Title

Promoting Individual Innovative Behavior through Psychological Empowerment

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Executive Summary

Innovation is the key for organizations to remain relevant in the ever-changing marketplace. While some organizations focus their innovative capacity in a single department, most personnel of an organization is involved with the daily business. Their knowledge and experience could prove to be a valuable source of potential innovation. To make use of this information, all personnel members need to become involved in the innovative process. This research focusses at how personnel can become motivated to involve themselves in the innovative process of an organization. It uses the construct of psychological empowerment, an important antecedent to innovative behavior. While the positive relation between psychological empowerment and innovative behavior has been confirmed by previous work, this research proposes that the underlying elements of psychological empowerment – being *meaning*, *impact*, *competence*, and *self-determination* – have a specific relation to the different types of innovative behavior – being *idea generation*, *building of support* and *realization of an idea* –. In a field study with 367 employees of two Dutch firms I show the specific role the elements of psychological empowerment play in relation to innovative behavior. Furthermore, the findings show self-determination to have an important moderating effect on the relationship between elements of psychological empowerment and types of innovative behavior rather than a direct relationship. Without self-determination as a basis, the effect of psychological empowerment on innovative behavior is negligible.

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CONTENTS

INTRODUCTION

Innovation has long been seen as the key for organizations to remain relevant in the ever-changing marketplace. There are various methods to create innovation in an organization, a great potential for many organizations remain the ideas generated from within by its employees (De Jong and Den Hartog 2007). Employees often know the products and services best as they work with these on a daily basis. Together with the available information and understanding of the market obtained by direct contact with both internal and external stakeholders, they are in an excellent position to identify improvements to an organization and its products or services (Fernandez and Moldogaziev 2012). Amabile (1983) described this as part of domain-relevant skills. However having this domain-relevant knowledge alone is not sufficient. In order gain access to those ideas and involve employees, organizations should have an understanding what they can do to ensure that people feel motivated to come forwards with ideas and subsequently assist in the further development and implementation of those ideas. In this process, called innovative behavior, personal motivation and an individual's perception of his or her role within an organization play an important role. During her research into an individual's orientation of his or her role in an organization, Spreitzer (1995) has developed the construct of psychological empowerment. Psychological empowerment is defined as a motivational construct which reflects an individual's orientation to his or her work role and the manner in which he or she wishes and feels able to shape his or her workplace. The construct is manifested in four cognitions, each directed at a different form of increased intrinsic task motivation (Spreitzer 1995).

Research has shown a direct correlation between psychological empowerment and innovative behavior (Spreitzer 1995, Fernandez and Moldogaziev 2012). Other research has shown various other roles psychological empowerment plays in relation to innovative behavior. For example it

has a moderating effect on leadership styles, where empowered individuals show a great increase of innovative behavior when experiencing transformational leadership (Pieterse et al. 2010). Other research has directed its attention on the relation between leadership and creativity, showing that psychological empowerment acts as a mediator with positive effect on creative process engagement (Zhang and Bartol 2010). Knol and Van Linge (2009) showed that psychological empowerment acts as a mediator for the relation between structural empowerment (referring to an individual's power related to their position in an organization) and innovative behavior. While this previous work does supports a positive relationship between psychological empowerment and individual innovative behavior, a deeper understanding of this relation remains unknown. Both psychological empowerment and innovative behavior are used as higher-order constructs based on a set of elements or types of behavior. Innovative behavior can be seen as the *generation of ideas*, the *building of support* in an organization and finally *idea realization* (Scott and Bruce 1994, Janssen 2001). The construct of psychological empowerment contains a total of four elements (a sense of *meaning*, *competence*, *impact* and *self-determination*), each reflecting a different part of an individual's orientation to his or her work role (Spreitzer 1995).

The goal of this research is to further test the relation between psychological empowerment and innovative behavior and gain a better understanding of the underlying mechanisms. I propose that each type of innovative behavior requires a different set of competences from individuals to complete them. Subsequently I hypothesize that a certain element of psychological empowerment may have a greater influence on a certain type of behavior compared to the other elements. For example to increase the generation of ideas within an organization, it might be more effective to increase a certain element of psychological empowerment rather than to

increase the construct as a whole. In practice, this would mean not all elements of the construct of psychological empowerment weight or act equal when trying to promote innovative behavior. In this thesis, I first develop hypotheses to identify the strongest potential relations between the elements of psychological empowerment and the types of innovative behavior by reviewing available literature. Secondly I test these hypotheses on data received from two Dutch firms, the first being a service provider in an industrial setting and the second being a health care provider. Finally, I discuss both theoretical and practical implications based on these results theoretical together with possible limitations of this research.

LITERATURE REVIEW

Innovation is widely accepted as an essential factor in ensuring the continuity and relevance of a business. Over the years innovation has become a very broad term for describing many sorts of changes in the way an organization operates. As a consequence definitions for the term innovation are various in nature, for example; when discussing product innovation it can be defined as the introduction of any new product to meet a market need by means of exploiting existing or new technology (Cheng, Chang and Li 2013), management innovation is used to refer to the introduction of management practices, processes and structures to further organizational goals (Birkinshaw, Hamel and Mol 2008). Other researchers differentiate in the newness of the innovation whereas small changes, remaining close to the current status, are seen as an incremental innovation and larger changes, involving more risk and straying further from the current status, are seen as radical innovation (Brentani 2001). What these definitions share is the fact that innovation is seen as the creation of something new or further developing something into a new product, which is an improvement compared to the previous situation. Other forms of innovation are less tangible but can greatly affect the way an organization adds value with its work. Business model innovation for example can be used to describe changes in customer value proposition by changing the profit formula, the key resources or key processes (Johnson, Christensen and Kagermann 2008). A disruptive innovation allows a company to undercut its competitors when underperforming on some aspects of a product or service while gaining a stronger market position by outperforming on other aspects (Christensen 2013), as low cost air-carriers have done in recent years. Innovation can also be used by organizations to strengthen themselves in their current market through development of products for existing clients using existing technologies, or explore new markets with new clients and new technology (Terwiesch

and Ulrich 2008). This leads to diversification of an organization making it less dependent on a single market. All these forms of innovation help an organization remain relevant and competitive in its own market or grant it access to other markets.

The various forms of innovation so far discussed use the term innovation as the end result. In this respect Van de Ven (1986) adds and important factor, stating that innovation is the development and implementation of new ideas by people who engage in transactions within an institution. This implies that innovation is a process which relies on input and actions from people, or personnel as we are researching a business context. The day to day experiences personnel has working with the processes or products of an organization and their direct contact with both clients, suppliers, and other stakeholders gives them important information and understanding of the market. These domain relevant skills are shown to be an important part of innovative behavior as they play a role in the preparation and validation of potential innovations (Amabile 1983). As such personnel within an organization should be a great asset in the innovation process. To improve the innovative effort within an organization it is important to involve employees and stimulate their innovative behavior.

Innovative Behavior

Innovative behavior can be seen as a set of different types of behavior people exhibit when involving themselves in an innovative process. While there are various approaches to the number and content of the different types of innovative behavior, its generally agreed it starts with the recognition of a problem and generation of an idea, and end with the implementation of a solution (Scott and Bruce 1994, Janssen, Schoonebeek and Van Looy 1997). As innovation involves something new, either as a result of improving something that already exists or

something brand new, it is often seen as a creative process. However research by Amabile (1983) shows not only creativity is involved, other components such as domain-relevant skills and task motivation also play an important role.

Reflecting on the different types of behavior needed to be part of the innovative activities within an organization, this research will follow a process entailing three types of behavior based on work by Scott and Bruce (1994) and Janssen (2001). This approach has been chosen as each type of behavior entails actions that require different competences from the individuals to complete them. The first type, *generation of ideas*, is the recognition of a problem and generating a subsequent solution for this problem. It is here that the components listed by Amabile (1983) play an important role. Domain-relevant skills for example are well needed, as without sufficient understanding of a product, its features and uses it becomes difficult to identify possible improvements to this product. Creativity also plays an important role in this part of the innovative process, helping to find an appropriate response when faced with a challenge (Amabile 1983). After the generation of an idea the next type of behavior in the innovative process is the *building of support* for the idea. This second type is performed on several levels when convincing the users of the benefits in an idea or discussing with managers to receive funding for the realization of an idea. As such this step in the innovative process requires significant social skills from its promoter (Janssen 2001, Baer 2012). The last type of innovative behavior involves the *realization of the idea*. This task, especially if the innovation is complex, can involve experimenting or the creation of a prototype and is most likely a team effort involving other employees from the organization to overcome potential challenges (Janssen 2001).

With the identification of the need for innovation in a changing market, research into the antecedents also increased. Scott and Bruce (1994) created a model integrating several streams of research into the subject of creativity and innovation. They identified innovative behavior as the outcome of four interacting systems, being individual attributes such as intuitive problem-solving style, the leadership that is experienced, the work group in which an individual is active, and the psychological climate for innovation based on the support which is present in an organization for innovation and the resources that are made available. More recent work (Yuan and Woodman 2010) showed a positive relation between expected positive performance outcomes and intrinsic motivation and an individual's innovative behavior. As a whole, it is shown that innovative behavior is complex where each activity requires different skills and behavior from the individuals undertaking them (Scott and Bruce 1994). As such it is to be expected that an individual may perform better on some types of behavior then they would on others.

To better understand which individuals can be expected to perform well in innovation, psychological empowerment will be used as an antecedent to innovative behavior. Psychological empowerment is a construct which provides insight in whether an individual feels they have the motivation and capabilities to perform their work tasks. Employees who show strong feelings of psychological empowerment also show a higher degree of innovative behavior compared to colleagues who feel less empowered (Spreitzer 1995).

Psychological empowerment

Empowerment has been the subject of a great deal of study throughout the history of management. Fock et al. (2013) has identified three types of empowerment. The first is discretion empowerment, which is used to describe empowerment through structural or

organizational design where decentralization of authority is applied to give employees ownership of their own tasks (as such it is also known as structural empowerment). The second is leadership empowerment, which is used to describe empowerment through management support and the trust given to the employee by the supervisor when empowering an employee. The third type of empowerment is psychological empowerment. This type of empowerment is used to capture the extent to which employees are motivated and feel they have the capabilities to successfully perform their task duties. The concept of psychological empowerment has received attention from several researchers (Kanter 1988, Spreitzer 1995, Thomas and Velthouse 1990). It differs from discretionary empowerment and leadership empowerment in the way that it is described as a cognitive process within an individual rather than an external or contextual state (Thomas and Velthouse 1990). Thomas and Velthouse (1990) further describe empowerment as a variation on motivation. They argue that empowerment works through relaxing controls on tasks and the completion of these tasks; emphasizing internalized commitment to the task itself. It is as much influenced by external conditions as it is by conditions working in the cognition of individuals.

Spreitzer (1995) developed psychological empowerment into a construct, defining it as "*a motivational construct manifested in four cognitions…together these four cognitions reflect an active, rather than a passive, orientation to a work role*". Spreitzer (1995) defined the four cognitions, or elements. The first element is *meaning*, which identifies how an individual judges the value of his or her work in relation to their own ideals or standards. Research into this field shows varied results, with meaning either being seen as an antecedent or a consequence in relation to work engagement (Yasin Ghadi, Fernando and Caputi 2013), however both directions identify an important link between these two aspects. For example a vegetarian working for a butcher shop will likely feel a large gap between his or her personal values and those of the

organization, possibly leading to a weak sense of meaning and low commitment to their work tasks. The second element is self-efficacy or *competence*. In the context of psychological empowerment this term is used to describe an individual's belief in his or her competence to deliver a high performance. When a person feels he or she is incompetent they may expect their work result to be average at best leading to a more passive attitude towards work tasks. As this research is directed at a work context the term competence will be used. The third element is *self-determination*, reflecting the sense of choice an individual experiences in initiating and regulating his own work performance. People with a strong sense of self-determination are driven by intrinsic motivation and keep an intrinsic regulation style. They perform their work out of interest and enjoyment and receive inherent satisfaction from it (Ryan and Deci 2000). Finally, the fourth element is *impact*, indicating how much an individual feels he or she can influence his own activities and environment. Without this belief one might not take action, as they feel these actions might not be within their span of control.

Psychological empowerment has shown to have a direct positive correlation with both managerial effectiveness and innovative behavior (Spreitzer 1995). As these are very promising consequences the field has since developed further, Amongst other, Pieterse et al. (2010) showed a moderating effect psychological empowerment has on the relation between leadership styles and innovative behavior. They showed at a Dutch government agency that empowered individuals undergo a great increase of innovative behavior when experiencing transformational leadership while transactional leadership had a negative effect on empowered individuals. Other research focusing on the relation between leadership and creativity shows that psychological empowerment acts as a mediator, with positive effect on creative process engagement (Zhang and Bartol 2010). Their comprehensive model also confirmed that empowerment role identity, a

term used to describe the extent to which an individual sees him or herself as a person who wants to be empowered in their jobs, strengthens the effect of leadership on psychological empowerment. Knol and Van Linge (2009) showed in a medical context that psychological empowerment acts as a mediator for the relation between structural empowerment (referring to an individual's power related to their position in an organization, earlier also referred to as discretionary empowerment) and their innovative behavior. Seibert, Wand and Courtright (2011) have taken a more systematic approach and distributed the effects of psychological empowerment in two sets of consequences. The first being attitudinal consequences such as job satisfaction and organizational commitment and the latter being behavioral consequences where amongst others innovative behavior was once again identified.

When developing her model Spreitzer (1995) identified four potential antecedents to psychological empowerment. These may be grouped in two types. The first two being antecedents related to the individual, namely self-esteem and locus of control. The second two being contextual factors, namely access to information about organization mission and purpose, and the reward system. Using the same two types as Spreitzer, Seibert et al. (2011) continued work in the identification of antecedents to psychological empowerment. They found several additional contextual antecedents such as high performance management practices, socio-political support, leadership style, and work design characteristics and several individual antecedents such as positive self-evaluation traits, human capital and gender.

While clear evidence has been found that a strong sense of personal empowerment leads to an increase in innovative behavior, this research has been focused on the overall constructs of empowerment and innovative behavior (Spreitzer 1995, Seibert et al. 2011, Knol and Van Linge 2009, Pieterse et al. 2010). To fully understand how an organization may increase its innovative

capacity through the use of psychological empowerment, a better understanding of the relationship between the underlying elements of both constructs is needed.

HYPOTHESES

In the past, a positive relationship has been established between a strong sense of psychological empowerment and an individual's innovative behavior (Spreitzer 1995). Their research has assumed both psychological empowerment and innovative behavior as overall construct. Subsequent research has also assumed both psychological empowerment and innovative behavior as overall construct (Janssen 2001, Pieterse et al. 2010, Kraimer, Seibert and Liden 1999, Seibert et al. 2011). However, when reviewing the types of innovative behavior it can be argued that these types require different competences from the employee undertaking the behavior. Similarly the elements within the construct of psychological empowerment each show a very different aspect of how an employee perceives him or herself in their work context (Kraimer et al. 1999). Therefore, the parts which make up the construct of both psychological empowerment and innovative behavior differ in their nature.

Problem recognition and the generation of ideas can be seen as a cognitive process where motivation, specifically intrinsic motivation, plays an important role. This seems to be closely related to the meaning an employee perceives in their work and the subsequent effort they are willing to invest in their work. Building support for ideas on the other hand is more of a social effort within innovative behavior. It involves making the idea known within the organization and gathering key supporters to ensure the approval and required funding of an idea. The element of impact shares this social aspect, being the degree in which an employee feels he or she is able to effect on what is going on in their department or organization. Finally the realization of an idea

relates to the work behavior it takes to put the idea into practice, which may involve creating a prototype or perform a test case. This requires substantial domain skills from the employee performing the tasks, including a sound understanding of the domain and technical knowledge. This part of innovative behavior will most likely take a lot of effort and perseverance to overcome challenges. A strong sense of competence will give an employee the confidence to participate, expecting a positive outcome of the activity based on his effort.

While the first three elements of psychological empowerment – meaning, impact and competence – each have a clear aspect they affect, the element of self-determination covers a broader aspect of a person's sense of control in his or her work. The feeling that the choices one makes are their own rather than directed from an external source will increase the sense of overall ownership. While this is not expected to have a direct relationship on the types of innovative behavior, it is expected that a higher sense of self-determination has a positive moderating effect on the relationships between the other elements of psychological empowerment and the types of innovative behavior.

Meaning and the Generation of Ideas

Problem recognition and the generation of ideas are closely related to creativity. There is a positive relationship between task motivation and the generation of an idea (Amabile 1983). Especially intrinsic task motivation has an important relationship with employee creativity (Zhang and Bartol 2010). When a person is intrinsically motivated he or she has the inherent tendency to seek out novelty and challenges, and uses their capabilities to explore and to learn (Ryan and Deci 2000). Intrinsically motivated people derive a positively valued experience directly from the performance of a task. When faced with a task an intrinsically motivated person

will spend effort and attention to understand the problem from multiple perspectives and generate a significant number of alternatives to solve the problem (Thomas and Velthouse 1990).

I theorize that a sense of meaning may have an important relationship to problem recognition and the generation of ideas. People with a strong sense of meaning feel that the values of his or her work closely match their own standards (Spreitzer 1995). The work tasks become important to them and they are driven by internal aspects such as curiosity and enjoyment rather than external aspects such as compensation of managerial instructions. They are expected to be more willing to thoroughly work on a problem and be motived to find the best solution to this problem. As such I propose:

> *Hypothesis 1. A stronger sense of meaning is positively related to more problem recognition and the generation of ideas and solutions.*

Impact and Building Support for Ideas

Innovation does not end with the generation of an idea. Without implementing this idea into practice the idea is wasted, regardless of its quality. Especially ideas with a high degree of novelty might face difficulty in being implemented. These ideas in their nature represent a high degree of uncertainty for an organization and, as a result, are likely to be met with skepticism and hesitation (Baer 2012). In most organizations, the decision to move forward with an idea (for example by allocating resources) is made by multiple stakeholders who each will have their own opinion about the potential value of the idea and their interest in it. As such this situation is open to social maneuvers such as finding sponsorship and advocacy (Green, Welsh and Dehler 2003). Individuals can use their existing network with colleagues and managers to mobilize sponsorship and create buy-in to the idea. Their support may be based on various reasons, for example; on the

expected positive outcome of the innovation or the expectation of returned support in future exchanges. Such agreements require the existence of mutual trust in norms of reciprocity which implies the network ties need to be strong (Baer 2012).

Similarly, the element of impact concerns the degree to which an employee has influence over strategic, administrative, and operating decisions in their organization (Ashforth 1989). Naturally this also includes influencing the people responsible for these decisions. It is also at this point that an idea goes public in the organization, as while an innovative idea can be generated by a single individual or among a small group of trusted peers, the building of support requires the involvement of a larger part of the organization. This will have effect on a person's image as others might feel threatened by innovative ideas making problems in the existing processes visible (Janssen, Van de Vliert and West 2004). These changes to one's image (potentially positive or negative) have shown to have a negative effect on an individual's willingness to participate in innovation (Yuan and Woodman 2010).

To build support for an innovative idea means to make an idea public within the organization and to influence the people and structures involved in the decision making process in favor of the idea. This is an activity which will require social skills from the person undertaking it and proposing changes to the structure will affect a person's image within the organization. To undertake such an action a person would need to feel he or she is able to influence the people and decisions regarding these changes in structure, in short, they need to feel they have an impact. As such I propose:

> *Hypothesis 2. A stronger sense of impact is positively related to more building of support*
> *for ideas.*

Competence and Idea Realization

Once an idea has been generated and sufficient support has been gathered within the organization to receive approval the last part involves the actual realization of the idea (Janssen 2001). While small incremental innovations which have minimal impact on the organization can be tested and implemented by a single person in a short time period, larger or more novel ideas will take significantly more effort to realize. These innovations might require the production of a prototype or creation of a test case to confirm the benefits of the idea. This can involve effort from a team, where multiple disciplines from the organization are involved (Janssen et al. 2004).

In her componential framework for creativity, Amabile (1983) identified that the testing of a creative solution against factual knowledge and other possible criteria is influenced by skills of the tester. These skills include knowledge about the domain, the possession of technical skills and domain-relative talent. They are dependent on cognitive abilities, perceptual and motor skill, and formal or informal training. It is important to note that competence as described by Spreizer (1995) in her research on psychological empowerment and the domain-relevant skills specified by Amabile (1983) are not actually the same. When competence is used in the construct of psychological empowerment, it means the degree to which a person *believes* he or she possesses the skills needed to complete their tasks, rather than the more objective approach of actually possessing these domain-relevant skills.

A belief in one's competence has a positive effect on the behavior shown by an employee. Expectations of personal mastery affect the persistence or coping behavior during a task. The strength of an individual's belief in their own effectiveness may affect whether they will even try to undertake an activity, as people fear and will try to avoid situations they believe exceed their coping skills. Feelings of competence also have a direct relation to the efforts one is willing to

invest in a task. The stronger the feeling of competence, the longer an employee will persist in the face of obstacles or adverse experiences (Bandura 1977).

As the work required performing the realization of an idea will often be unsure, challenging, and faced with obstacles, a strong sense of competence will most likely give an employee more confidence in being able to achieve the desired end-result. As such I propose:

> *Hypothesis 3. A stronger sense of competence is positively related to more idea realization.*

The Moderating Role of Self-Determination

The elements of psychological empowerment that have so far been discussed each embody a specific type of cognition that is argued to have a relationship with the competences needed in the different types of innovative behavior. However the element of self-determination seems to embody a broader perspective of a person's sense of self in their work context. In their extensive work on self-determination theory Ryan and Deci (2000) compared people whose motivation to perform a task is derived internally (self-determined) with those who are externally controlled for an action. Typically those who are self-determined have a greater sense of interest, excitement and confidence in their tasks, leading to enhanced performance, persistence and creativity. Self-determination reflects the degree to which the values and regulations of the requested behavior have been internalized and integrated within the person. The ideas and actions are decisions of their own making rather than that they feel forced upon them by external sources. A feeling of self-determination will lead a greater commitment to the work being performed, a greater persistence in the face of obstacles and an increase in creativity.

While a sense of self-determination creates a feeling of ownership for individuals, leading to increased commitment to their tasks, it is expected that it does not necessarily lead to initiating tasks outside the normal requirement for the work they perform. For example this would mean while a sense of self-determination could motivate a programmer to perform his tasks (programming software) as best he or she can, it would not directly motivate him or her to look beyond normal work responsibilities and try to improve company efficiency through innovation. This is where the other elements of psychological empowerment play their role in relation to innovative behavior. These elements motivate individuals to initiate and participate in activities related to innovation, while a sense of self-determination increases the commitment to these activities (Dorenbosch, Engen and Verhagen 2005).

So while self-determination does increase an individual's commitment to tasks, it needs the other elements of psychological empowerment to initiate and participate in those tasks in the first place. As such I propose:

> *Hypothesis 4a. The relationship between a sense of meaning and problem recognition and the generation of ideas is positively affected by a sense of self-determination such as this relationship becomes more positive when the sense of self-determination is higher.*

> *Hypothesis 4b. The relationship between a sense of impact and the building of support for ideas is positively affected by a sense of self-determination such as this relationship becomes more positive when the sense of self-determination is higher.*

> *Hypothesis 4c. The relationship between a sense of competence and idea realization is positively affected by a sense of self-determination such as this relationship becomes more positive when the sense of self-determination is higher.*
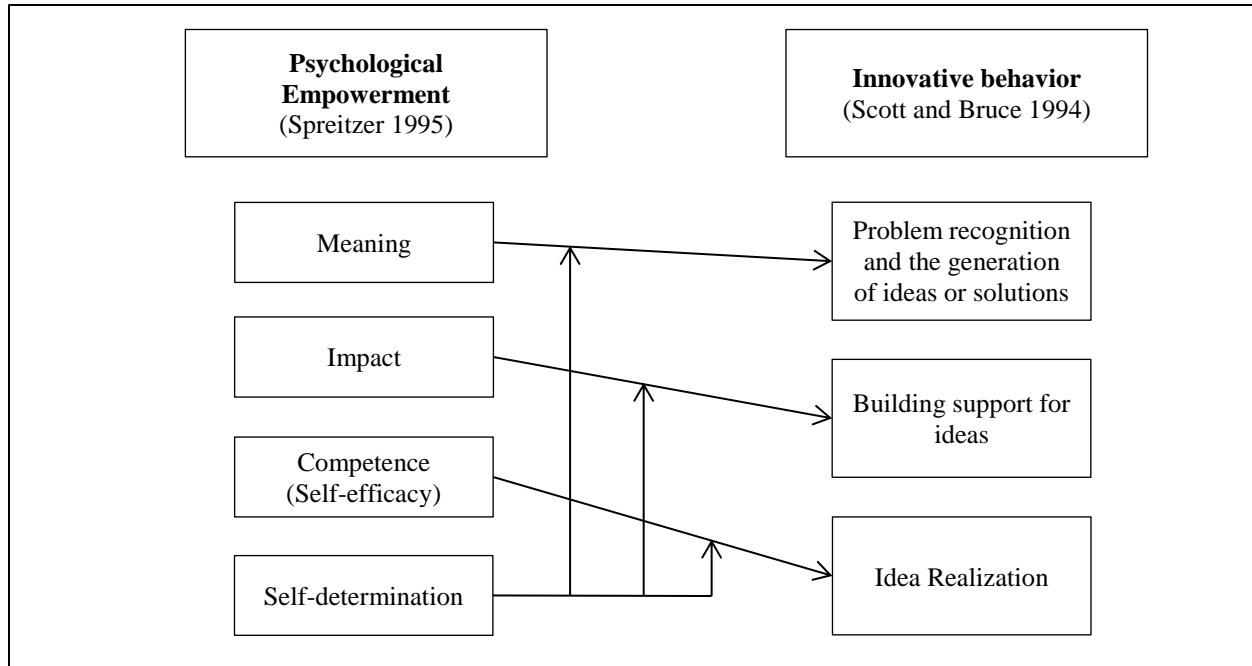
Figure 1. Hypothesized model for the relation between the elements of psychological empowerment and the types of innovative behavior. All presented relations are expected to be positive.

Cross Relationships

This research is based on the assumption that the positive relationship between psychological empowerment and an individual's innovative behavior can be further developed by testing the relationships between the underlying elements of both constructs. As previous research has shown a correlation between the elements of both constructs (Spreitzer 1995, Pieterse et al. 2010, Zhang and Bartol 2010, Kraimer et al. 1999), it is expected that most, if not all elements of psychological empowerment may have some effect on the types of innovative behavior. For example, the element of meaning which is argued to be positively related to the generation of ideas may also have a positive relationship with building support for ideas or idea realization. While anticipating these cross-relationships, this research tries to identify the relationship between the elements of psychological empowerment and the types of innovative behavior which has the strongest effect.

METHODS

Sample and Procedure

Responses were gathered from two Dutch firms. The first is a service provider in an industrial setting. The second is a medical center specialized in treating epilepsy. Respondents were contacted through a general mailing list managed within the organizations. The email entailed a short description of the research and its goals. Participation is voluntary and at request of both organizations responses are kept anonymous. A list of employees was gathered at the human recourse department for each organization. For the industrial service provider the list was limited to those employees working at the office headquarters in Rotterdam, the Netherlands. For the health care provider the list was limited to employees working in close contact with clients who require care on a daily basis. These forms of pre-selection are limited based on the expectation that any employee who is involved in the daily activities of an organization can contribute to the innovative process.

The questionnaire has been translated from English to Dutch, after which back-translation has been performed. Participants received the survey via email containing a unique web-link. One week after the original invitation an automatic reminder was send. For the industrial service provider a total of 295 surveys were send to the business email of the employees. A total of 117 questionnaires were returned leading to a response rate of just over forty percent. For the healthcare service provider a total of 617 surveys were send to the business email of the employees. A total of 250 questionnaires were returned leading to a response rate of over forty percent. This leads to N=367. Pairwise deletion was used to account for missing values, meaning that some results are based on a lower N.

Measures

Innovative Behavior

To measure innovative behavior a nine item scale was used based on research by Scott and Bruce's (1994) on individual innovative behavior in a workplace context as formulated by Janssen (2001). Each of the three types of innovative behavior, based on original work by Kanter (1988) was tested with three items as follows: (1) Creating new ideas for difficult issues (*idea generation*); (2) Searching out new working methods, techniques or instruments (*idea generation*); (3) Generating original solutions for problems (*idea generation*); (4) Mobilizing support for innovative ideas (*building of support*); (5) Acquiring approval for innovative ideas (*building of support*); (6) Making important organizational members enthusiastic in a systematic way (*building of support*); (7) Transforming the work environment in a systematic way (*idea realization*); (8) Introducing innovative ideas into the work environment in a systematic way (*idea realization*); (9) Evaluating the utility of innovative ideas (*idea realization*). The response format was a seven-point scale ranging from 'never' (1) to 'always' (7).

Psychological Empowerment

To measure psychological empowerment a twelve item scale was used designed by Spreitzer (1995). Each of the four elements of psychological empowerment is measured by three items. The items were formulated as follows: (1) The work I do is very important to me (*meaning*); (2) My job activities are personally meaningful to me (*meaning*); (3) the work I do is meaningful to me (*meaning*); (4) I am confident about my abilities to do my job (*competence*); (5) I am self-assured about my capabilities to perform my work activities (*competence*); (6) I have mastered the skills necessary for my job (*competence*); (7) I have significant autonomy in determining how I do my job (*self-determination*); (8) I can decide on my own how to go about doing my

work (*self-determination*); (9) I have considerable opportunity for independence and freedom in how I do my job (*self-determination*); (10) My impact on what happens in my department is large (*impact*); (11) I have a great deal of control over what happens in my department (*impact*); (12) I have significant influence over what happens in my department (*impact*). The response format was a seven-point scale ranging from 'fully disagree' (1) to 'fully agree' (7).

Control Variables

Past research has shown tenure within an organization to be related to innovative behavior (Baer 2012, West and Anderson 1996). Additionally as I have argued that social aspects hold an important place in this research related to the building of support, the number of positions held within the organization may have a positive effect on an individual's networking capacity. To make sure the results hold irrespective of the variables they have been included as control variables. While there is no support to include gender as a variable, it has been examined as the expectations were that the organization in the industrial context would provide predominantly male respondents while the organization in the medical context would provide predominantly female respondents. While this assumption was correct, gender did not show any significant results and as such was excluded from the final analyses.

RESULTS

Table 1 displays the mean, standard deviation, reliabilities, and correlations among the variables of psychological empowerment and innovative behavior. The reliability of the used measures was high; whereas exclusion of any items would not provide a relevant increase in reliability.

Table 1. Descriptive statistics and correlations among the variables from psychological empowerment and innovative behavior.

	Variable	M	SD	1	2	3	4	5	6	7	8	9
1	Tenure	3.00	1.19									
2	Positions	1.98	1.03	.39**								
3	Meaning	5.76	1.29	.15**	.00	(.96)						
4	Competence	5.80	1.12	.22**	.07	.76**	(.95)					
5	Self-determination	5.31	1.17	.13*	.08	.54**	.65**	(.92)				
6	Impact	4.65	1.29	.07	-.01	.41**	.38**	.52**	(.92)			
7	Generating ideas	1.77	0.88	-.01	.09	.19**	.11	.13*	.25**	(.84)		
8	Building of support	1.24	0.90	-.02	.02	.04	.00	.06	.19**	.65**	(.89)	
9	Idea realization	1.24	0.85	-.02	.04	.11	.02	.13*	.29**	.68**	.71**	(.91)

Note: Cronbach αs are reported on the diagonal between brackets. *N* = 367, with pairwise deletion of missing values, which means that some correlations are based on lower *N*.
*p < .05; **p < .01.

Some of the elements of psychological empowerment show a strong correlation. Similarly the types of innovative behavior also show a strong correlation. This was expected as previous literature has treated these concepts as constructs. To ensure the items used measured only their intended target, a principle component analyses was performed. The items used to measure the elements of psychological empowerment showed a clear separation between each element. Similarly the items used to measure the types of innovative behavior showed a clear separation, except for item six from the survey, used to measure the building of support for an idea (*Making*

important organizational members enthusiastic in a systematic way). This question related more closely to the realization of an idea. As such this item has been removed from the results.

Regression Analyses

To test the hypotheses, regression analysis was performed using the variables and pairwise deletion. In the first step the control variables were entered. In the second step the four elements of psychological empowerment were added to test their direct relation to the type of innovative behavior. In the final step the interaction terms of self-determination and the other elements of psychological empowerment were added (self-determination with meaning for Table 2, self-determination with impact for Table 3, and self-determination with competence for Table 4). Due to the high correlation amongst the elements of psychological empowerment the regression analyses have been checked for multicollinearity, however the results showed that none of the elements had a significant predictive ability for the other elements (VIF < 3.5).

The Generation of Ideas

Table 2. Hierarchical regressions for the generation of ideas.

	Step 1				Step 2				Step 3			
Variable	*B*	*β*	*Err.*	*p*	*B*	*β*	*Err.*	*p*	*B*	*β*	*Err.*	*p*
Tenure	-.04	-.06	.05	.37	-.06	-.08	.05	.18	-.07	-.10	.04	.10
Positions	.09	.11	.05	.08	.11	.13	.05	.03	.13	.16	.05	.01
Meaning					.19	.21	.08	.01	.30	.33	.08	.00
Competence					-.09	-.10	.08	.28	.12	.13	.09	.18
Self-determination					-.03	-.03	.07	.71	.04	.05	.07	.51
Impact					.20	.22	.06	.00	.16	.18	.06	.00
Meaning x Self-determination									.21	.46	.04	.00

Note: R^2 = .01 for step 1; ΔR^2 = .083 for step 2; ΔR^2 = .018 for step 3. N= 367 with pairwise deletion of missing values.

Results for the building of support for an idea show that before interactions were applied, the control variables did not show a significant relationship. When including the elements of

psychological empowerment with the second model, a sense of meaning showed a positive relationship to the generation of ideas. This confirms the expectations formulated in *hypothesis 1*, where the relation between a sense of meaning and the generation of ideas was formulated (β = .21, B = .19, ρ = .01). Additionally a sense of impact also showed a positive significant relationship to the generation of ideas.

The model containing a sense of self-determination as a moderator of the relation between a sense of meaning and the generation of ideas had added value over the main relationship between a sense of meaning and the generation of ideas, as can be seen in Figure 2. This confirms the expectations formulated in *hypothesis 4a*, where the moderating effect of self-determination on the relationship between a sense of meaning and the generation of ideas was formulated (β = .46, B = .21, ρ < .01). Simple slope analyses demonstrated the moderating effect was not statistically relevant one standard deviation below the mean (ρ < .78) or one standard deviation above the mean (ρ < .14).
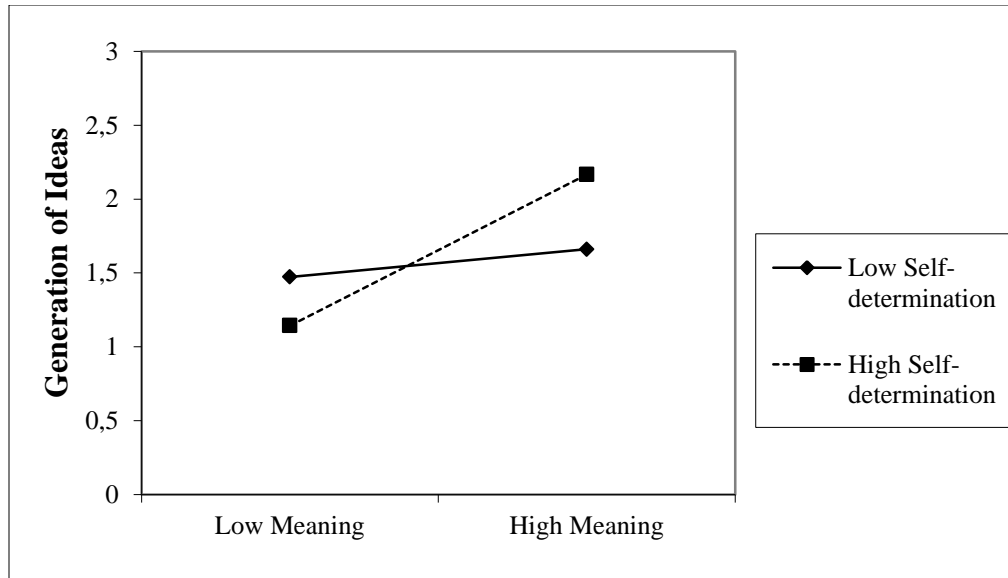
Figure 2. The interaction between a sense of self-determination and a sense of meaning on the generation of ideas.

The Building of Support for an Idea

Table 3. Hierarchical regressions for the building of support for an idea.

Variable	Step 1				Step 2				Step 3			
	B	β	Err.	p	B	β	Err.	p	B	β	Err.	p
Tenure	-.02	-.03	.05	.61	-.02	-.03	.05	.61	-.02	-.02	.05	.69
Positions	.03	.03	.05	.58	.04	.04	.05	.48	.04	.05	.05	.42
Meaning					.04	.04	.08	.61	.08	.09	.08	.31
Competence					-.10	-.10	.09	.27	-.09	-.10	.09	.28
Self-determination					.00	.00	.07	.97	.09	.10	.07	.21
Impact					.20	.21	.06	.00	.20	.22	.06	.00
Impact x Self-determination									.17	.26	.04	.00

Note: $R^2 = .001$ for step 1; $\Delta R^2 = .043$ for step 2; $\Delta R^2 = .046$ for step 3. N= 367 with pairwise deletion of missing values.

Results for the building of support for an idea show that before interactions were applied, the control variables did not show a significant relationship. When including the elements of psychological empowerment with the second model, a sense of impact showed a positive relationship to the building of support for an idea. This confirms the expectations formulated in *hypothesis 2*, where the relation between a sense of impact and the building of support for an

idea was formulated (β = .21, B = .20, ρ < .01). The other elements of psychological empowerment did not show a significant relationship with the building of support for an idea.

The model containing a sense of self-determination as a moderator of the relation between a sense of impact and the building of support for an ideas had added value over the main relationship between a sense of impact and the building of support for an idea, as can be seen in Figure 3. This confirms the expectations formulated in *hypothesis 4b*, where the moderating effect of self-determination on the relationship between a sense of impact and the building of support for an ideas was formulated (β = .26, B = .17, ρ < .01). Simple slope analyses demonstrated the moderating effect was not statistically relevant one standard deviation below the mean (ρ < .93) or one standard deviation above the mean (ρ < .25).
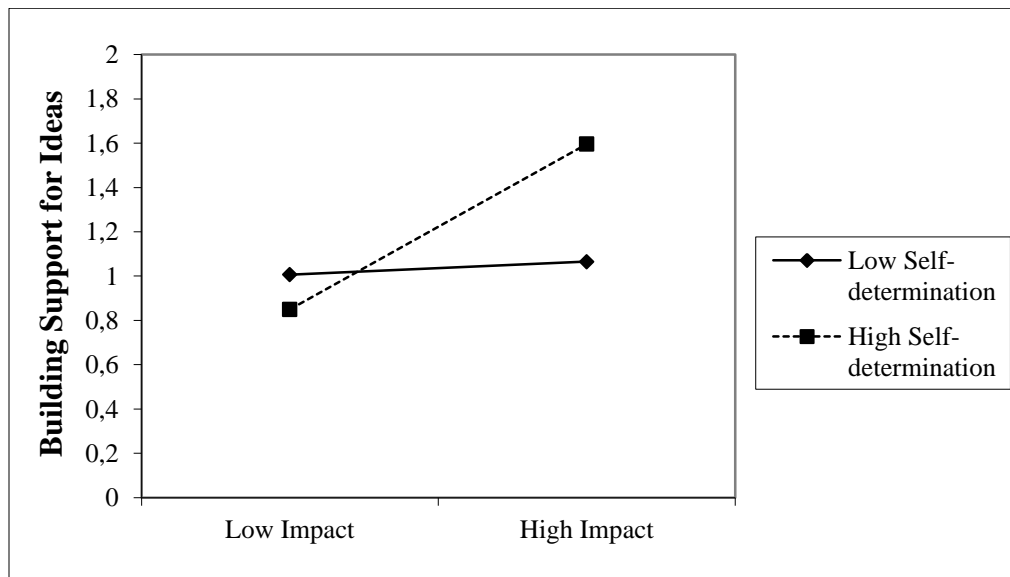

Figure 3. The interaction between a sense of self-determination and a sense of impact on the building of support for an idea.

The Realization of an Idea

Table 4. Hierarchical regressions for the realization of an idea.

Variable	Step 1				Step 2				Step 3			
	B	*β*	*Err.*	*p*	*B*	*β*	*Err.*	*p*	*B*	*β*	*Err.*	*p*
Tenure	-.03	-.04	.05	.51	-.03	-.04	.04	.46	-.04	-.06	.04	.34
Positions	.05	.06	.05	.35	.06	.07	.05	.22	.07	.08	.05	.16
Meaning					.11	.13	.07	.13	.18	.20	.08	.02
Competence					-.18	-.20	.08	.03	-.08	-.09	.09	.38
Self-determination					.04	.05	.07	.51	.07	.08	.07	.28
Impact					.25	.29	.06	.00	.23	.27	.06	.00
Competence x Self-determination									.09	.23	.04	.01

Note: R^2 = .003 for step 1; ΔR^2 = .100 for step 2; ΔR^2 = .018 for step 3. N= 367 with pairwise deletion of missing values.

Results for the realization of ideas show that before interactions were applied, the control variables did not show a significant relationship. When including the elements of psychological empowerment with the second model, a sense of competence showed a negative relationship to the realization of an idea. This contradicts the expectations formulated in *hypothesis 3*, where the relation between a sense of competence and the realization of an idea was formulated ($β$ = -.20, B = -.18, $ρ$ = .03). Additionally a sense of impact showed a positive significant relationship to the generation of ideas.

The model containing a sense of self-determination as a moderator of the relation between a sense of competence and the realization showed significant relevance. While the direct relationship between a sense of competence and idea realization is negative this effect is positively moderated when including a sense of self-determination, as can be seen in Figure 4. This confirms the expectations formulated in *hypothesis 4c*, where the moderating effect of self-determination on the relationship between a sense of competence and the realization of an idea was formulated ($β$ = .23, B = .09, $ρ$ < .01). Simple slope analyses demonstrated the moderating

effect was not statistically relevant one standard deviation below the mean ($\rho < .63$) or one

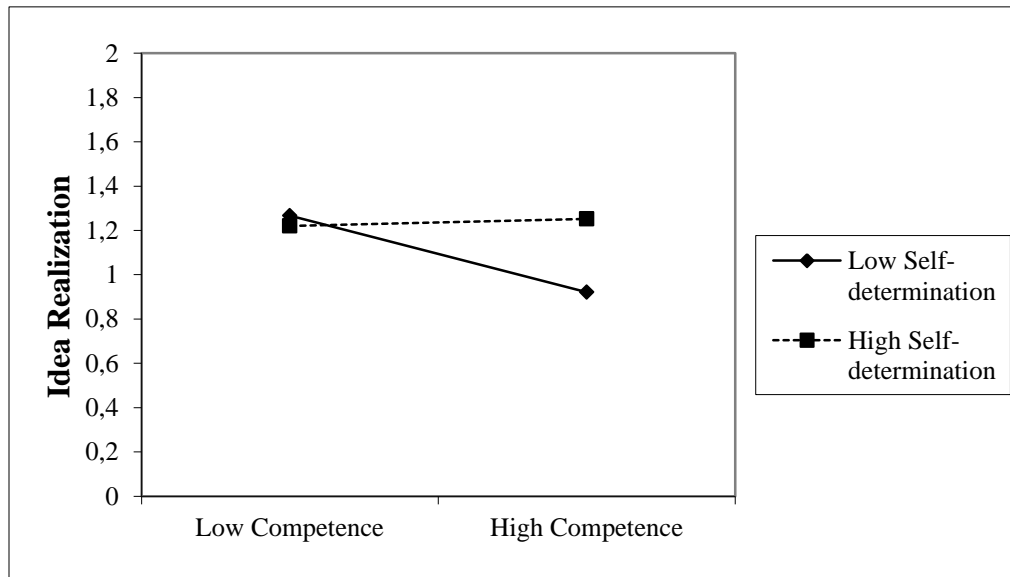standard deviation above the mean ($\rho < .97$).

Figure 4. The interaction between a sense of self-determination and a sense of competence on the realization of an idea.

DISCUSSION

Previous research has provided evidence of a positive relationship between psychological empowerment and an individual's innovative behavior. However both concepts are overall constructs consisting of several elements or types of behavior. The goal of this research is to gain a better understanding of the underlying mechanisms for the relationship between psychological empowerment and an individual's innovative behavior. The generation of an idea, which relates closely to creativity and motivation, is shown to be positively affected by an individual's sense of meaning. Building support for an idea, which is a social activity, is shown to be positively affected by an individual's sense of impact. The realization of an idea, which relates to perseverance and effort, is shown to be negatively affected by an individual's sense of competence.

Despite the negative relationship between a sense of competence and idea realization it was found that when introducing self-determination as a moderator on the relationship this added significant value to the relationship. So much so, that the negative relationship between a sense of competence and idea realization only showed for individuals who experienced a low sense of self-determination. Similarly the other relationships (between a sense of meaning and the generation of an idea, and between a sense of impact and the building of support for an idea) were also positively moderated by a sense of self-determination. It showed that when an individual has a low sense of self-determination, the positive effect in the direct relationship is almost fully negated.

Theoretical Implications

The findings of this research confirm the expectations that there is a deeper understanding for the relationship between psychological empowerment and innovative behavior. When separating innovative behavior in a set of different types of behavior, results show that for each type of behavior a different element of psychological empowerment has a positive effect (while noting that having a sense of impact has a positive effect on each of the types of innovative behavior). Previous research directed its attention to the effects of psychological empowerment as a construct (Spreitzer 1995, Spreitzer, De Janasz and Quinn 1999, Seibert et al. 2011). This assumes that each element of psychological empowerment operates in a similar manner with equal weight on the construct as a whole, however this research has shown that when using psychological empowerment to promote individual innovative behavior this is not the necessarily the case. This confirms findings relating to the validity of the construct of psychological empowerment (Kraimer et al. 1999), describing that while the construct is valid evidence was found indicating the elements were not all equal.

This research also shows the role of self-determination as an essential part of psychological empowerment. While it does not show any significant direct relationship with innovative behavior, when viewed as a moderator it greatly strengthens the effect elements of psychological empowerment have on the types of innovative behavior. This holds true for all direct relations investigated in this research and supports the idea that not all elements of psychological empowerment work in a similar manner, as with a low sense of self-determination the effects of psychological empowerment on innovative behavior would have been marginal at best. These results also support the claim that not all elements of psychological empowerment act similar to each other and that self-determination describes a broader concept of motivation and

involvement. In fact this research shows the essential role self-determination plays in relation to innovative behavior. I argued that self-determination plays an important role in an individual's motivation to perform their tasks. It is a broader perspective reflecting on all tasks a person is involved with and not isolated directly to specific tasks such as innovative behavior. Within the construct of psychological empowerment, self-determination is the cornerstone to promote innovative behavior. Without it, the effects of the other elements on innovative behavior are cancelled out. As such it can be stated that the pursuit of innovative behavior through psychological empowerment should above all start with ensuring employees involved poses a strong sense of self-determination.

As having a sense of self-determination plays such an important role in relation to promoting innovative behavior through psychological empowerment further research is needed to test if self-determination has a similar role on other known consequences of psychological empowerment such as leadership (Spreitzer et al. 1999), organizational commitment (Kraimer et al. 1999), and task performance (Seibert et al. 2011).

While this research does show how innovative behavior can be improved through the elements of psychological empowerment, it gives no handle on how to influence the individual elements of psychological empowerment. Current research involving antecedents to psychological empowerment also assume the construct as a whole (Zhang and Bartol 2010, Fock et al. 2013, Laschinger et al. 2001, Kirkman and Rosen 1999, Seibert et al. 2011), so while strong antecedents such as managerial leadership (Seibert et al. 2011) and structural empowerment (Laschinger et al. 2001) are known, these studies do not show which element or elements are primarily affected. Further research might direct its efforts to categorize the known antecedents to psychological empowerment and test their effect on the separate elements of psychological

empowerment. For the element of meaning research into the field of organizational identification may provide useful insights, outlining the relationship between individuals and their organization (Van Knippenberg and Sleebos 2006). For the element of impact, a meta-analysis by Spector (1986) provides a comprehensive list of variables (such as satisfaction, involvement or role conflict) that affect the sense of perceived control individuals have in their work. Operationalizing these variables into adjustments of organizational structure could provide promising insights into how a sense of impact may be increased. For increasing a sense of competence, a potential direction could be found in setting of continuing challenges in work requirements (Tierney and Farmer 2011). Finally for improving the element of self-determination, theory by Ryan and Deci (1989) show certain leadership styles have a positive relationship on how self-determined people feel within an organization. Specifically when managers provide choice, non-controlling feedback and acknowledge the perspective of their employees' self-determination increases.

Finally this research showed a negative relationship between a sense of competence and the realization of an idea. I argued that this relationship would be positive as a greater sense of competence would increase an individual's willingness to invest time and effort in the task, especially in the face of obstacles or adverse experiences. While support has often been found for this positive relation between a sense of competence and performance (Bandura 1977, Stajkovic and Luthans 1998, Tierney and Farmer 2011), other research by Vancouver et al. has questioned the validity of this claim. Through longitudinal research they established that performance has a positive effect on feelings of competence rather than the other way around (Vancouver, Thompson and Williams 2001). In a later study, by performing manipulated experiments, it was shown that at individual level an increased sense of competence had a negative effect on

subsequent performance (Vancouver et al. 2002). Hence complacency during preparation or performing of a task due to a high sense of competence could be argued as a possible reason for the negative effect found.

Managerial Implications

It is generally acknowledged that innovation is essential for the long term success of an organization. The results of this study confirm claims from previous research that psychological empowerment is an important antecedent to innovative behavior within an organization. However, the results also show organizations should not focus on the whole construct of psychological empowerment to increase their innovative capabilities. Through analyses, an organization should identify where in the innovative process their organization is lacking. For example this could lead to acknowledging that while there are sufficient creative ideas within the organization, there is a lack of support building or idea realization. From these results an organization could specifically target to improve the element of psychological empowerment which will be most effective in improving the innovative behavior of its personnel and as such their own innovative capabilities.

This information could be valuable on multiple levels of an organization. From the team leader looking to improve the innovative effort within the team, till the CEO looking to improve innovative behavior throughout the organization. Knowing which elements will have which effect is essential to ensure the efforts spend are being used effectively.

Strengths and Limitations

This research marks the next step into understanding the relationship between psychological empowerment and innovative behavior. The sample contains personnel involved in the everyday

business of two very different organizations. As such the results give a good indication of the consequences when an organization directs its attention to a specific element of psychological empowerment. Understanding that each element of psychological empowerment has its own role to play in the promotion of innovative behavior opens up the possibility for to direct effort more specifically on all levels of an organization.

This research also has several limiting factors. Innovation is a broad concept, which can group together all kinds of improvements to all kind of processes and products. One limitation of this research is that there is no differentiating factor in the type or complexity of the innovation where the individual shows his or her innovative behavior. As such there may be great variation in the innovative behavior respondents envisioned when completing the survey. This could also be part of the reason for the high correlation within the types of innovative behavior as especially for smaller, incremental innovations the difference between types of behavior may become blurred. Another limitation is the sample used for this study. For both organizations there was no strict pre-selection performed. While the argument that any employee can show innovative behavior still holds true, further research could direct its attention on whether the findings of this research hold true among various other samples. For example a sample containing only individuals whose daily work focusses on innovation would further develop this research showing if the same results are found when innovation is an important part of one's daily responsibilities.

The items measuring innovative behavior are subjective and subject to common source bias. A positive score on the items may have been interpreted by the respondents as favorable or desirable. This could be averted by gathering an assessment of an individual's innovative behavior from a third party, such as a peer or direct manager. Due to the required anonymity of

the information this was not possible, however even if the information would be available one may also question the objectiveness of this information as a peer or direct manager may not have a clear view of all the activities performed by an individual. A more objective method of measuring innovative behavior would add to confidence in the findings.

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