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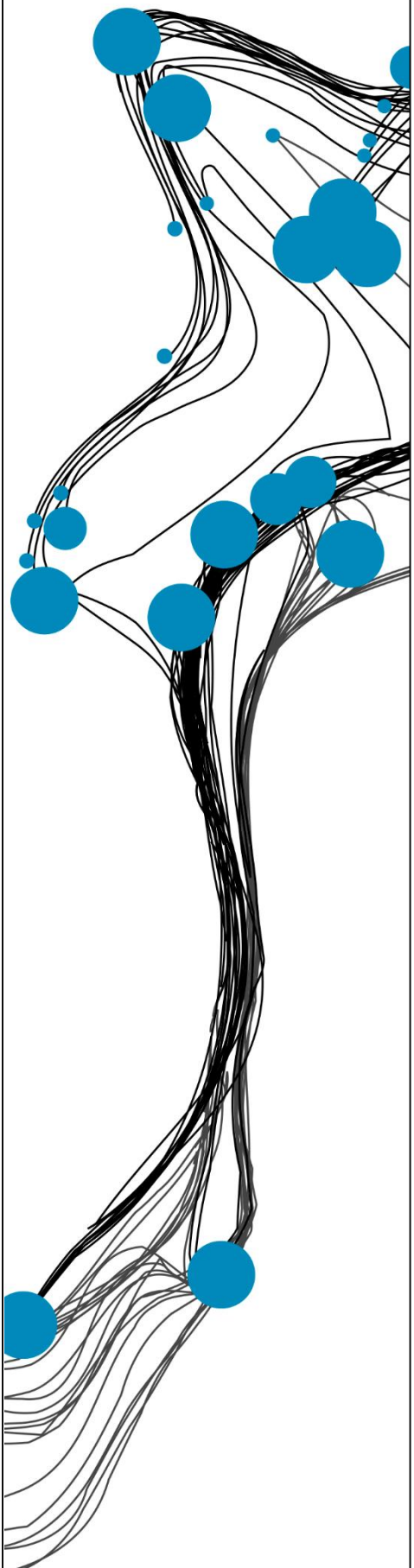

Linking learning and innovation: the role of innovative work behavior

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Master Thesis

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Abstract

The purpose of this study was to 1) develop a theoretical model that relates learning to innovation, and 2) test that model through examining the effect of reflective learning and organizational learning on employees' innovative work behavior (IWB) as well as determining the influence of employees' IWB on service and process innovation at the organizational level. It was hypothesized that employees will show greater IWB if they engage in both reflective and organizational learning and it was expected that IWB is positively related to service innovation and process innovation. Survey data were collected from a sample of 161 employees from a Dutch organization which is market leader in Supply Chain Management services for fashion and lifestyle markets. Simple and multiple regression models have been conducted to empirically test the hypotheses. The results show that reflective learning and knowledge acquisition (a dimension of organizational learning) are positively related to IWB. With regard to the relationship between IWB and organizational level innovation, it was found that IWB is positively related to both service innovation as well as process innovation. Therefore, the findings of this study highlight the important direct effect of IWB on service and process innovation at the organizational level. Managers can stimulate IWB, which in turn has a positive effect on organizational level innovation, by providing opportunities for reflection on work experiences and investing in knowledge acquisition activities.

Keywords: reflective learning; organizational learning; innovative work behavior; service innovation; process innovation; multilevel research

Introduction

There is a growing emphasis by scholars and organizational leaders on the importance of innovations in the workplace. The reason for this is that innovations help to challenge old ways of thinking and can provide new solutions to challenges such as changes in customer expectations or society (Bamber, Bartram, & Stanton, 2017). More specifically, innovations encompass all services, products and work processes that are new and beneficial for an organization or a specific group of employees (Neiva, Mendonça, Ferreira, & Francischeto, 2017). Hence, innovations not only enable an organization to attain external benefits but are also a source to secure and improve internal work processes that are the basis for the provision of new services or production processes (Widmann, Messmann, & Mulder, 2016). As Santos-Vijande and Álvarez-González (2007) highlight, through innovation organizations can diversify and adapt, and even reinvent themselves to fit the changing conditions of technology and the market. On this basis, innovation is widely considered to be one of the most important antecedents of organizational performance and success (Turulja & Bajgoric, 2019; Zaefarian, Forkmann, Mitręga, & Henneberg, 2017).

Academics as well as practitioners have acknowledged that one way for organizations to become innovative is to capitalize on their employees' ability to innovate (Agarwal, 2014). The argument for this is that employees are the ones who can generate new ideas and who can transform these ideas into new working methods, products and services (Carmeli, Meitar, & Weisberg, 2006; Yuan & Woodman, 2010). Hence, employees are expected to be innovators themselves, and actively contribute to the development and implementation of innovations. Consistent with this, there has been a burgeoning interest of scholars in understanding what factors influence employees' innovative work behavior (IWB) at work (Prieto & Pérez-Santana, 2014). IWB refers to all activities employees carry out individually or in social interaction in relation to the development of innovations in their work context (Messman & Mulder, 2020).

In this stream of research, scholars have related the concept of individual level learning with IWB, suggesting that an individual's learning process increases domain-related knowledge, which in turn increases an individual's potential to combine knowledge in new ways and explore and generate new ideas (Holman et al., 2012). More specifically, according to Lin and Sanders (2017) individuals learn through recognizing past patterns and discerning new possibilities. Moreover, they theorize that individuals develop cognitive maps about the various domains in which they work through the process of articulating ideas to oneself and others. These cognitive maps, which consists of competences and knowledge, can be thought of as individual learning stocks (Bontis, Crossan & Hulland, 2002). These learning stocks, enable individuals to take on actions that are experimental in nature or help them in breaking out of traditional mind-sets and so to see things in new and different ways (Bontis et al., 2002;

Lin & Sanders, 2017). As such, promoting learning at the individual level seems to be important to enhance IWB.

However, limiting the scope to only learning at the individual level still underestimates the organizational context in which employees' learning is displayed (Hubers, 2020). That is to say, employees do not only learn at the individual level but together, through the social processing of meaning making and knowledge exchange, they also develop new ideas and tools and share these in a way that results in commonly held beliefs or practices (Finnigan, Daly, & Stewart, 2012). For this reason, it is important to also take the organizational level into account as organizational learning is more than only the sum of learning by individual members of the organization (Greiling & Halachmi, 2013). Nevertheless, to the best of our knowledge, no empirical studies have examined the influence of individual learning in combination with organizational learning on IWB. Therefore, this study aims to shed light on this gap by simultaneously examining the influence of individual an organizational learning on employees' IWB.

Another gap, and potential opportunity for this study, emerges in the in the lack of evidence regarding the relationship between IWB and organizational level innovation. In the literature, it is widely suggested that employees' IWB is positively related to organizational level innovations which include for example, product and process innovations (e.g. Prieto & Perez-Santana, 2014). In fact, it is argued that "one of the most vital elements organizations can use to achieve necessary organizational level innovation is for their employees to display innovative work behaviour (Hak & Sanders, 2018, p. 7)". However, most prior studies on innovation have been limited to only a single level of analysis and examined for example employees' IWB as the ultimate dependent variable (Anderson, De Dreu, & Nijstad, 2004) or focused only on organizational level innovation. While this narrow focus helps to deepen the understanding of specific levels of innovation, the resulting fragmention prevents us from seeing the relationship between these levels (Crossan & Apaydin, 2010). For this reason, gaining insight into the relationship between employees' IWB and organizational level innovation is of great relevance as it will provide a more coherent picture of the innovation research.

Given this relevance, the current study aims to answer the following three research questions:

1. First, what would a theoretical model on the relationship between individual and organizational level learning and innovation look like?
2. Second, to what extent do individual and organizational learning predict individual level innovation?
3. And finally, to what extent does individual level innovation predict organizational level innovation?

Through answering these questions, the present study closes the scientific gap of missing insights on the effect of learning processes at different levels on innovation as requested by

Timmermans, Van Rompaey and Franck (2018). Practitioners could utilize these new insights to stimulate innovation within the organization through learning practices and activities that span across multiple levels. Second, this study answers the need for more empirical examination on the link between employees' IWB and organizational level innovation because despite their inherent interdependence, IWB and organizational level innovation have been studied independently with little or no integration (Fu, Flood, Bosak, Morris, & O'Regan, 2015). This multi-level approach is theoretically important since it provides a more comprehensive insight on how different level outcomes are related to each other.

Theoretical framework

First, IWB is being introduced and conceptualized. Second, individual and organizational learning processes are defined and related to IWB. Subsequently, service and process innovation at the organizational level are defined. Thereafter, the relationship between IWB and innovation at the organizational level is explained.

Innovative work behavior

IWB is defined as all employees' contributions and efforts directed at the generation, processing and implementation of new ideas regarding ways of doing things, including new products, technologies, work processes or procedures with the aim of increasing organizational success and effectiveness (Yuan & Woodman, 2010). As this definition implies, IWB not only generates new ideas but also makes such new ideas reality, creating benefits for the individual, the team or the organization (Shih & Susanto, 2016). These innovations resulting from IWB may vary from the exploitation and renewal of processes, products or services to the establishment of new management systems or productions methods (Bos-Nehles, Renkema & Janssen, 2017). Furthermore, IWB is considered as extra-role behavior, in that it is desired behavior that goes beyond the formal job requirements or what is explicitly expected of an employee (Janssen, 2000). Therefore, organizations cannot enforce employees to engage in IWB. Rather, organizations depend on the ingenuity and willingness of employees to engage in IWB (Susomrith & Amankwaa, 2019).

How to measure IWB has been the aim of various studies. In the literature, scholars theoretically distinguish between multiple dimensions, which are often linked to different stages of the innovation process (De Jong & Den Hartog, 2010). Noefer, Stegmaier, Molter and Sonntag (2009) for example, perceive IWB as a two-dimensional construct consisting of: idea generation and idea implementation whereas Janssen (2000) and Scott and Bruce (1994) define IWB as a three-stage process consisting of: idea generation, idea promotion and idea implementation. In general, most

scholars distinguish between two and five different dimensions of IWB. Nevertheless, although different conceptualizations of IWB exist, the proposed four-factor model of De Jong and Den Hartog (2010) performed better than any competing model in terms of absolute, incremental and parsimonious model fit. Following De Jong and Den Hartog (2010), IWB is conceived as a construct consisting of four dimensions: idea exploration, idea generation, idea championing, idea implementation. These four dimensions will be explained below.

Four dimensions of innovative work behavior. First of all, an innovation process starts with the discovery of an opportunity (De Jong & Den Hartog, 2010) and includes looking for new ways to improve processes, products or services (Basadur, 2004; Kanter, 1988). Such new ways of idea exploration are often triggered by incongruities, discontinuities, perceived task-related problems or emerging trends (Janssen, 2000). The second dimension of IWB is idea generation. Idea generation involves the production of new and useful ideas or, in general terms, solutions to identified problems (Woodman, Sawyer, & Griffin, 1993). Once a new idea has been generated, idea championing becomes relevant, which is the third dimension of IWB. Idea championing is defined as the process in which the employee aims to find sponsors, backers and friends to promote the new idea as it will generally demand a change in the current ways of doing business that can meet resistance (Bos-Nehles, Bondarouk, & Nijenhuis, 2017; Janssen, 2000). Finally, the new idea has to be implemented. This can be done in multiple ways, such as producing a prototype or model of innovation that can be experienced and ultimately applied within a work role, a group or the whole organization (Janssen, 2004). In addition, idea implementation also includes making innovations part of the regular work processes (Kleysen & Street, 2001).

Taken together, in this study IWB is conceptualized as a construct consisting of four dimensions: idea exploration, idea generation, idea championing and idea implementation. It is, however, important to note that although IWB is described as a set of four dimensions, De Jong and Den Hartog (2010) failed to find empirical evidence for the distinctiveness of these dimensions. Rather, IWB could be considered as a mix of interrelated and discontinuous dimensions, where employees are most likely to be involved in any combination of these dimensions at any time (Bos-Nehles, Renkema, & Janssen, 2017; Scott & Bruce, 1994). For example, during the last phase: the implementation of an innovation, new obstacles or challenges may arise. In such a situation, an employee has to step back and must seek support to solve the problem (idea championing), adjust the idea and check resources within the workplace. Thus, although IWB is presented in a linear and sequential order, in reality, the dimensions are not linear but reiterative and chaotic (Widmann, Mulder & König, 2018). Therefore, in line with previous studies, this study conceives IWB as a one-dimensional construct with four dimensions, rather than as a four-dimensional construct (De Jong & Den Hartog, 2010; Janssen, 2000; Scott & Bruce, 1994).

The dynamic and context-bound nature of innovative work behavior. Since innovations are developed in a particular work context and based on human activities, IWB is considered to be both dynamic as well as context-bound (Messmann & Mulder, 2012). It is dynamic because the development of an innovation is an interactive process that involves multiple individuals with several responsibilities, needs and expectations who interact to share their problems and ideas and who come up with strategies for realizing their ideas (Messmann & Mulder, 2017). On the other hand, IWB is context-bound because the activities that employees undertake with regard to innovation development are determined by the expectations and demands within a particular work context for which the innovation is developed (Messmann & Mulder, 2020). As such, innovative activities and their outcomes can be facilitated or hampered by individual and contextual factors such as personal characteristics, managerial practices and leadership styles or an innovative work culture (El Fath & Radikun, 2019; Widmann & Mulder, 2018; Yuan & Woodman, 2010).

However, while many individual and contextual factors as antecedents of IWB are empirically evidenced, no empirical studies have been undertaken to examine the effect of both individual and organizational learning processes on IWB despite theoretical reasoning (e.g. Ellström, Ekholm, & Ellström, 2008; Lemon & Sahota, 2004). In fact, individual learning and organizational learning might have an important influence on employees' IWB since they are both related to actions intended to improve an employees' ability, knowledge, skills and competences (Ellström et al., 2008). How individual learning and organizational learning processes are likely to affect IWB will be discussed in the following sections where also related hypotheses are developed.

Individual learning

Individual learning in the workplace is defined as a process by which individuals expand their capacity (e.g. competences, skills and knowledge) and change their behavior through experience, action and social interaction (Høyrup, 2010; Van Minh, Badir, Quang, & Afsar, 2017). It can include a variety of different forms which may or may not be formally structured, and learning can take place spontaneously when the individual engages in social interactions. In more concrete forms, individuals learn for example by doing the job itself, trough working with clients, by tackling and challenging new tasks, through co-operating and interacting with colleagues, through formal education or by reflecting on one's work experiences and tasks (Tynjälä, 2008).

Deriving from this, learning at the individual level can include a variety of different forms. Most of these forms learning forms are aimed at increasing the level of mastery on specific tasks (e.g. deliberate practice theory) or on the development of personal skills (e.g. situated learning theory) (Ericsson, 2006; Lave & Wenger, 1991). However, this study specifically focuses on the relationship between reflective learning and IWB. The reason for this is that reflective learning is aimed at

transforming individual and collective experiences into new thinking and acting (Gieske, van Meerkerk, & van Buuren, 2019; Hildén, Pekkola, & Rämö, 2014). In other words, reflective learning enables employees to see things in new and different ways by breaking out of rigid and traditional mind-sets (Matsuo, 2019). Accordingly, as IWB is all about exploring new possibilities, generating new ideas and ultimately implementing these new ideas, reflective learning can serve as an important facilitator. In this regard, there are three individual learning theories that are likely to provide insights into the relationship between learning and IWB, because at the heart of these theories is the concept of (critical) reflection. These learning theories are: Kolb's (1984) Experiential learning theory, Mezirow's Transformative learning theory (1978) and Schön's (1987) Reflective Practitioner theory and will be discussed next.

Reflective learning as facilitator of innovative work behavior. Kolb's (1984), Mezirow's (1978) and Schön's (1987) individual learning theories describe how the reflective processing of past experiences with situations and tasks can facilitate the performance of new tasks and activities in new situational contexts. Moreover, these theories outline how individuals use reflection to establish connections between activities and outcomes over time (e.g. the understanding of how activities lead to certain outcomes or how previous activities and their outcome affect a current activity) (Messmann & Mulder, 2015). As such, reflection on everyday work experiences and tasks, may be beneficial for employees' IWB. Reflection on daily work experiences includes activities such as identifying own weaknesses and strengths, assessing progress toward goals and devising approaches to overcome perceived obstacles (Bednall, Sanders, & Runhaar, 2014). These reflective activities enable the transfer of skills and knowledge from familiar situations to new situations in a work context (Schön, 1987). Therefore, reflection increases an employees' flexibility to cope with unexpected, unfamiliar or ambiguous work tasks and situations, which are inherent to innovation development (Messmann & Mulder, 2015). In addition, reflection on work experiences requires employees to 'stop and think', to step back from the scene of action and evaluate the meaning of their actions (Høyrup, 2010). As result, employees are likely to acquire a clear vision about the status quo and gain new insights on what they have to achieve and how they can achieve that. This clarity enables them to recognize opportunities for innovation development and so explore and generate new ideas (Høyrup, 2010; Widmann & Mulder, 2018). On this basis, reflective learning could be considered as an important facilitator of employees' IWB. Therefore, it is hypothesized:

H1: Reflective learning will positively affect employees' IWB.

Besides focusing on individual reflective learning in relation to IWB, it is important to study organizational learning processes in relation to IWB because, although organizational learning occurs

through individuals, it would be a mistake to conclude that organizational learning is nothing but the cumulative result of their employees' learning (Hult, Ketchen Jr, & Nichols Jr, 2003). To be more precise, individual learning is a cognitive or behavioral activity between an individual and his/her environment, whereas organizational learning is a collective process dependent upon relationships and interactions among individuals such that learning occurs primarily through the interaction of the participants (Bennet & Bennet, 2004). Adding the perspective of organizational learning is thus beneficial, as it includes more than the sum of all individual learning within the organization (Hubers, 2020). Therefore, to obtain a more comprehensive view of learning in relation to IWB, the next section describes the relationship between organizational learning processes and employees' IWB.

Organizational learning

Organizational learning is regarded as the detection and correction of errors (Argyris, 1976) whereby an error is defined as the discrepancy between what an organization and their members aspire or expect to achieve and what they actually achieve (Visser, 2016). Along these lines, there is a general agreement among scholars that learning may be accomplished along two dimensions which appear under a variety of labels (Van Grinsven & Visser, 2011). On the one hand, in its basic dimension, organizational learning is action oriented, occurring within existing mental models, routine, norms, policies and underlying assumptions labeled by scholars as single-loop (Argyris & Schön, 1996) or first-order learning (Susan, Boal & Hunt, 1998). To be more precise, in its basic dimension, organizational learning denotes learning in which employees reduce the discrepancy between expected and actual consequences by adjusting action strategies and assumptions, however without changing their deeply held norms and values that make the consequences worthwhile to pursue (Visser, 2017). For example, when employees find ways to improve an existing system without fundamentally changing the assumptions they are working with (Midgley & Lindhult, 2020). On the other hand, in its second dimension, organizational learning involves changing mental models, policies, norms, and assumptions underlying day-to-day actions and routines labeled by scholars as double-loop (Argyris & Schön, 1996) or second-order learning (Susan, Boal, & Hunt, 1998; Van Grinsven & Visser, 2011). As such, in its second dimension, organization learning denotes learning in which employees reduce the discrepancy between expected and actual consequences by adjusting action strategies, assumptions but also by changing their own norms and values. For example, when a whole system in an organization needs to be changed and the learning is much more extensive since it is about rethinking fundamental assumptions (Midgley & Lindhult, 2020).

In the literature, several scholars have studied the process of organizational learning to define its dimensions or sub-processes (e.g. Daft & Weick, 1984; Huber, 1991; March, 1991; Watkins & Marsick, 1993). This study adopts the proposed sub-processes of Huber (1991) as this model is multi-

level and therefore speaks to the aims of this study. According to Huber (1991) organizational learning consists of four sub-processes, each of which is likely to be related to IWB. These four organizational learning processes are: knowledge acquisition, knowledge distribution, knowledge interpretation and organizational memory and will be discussed next.

Four organizational learning processes and their relation with innovative work behavior. *Knowledge acquisition.* Knowledge acquisition is the process followed by an organization in order to actively search for information and knowledge (McKelvie, Wiklund, & Brattström, 2018). This process is twofold. An organization can acquire knowledge internally by for example, learning from its experiences, obtaining knowledge from its staff or conducting internal benchmarking studies. Simultaneously, an organization can acquire knowledge externally by for example, attending conferences on new developments in the market, collaborating with other organizations or conducting external benchmarking studies (Kululanga & McCaffer, 2001). According to Radaelli, Lettieri, Mura and Spiller (2014), facilitating knowledge acquisition activities could prove a valuable effort for organizations to stimulate IWB among employees, because knowledge acquisition can assist employees in the generation of new ideas. More specifically, through knowledge acquisition, employees expand their domain relevant skills such as factual knowledge (i.e. information about a particular subject or discipline) and technical skills. This expansion of domain relevant skills allows an employee to better understand complexities and generate solutions to occurring problems which require an innovative approach. Hence, the larger the set of domain relevant skills through knowledge acquisition, the more alternatives available for exploring, generating and implementing new ideas, thus an increase in IWB (Afsar & Umrani, 2019; Dong, Bartol, Zhang, & Li, 2017). Moreover, new knowledge obtained through knowledge acquisition can increase confidence in one's abilities and skills and thus facilitating overcoming the status quo to achieve new things (Cangialosi, Odoardi, & Battistelli, 2020). Furthermore, as a result of knowledge acquisition, employees are likely to gain new insights and a better understanding of the trends and market needs. This infusion of knowledge may trigger them to explore and generate more innovative ideas to problems they encounter in their own daily work situations (Yli-Renko, Autio, & Sapienza, 2001). Taken together, knowledge acquisition makes possible the continuous expansion, renewal and enhancement of individual knowledge (Senge, 1990). Therefore, knowledge acquisition efforts could be regarded as an important facilitator of employees' IWB.

Knowledge distribution. Knowledge distribution refers to the extent to which an organization distributes knowledge to its employees regarding the organization's overall (innovation) goals, achievements, policies and future plans (Battistelli, Odoardi, Vandenberghe, Di Napoli, & Piccione, 2019). This process of knowledge distribution is not only a crucial part of organizational learning (Huber, 1991; Srivastava, Bartol, & Locke, 2006) but it is also likely to contribute to employees' IWB for

the following reasons. First, by sharing and distributing information, employees gain confidence and perceptions of importance to the organization, which may lead to reciprocation in extra-role behavior (Veenendaal & Bondarouk, 2015). Extra-role behavior refers to desired behavior that goes beyond the formal job requirements, such as IWB (Caniëls & Veld, 2019). Hence, when managers and supervisors share innovation-related information it is likely that employees will reciprocate in innovative behavior that fits the innovation goals of the organization (Bos-Nehles & Veenendaal, 2019). Second, knowledge distribution activities help to reduce ambiguity and uncertainty among employees regarding the organizational innovation-related goals and processes. This is crucial to promote adaptive attitudes and, consequently, enhance employees' contribution to the organization's innovation goals (van den Heuvel, Demerouti, Bakker, & Schaufeli, 2013). Finally, knowledge distribution is crucial in promoting IWB among employees because the risks of engaging in spontaneous processes of innovation development are perceived to high if employees feel they lack up-to-date knowledge (Vera & Crossan, 2005). For these reasons, it is reasonable to suggest that knowledge distribution will enhance employees' IWB.

Knowledge interpretation. Knowledge interpretation refers to the process of knowledge sharing and developing a shared understanding (Daft & Weick, 1984; Vashdi, Levitats, & Grimland, 2019). A shared understanding is essential in organizational learning as it provides a general guide on the knowledge needs. This broad direction helps to determine the types of knowledge acquisition and sharing activities that should be supported and encouraged (Hoe, 2007). Multiple scholars found empirical evidence that knowledge sharing and developing a shared understanding leads to more exploration, generation, championing and implementation of innovations (e.g. Akhavan, Hosseini, Abbasi & Manteghani, 2015; Radealli et. al, 2014; Yu , Yu, & Yu, 2013). There are two main reasons that support these findings. First, knowledge sharing offers the opportunity for employees to engage in social exchanges. According to the social exchange theory, employees will return their effort and dedication based on the social norm of reciprocity (Blau, 1964). Drawing on this theory, employees who share knowledge with others are more likely to be reciprocated and receive support from other employees within the organization (Mura, Lettieri, Radaelli, & Spiller, 2016). Hence, when employees are involved in knowledge sharing, they are likely to receive valuable and unique knowledge of others (which contributes to the generation of new ideas) and they are expected to find more potential buddies that would provide support during the championing or implementation of new ideas (Konstantinou & Fincham, 2011; Mura et al., 2016). Conversely, if employees do not share knowledge quite often, their communication becomes less open and ties get weaker, making it hard to gain social support for innovative ideas (Afsar, 2016). Second, while employees are involved in knowledge sharing, they do not simply pass on knowledge to others but they also elaborate, combine and 'translate' it into a form that is understandable and relevant for other individuals (Hansen, Mors, & Løvås, 2005; Radaelli

et al., 2014). These acts within knowledge sharing provide the employee with a new understanding of the knowledge he or she already possess and enhances the ability to think more creatively (Masood & Afsar, 2017). Consequently, this new understanding of knowledge and increase in creativity enables an employee to more readily perceive opportunities for change (idea exploration) and allow an employee to more easily engage in other IWB activities such as the generation of new ideas or the championing of ideas (Kim & Park, 2017; Radaelli et al., 2014). Taken together, employees who regularly share knowledge and develop a shared understanding are expected to engage in higher levels of IWB.

Organizational memory. It is assumed to find positive relationships between the three first organizational learning variables and employees' IWB. However, the role of organizational memory is more ambiguous. Organizational memory refers to the collection of knowledge within the organization, manifesting in assumptions, behaviors, shared beliefs, routines, organizational procedures, systems, structures and policies (Camisón & Villar-López, 2011). On the one hand, scholars have noted its negative role. For example, Moorman and Miner (1998) demonstrated in their study that groups with strong memories were least able to deviate from previous routines and routines during the development of new products. They argued that employees of an organization may not be willing to try new ways of doing things if they know that actions in the past were successful. Other scholars have obtained similar results and also suggested that the existence of routines, procedures, systems (i.e. organizational memory) obscures creative and innovative behavior among employees (Chen, Huang, & Hsiao, 2010; Prajogo & McDermott, 2014). Taken together, these findings indicate that organizational memory can hinder the creation of new ideas and solutions of employees.

On the other hand, organizational memory can be seen as an antecedent of IWB as it facilitates access to the prior knowledge that resides within the organization like for example, information about the current market and clients or information about the competitive environment. Previous studies have provided empirical evidence that what has already been learned and stored in organizational memory drives innovation development because organizations who can manage current knowledge in organizational memory are better able to speed learning processes and the creation of creativity and innovation (Camisón & Villar-López, 2011; Tsai, 2008; Wang, 2011). Moreover, organizational memory contains knowledge about previous failures and successes regarding innovation development. For employees within an organization, it acts as a source for remembering what worked successfully and what failed and why. In this way, organizational memory can avoid errors that were made in the past during innovation development and can impact future decision making in a positive way (Kmieciak, 2019). Lastly, having databases with up to date knowledge and information can have a positive influence on IWB because if employees have easy access to stored knowledge, they can efficiently reuse knowledge during innovation development (Filieri & Willison, 2016). For example, retrieving how

previous innovations were implemented can provide direction on how to implement a new innovation in an efficient and effective way. Deriving from this, it is expected that organizational memory will have a positive influence on IWB.

H2: The organizational learning dimensions a) knowledge acquisition b) knowledge distribution c) knowledge interpretation and d) organizational memory will positively affect employees' IWB.

So far, this study explained individual and organizational learning processes and describes their influence on IWB. The next section will define two types of organizational level innovation and will explain how IWB is likely to lead to organizational level innovation. By examining the relationship between IWB and organizational level innovation, this study moves from the micro level of analysis to the macro level of analysis.

Organizational level innovation

Organizational level innovation is defined as the implementation, acceptance and adoption of a new or significantly improved product (service or good), process, a new organizational method or a new marketing method in business practices, workplace organization or external relations (Eurostat, 2005; Uzkurt, Kumar, Kimzan, & Eminoğlu, 2013). As this definition implies, innovations can be implemented in different forms such as products, processes, marketing and organizational methods. However, this study considers two types of organizational level innovation: service innovation and process innovation.

Service innovation is defined as a type of product innovation involving the introduction of a service that is new or significantly improved, with the aim to create value for any of the service stakeholders (Eurostat, 2005; Thakur & Hale, 2013). This type of innovation is crucial in organizations as it allows for the sustaining of competitive advantage, helps organizations outperform their competitors, creates opportunities to increase the quality of the delivery process and supports the introduction of new service concepts (Giannopoulou, Gryszkiewicz, & Barlatier, 2014).

Process innovation is defined as the implementation of a new or significantly improved production process, support activity, or distribution method for an organization's products or services (Eurostat, 2005). Objectives of process innovation are primarily to reduce production costs, increase quality and efficiency or improve product recoveries or productions (Baba, 2012).

Taken together, service innovations are mainly driven by market needs and ultimately external customers. Hence, service innovations are primarily effectiveness-driven. Accordingly, process innovations are mainly driven by the needs of internal production (i.e. internal customers) and can be said to be primarily efficiency-driven (Bergfors & Larsson, 2009). However, this separation and these

strict definitions of service and process innovation do not imply that there cannot be a combination of the two types of innovations simultaneously. Instead, these types of innovation are most often depending on each other. For example, when an organization wants to produce a new service, it usually requires a change in its production process to facilitatie the production of this new service, thereby, implying a complementary relationship (Doran, 2012).

Innovative work behavior and its relationship with organizational level innovation

In the literature, it is suggested by scholars that employees' IWB is positively related to organizational level innovations which include for example, service or process innovations (e.g. Jimenez-Jimenez & Sanz-Valle, 2008; Prieto & Perez-Santana, 2014). The central idea is that employees' IWB, through interactions and exchanges, can merge together to shape organizational level innovation (Gupta, Tesluk, & Taylor, 2007). Based upon the institutionalization theory, Shipton, Sparrow, Budhwar and Brown (2017) conducted a conceptual study on the relationship between individual level innovation (i.e. IWB) and organizational level innovation. More precisely, Shipton et al., (2017) explored whether and how two distinct HRM configurations – characterized by an entrepreneurial orientation or a control orientation – foster different types of IWB and they describe how these IWB's at the individual level in turn may coalesce to shape organizational level innovation. They argue that, control-oriented HRM promotes IWB that is focused on aligning with the prevailing institutional norms and expectations. As such, organizational level innovations resulting from this type of IWB through bottom-up emergence, are theorized to be oriented toward what is perceived to fit with the context. On the other hand, they claim that entrepreneurial HRM fosters reflective IWB's, which in turn coalesce through composition (reaching consensus) and compilation (bringing together diverse abilities, perspectives and insights into a coherent whole) to reflective organizational level innovation (Shipton et. al (2017). Deriving from this, IWB at the individual level can through the exchange of ideas and conflicting demands merge together to shape organizational level innovation (Lin & Sanders, 2017; Shipton et al., 2017).

The studies developed by Fu et al. (2015), Sanz-Valle and Jiménez-Jiménez (2018) provide empirical evidence of the relationship between IWB and organizational level innovation. Using a sample of 120 Irish accounting firms, Fu et al. (2015) showed that there is a positive association between IWB and the revenues per employee generated from new services and new clients, which they used as a measure of innovation. In a similar fashion, Sanz-Valle and Jiménez-Jiménez (2018) collected data from 225 Spanish manufacturing organizations and studied the effect of employees' IWB on product innovation. Their findings support the idea that employees' IWB fosters product innovation. In particular, the authors argue that companies seeking to foster product innovation should pay attention to their employees' innovative behaviour. Based on these studies and on the

general consensus in previous research, it is reasonable to suggest that employee's IWB will be positively related to organizational level innovation, including service and process innovation. Therefore, it is hypothesized:

H3: Employees' IWB is positively related to service innovation and process innovation at the organizational level.

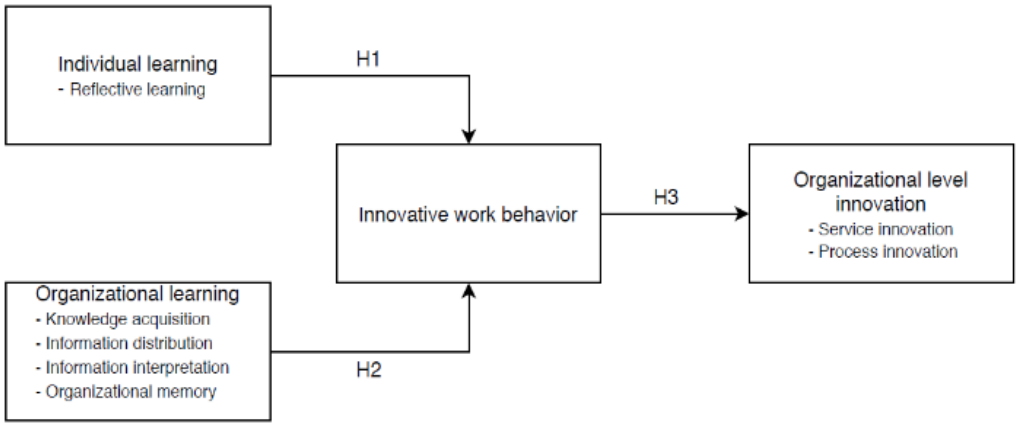

Figure 1 Research model with hypothesized relationships

Method

Research design & participants

A quantitative cross-sectional research design was used to test the three hypotheses. To collect data, an online questionnaire was distributed to employees from a Dutch organization which is market leader in Supply Chain Management services for fashion and lifestyle markets. In total, 211 participants out of the possible 494 filled out the online questionnaire, an overall response rate of 42,41 %. Data from participants who did not complete the entire questionnaire have been excluded. Ultimately, data of 161 participants were included in this study (N = 161). With respect to background characteristics of participants, 65,8% were male and 34,2% were female. Concerning age, participants ranged in age from 21 to 64 years (M = *40,6 years, SD = 11,3)*. Table 1 provides an overview of other demographic information.

Table 1

Demographic Variables in %

		N	Percentages
Highest degree	Secondary Vocational Education	69	42.9%
	University of Applied Sciences	77	47.8%
	Master´s Degree	15	9.3%
Length of employment	0 – 9 years	101	62.7%
	10 – 19 years	31	19.3%
	20 – 29 years	18	11.2%
	30 – 37 years	11	6.8%

Instruments

The questionnaire consisted of five construct-specific scales adopted from previous studies as well as demographic (e.g. gender, age, length of employment and educational level) items. A factor analysis, using principal axis factoring with direct oblimin rotation with a fixed number of eight factors, was conducted on all items of the questionnaire to examine the validity of the scales. In total, these factors accounted for 67% of the variance in the questionnaire. However, it must be noted that not all questions did load on the factors as originally meant in the questionnaires (see Table 2). Based on theoretical reasons, Cronbach's alphas of the pre-existing eight construct-specific scales were computed and these were found reliable. For this reason, this study proceeds with the pre-existing classification of the eight construct-specific scales. The construct-specific scales used were as follows:

IWB. IWB was measured using the ten-item scale developed by De Jong and Hartog (2010). This measure of IWB contains four subscales: idea exploration, idea generation, idea championing and idea implementation. Participants were asked to assess their own IWB. Responses could vary from *never* (1) to *always* (5). Sample items are: *"How often do you pay attention to issues that are not part of your daily work?"* (Idea exploration), *"How often do you generate original solutions for problems?"* (idea generation), *"How often do you attempt to convince people to support an innovative idea?"* (idea championing), and *"How often do you contribute to the implementation of new ideas"* (idea implementation). This IWB scale was originally developed for supervisor ratings but in this study provided an employee self-rating instrument. Although using self-ratings creates some risk of social desirability biases, their use avoids the risk of biased supervisor ratings that vary across different raters (Korzilius, Bücker, & Beerlage, 2017). The Cronbach's alpha for the scale was .90, indicating a reliable scale.

Reflective learning. Reflective learning was measured using the four-item reflection scale developed by Kember (2000). Participants were asked to rate the extent of agreement at items describing their reflective learning activities. Responses could vary from *totally disagree* (1) to *totally*

agree (5). A sample item is: *"I often reflect on my actions to see whether I could have improved on what I did".* The scale was found to be reliable with a Cronbach's alpha of .73.

Organizational learning. Organizational learning was measured using the twenty-five-item scale developed by Jiménez-Wang (2011) which covers the four subprocesses of organizational learning: knowledge acquisition, information distribution, information interpretation and organizational memory. Participants were asked to rate the extent of agreement at items describing the learning practices and activities in their organization. Responses could vary from *totally agree* (1) to *totally disagree* (5). Sample items are: *"The organization has co-operation agreements with other companies, universities and technical colleges"* (knowledge acquisition), *"Our organization informs all members about the aim of the company"* (knowledge distribution), *"All the members of our organization share the same aim to which they feel committed"* (knowledge interpretation), and "*Our organization has up-to-date databases of its clients"* (organizational memory). All four sub-scales were found to be reliable, with Cronbach's alphas of .83 (knowledge acquisition), .81 (knowledge distribution), .71 (knowledge interpretation) and .83 (organizational memory).

Service innovation. Service innovation was measured using the four-item scale of Akgün, Keskin and Byrne (2009). Participants were asked to rate the services on their newness and innovativeness. Responses could vary from *never* (1) to *always* (5). A sample item for service innovation is: *"Our new services are often perceived as very novel by customers".* The Cronbach's alpha for the scale was .66, slightly below the threshold of .7 but indicating an acceptable scale.

Process innovation. Process innovation was measured using the four-item scale of Akgün, Keskin and Byrne (2009). Participants were asked to rate the business processes on their newness and innovativeness. Responses could vary from *never* (1) to *always* (5). A sample item for process innovation is: *"We are constantly improving our business processes".* The Cronbach's alpha for the scale was .68, slightly below the threshold of .7 but indicating an acceptable scale.

Procedure

The first step in the data collection was recruiting an organization who is willing to participate in this study. This was done by making by making an appointment with the Chief People Officer of a Dutch organization which is market leader in Supply Chain Management (SCM) services for fashion and lifestyle markets. After explaining the aim and procedure of the study, the organization was willing to participate. The second step was collecting data in the organization. In order to encourage voluntary participation to the questionnaire, the following procedures were adopted. First, a week before distributing the questionnaire, an announcement e-mail was sent to all employees that clearly specified the aim en procedure of the study and kindly asked employees to participate. Second, a week

after the announcement mail was sent, the participants were invited to participate via an e-mail with a link to the online questionnaire. Third, a follow-up reminder was sent one week after the initial invitation. Participants were assured that participation was voluntary and that anonymity was guaranteed. Additionally, participants could fill in the questionnaire on either a smartphone or a computer depending on personal preferences. The data were gathered within a two-week period.

Data analysis

Gathered data were analyzed using the statistical software program SPSS (25.0). First, the means, standard deviations and correlations for the variables addressed in this study were calculated to examine the coherence between them. Second, a multiple regression analysis was carried out to investigate whether the five predictor variables: reflective learning, knowledge acquisition, knowledge distribution, knowledge interpretation and organizational memory could positively affect employees' IWB (hypotheses 1 & 2). These predictor variables were investigated sequentially through the use of 'backward elimination' where at each step, the predictor variable that had the smallest (non-significant) impact on the model was excluded. This method of backward elimination continued until only significant (p = 0.05) predictors remained in the model. Third, a single linear regression analysis was carried out twice: once to examine the effect of employees' IWB on service innovation and once to examine its effect on process innovation (hypothesis 3). In all analyses performed, IWB was treated as a one-dimensional construct instead of a four-dimensional construct. The reason for this is that the exploratory factor analysis revealed that all 10 items of IWB loaded on to one single factor (see Table 2). This conceptualization of IWB is in line with other research who also considered IWB as an one dimensional construct (e.g. De Jong & Den Hartog, 2010; Janssen, 2000; Scott & Bruce, 1994).

Table 2

Factor Loadings Resulting from a Principal Axis Factoring, using Oblique Rotation (N = 161)

	Knowledge distribution	Innovative work behavior	Organizational memory	Service innovation	Reflective learning	Knowledge interpretation	Knowledge acquisition	Process innovation
Our organization has an (online) place where employees can bring in new suggestions and ideas.	**.54**	-.01	.04	.10	.12	.11	.19	-.14
There are within the organization individuals who take part in several teams or divisions and who also act as links between them.	**.20**	.04	.00	.10	.07	.41	.19	.13
Our organization periodically informs employees about the latest innovations in the organization.	**.18**	.00	.24	.03	.14	.22	.26	-.19
Our organization encourages employees to share knowledge and best practices with each other.	**.15**	.11	.29	-.07	.09	.45	.19	-.19
Our organization informs all members about the mission of the organization.	**.01**	-.05	.15	-.05	.07	.39	.20	-.48
How often do you make other employees enthusiastic for innovative ideas?	-.16	**.84**	.11	-.01	-.11	.07	.12	.11
How often do you systematically introduce innovative ideas into work practices?	.09	**.76**	-.03	-.05	.04	-.11	.08	.09
How often do you contribute to the implementation of new ideas?	-.03	**.75**	-.02	.04	-.05	.05	-.08	.12
How often do you attempt to convince people to support an innovative idea?	-.01	**.75**	-.05	-.07	-.01	.12	.02	.02
How often do you put effort in the development of new things?	.08	**.72**	-.01	.02	.11	.05	-.03	.07
How often do you wonder how things can be improved?	-.02	**.68**	-.07	.06	.12	.04	-.09	-.20
How often do you search out new working methods, techniques or instruments?	.13	**.63**	.12	-.14	.20	-.12	.02	-.07
How often do you find new approaches to execute tasks?	.00	**.58**	.04	.12	.09	-.08	-.07	.00
How often do you generate original solutions for problems?	.06	**.54**	.02	.07	.04	-.16	.09	-.12
How often do you pay attention to issues that are not part of your daily work?	-.24	**.34**	-.01	.04	.09	.02	.09	.19
Our organization keeps databases up-to-date.	.09	.00	**.78**	.09	-.04	.01	.00	-.07
Our organization allows all the employees have access to the organization's databases.	.02	.10	**.75**	-.03	.03	-.10	-.13	-.13
Employees within our organization consult the databases.	-.04	.02	**.74**	-.05	-.01	.13	-.01	.03
Employees have access to the documents of the organization.	.04	.01	**.65**	.09	-.05	-.02	.01	.08
Bleckmann has up-to-date databases of its clients.	.02	-.11	**.64**	-.12	.19	.16	-.01	.10
Stored knowledge in databases (e.g. customer data) makes work easier for employees.	.05	.00	**.41**	.19	-.24	.07	-.05	-.11
Our organization has an online community, so as to find an expert on a concrete issue at any time.	-.03	.00	**.30**	-.01	.03	.06	.18	.25
In comparison with competitors, our company has introduced more innovative services during the past 5 years.	.05	.10	-.05	**.70**	-.01	.04	-.13	-.01
In comparison with competitors, our company is faster in bringing new services into the market.	.10	.06	-.06	**.69**	-.01	.04	-.09	.05

Our new services are often perceived as very novel by customers.	-.23	.10	.18	**.31**	.02	-.06	.25	-.06
New services of our company often put us up against new competitors.	-.17	.03	.09	**.29**	.12	.09	.31	.07
I often re-appraise my experience so I can learn from it and improve for my next performance.	.04	-.05	.05	.09	**.78**	-.09	-.01	.07
I often reflect on my actions to see whether I could have improved on what I did.	-.07	.06	-.03	-.01	**.75**	-.02	.08	-.03
I like to think over what I have been doing and consider alternative ways of doing it.	.05	.22	-.02	-.04	**.55**	.09	-.09	.04
I sometimes question the way others do something and try to think of a better way.	.01	.19	-.04	.10	**.23**	.09	-.22	-.04
Teamwork is a very common practice within our organization.	-.08	-.01	-.01	.08	.01	**.67**	-.01	-.07
Employees of our organization share knowledge and experiences with each other.	.06	-.07	.16	-.07	-.05	**.64**	.06	-.02
The organization offers other opportunities to learn (visits to other parts of the organization, internal training programs, etc.) so as to make individuals aware of other people or departments' duties.	.17	.17	.17	.13	-.09	**.32**	.17	-.07
All employees of Bleckmann share the same aim to which they feel committed.	.05	-.13	.04	.06	-.11	**.28**	.02	-.34
Our organization develops internal rotation programs so as to facilitate the shifts of the employees from one department or function to another.	.35	.17	.10	.21	-.18	**.28**	.04	.12
Our organization encourages employees to join formal or informal nets outside the organization.	.08	.12	-.12	.09	.01	.08	**.73**	-.12
Our organization is in touch with professionals and experts.	-.01	-.05	.05	-.07	.04	.07	**.69**	.02
Our organization has co-operation agreements with other companies, universities and colleges.	.17	.00	-.04	-.04	-.09	-.01	**.55**	.08
Bleckmann asks employees to attend fairs and events.	.12	.18	-.15	-.06	.07	.20	**.54**	-.15
Our organization has a resourceful Research and Development policy.	.34	.10	.20	.04	.16	.08	**.39**	-.02
Our organization has the organizational systems and procedures that support innovation.	.30	.04	.27	.25	.15	.10	**.19**	.08
Our organization continuously experiments with new ideas and approaches to working methods.	.17	.12	.13	.25	.08	.36	**.14**	.24
Business processes in our company are new compared with that of our main competitors.	.09	-.04	.09	.31	.22	.32	.05	**.08**
We are constantly improving our business processes.	-.06	-.01	-.02	.63	.09	.14	-.04	**.04**
Our future investments in new business processes are significant compared with our annual turnover.	.02	-.04	.12	.30	.11	-.05	.24	**-.06**
Our company changes business processes at a great speed in comparison with our competitors.	.07	-.14	.11	.59	-.02	-.17	.11	**-.14**
Eigenvalues	10.74	5.66	2.47	2.10	1.76	1.72	1.43	1.28
% of explained Variance	22.86	12.05	5.25	4.47	3.74	3.67	3.05	2.73

Results

The aim of this study was to examine the effect of reflective learning and organizational learning on employees' innovative work behavior (IWB) as well as determining the influence of employees' IWB on service and process innovation at the organizational level. In this section, descriptive statistics of the variables addressed in this study are provided, followed by the results of multiple regression and single linear regression analyses.

Description of study variables

In Table 3, the means, standard deviations and correlations of the variables addressed in this study are presented. The results of the correlational analysis showed that reflective learning $r = .49$, $p = <.001$, knowledge acquisition $r = .28$, $p = <.001$ and knowledge distribution $r = .20$, $p = .197$ are positive and significantly correlated with IWB. This suggests that, on average, a higher score on reflective learning, knowledge acquisition and knowledge distribution is accompanied with a higher score on IWB. However, no significant correlations were found between knowledge interpretation, organizational memory and IWB. Furthermore, IWB is significantly correlated with service innovation $r = .28$, $p = <.001$ and process innovation $r = .16$, $p = .157$. This implies that, on average, employees with higher scores on IWB are likely to have higher scores on service innovation and process innovation.

Table 3

Pearson Correlations and Descriptive Statistics of Study Variables (N = 161)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Innovative work behavior	3.59	(.56)	-							
2. Reflective learning	3.98	(.49)	.49*	-						
3. Knowledge acquisition	3.11	(.60)	.28*	.20*	-					
4. Knowledge distribution	3.10	(.75)	.20*	.19*	.72*	-				
5. Knowledge interpretation	3.15	(.60)	.09	.05	.57*	.68*	-			
6. Organizational memory	3.14	(.57)	.06	.07	.49*	.56*	.48*	-		
7. Service innovation	3.18	(.40)	.28*	.24*	.40*	.37*	.32*	.33*	-	
8. Process innovation	3.12	(.46)	.16*	.21*	.47*	.47*	.42*	.42*	.55*	-

Note: **p <0.05.*

Furthermore, reflective learning is significantly correlated with knowledge acquisition $r = .20$, $p = .199$, knowledge distribution $r = .19$, $p = .186$, service innovation $r = .24$, $p = <.001$ and process

innovation r = .21, p = <.001. Moreover, high scores on knowledge acquisition are, on average, accompanied with high scores on knowledge distribution r = .72, p = <.001, knowledge interpretation r = .57, p = <.001, organizational memory r = .49, p = <.001, service innovation r = .40, p = <.001 and process innovation r = .47, p = <.001. In addition, significant positive correlations were found between knowledge distribution and knowledge interpretation r = .68, p = <.001, organizational memory r = .56, p = <.001, service innovation r = .37, p = <.001 and process innovation r = .47, p = <.001. Furthermore, significant positive relations were found between knowledge interpretation and organizational memory r = .48, p = <.001, service innovation r = .32, p = <.001 and process innovation r = .42, p = <.001. Additionally, organizational memory is significantly correlated with service innovation r = .33, p = <.001 and process innovation r = .42, p = <.001. At last, service innovation is significantly correlated with process innovation r = .55, p = <.001.

Relating individual learning and organizational learning to IWB

Hypothesis 1 proposed that reflective learning will positively affect employees' IWB. In addition, hypothesis 2 stated that the organizational learning dimensions a) knowledge acquisition b) knowledge distribution c) knowledge interpretation and d) organizational memory will positively affect employees' IWB. To test these two hypotheses simultaneously, a multiple regression analysis was carried out with reflective learning, knowledge acquisition, knowledge distribution, knowledge interpretation and organizational memory as independent variables and IWB as dependent variable. Prior to the analysis, it was ensured that there was no violation of the assumptions that need to be met for multiple regression analysis. That is, there is no need for concern with respect to multicollinearity as the maximum correlation between the independent variables is .72, still under the threshold of .75 (Ashford & Tsui, 1991). Moreover, the Variance Inflation Factor (VIF) values associated with the independent variables are within acceptable limits at between 1.06 and 2.90, which was less than the accepted threshold of 5 (Foss & Pedersen, 2002), again suggesting that there is no need for concern with respect to multicollinearity.

In order to obtain a model with the best set of predictors of IWB, a multiple regression analysis with backward elimination was performed, see also Table 4. That is to say, all the predictor variables were entered into the regression equation first and each one was deleted one at a time if they did not contribute to the regression equation. This method of backward elimination continued until only significant (p = 0.05) predictors remained in the model. The results of the analysis were as follows. In the first model of the analysis, the model included all the five predictor variables. In total, these five predictor variables explained (R^2 = .25, F (5,155) = 11.89, p = <.001) 25% of the variance in IWB, see also Table 4. Subsequently, the model was run again to explore a better overall fit. The second model

of the analysis, excluded knowledge distribution as this predictor had the highest value of insignificance (backward modelling; p = .924). In total, the remaining four predictors variables now explained (R^2 = .26, F (4,156) = 14.96, p = *<.001)* 26% of the variance in IWB. As such, there was a small increase of one percentage point of the variance explained in IWB. Thereafter, the model was run again to explore a better fit. The third model excluded knowledge interpretation (backward modelling; p = .726) due to its insignificant impact on IWB. In total, the remaining three predictors variables again explained (R^2 = .26, F (3,157) = 20.02, p = *<.001)* 26% of the variance in IWB. Thereafter, the model was run again. The fourth model excluded organizational memory (backward modelling; p = .231) due to its insignificant impact on IWB, resulting in the final model with the best fit. That is, the two remaining predictors in the final model: reflective learning and knowledge acquisition were both significant predictors of IWB. The final model was significant (R^2 = .26, F (2,158) = 29.31, p = <.001) and explained 26% of the variance in IWB, see also Table 4. Taken together, this shows that the predictor variables reflective learning and knowledge acquisition explained 26% of the total variance in IWB.

Taken together, it was proposed that reflective learning will positively affect employees' IWB (hypothesis 1). As expected, the regression analysis showed a significant effect of reflective learning on IWB (β = .45, p < .001) and therefore, hypothesis 1 is confirmed. Thus, participants who regularly reflect on their work experiences displayed more IWB than employees who reflect less on their work experiences. Furthermore, it was stated that the organizational learning dimensions a) knowledge acquisition b) knowledge distribution c) knowledge interpretation and d) organizational memory will positively affect employees' IWB (hypothesis 2). As shown in Table 4, of all four dimensions of organizational learning, only knowledge acquisition has a positive and significant effect on IWB (β = .19, p = .008) and therefore hypothesis 2 is only partially confirmed. Thus, employees who often acquire knowledge from both the internal as well as the external environment were more engaged in IWB than participants who acquire less knowledge from their internal and external environment. However, contrary to what was hypothesized, knowledge distribution, knowledge interpretation and organizational memory did not have a significant influence on IWB. Thus, knowledge distribution, knowledge interpretation and organizational memory had no impact employees' IWB.

Table 4

Multiple Regression Analysis With IWB as Dependent Variable (N = 161)

	Model 1					Model 2					Model 3					Model 4				
Variable	*b*	*SE*	*β*	*t*	*p*	*b*	*SE*	*β*	*t*	*p*	*b*	*SE*	*β*	*t*	*p*	*b*	*SE*	*β*	*t*	*p*
Reflective learning	.51	.09	.44	6.31	<.001	.51	.08	.45	6.40	<.001	.52	.08	.45	6.45	<.001	.52	.08	.45	6.49	<.001
Knowledge acquisition	.23	.10	.24	2.37	.019	.23	.08	.25	2.76	.006	.22	.08	.23	2.92	.004	.18	.07	.19	2.69	.008
Knowledge distribution	.01	.09	.01	.10	.924	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Knowledge interpretation	-.03	.09	-.03	-.36	.721	-.03	.08	-.03	-.35	.726	-	-	-	-	-	-	-	-	-	-
Organizational memory	-.08	.08	-.08	-.99	.320	-.08	.08	-.08	-1.01	.315	-.09	.08	-.09	-1.15	.250	-	-	-	-	-
Adjusted R^2			.25					.26					.26					.26		
Model F-value			11.90					14.96					20.02					29.31		

Relating innovative work behavior to service innovation and process innovation

Hypothesis 3 proposed that employees' IWB is positively related to service innovation and process innovation at the organizational level. To test this hypothesis, a single linear regression analysis was carried out to twice: once for service innovation and once for process innovation. First, a single linear regression was carried out to examine the effect of IWB on service innovation. The results show that IWB is indeed a significant predictor of service innovation (β = .28, p = <.001), see also Table 5. Second, a single linear regression was carried out to investigate the effect of IWB on process innovation. As shown in Table 6, IWB was also found to be a significant predictor of process innovation (β = .16, p = .047). Given the significant and positive effect of IWB on both service innovation as well as process innovation, hypothesis 3 is supported. This implies that employees with high levels of IWB in their jobs contribute positively to their organization's service innovation output. In addition, with regard to the relationship between IWB and process innovation, high engagement in IWB has a positive influence on process innovation at the organizational level.

Table 5

Simple Regression Analysis for IWB Predicting Service Innovation (N = 161)

	Service innovation				
Variable	*b*	*SE*	*β*	*t*	*p*
IWB	.20	.06	.28	3.62	<.001

Table 6

Simple Regression Analysis for IWB Predicting Process Innovation (N = 161)

	Process innovation				
Variable	*b*	*SE*	*β*	*t*	*p*
IWB	.13	.06	.16	2.00	.047

In conclusion, the results demonstrated that reflective learning significantly affected employees' IWB in a positive way, and thus hypothesis 1 is confirmed. Further, the findings revealed that knowledge acquisition significantly had a positive influence on employees' IWB, however, an examination of the influence of knowledge distribution, knowledge interpretation and organizational

memory on IWB yielded non-significant results. Therefore, hypothesis 2 in only confirmed for knowledge acquisition but not for the other three dimensions of organizational learning (i.e. knowledge distribution, knowledge interpretation and organizational memory). Lastly, the results showed a significant and positive effect of IWB on both service innovation and process innovation at the organizational level. Therefore, hypothesis 3 is confirmed.

Discussion

The aim of this study was to 1) develop a theoretical model that relates learning to innovation, and 2) test that model through examining the effect of reflective learning and organizational learning on employees' innovative work behavior (IWB) as well as determining the influence of employees' IWB on service and process innovation at the organizational level. In this section, the conclusions of the study are explained per hypothesis. Then, theoretical and practical implications are discussed. Finally, limitations of the present study are presented and suggestions for future research are provided.

The influence of reflective learning on innovative work behavior

It was hypothesized that reflective learning would have a positive effect on employees' IWB. As expected, the results confirmed that reflective learning indeed has a significant positive influence on employees' IWB. Therefore, the findings of the current study provide supporting evidence for the idea that employees who regularly reflect on their work experiences tend to display higher levels of IWB and, thus, are more often engaged in the development of innovations than employees who reflect less on their work experiences. This is consistent with previous findings (e.g. Bednall et al., 2014; Decuyper, Dochy, & Van den Bossche, 2010) that reflecting on work experiences is an important antecedent of employees' IWB. As Messman and Mulder (2015) argue, employees who engage in reflection on their work tasks and experiences develop a higher amount of flexibility which, in turn, allows them to adapt more easily to new or unexpected situations requiring an innovative approach. Moreover, as suggested in prior research (e.g. Matsuo, 2019), reflection on work experiences enables employees to replace or select their beliefs and routines by examining taken-for-granted assumptions, thus making them more open to alternative ways of behaving. Taken together, reflective learning at the individual level is an important antecedent of IWB.

The influence of organizational learning on innovative work behavior

It was assumed that the four dimensions of organizational learning: knowledge acquisition, knowledge distribution, knowledge interpretation and organizational memory would have a positive influence on employees' IWB. As expected, knowledge acquisition had a significant positive effect on IWB. However, contrary to what was hypothesized, knowledge distribution, knowledge interpretation

and organizational memory did not have a significant positive effect on employees' IWB. Both the expected and the unexpected findings are explained below.

To begin, this study confirmed that knowledge acquisition, the process followed by employees of an organization in order to actively search for information and knowledge (Boselie, Brewster, Paauwe, van Woerkom, & Croon, 2009) has a positive influence on IWB. This means that employees who regularly acquire information from both the internal as external environment, are more strongly engaged in IWB than employees who acquire less information from their internal and external environment. According to Radaelli et al. (2014), knowledge acquisition has a positive influence on IWB because knowledge acquisition can assist employees in the exploration and generation of new ideas. More specifically, when employees acquire knowledge from their internal or external environment they involve in the process of combining new and existing knowledge. Combining new and existing knowledge refers to the process of bringing together elements that were previously unconnected or developing new ways of combining elements previously associated. In so doing, employees create new potential knowledge (Smith, Collins, & Clark, 2005) and are, as a result, more likely to perceive opportunities for change and the generation of innovative ideas (Radaelli et al., 2014). On this basis, knowledge acquisition is in addition to reflective learning a valuable facilitator of IWB.

With respect to knowledge distribution, it was expected that when managers communicate strategic information concerning innovation plans, activities and goals of the organization, employees would show higher levels of IWB, because when information is distributed they will identify with the goals of the organization and help the organization to achieve those goals (A. C. Bos-Nehles & Veenendaal, 2019; Odoardi, Montani, Boudrias, & Battistelli, 2015). However, in this study the influence of knowledge distribution on IWB was not significant. A possible explanation for this unexpected finding may be that employees are too much pressured into conforming to the expectations of their managers, resulting in their inability to think and act innovatively and differently (Al-Hawari, Bani-Melhem, & Shamsudin, 2019). In other words, employees can feel pressured to meet the expectations and innovation goals of their managers and might therefore be afraid to give voice to their own innovative ideas or might not want to deviate from what is expected from them. This is in line with for example other studies who found that conformity pressure is a significant factor in ensuring that employees do not want to deviate from the norm which in turn obscures their innovative ability (e.g. Beran, 2015; Chirumbolo, Livi, Mannetti, Pierro, & Kruglanski, 2004).

Furthermore, concerning the link between knowledge interpretation and IWB, it was assumed that knowledge interpretation (i.e. the process of knowledge sharing and developing a shared understanding) would have a positive effect on employees' IWB. However, knowledge interpretation did not have a significant influence on IWB. This result is of particular relevance as it is not consistent

with what is expressed in previous literature on the relationship between knowledge interpretation (i.e. sharing of knowledge) and IWB (e.g. Hawryszkiewycz & Chandran, 2019; Radaelli et al., 2014). A possible reason for our non-significant finding can be attributed to a social dilemma that comes with knowledge sharing. More specifically, knowledge sharing with other employees involves some personal benefits such as getting public praise or getting recompensed with informational compensation but can have some individual costs too, like personal vulnerability or a loss of competitive edge (Oliveira, Curado, & Henriques, 2019). As a consequence of the individual costs of knowledge sharing, employees are sometimes reluctant to share knowledge with other employees because they think they will lose their own value in doing so. In fact, they sometime deliberately try to hide their knowledge and avoid to share their expertise (Casimir, Lee, & Loon, 2012). This competing and offsetting dilemma of wanting to and not wanting to share knowledge, probably obscures the performance and quality of knowledge sharing which as a result does not significantly lead to more engagement in IWB (Usmanova, Yang, Sumarliah, Khan, & Khan, 2020).

Finally, it was expected to find a significant positive effect of organizational memory, the collection of individual or group knowledge within the organization, manifesting in organizational procedures, systems, structures, policies, shared beliefs and routines (Camisón & Villar-López, 2011) on employees' IWB. However, contrary to what was previously thought, no significant influence of organizational memory on IWB was found. A possible explanation for our non-significant finding is explained by Kmieciak (2019). This author argues that knowledge about past experiences stored in for example in an employees' mind, shared beliefs, files or databases can hinder innovative work behavior and flexibility. The reason for this is that employees of the organization may not be willing to try new ways of doing things if they know that previous actions were successful. This effect is also known as a routine rigidity (Kmieciak, 2019; Moorman & Miner, 1997). Hence, employees perceive no need to search for new ways of improvements if previous actions were successful. For this reason, it might be that organizational memory had not a significant and positive influence on employees' IWB. This finding is in compliance with the findings of (Widmann et al., 2016) who also indicated no significant link between the storage and retrieval of knowledge and employees' IWB. They found that employees making the outcomes of their work persistent and accessible did not carry out more activities with regard to innovation development.

The influence of innovative work behavior on service innovation and process innovation

It was assumed that employees' IWB would be positively related to service innovation and process innovation. First, with respect to the relationship between IWB and service innovation, the results showed that IWB positively affects service innovation at the organizational level. Therefore,

this study proved that employees with high levels of IWB contribute positively to their organization's service innovation output. This is in alignment with previous findings (Ahlin, Drnovšek, & Hisrich, 2014; Fu et al., 2015) and underlines the important effect of IWB on service innovation. Second, regarding the relationship between IWB and process innovation, the findings of this study also demonstrated that IWB positively affects process innovation at the organizational level. As such, our findings evidenced that a high engagement in IWB has a positive influence on process innovation. This is again in line with previous findings (e.g. Javed, Anas, Abbas, & Khan, 2017). Therefore, this study lends support for the idea that employees' new ideas and suggestions are transferable to other employees in the organization for their own use and development. Consequently, such creativity at the individual level, through idea generation, championing and implementation, is likely to lead to the development of service and process innovations at the organizational level (Shalley et al., 2004).

Theoretical implications

The present study offers several important theoretical contributions to the learning and innovation literature. First, most prior studies on innovation have been limited to only a single level of analysis and investigated innovation at the individual level and innnovation at the organizational level seperately from each other (Anderson et al., 2004). While this narrow focus helps to deepen the understanding of specific levels of innovation, it also entails less positive aspects as it leads to separation and fragmentation of the innovation research (Durand, Grant, & Madsen, 2017). In response to this, this study set out to develop a model and investigate the relationship between innovation at the individual level (i.e. innovative work behaviour) and organizational level innovation. This approach is theoretically important since it provides a more comprehensive insight on how different level outcomes are related to each other.

A key contribution of the current study to the literature is our finding that IWB is an important outcome at the individual level that significantly contributes to organizational level innovation. More specifically, we differentiated between two types of organizational level innovations. Our results highlight the important direct effect of an employees' IWB on service and process innovation. This result confirms the view that employees' IWB is an initial and crucial phase within the innovation process (e.g. Fu et al., 2015; Sanz-Valle & Jiménez-Jiménez, 2018). For this reason, it can be argued that employees' IWB is an essential prerequisite that leads to organizational level innovation. As such, for service innovation and process innovation to occur, organizations need to focus on enhancing employees' IWB. Once employees engage in high levels of IWB, they are likely to make significant contributions to service and process innovations at the organizational level.

Second, although existing literature has explored the influence of different types of learning on IWB, to the best of our knowledge, there is no prior research that examined the effect of both individual learning and organizational learning on IWB. By taking into account the individual as well as the organizational level, this study contributes to the literature and shed new lights on the relationship between learning and employees' IWB. That is, our results show that reflective learning and knowledge acquisition do have a significant and positive effect on IWB. Therefore, these two learning processes can be considered as important antecedents of IWB. However, based on the analysis of this study, it can be concluded that there is currently little evidence that supports the conceptual assumption of the importance of organizational learning processes on employees' IWB as only knowledge acquisition had a significant effect on IWB.

Practical implications

This study demonstrates to organizations seeking to foster service innovation and process innovation that a key element for achieving this goal is to have employees who engage in IWB at work. More specifically, this study empirically proved that employees who explore ways to improve existing services and processes, which are able to reconsider established ideas, who champion and promote ideas to others in the organization and who are actively engaged in the implementation of innovative ideas are important for organizational level innovations. Therefore, to reach organizational level innovation, fostering employees' IWB is important.

The findings of our study emphasize that employees' IWB can be enhanced by reflective learning. Hence, it is valuable to provide employees with opportunities to reflect on their work daily work experiences. However, as it can be argued that employees may have difficulty undertaking purposeful reflection in the workplace setting (e.g. because of a lack of interest, time constraints or uncertainties) (Martin, Fleming, Ferkins, Wiersma, & Coll, 2010), it is not only important to provide opportunities for reflection but it is also crucial to encourage and empower employees to reflect on their daily work experiences. This can be done in multiple ways. Managers and supervisors could, for example, establish team meetings that are especially designed to reflect on work experiences. In these meetings, the leader should encourage the team members to exchange ideas, discuss problems and to learn from each other's experiences. The reason for this is that providing feedback on each other's experiences stimulates reflection, which in turn has a positive effect on employees' IWB (Messmann & Mulder, 2015). In addition, another way to make sure that employees reflect meaningfully on their work experiences is by encouraging them to keep track of their work experiences in a portfolio. In a portfolio, employees note down what they have experienced during their daily work. It provides them with an accurate record of a process and helps them to reflect on past experiences which will help

them to make better decisions for future actions which require an innovative approach (Mansvelder-Longayroux, Beijaard, & Verloop, 2007). At last, in order to stimulate reflective learning among employees, after-event reviews with an external trainer can be helpful (Kmieciak, 2020). During after-event reviews, employees are asked to analyze their own behavior and to suggest explanations for their successful and/or failed actions. As a consequence, employees gain new insights in own behavior and actions (Ellis & Davidi, 2005). These after-event reviews can, for instance, be scheduled after projects on which team members worked together for a longer period.

Furthermore, this study has empirically proven that knowledge acquisition from both the internal as the external environment is an important antecedent of employees' IWB. This suggests that it is crucial to strengthen knowledge acquisition strategies within an organization. In developing these strategies HRM, managers and supervisors play an important role because they can assist employees in identifying and assessing information channels and opportunities either internal or external the organization. For example, to acquire external knowledge organizational leaders could encourage employees to visit events and fairs (Wang & Ellinger, 2011). Moreover, employees can engage in network activities with external contacts (e.g. universities, high schools, professional from other organizations etc.) to gain valuable and new insights that might help them to generate and explore new ideas (Wang & Ellinger, 2011). Further, to stimulate internal knowledge acquisition HRM could, for instance, develop internal rotation programs. Within a rotation program, employees take on new tasks at different jobs for a period of time before they rotate back to their original position. Job rotation is an opportunity for employees to utilize in new activities, and thus in rich learning activities and the possibility to engage in IWB (Prieto & Pérez-Santana, 2014; Rehman & Ahmad, 2015).

Limitations

Some limitations can be defined. The first limitation of the study is the reliance on self-reported data. A shortcoming of self-reported data is that respondents usually have preconceived notions about socially desirable answers, and thus tend to provide answers that cause them to look good (Hakkarainen et al., 2001). For example, it could be that respondents tend to describe themselves as more innovative than they really are in order to look more competent or capable. Therefore, it would be valuable to include alternative sources such as, peer and supervisor ratings in addition to self-reported data that were used in the current study. Additionally, the current study used subjective innovation performance data (i.e. Likert-scale items) to examine service and process innovation at the organizational level. Therefore, this study to rely on subjective judgement of employees regarding their organization's innovation output. Hence, future research would greatly benefit if it also includes objective innovation performance data. For example, a study that compares employees' IWB

(subjective data) with the revenue per person generated from new services and new clients (objective data). As such, when comparing subjective data with objective data, the accuracy of the innovation measurement increases (Fu et al., 2015).

Second, this study treated IWB as a one-dimensional construct because our exploratory analysis revealed that all items of IWB loaded on to one single factor. This implies that there was a lack of distinctiveness between the four dimensions of IWB. As a consequence, it was not possible to examine the effect of reflective and organizational learning on the different dimensions of IWB. Therefore, it is still unknown which specific dimensions of IWB are enhanced by reflective learning and knowledge acquisition. However, in their study, Veenendaal and Bondarouk (2015) identified three separate dimensions of IWB: idea generation, idea championing and idea application. As such, future researchers can make use of the measurement of IWB used by Veenendaal and Bondarouk (2015) to study the impact reflective learning and organizational learning on the three dimensions of IWB separately and so to analyse their distinct contribution to each dimension. Nevertheless, although it was not possible to examine the influence of learning processes on the different dimensions of IWB, this study clearly demonstrates that reflective learning and knowledge acquisition are both important antecedents of employees' IWB.

Third, with regard to the performed exploratory factory analysis (EFA), it must be noted that not all the items did load on the on the factors as originally meant in the pre-existing scales. Preferably, items which do not load on the pre-existing scale should be removed according to the EFA process outlined by Baldner and McGinley (2014). However, Cronbach's alphas of the items in the original pre-existing eight construct-specific scales were computed and these were found reliable. For this reason, this study proceeded with the pre-existing classification of the eight construct-specific scales.

Suggestions for future research

This study provided some directions for future research. First, this study examined the effect of learning and innovation at the individual level and at the organizational level but neglected the team level of analysis. Therefore, it would be valuable for future research to investigate the team level of analysis and their learning influence on innovation at the individual and organizational level. The reason for this is that teams provide opportunities for employees to bring together different kinds of knowledge, (Miner & Mezias, 1996) skills and experiences which could greatly benefit the development of innovations (Widmann & Mulder, 2018). Hence, understanding how innovation at the individual and organizational level acts upon team learning processes may provide valuable new insights for HRM and HRD professionals in developing and facilitating team learning processes within the organization.

Second, by focusing on the influence of reflective learning at the individual level and organizational learning on employees' IWB, this study focused on personal and organizational factors influencing IWB. However, it is claimed that IWB is a context-bound construct because the activities that employees undertake with regard to innovation development are determined by the expectations and needs within a particular work context for which the innovation is developed (Messmann & Mulder, 2020). As such, the relationship between learning and IWB can be mediated by contextual factors (El Fath & Radikun, 2019; Yuan & Woodman, 2010). Therefore, future research can improve the research model by adding mediating variables that could more comprehensively explain the relationship between learning and IWB such as managerial practices and leadership styles, learning potential of the workplace or an innovative climate (Cangialosi et al., 2020; Shanker, Bhanugopan, Van der Heijden, & Farrell, 2017).

At last, this study investigated the effect of employees' IWB on service innovation and process innovation at the organizational level. However, no distinction was made between incremental innovation (involves changes or adjustments in existing services / processes) or radical innovation (the development of completely new services or processes) (Barba-Aragón & Jiménez-Jiménez, 2020). Therefore, it would be interesting to disentangle if employees' IWB may promote both of them. In addition, the research on innovation is a wide field with multiple types of innovation. So, it is valuable for future research to examine if the effect of employees' IWB is also significant on other types of innovation such as product innovation, marketing innovation or organisational innovation.

Conclusion

This study searched for and answer whether and to what extent reflective learning and organizational learning processes affect innovation. This study revealed that both reflective learning as well as knowledge acquisition had a significant and positive influence on IWB. Therefore, the present study offered new insights on the relationship between learning and IWB. Further, this study empirically evidenced that IWB is an important outcome at the individual level that significantly contributes to organizational level innovation. As such, leaders can stimulate IWB, which in turn has a positive effect on organizational level innovation, by providing opportunities for reflective learning and investing in knowledge acquisition activities.

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