creativity would be mediated by PsyCap. Hence, we hypothesize that

H4f: AL has a positive indirect effect on Innovation through PsyCap and Work Engagement

H4h: AL has a positive indirect effect on Innovation through PsyCap, Work Engagement and Creativity

Model to be tested

The present study will measure the job-resource AL, the personal resource PsyCap, employee Work Engagement and the two performance variables Creativity and Innovation. To our knowledge this will be the first time AL and PsyCap are connected to Creativity and Innovation through the mechanism of Work Engagement in one single study. Hence, the study answers a call to more research on individual resources and leadership in the JD-R Model (Bakker et al., 2011). Moreover, it answers a call to research on how the interaction between individual and contextual factors might enhance Creativity and Innovation (Anderson et al., 2014). We expected the main effect of AL on Innovation to be indirect via other constructs. Hence, we developed a model that might explain these mechanisms (see figure 2). The present study tests this model.

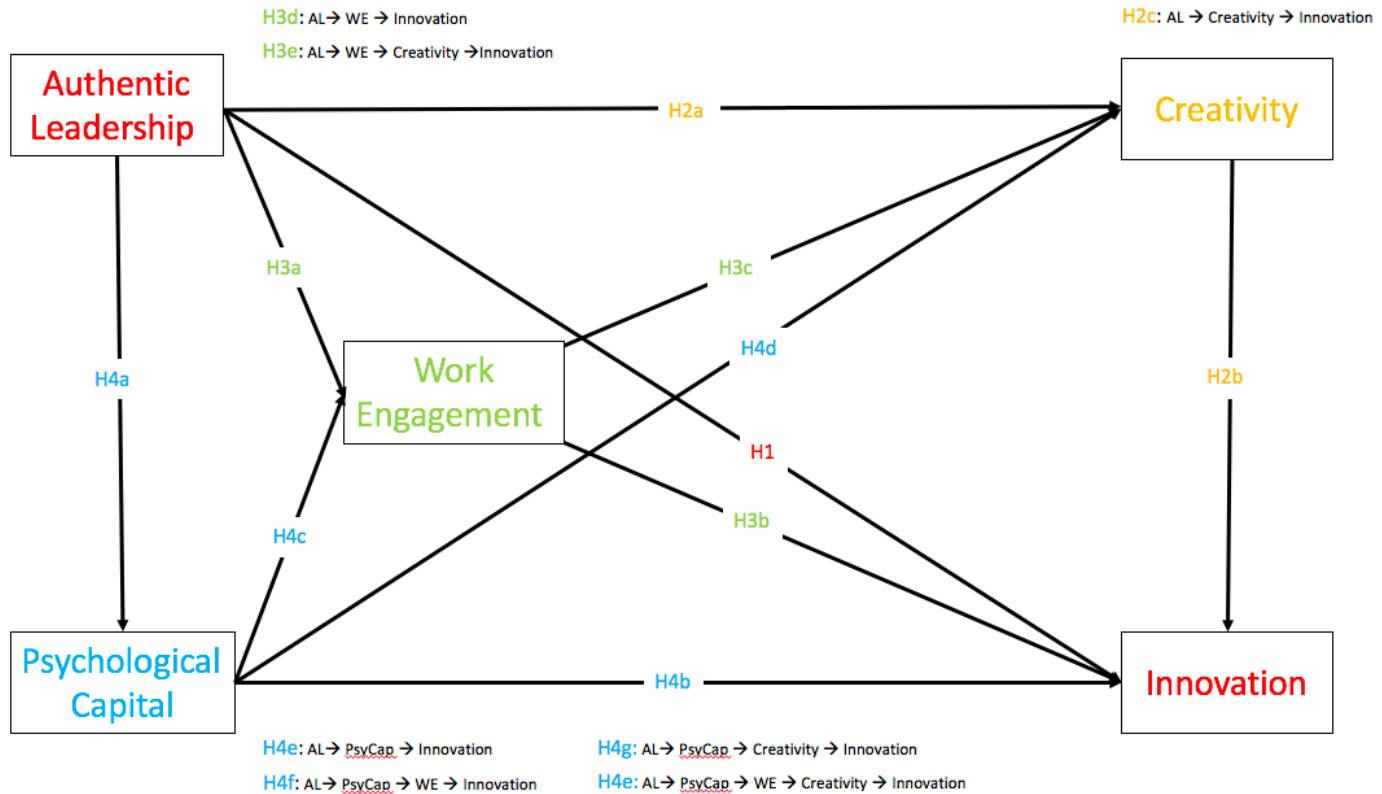


Figure 2. A path model of the proposed associations between the study variables

Method

Sample and procedures

We collected data from employees and leaders in three different Norwegian companies. The three companies were related and shared HR-department. They operated in the fields of banking (28.4%), real-estate (27.5%) and accounting (44%). The HR manager from the main company distributed the link to the web-based survey questionnaire (Qualtrics) to 231 employees and 30 leaders. 109 persons participated in the survey (47% response rate). However, 30 of these had missing data and were excluded in the analysis, because they had completed less than 10% of the survey. Thus, a total of 79 responses were used for the analyses in the present theses, both from leaders (n=14) and employees (n=65). Of these, 33.3% were males (n=23) and 66.7% were females (n=46). Mean age was 45.69 years ($SD=9.85$). Mean leadership experience in the company was 6 years ($SD=4.19$) and mean

leadership experience in other companies was 7 years ($SD=7.29$). 53.6% ($n=37$) had less than 4 years of higher education, 29% ($n=20$) had more than 4 years of higher education and the rest (17.4 %, $n=11$) had no higher education.

Along with the survey we attached a letter ensuring confidentiality and informed about how we planned to match pairs of employees with their immediate leader by asking the leaders to give their first name and the first letter in the last name. The employees were asked to name their immediate leader in the same way. Everyone was guaranteed anonymity and that all identifiable data would only be visible for the three researchers involved in the study, that the information exclusively would be used to match pairs of leaders and employees and that the information would be anonymized once the groups of employees had been connected to their immediate leaders. The response rate from the 58 employees were 0%. The response rate from the 14 leaders were 85.71% on the question on giving their own name, and 64% on giving the name of their own immediate leader. Because of the low response rate from the employees on the question on leaders' name, we couldn't match the pairs. The names were therefore deleted and the further analysis were conducted with this part left out of the analysis. Before the data collection a permission to collect and store personal, sensitive and identifiable data (i.e. the names of the Leaders) was obtained from NSD (See Appendix A).

Measures

We measured employee Innovative Output using a self-rated Innovative Output scale adopted from (Jong & Hartog, 2010). It consisted of 6 items on employees' innovative suggestions and implementation efforts related to new products and services, work practices, knowledge and markets. These are all widely recognized objects of Innovation (Amabile, 1988; Amabile & Pillemer, 2012; Shane, 2003). Responses were given on a 5-endpoint labelled numeric rating scale and indicated how often the described behaviour applied to them from "1=never" to "5=often, if not always". Example items are: "I make suggestions to

improve current products or services” and “I actively contribute to the development of new products or services”. We translated the scale from English to Norwegian using two separate translators, and having the translators meet and discuss differences and agree on a common version (See appendix B). In the present study, the scale had a Cronbach’s $\alpha=0.75$.

AL was measured using the 16-item Authentic Leadership Questionnaire. For the research permission to use the instrument, see: Appendix C. We measured both leaders self-ascribed Authentic Leadership and employees perceived Authentic Leadership of their immediate leader. We couldn’t use the leaders self-ascribed Authentic Leadership because of non-satisfactory data. According to (Cerne et al., 2013) employees’ perception of their leaders’ Authenticity is a better predictor than the leaders self-ascribed Authenticity. We used the Norwegian translation provided from Mind Garden, but we modified some of the items by improved translations. The ALQ comprises the four subscales: Transparency, Integrated Moral Perspective, Balanced Processing and Self Awareness. Responses were given on a 5-endpoint labelled numeric rating scales and indicated how frequently each statement fitted his or her leaders’ leadership style from “1=not at all” to “5=frequently, if not always”. Sample items from the ALQ where employees rated their immediate leaders are: “My leader says exactly what he or she means” (transparency), “my leader demonstrates beliefs that are consistent with actions” (Integrated moral perspective), “my leader seeks feedback to improve interactions with others”. In the present study, the ALQ scale had Cronbach’s $\alpha=0.95$.

Employees Creativity was measured using the 13-items Creativity scale adopted from (George & Zhou, 2001). This is according to Anderson et al. (2014) the most used Creativity scale. We translated the scale from English to Norwegian with the same procedure as the Creativity scale (See appendix D). Employees were asked to rate their immediate colleagues’ creativity, following the advice from Berg et al. (2015) where they found that neither the leader or the producer of the idea was the best suited for evaluating the idea, but a co-worker

on the same level who also produces ideas. These co-workers got the best balance between novelty and usefulness and predicted best the success of the ideas. Responses were given on a 5-endpoint labelled numeric rating scale ranging from 1=totally disagree to 5=totally agree. Example items are: “My immediate colleagues suggest new ways to achieve goals or objectives” and “My immediate colleagues promote and champions ideas to others”. In the present study, the 13-items Creativity scale had a Cronbach’s $\alpha=0.96$.

Work Engagement was measured using the Norwegian translation of the Utrecht Work Engagement Scale (UWES). We used the shortened 9-items questionnaire that has been validated by Nerstad, Richardsen, and Martinussen (2010). The scale consists of the three subscales: Vigor (3 items), Dedication (3 items) and Absorption (3 items). These subscales cover different dimensions of work engagement. Responses were given on a 6-endpoint labelled numeric rating scale from “0=Never” to “6=Always/Every day”. Example of items in the different subscales are for Vigor: “At my work, I feel bursting with energy”, for Dedication: “I am enthusiastic about my job” and for Absorption: “I am immersed in my work.” Schaufeli et al. (2006) recommends using the overall scale as a measure of work engagement. Hence, the overall score of the UWES-scale was used in the present study, and the 9-item version had a Cronbach $\alpha = 0.90$.

PsyCap was measured using the 12-items short version of the Psychological Capital Questionnaire. For the research permission to use the instrument see Appendix E. We used the Norwegian translation provided by Mind Garden, but we had two bilingual readers check and modify some of the items in the Norwegian translation. Responses were given on a 5-endpoint labelled numeric rating scale and indicated level of agreement or disagreement with each statement from “1=strongly disagree” to “5=strongly agree”. Sample items are: “I feel confident in representing my work area in meetings with management” (self-efficacy); “I’m optimistic about what will happen to me in the future as it pertains to work” (optimism); (3) “I

can think of many ways to reach my current work goals” (hope); “I usually take stressful things at work in stride” (resilience). Cronbach’s $\alpha=0.88$

Results

Table 1 presents means, standard deviations and correlations of the main constructs of the study. Table 2 presents an extended version of the correlation matrix, also including the sub-constructs comprising the main constructs. Employees’ educational level relates positively to employees innovative output. AL correlates positively with employees’ PsyCap, Work Engagement and Creativity. Employee’s PsyCap correlates positively with their Work Engagement Creativity and Innovative Output. Employees’ Work Engagement correlates positively with their Creativity and Innovative Output. Employees Creativity correlates positively with their Innovative Output.

Table 1. Descriptive statistics and correlations

	1	2	3	4	5	6	7	8	9
1 Age									
2 Gender (F=0, M=1)	-.12								
3 Education	-.37**	-.17							
4 Organizational tenure	.51**	-.07	-.22						
5 Authentic Leadership	-.10	-.18	.07	-.19	(0.95)				
6 Employee Creativity	-.19	-.15	.13	.05	.54**	(0.96)			
7 Employee Work Engagement	-.07	-.12	.07	-.01	.44**	.58**	(0.90)		
8 Employee PsyCap	.01	-.24	.04	.08	.48**	.44**	.65**	(0.88)	
9 Employee Innovative Output	-.14	-.20	.29*	-.03	.16	.38**	.34**	.50**	(0.75)
N	68	69	69	69	60	58	59	65	58
M	45.69	1.67	3.99	9.46	3.41	3.47	5.99	4.63	3.01
SD	9.85	0.48	0.96	9.35	0.79	0.76	0.84	0.60	0.63

Significant coefficients are flagged

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

Cronbach’s alphas in parentheses

Path modelling was conducted, using Mplus (version 7.4; Muthén & Muthén 1998-2015), with the maximum likelihood estimation method) to test its hypotheses. Because educational level correlated significantly with the dependent variables, the study included this

variable as control variables in the path model analysis. The model is saturated with 0 degrees of freedom and we were therefore unable to perform the goodness-of-fit analysis on the model. Figure 3 shows the findings, including standardized path coefficients.

The direct path from AL to Innovation was not significant, $\beta = -.14, p = .058$, hence H1 is supported. The direct path from AL to Creativity was significant, $\beta = .35, p = .002$, supporting H2a. The direct path from Creativity to Innovation was significant, $\beta = .84, p = .000$, supporting H2b. This implies that AL influences Innovation indirectly through Creativity, supporting H3c.

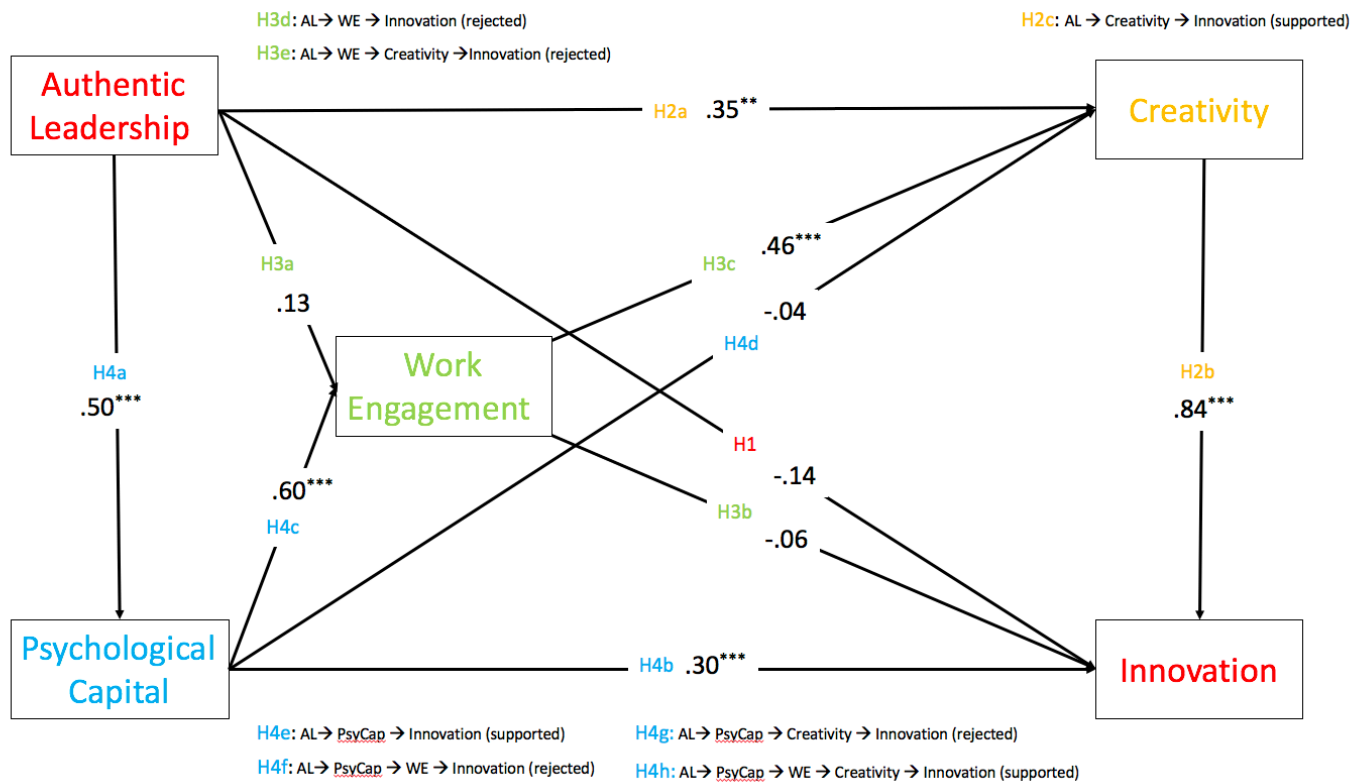


Figure 3. A path model of the proposed associations between the study variables with results

The direct path from AL to WE, was not significant, $\beta = 0.13, p = .245$, hence H3a is not supported. The direct path from WE to Innovation was not significant, $\beta = -.06, p = .490$, hence H3b is not supported. The direct path from WE to Creativity was significant, $\beta = .46, p$

= .000, supporting H3c. Authentic Leadership did not influence Innovation indirectly through WE since the direct path from AL to WE was nonsignificant, hence H3d and H3e are not supported.

The direct path from AL to PsyCap was significant, $\beta = .50, p = .000$, supporting H4a. The direct path from PsyCap to Innovation was significant, $\beta = .30, p = .001$, supporting H4b. The direct path from PsyCap to WE was significant, $\beta = .60, p = .000$, supporting H4c. The direct path from PsyCap to Creativity was nonsignificant, $\beta = -.04, p = .778$, H4d is not supported.

With H4a and H4b supported, our hypothesis that AL influence Innovation indirectly through PsyCap, H4e, is supported. AL did not influence Innovation through PsyCap and Work Engagement, since there was no significant direct effect between WE and Innovation (H3c), meaning H4f is not supported. AL did not influence Innovation through PsyCap and Creativity, since there was no significant direct effect between PsyCap and Creativity. Hence, H4g is not supported. AL had an indirect effect on Innovation through the significant paths from AL to PsyCap (H4a), from PsyCap to WE (H4c), from WE to Creativity (H3c) and from Creativity to Innovation (H2b). Table 3 shows an overview over the hypotheses and whether they are supported or not by the present study. And Figure 4, shows the model with only significant paths, to clarify the findings from the present study.

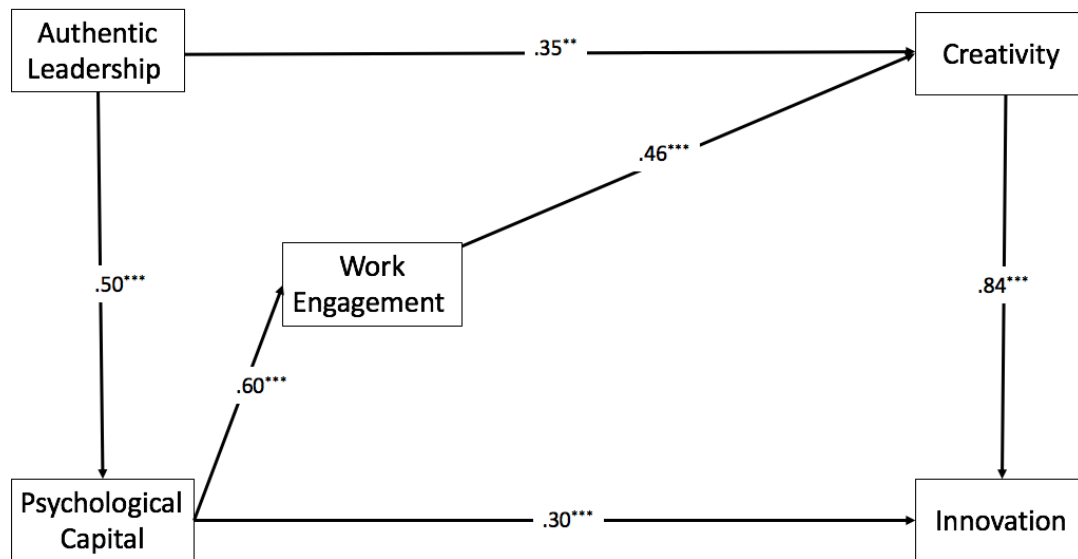


Figure 4. A path model of the significant associations between the study variables

Table 3. Hypotheses overview with empirical support/non-support

Hypotheses name	Hypotheses	Empirical support in the present study
H1	AL > Innovation	Not supported
H2a	AL > Creativity	Supported
H2b	Creativity > Innovation	Supported
H2c	AL > Creativity > Innovation	Supported
H3a	AL > WE	Not supported
H3b	WE > Innovation	Not supported
H3c	WE > Creativity	Supported
H3d	AL > WE > Innovation	Not supported
H3e	AL > WE > Creativity > Innovation	Not supported
H4a	AL > PsyCap	Supported
H4b	PsyCap > Innovation	Supported
H4c	PsyCap > Creativity	Not supported
H4d	PsyCap > WE	Supported
H4e	AL > PsyCap > Innovation	Supported
H4f	AL > PsyCap > Creativity > Innovation	Not supported
H4g	AL > PsyCap > WE > Innovation	Not supported
H4h	AL > PsyCap > WE > Creativity > Innovation	Supported

Table 3. Descriptive statistics and correlations (ext.)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 Years employed	1																			
2 Gender (female=0, male=1)	-.07	1																		
3 Level of education	-.22	-.17	1																	
4 Age	.51**	-.12	-.37**	1																
5 Employee Work Engagement	-.01	-.12	.07	-.07	1															
6 WE Vigor	.00	-.07	-.03	.03	.92**	1														
7 WE Dedication	.07	-.15	.03	-.04	.94**	.89**	1													
8 WE Absorption	-.09	-.09	.17	-.18	.83**	.59**	.64**	1												
9 Employee PsyCap	.08	-.24	.04	.01	.65**	.56**	.68**	.51**	1											
10 PsyCap Efficacy ESR	.09	-.32*	.12	.00	.48**	.42**	.49**	.40**	.86**	1										
11 PsyCap Hope ESR	.09	-.17	-.09	.00	.57**	.47**	.63**	.46**	.88**	.73**	1									
12 PsyCap Resilience ESR	.01	-.19	.13	-.01	.28*	.25	.30*	.20	.55**	.28*	.24	1								
13 PsyCap Optimism ESR	.02	.07	-.03	.03	.64**	.59**	.65**	.49**	.61**	.32*	.49**	.18	1							
14 Authentic Leadership	-.19	-.18	.07	-.10	.44**	.45**	.45**	.29*	.48**	.45**	.37**	.17	.42**	1						
15 AL Transparency	-.09	-.19	.11	-.14	.32*	.31*	.30*	.24	.33*	.39**	.20	.13	.21	.86**	1					
16 AL Internalized Moral Perspective	-.21	-.22	.06	-.17	.43**	.41**	.45**	.30*	.49**	.46**	.45**	.12	.43**	.91**	.72**	1				
17 AL Balanced Processing	-.19	-.11	.00	.00	.41**	.47**	.47**	.17	.40**	.32*	.36**	.09	.47**	.91**	.68**	.81**	1			
18 AL Self Awareness	-.22	-.12	-.03	-.03	.47**	.49**	.46**	.31*	.48**	.42**	.39**	.16	.52**	.91**	.68**	.74**	.84**	1		
19 Employee Creativity	.05	-.15	.13	-.19	.58**	.51**	.60**	.46**	.44**	.44**	.36**	.12	.34**	.54**	.46**	.50**	.49**	.58**	1	
20 Employee Innovative output	-.03	-.20	.24*	-.14	.34**	.17	.33*	.42**	.50**	.58**	.38**	.24	.22	.16	.20	.08	.12	.19	.38**	1
N	69	69	69	69	58	58	58	58	58	58	58	58	58	57	57	56	55	55	57	57
M	9.46	1.67	3.99	45.69	5.99	5.93	6.16	5.89	4.63	4.50	4.59	4.89	4.50	3.41	3.40	3.61	3.44	3.21	3.47	3.01
SD	9.35	0.48	0.96	9.85	0.84	0.99	0.86	0.97	0.60	0.99	0.70	0.72	0.82	0.79	0.73	0.93	0.94	1.05	0.76	0.63

Significant coefficients are flagged, * $p < 0.05$, ** $p < 0.01$

Discussion

Main findings

The main findings in the present study suggest that AL influence Innovation indirectly in three main ways. Firstly, by elevating employee Creativity leading to more Innovation. Secondly, by elevating PsyCap, also leading to more innovation. And finally, by elevating Work Engagement through PsyCap leading to more Creativity and Innovation. These findings support the JD-R Models assumptions that vital job-resources (i.e., leadership) and individual resources (i.e., PsyCap) contribute to Work Engagement, leading to desired work outcomes (i.e., Creativity and Innovation). In this way, the present study provides empirical evidence supporting the JD-R Model. Furthermore, the present study contributes to the JD-R literature on the role of leadership in the model.

Employees working with Authentic Leaders become more Creative because the leaders' Authenticity have a direct impact on their Creativity. The direct effect of Authentic Leadership on employee Creativity can be explained by the different facets of AL. Self-aware leaders who know who they are, their strengths and weaknesses, might feel less threatened of creative individuals' initiatives. This might provide individuals with a feeling of a safe and non-judgemental climate for sharing their creative ideas. The self-aware leader might also become a role model of self-awareness, making the employees more aware of their own creative potential and thereby stimulating the generation and sharing of these ideas. Leaders with high internalized moral and ethical standards probably have a way of responding to creative initiative that feels less uncomfortable, compared to if the leader have a lower degree of ethical standards. This might reinforce the creative initiative and thereby stimulate to more creativity. Leaders who are relational transparent will be able to improve the leader-employee relation, which might lead to positive emotions and emotional safety, both associated with higher levels of Creativity. To hold a perception of the leader as a person that is who and

what he or she claims to be, might minimize ambiguity and insecurity and make employees more relaxed regarding their own thinking. Furthermore, Authentic Leaders actively seeks balanced information, including unconventional and creative ideas. Knowing that this kind of ideas are welcomed could stimulate both the generating of and the active sharing of these ideas. Employees under that kind of leadership also get used to different perspective taking, and make decisions based on these perspectives, which is a kind of training in creative or divergent thinking.

The Creativity level is not only affected directly by AL, but by increased Work Engagement caused by access to resources needed for this engagement. Leaders authenticity builds employees own PsyCap which makes them more engaged. Self-aware leaders might elevate employees hope and optimism because of the heightened awareness of opportunities and potential. Relational transparent leaders might facilitate a good leader-employee relationship where positive emotions are elevated. Transparent leaders make their own PsyCap accessible to the employees, and thereby facilitate the transferring of these states from the leader to the employee. Leaders balanced processing could lead to perceived fairness – increasing trust, preventing insecurity and promoting confidence. When employees feel confident, optimistic, resilient and hopeful, it might lead them to working states that are vigorous, dedicated and absorbed. This in turn creates the opportunity to not only accomplish the work, but to enjoy the work, experiencing positive emotions, and to have the energy to a more playful approach. Being engaged is closely related to being intrinsically motivated, which has been proven to be an important precondition for creativity (Amabile, 1983; Amabile, 1988).

Even if Creativity is stimulated directly by the leaders' authenticity or by the way WE is elevated by the Authentic Leaders' impact on employee PsyCap, the enhanced Creativity is crucial for Innovation. Creative employees come up with new ideas, share these ideas, and

make attempts of implementing these ideas into improvement of products, services and work processes. The ideation stage of the innovation process is also crucial for choosing the really good ideas that has the best potential for successful implementation. The cost of the ideation stage of the innovation process is incremental compared to the cost of the implementation stage. The ideation process is, often estimated to only 8 % of the total cost of the total innovation process (Thomson, 2008). This highlights the significant importance of the creativity stagespending time and money on the ideation stage. The potential loss of trying to implement bad ideas can be far more expensive than spending more time on working with the ideas at the ideation stage until the really good ideas come. Even if this connection is logical there is still a lack of research on the connection. Many studies focusing on Innovation measure only the Creativity dimension of Innovation (Jong & Hartog, 2010), and assume that Creativity might lead to Innovation. The present study provides empirical evidence for the link between Creativity and Innovation and how the different factors and processes might affect this link.

The direct link between PsyCap and innovative output, suggests that hopeful, optimistic, resilient and confident employees are better innovators. Innovation measures the implementation stage of the creative ideas. This suggests that AL influences not only factors vital for the ideation stage, but also the implementation stage of the innovation process. The transfer of high ethical standards from authentic leaders to the employees, could have a positive impact on the resilience dimension of PsyCap, making the employees pushing forward in the innovation process even when beset by adversity. Resilient and engaged workers are willing to go the extra mile and are persistent in their work, even when facing difficulties. Authentic Leaders are expected to both contain and express high levels of PsyCap, and through their relational transparency they are expected to model hopeful, optimistic, resilient and confident behaviours, that employees might adopt. Transparent

relations with high levels of moral could inspire followers to follow their lead and maybe also to reciprocate by performing their very best for their leader.

There is not an unquestionable causal link between AL and creativity, nor between AL and PsyCap. When creative employees succeed in innovating, they might experience more positive emotions like pride over these achievements and this could prime them to describe their leaders in more positive ways. There is also a possibility that employees might overrate their leaders' authenticity because of a halo effect created by an improved relationship between the leader and the employee (Rego et al., 2012a; Rego et al., 2014).

Cerne et al. (2013) showed that the support for innovation was important for the relation between AL and creativity and innovation. Authentic Leadership might be an effective way to carry out the supportive climate for Innovation, but not the antecedent of the creativity and innovation per se.

The findings show that the dual influence of Authentic Leadership on two distinct aspects of the innovation process (i.e. Creativity and Innovative Output) can be integrated in one theoretical model. This is highly valuable for researchers wanting to build on these findings, and for practitioners wanting to stimulate either or both aspects of Innovation. The JD-R Model predicts that it is the enhancement of WE, by the influence of job-resources and personal resources, that lead to different performance outcome. Our model tests both the indirect path through WE and the direct paths from Leadership to Creativity and from PsyCap to Innovation, along with the crossover effect that PsyCap has on Creativity via WE. In this way, our model is an extension of the JD-R by adding these direct paths to the model.

Limitations and future studies

There are several limitations to our study. The main limitation is the size of the sample. With such a small sample, all results need to be interpreted with caution. Future studies should aim for larger samples. Moreover, we collected data from three kind of

businesses, namely banking, accounting and real estate. We should therefore be careful with by generalizing our results to gjelde andre bransjerto other businesses. Future studies should aim to investigate more diverse various work places, and measure if there are systematic differences between these..

Because our intentionally coding of leaders and employees failed, we were unable to match pairs of leaders and their leaders. The fact that not one of the asked employees were willing to name their immediate leader, even when ensured strict confidentiality, suggests that future studies should use alternative methods to match pairs of leaders and employees, at least when operating in a Norwegian context.

The measure of Ccreativity and Innovation could be developed. We chose to use the 13-items creativity scale (George & Zhou, 2001) because other comparable studies have used this measure for creativity when investigating the AL – Creativity relation, and because this is the most common used measure of Creativity (Anderson et al., 2014). By adding the Innovative Output dimension to the Creativity measure, we could monitor how the other variables influenced the two separate dimensions of the innovation process. Other studies could instead use bothconsider the combination of the Innovative Work Behaviour (IWB) scale developed by Jong and Hartog (2010) and their Innovative Output construct to better discriminate between the different facets and stages of the creativity process. In this way one could might better understand how the different factors influence the different stages of the innovation process – from opportunity exploration, idea generation, championing of ideas and implementation of ideas.

Some business organizations have electronical suggestion systems where employees can post their ideas, and the suggestion system tracks if the idea is turned into any form of improvement or Innovation (Frese, Teng, & Wijnen, 1999; Van Dijk & Van Den Ende, 2002). Future studies could track the ideas of such suggestion systems through the different

stages of the innovation process. This would add an important objective measure when studying Innovation. By setting up a longitudinal design and measuring the different factors from the present study on different times, it would be possible to test if the employees' self-reported Creativity and self-reported Innovation, matches the data from the suggestion systems. It would be possible to elaborate on the idea from Berg et al. (2015) and get different sources to predict the ideas success potential regarding novelty and usefulness, and integrate these "bettings" into the suggestion system. In this way, it would be easy to track down who's best at predicting the outcome of ideas. This would be useful for both researchers and practitioners, because it would strengthen the predictive value of the measure. Using these systems and adding elements of rewards could also test the intrinsic motivation hypothesis regarding creativity and innovation. There is a possibility that different motivational elements are needed at different stages in the innovation process, and such study designs could provide more clarity around this.

Quasi experimental designs using an intervention to improve AL as suggested by (Walumbwa et al., 2008), to compare one group where leaders got training to enhance their Authentic Leadership with a comparable group who didn't get this training, and see if the employees in the group with training got significant more creative than the control group.

Future studies could integrate AL into a broader definition of Creative leadership and control the construct of AL up against other validated scales of leadership traits. This could uncover if the Authentic Leadership scale is superior in predicting Creativity over other used leadership styles, as it was found to be better than Transformational and Ethical leadership in predicting outcome variables (Walumbwa et al., 2008).

The present study shows how the theoretical framework of the JD-R Model might be a useful way to further develop and test theoretical models. Other interesting intervening variables that could mediate relations between the present study's variables, might be intrinsic

motivation, ownership, extra role behaviour. These could be integrated in future studies and analysed in the theoretical model of the present study.

Implications for management

There is a great need for evidence based training interventions for developing leadership because many leadership development programs can provide little or no evidence for significant effects (Avolio, 2010; Cooper, Scandura, & Schriesheim, 2005; Wingerden et al., 2016). Because of the developmental character of both Authentic Leadership and Psychological Capital (Avolio, 2010) these should be considered integrated into leadership development programs.

There are at least two main ways to get more Authentic Leaders. The first is to assess Authentic Leadership in potential leaders during the selection process (Avolio & Gardner, 2005) and the second is to facilitate for the development of AL in existing leaders (Avolio & Gardner, 2005; Rego et al., 2012a; Rego et al., 2014; Sousa et al., 2011). According to Avolio (2010) Authentic Leadership might be developed through significant moments or experiences, and not necessarily through long and extensive leadership development programs.

Micro-interventions focused on enhancing leaders' self-awareness, moral, transparency or balanced information processing could be an effective way to increase Authentic Leadership. Since it is the employees perceived authenticity that is measured in this study, it is the expressed authenticity that influences the different outcomes. This means that when leaders work to improve their authenticity it must be developed in the real interaction between them and their employees. This poses an argument for mapping out and monitoring important structural factors like meetings, physical space, worktime – that is impacting everyday interactions between leaders and employees. By a better understanding of these structural factors, one could and try to structure change these in ways that encourages the development of Authentic Leadership.

Psychological Capital Intervention (PCI) has proven to level up individuals PsyCap in as little as 3 hours training and shows that this training could yield a return on up to 270% on investment (Luthans, Avey, Avolio, Norman, & Combs, 2006; Luthans, Avey, & Patera, 2008; Luthans, Avolio, Avey, & Norman, 2007; Luthans, Youssef, & Avolio, 2007). AL is closely related to leaders own PsyCap (Avolio & Gardner, 2005) and by investing in the leaders' PsyCap this could also have a positive effect on the leader's authenticity. Since PsyCap is so closely related to Work Engagement and Innovation, Creativity investing in PsyCap could be an effective way of stimulating Innovation. Bakker et al. (2011) propose that developmental interventions for levelling up PsyCap could be an effective way to build Work Engagement. Wingerden et al. (2016) showed promising results for interventions using the JD-R Model, and this could be further developed. Enhanced PsyCap may also lead to other positive outcomes like workplace performance, job satisfaction, work happiness, and organizational commitment (Rego et al., 2012a)..

Conclusion

The results of our study support the stream of research that has established the link between Leadership and Innovation, and extends this stream to uncover by which mechanisms this is happening. The study clarifies the distinction between Creativity and Innovation and how Authentic Leadership influences these processes in different ways. It shows that Creativity is an important predictor for Innovation and that Creativity is influenced by Authentic Leadership both directly and through Work Engagement. It also shows that Innovation can be influenced by Authentic Leaders through enhancing employees PsyCap. The study has developed and tested a model, inspired by the JD-R Model, that explains how these mechanisms work together to stimulate Innovation.

With Authentic Leaders, organizations might develop the most resourceful, engaged, creative and innovative employees. Workplaces like that will have what it takes, not only to

adapt to the changes, but to become the leading innovators creating positive change!

Authentic Leadership creates an environment where opportunities are discovered first, the most novel and useful ideas are generated, and the ideas are effectively turned into successful innovations. Authentic Leaders doesn't only facilitate this Innovation but they nurture the company's human and Psychological Capital into flourishing and reaching their full Innovative potential. This way they secure their organizations lasting and sustainable competitive advantage. This way Authentic Leadership would be a highly preferable and promising way to lead Innovations and Innovators!

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Appendix A



Benedicte Emilie Langseth-Eide
Institutt for psykologi UiT Norges arktiske universitet

9037 TROMSØ

Vår dato: 22.12.2016

Vår ref: 51115 / 3 / KH

Deres dato:

Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 15.11.2016. Meldingen gjelder prosjektet:

51115	<i>Hva er forholdene mellom autentisk ledelse, PsyCap, kreativitet, innovasjon og jobbutførelse?</i>
Behandlingsansvarlig	<i>UiT Norges arktiske universitet, ved institusjonens øverste leder</i>
Daglig ansvarlig	<i>Benedicte Emilie Langseth-Eide</i>
Student	<i>Håkon Tveiterås</i>

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstillter kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, <http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, <http://pvo.nsd.no/prosjekt>.

Personvernombudet vil ved prosjektets avslutning, 30.06.2017, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Katrine Utaaker Segadal

Kjersti Haugstvedt

Kontaktperson: Kjersti Haugstvedt tlf: 55 58 29 53

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

Appendix B

Scale for Innovative output (employee rated)

Adopted from Jong, d. J., & Hartog, d. D. N. (2010). Innovative work behavior: Measurement and validation. *Creativity and Innovation Management*, 19(1), 23-36.

Innovative output (employee rated)

In your job, how often do you...

- ...make suggestions to improve current products or services?
- ...produce ideas to improve work practices?
- ...acquire new knowledge?
- ...actively contribute to the development of new products or services?
- ...acquire new groups of customers?
- ...optimize the organisation of work?

Norwegian translation:

Innovativ prestasjon (ansattes selvrappport)

I din jobb, hvor ofte

- ... kommer du med forslag til forbedringer av gjeldende produkter eller tjenester?
- ... produserer du ideer som kan forbedre arbeidsrutiner?
- ... tilegner du deg ny kunnskap?
- ... bidrar du aktivt til utviklingen av nye produkter eller tjenester?
- ... skaffer du nye grupper med kunder?
- ... optimaliserer du organiseringen av arbeidet?

Appendix C

Hakon Tveiteras



To whom it may concern,

This letter is to grant permission for Hakon Tveiteras to use the following copyright material for his/her research:

Instrument: ***Authentic Leadership Questionnaire (ALQ)***

Authors: ***Bruce J. Avolio, William L. Gardner, and Fred O. Walumbwa***

Copyright: ***2007 by Bruce J. Avolio, William L. Gardner, and Fred O. Walumbwa***

Three sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any published material.

Sincerely,

A handwritten signature in black ink, appearing to read "Hakon Tveiteras".

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Appendix D

13-items Creativity scale adopted from George, J. M., & Zhou, J. (2001). When openness to experience and conscientiousness are related to creative behavior: An interactional approach. *Journal of Applied Psychology, 86*(3), 513-524. doi:10.1037//0021-9010.86.3.513

1. Suggests new ways to achieve goals or objectives
2. Comes up with new and practical ideas to improve performance
3. Searches out new technologies, processes, techniques and/or product ideas
4. Suggests new ways to increase quality
5. Is a good source of creative ideas
6. Is not afraid to take risks
7. Promotes and champions ideas to others
8. Exhibits creativity on the job when given the opportunity to
9. Develops adequate plans and schedules for the implementation of new ideas
10. Often has new and innovative ideas
11. Comes up with creative solutions to problems
12. Often has a fresh approach to problems
13. Suggests new ways of performing work tasks

Norwegian translation leader rate employees

1. Mine ansatte kommer med nye forslag til hvordan målsettinger kan nås
2. Mine ansatte kommer med nye og praktiske ideer til hvordan ytelse kan forbedres
3. Mine ansatte utforsker nye teknologier, prosesser, teknikker og/eller produktideer
4. Mine ansatte kommer med nye forslag til hvordan kvaliteten kan heves
5. Mine ansatte har mange kreative ideer
6. Mine ansatte er ikke redd for å ta sjanser
7. Mine ansatte fremmer ideer overfor andre
8. Mine ansatte viser kreativitet på jobben når anledningen byr seg
9. Mine ansatte utvikler gode planer for gjennomføring av ideer
10. Mine ansatte har ofte nye og innovative ideer
11. Mine ansatte finner kreative løsninger på problemer
12. Mine ansatte har ofte en ny tilnærming til problemer
13. Mine ansatte kommer med forslag til nye måter jobben kan utføres på

Norwegian translation colleagues rate other colleagues

1. Mine nærmeste kollegaer foreslår nye måter målsettinger kan oppnås på
2. Mine nærmeste kollegaer med nye og praktiske ideer til forbedring av ytelse
3. Mine nærmeste kollegaer utforsker nye teknologier, prosesser, teknikker og/eller produktideer
4. Mine nærmeste kollegaer foreslår nye måter kvaliteten kan heves på
5. Mine nærmeste kollegaer har mange kreative ideer
6. Mine nærmeste kollegaer er ikke redd for å ta sjanser
7. Mine nærmeste kollegaer fremmer ideer overfor andre
8. Mine nærmeste kollegaer viser kreativitet på jobben når anledningen byr seg
9. Mine nærmeste kollegaer utvikler gode planer for gjennomføring av ideer
10. Mine nærmeste kollegaer har ofte nye og innovative ideer
11. Mine nærmeste kollegaer finner kreative løsninger på problemer
12. Mine nærmeste kollegaer har ofte en ny tilnærming til problemer
13. Mine nærmeste kollegaer foreslår nye måter jobben kan utføres på

Appendix E

Hakon Tveiteras



To whom it may concern,

This letter is to grant permission for Hakon Tveiteras to use the following copyright material:

Instrument: *Psychological Capital (PsyCap) Questionnaire (PCQ)*

Authors: *Fred Luthans, Bruce J. Avolio & James B. Avey.*

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for his/her thesis/dissertation research.

Three sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any other published material.

Sincerely,

A handwritten signature in black ink, appearing to read "Hakon Tveiteras", is written over a light blue circular stamp.

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