Team performance and innovative work behavior through self-managing work teams in the health care sector

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1. Research question and relevance for research

1.1. Introduction

In the last ten to twenty years, the healthcare sector has changed and is still changing radically. Because of the increase in population and the ageing of the population the demand for care increases, while the labor market is tight, the modernization of the AWBZ, the personal bounded budget (PGB) and the system changes (insurance and finance) causes increased competition, the need to market-orientation thinking and critical attention for the business. And with the shift from input- to output financing, institutions are pushed to greater efficiency (Breedveld, Wersch, Lange & Roo, 2004). These developments in the demand and supply for healthcare influence the strategic policies of health care organizations. Companies in the past who faced these difficulties increasingly made use of self-managing work teams (Coppens et al., 1996). Now that healthcare organizations are facing these challenges, there is a growing development towards self-managing work teams in these organizations.

Self-managing work teams (SMWTs) are defined as teams whose members do the following: manage themselves, assign jobs, plan and schedule work, make production- or service-related decisions, and take action on problems (Wellins et al., 1990). Since the added value of HRM lies in the strategic utilization of employees and delivering organizational and cultural change in order to achieve continuous achievement in organizational, team and individual performance (Heathfield, S.M., 2010; Armstrong, 2007), SMWTs can be seen as an HR innovation in the essence of job design and the organization of work. This HR innovation can have a great impact in the performance of healthcare organizations. Yang & Guy (2004) have already proven that SMWTs positively enhances performance by increasing productivity, quality, employee satisfaction and quality of work life, and decreasing absenteeism and turnover.

But, different from the companies who adopted self-managing work teams in the past and those studied by Yang & Guy (2004), the companies in the healthcare sector are bound to a bureaucratic environment. Bureaucracy implies a complex structure with multiple layers and procedures that make decision making slow. Bureaucracies can render systems formal and rigid, which is desirable in contexts where following safety procedures is critical (Banton, 2019), such as it is in the healthcare sector. Due to this environment, it is still unclear if the relationship between self-managing work teams and team performance holds in companies based in the health care sector.

Still, healthcare organizations aim to be innovative, not only because they are forced to adopt innovation from the market, but also because they want to improve the quality and efficiency of their business. According to literature, HR can stimulate innovative work behavior (IWB) (Seeck & Diehl, 2016), but there is little knowledge whether this

relationship also holds in the bureaucratic context of the healthcare sector. Many authors have investigated the relationship of HRM and IWB, and have found multiple HRM practices that have a positive effect on IWB. Since this paper is about the relationship between SMWTs and IWB, only the HRM practices that can be influenced by SMWTs are relevant for this paper.

The relationship between bureaucratic structure and innovative behavior is examined by Thompson (1965) by comparing the conditions within the bureaucratic structure with the conditions found by psychologists to be most conducive to individual creativity. The conditions within bureaucracy are found to be determined by a drive for productivity and control, and inappropriate for creativity (Thompson, 1965).

Although the bureaucratic environment in the healthcare sector normally has a negative impact on autonomy and employee driven innovation (EDI), making it difficult to create bottom-up innovation, SMWTs can counter this. SMWTs has shown positive associations with job satisfaction, organizational commitment, information/knowledge sharing, autonomy, employee empowerment and feedback (Cohen & Ledford, 1994; Cordery, Mueller & Smith, 1991; Wall, Kemp, Jackson, & Clegg, 1986; van den Broek, 2014), which in turn are positively related with IWB (Janssen, 2000; Fernandez & Moldogaziev, 2013; Ramamoorthy, Flood, Slattery & Sardessai, 2005; Spiegelaere, de, van Guys & van Hootegem, 2012; Bos-Nehles, Renkema & Janssen, 2017; Bysted & Hansen, 2013).

Normally, the outcome of IWB is innovation. In the context of this paper, innovation is seen as the act or process of introducing new ideas, devices or methods which make work easier, more efficient, faster, cheaper and/or better (Skillicorn 2016). This innovation, in turn, leads to an increase in organizational performance (Garcia-Morales, Jimenez-Barrionuevo & Gutiérrez-Gutiérrez, 2012).

Conclusive can be said that healthcare organizations need to be innovative in order to increase team performance, which can, theoretically, be realized by an increase in IWB through working with SMWTs. This leads to the main question of this research:

To what extent do self-managing work teams in the healthcare sector influence team performance through employee innovative behavior?

Since the research question involves both measures on individual and team level, the following sub-questions are formulated due to this multi-level component:

- To what extent do self-managing work teams influence innovative behavior in the healthcare sector?
- To what extent does individual innovative behavior influences team performance in the healthcare sector?

1.2 Relevance of the research

This research is scientifically relevant because it contributes to the knowledge of innovative behavior of employees and that it uses a

multilevel perspective. Such a multilevel theoretical approach is necessary because the relationship between SMWTs and IWB exists at different organizational levels of analysis. In the HRM literature there has been attention for the innovative behavior of employees, but this research was predominantly focused on employees in a specific context of knowledge intensity. Employees in a bureaucratic organization, such as organizations in the healthcare sector, can and/or should also be innovative, both to cope with technological development in the external environment and to create new and improved services and processes. Research into this type of context is therefore very relevant and valuable for organizations in a bureaucratic context to understand how innovative ideas arising from work floor employees can be supported.

Also, healthcare organizations are more and more switching to SMWTs. Since employees in a bureaucratic organization can and/or should be innovative, it is therefore interesting to gain knowledge about the influence SMWTs on innovative behavior. Next to this, the healthcare sector has been the center for financial cuts in the past years, and will be in the future. This is one of the reasons why healthcare organizations are switching to SMWTs, but this is also a reason why it is crucial for the healthcare sector to be innovative, since innovations can lead towards higher efficiency, which in turn leads to lower costs.

From a practitioner's perspective, this study also provides relevant insights. In the Netherlands, healthcare organizations are more and more switching to SMWTs. Since employees in a bureaucratic organization can and/or should be innovative, it is interesting to gain knowledge about the influence of SMWTs on innovative behavior. This knowledge is important for practice, since there is a growing share of older people in the Dutch population (CBS, 2016). The need for quality, standards and expectations will be different as there is a new 'older generation'. To deal with these changes, innovative behavior is needed, which should take place in SMWTs, since more and more healthcare organizations are switching to this type of teams.

2. Literature review

In this part, the several main subjects of this research will be examined using existing literature. After this, hypotheses are made which will be used to answer the (sub-) research question(s).

2.1 Team Performance

As stated by Heinemann & Zeiss (2002), assessing team performance is important in health care since it directly and indirectly impacts both the quality of care provided to patients and the resulting patients' response to care (e.g. client satisfaction). In this study, team performance is defined as the extent to which a team is able to meet its output goals (quality, functionality, and reliability of outputs), the expectations of its members, or its cost and time objectives (Ancona & Caldwell, 1992). A greater team performance can thus be reached through decreasing costs and a better

quality of output. SMWTs can be used to achieve this greater output.

2.2 Self-managing work teams

Self-managing work teams are defined as teams with members who each possess a variety of skills relevant to the group tasks and can manage themselves, assign jobs, plan and schedule work, make production- or service-related decisions, and take action on problems (Wellins et al., 1990; Kirkman & Shapiro, 2001; Hackman, 1986; Manz & Sims, 1987). SMWTs are often chosen in both domestic and international operations in order to improve competitiveness, since research has shown positive relationships with both job satisfaction and organizational commitment (Kirkman, Gibson, & Shapiro, 2001; Kirkman & Shapiro, 1997; Manz & Sims, 1993; Nicholls, Lane, & Brechu, 1999; Cohen & Ledford, 1994; Cordery, Mueller & Smith, 1991; Wall, Kemp, Jackson, & Clegg, 1986; Cordery et al., 1991).

SMWTs can be seen as work groups who are greatly empowered, where empowerment is divided in social-structural empowerment and psychological empowerment (Spreitzer, 2008). In order to generate social-structural empowerment, organizations involved in SMWTs differ from organizations with normal work groups based on participative decision-making, skill/knowledge-based pay, open flow of information, flat organizational structure and training (Spreitzer, 2008). Each of these practices contributes to employee empowerment by increasing access to opportunity, information, support, or resources. Much of the research on social-structural empowerment has been conducted under the terms high involvement work practices and high performance work systems and has shown that high involvement practices which involve sharing power, information, knowledge, and rewards with employees at all levels often have positive outcomes for organizations, particularly in terms of improvements to employee quality of work life, the quality of products and services, customer service, productivity, and reduced turnover (Lawler et al., 2001; Spreitzer, 2008).

All four dimensions of psychological empowerment are conceptualized as team level constructs (Kirkman & Rosen, 1999). Team meaningfulness is defined as the team valuing its tasks as important and worthwhile. Potency, or competence, is the collective believe the team can be effective. Autonomy involves the team members experiencing substantial freedom and discretion in their work, and impact is about the team producing work that is significant and important for the organization. Together, these four dimensions reflect an active orientation to one's work role. The experience of empowerment is manifest in all four dimensions, meaning if any one dimension is missing, then the experience of empowerment will be limited (Spreitzer, 1995).

Conclusive can be said that teams that are both social-structural and psychological empowered generate more positive outcomes for organizations than ‘normal’ work teams. Following the logic that those positive

outcomes at a team level can be seen as team performance, and that SMWTs are highly empowered teams, it can be hypothesized that:

Hypothesis 1: Self-managing work teams are positively related to team performance.

2.3 HRM & Innovation

A lot of research about the relationship between HRM and innovation has been done, with the use of several theories and observations. The ones discussed in this paper are innovative work behavior and employee driven innovation, as well as leader-member exchange and team-member exchange, since these cover the most of the HRM literature concerning innovation. In the context of this paper, innovation is seen as the act or process of introducing new ideas, devices or methods which make work easier, more efficient, faster, cheaper and/or better.

2.3.1 Innovative Work Behavior

Innovative work behavior (IWB) is defined as employee behavior to create, introduce, and apply new ideas intentionally within a work role, a group, or an organization that are beneficial to performance (Janssen, 2000). Innovative work behavior consists of three dimensions: idea generation, idea championing and idea implementation (Janssen, 2000; Veenendaal & Bondarouk, 2015; Scott & Bruce, 1994; De Jong & Den Hartog 2010). Within the first dimension, idea generation, employees recognize problems and opportunities and seek new ideas as solutions. In the second dimension, idea championing, the idea is promoted throughout the organization to find support for further development. Finding support involves building coalitions of potential allies – individuals who provide the necessary power to move the idea into practice – by expressing enthusiasm and confidence about success, being persistent, and involving the right people. The aim of the third dimension, idea implementation, is to incorporate the ideas that were generated and promoted into the daily business and to realize those ideas that can be experienced and applied within the work role, group, or organization (Veenendaal & Boundarouk. 2015). Because of these three dimensions, innovative work behavior can already be enhanced if one of the dimensions is enhanced.

The outcome of IWB is innovation, and in the context of this paper, innovation is seen as the act or process of introducing new ideas, devices or methods which make work easier, more efficient, faster, cheaper and/or better (Skillicorn 2016). This gives that innovation executed by SMWTs in the healthcare sector is working easier, more efficient, faster, cheaper and/or better. Since team innovation is proven to positively increase team performance (Garcia-Morales, Jimenez-Barrionuevo & Gutiérrez-Gutiérrez, 2012), the innovation executed by SMWT's should lead to an higher team performance. This gives the following hypothesis:

Hypothesis 2: An individual's innovative work behavior is positively related to team performance.

Next to IWB, innovativeness can also be stimulated through employee driven innovation (EDI). The role of HRM in stimulating EDI and innovator role adaption is creating an organizational climate where employees have freedom to make decisions and to carry out tasks without excessive supervision. Where leadership can be described as supportive, and employees are working together and sharing information and knowledge (Smith et al., 2012; Høyrup, 2010; Gemünden et al., 2007; Mansfeld et al., 2010). Although the relationship between HRM and EDI looks very similar to the relationship between HRM and IWB, the main difference of the two relationships lies in the underlying principles of the concepts of IWB and EDI. IWB is about creating innovative behavior among the employees, but EDI is more concerned with the actual output of innovation. In other words, the main focus of IWB is behavior, while the main focus of EDI is the innovation itself (De Spiegelaere et al., 2012). With this differences in mind, this paper still looks at EDI as a sub-section of IWB. This is because of the bureaucratic environment of the healthcare sector, and that innovation as an output is hard to measure in healthcare organizations. Therefore it is nearly impossible to research EDI as a specific variable, but is it still worth mentioning in this literature section.

One relationship often described in the field of innovative work behavior is the relationship with leadership (Scott & Bruce, 1994; De Jong & Den Hartog, 2007; Neal et al., 2005). Also, supportive supervision has been qualified as an important factor for innovative work behavior (Veenendaal & Bondarouk, 2015), and leader support has a positive effect on employee driven innovation, EDI (Smith et al., 2012; Høyrup, 2010; Gemünden et al., 2007; Mansfeld et al., 2010), which is closely related to innovative work behavior. Since SMWTs have structure without an absolute leader, supportive supervision and leader support are dependent on the culture and the choices of the team. Supportive supervision is defined as HR practices by Veenendaal & Bondarouk (2015). As HR practices are management practices that aim to increase employees' knowledge, skills, abilities (KSAs), and motivation, as well as empowering these employees to leverage their KSAs to deliver value. In the paper of Veenendaal & Boundarouk (2015), they have found that, for all three dimensions, supportive supervision has been the most beneficial in terms of innovative work behavior. Coming up with new ideas is often associated with the risk of negative exposure, of indifference from management, or being blamed if the idea does not immediately become a profitable innovation. Employees also risk losing face if their idea is not well received by management, which in turn determines whether they receive any benefits or rewards for innovative behavior (Smith et al., 2012). This gives a nice example why leader support could play a crucial role innovative behavior. In the case of SMWTs, there is no/little risk of indifference from management or losing face, which should be beneficial for innovative behavior based on the theories coping with leader support.

Since SMWTs do not rely on management, but on themselves and their team, it seems logical that employees working in a SMWT recognize problems and opportunities more and therefore enhance the idea generation dimension. Next to this, the flat organizational structure, team work, autonomy and empowerment of SMWTs makes it easier to find support for ideas, and find the right persons with the power to move the idea into practice, enhancing the idea championing and idea implementation dimensions. This gives the following hypothesis:

Hypothesis 3: Self-managing work teams are positively related to an individual's innovative work behavior.

2.3.2 LMX & TMX

Social exchange theory can be applied to explain the relationship between human resource management (HRM) and innovation, or in this case, team performance. According to Blau (1964), social exchanges involve unspecified duties; when one person does another a favor, there is an expectation of some future return, though it is often not exactly clear when this will occur and in what form (Gouldner, 1960).

Janssen (2000) explains employee behavior by using social exchange theory and states that employee behavior depends on two types of exchange: social and economic exchange. Whereas economic exchange is formalized by a contract, social exchange is about relationships between employees and the organization, both 'sides' of the relationship have obligations to the other 'side' who expects them to fulfil in the future (Janssen, 2000). In his study, despite some limitations, for example the possible bi-directional relationship and generalizability of the study, Janssen (2000) found that when employees perceive the reward from the organization for their work as fair, they have a more innovative response to higher levels of job demands. This is not the case when employees perceive the rewards as not fair compared to their effort.

The leader-member exchange theory builds on this social exchange theory, suggesting that based on social exchanges an interpersonal relationship between supervisors and employees evolves (Graen & Cashman, 1975). These LMX relationships have been shown to vary in terms of the amounts of material resources, information, and support exchanged between the two parties. The greater the perceived value of the exchanged (in)tangible items, the higher the quality of the LMX relationship. Research has shown that LMX is positively related to performance ratings, innovativeness, autonomy, leader support, employee commitment, support for innovation and resource supply (Scott & Bruce, 1994; Wayne, Shore & Liden, 1997; Basu & Green, 1997). This makes that LMX is related to both IWB, specifically the idea implementation stage of IWB, and team performance. This leads to the assumption that LMX can moderate the relationship between IWB and team performance, and gives the following hypothesis:

Hypothesis 4: The quality of leader-member exchange positively moderates the relationship between an individual's innovative work behavior and team performance.

Building on the same thoughts, both Scott & Bruce (1994) and Dunegan et al. (1992) investigated the relationship between team-member exchange (TMX), or work group exchange (WGX) as it is called by Dunegan et al. (1992), and innovativeness / IWB. Building on the LMX theory, individuals also engage in interpersonal relationships with their team members. These relationships may result in mutual trust, respect, cooperation and collaboration between an individual and the team, which in turn have a positive effect on idea generation and idea championing (Amabile & Gryskiewicz, 1987; Seers, 1989; Sethia, 1991; Scott & Bruce 1994). Scott & Bruce (1994) found that TMX was not related to innovative behavior or to climate perceptions in their study. A possible explanation for these seemingly implausible findings is that intragroup task interdependence may mediate the relationship between team-member exchange and both affective and behavioral responses. Where task interdependence and work-group-member interaction is low, the relationship between measures of work group cooperation and collaboration is likely to be weaker than it will be when task interdependence and member interaction is high (Scott & Bruce, 1994). Since SMWTs have a high task interdependence and member interaction, it is still possible that TMX plays a role in generating innovative behavior.

Next to this, Dunegan et al. (1992) did research about how to create an innovative climate. They found relationships between LMX, TMX and innovative actions, and made them visible as shown in *Figure 1*.

Since TMX has been found to have a positive influence on innovative behavior when working on in a group or team, it can influence in the relationship between SMWTs and IWB. Hereby, the following hypothesis can be made:

Hypothesis 5: The quality of team-member exchange positively moderates the relationship between self-managing work teams and innovative work behavior.

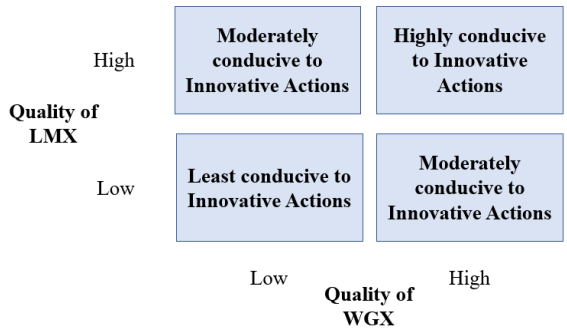

Figure 1: Creating an innovative climate with WGX and LMX (Dunegan et al., 1992)

2.4 Model building

Based on literature, there is a possibility that SMWTs can influence team performance through IWB, since the existence of SMWTs do have, theoretically, an effect on information sharing, supportive supervision, leader support, autonomy, collaboration and organizational norms of exploration, which in turn are proven to be important variables for IWB. These

relationships are still depending on LMX and TMX. Because of this, the model tested in this research is as follows:

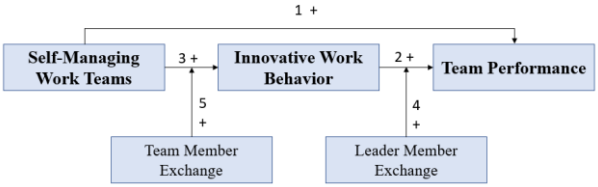

Figure 2: Causal model self-managing work teams influencing team performance

3. Methodology

This research is an evidence- and contextually based quantitative research (Boxall, Pucell & Wright, 2007), because it includes data in a specific sector. According to Babbie (2010), quantitative research can be described as involving a collection of numerical data and as presenting a view of the relationship between theory and research as a deductive and objectivist conception of social reality, with a preference for a mutual science approach.

The examined organization needed to fit several requirements. It needed to be based in the health care sector and have multiple self-managing work teams. Therefore, the data is collected from a healthcare organization based in the eastern region of the Netherlands. Due to anonymity reasons, the name of the organization will not be mentioned. The institution is an healthcare center for people with a mental handicap, sometimes combined with physical handicaps. The clients are mainly people with down syndrome and autism. The institution holds over 350 clients spread over 46 living groups. The size of the living group is between 6 to 10 clients, which depends on how “heavy” the care for these specific clients is. Each living group is situated in an own house, and each house has its own team of employees. Excluding trainees, there are 419 employees who work directly in these houses. The survey guaranteed completely anonymity Still, the teams who work with most heavily handicapped were excluded to participate in this research by the. Because of this, from the 46 living groups, eventually 25 participated in this research.

3.1 Measures

In this study, many variables were identified from literature review. The main variable in this study is the independent variable self-managing teams. Questions in the survey will cover the following dependent variables: IWB (idea generation, idea championing and idea implementation), team performance, TMX and LMX.

SMWT: Team empowerment was assessed using a shortened version of Kirkman and Rosen's (1999) 26-item measure; the Appendix gives the 12 items used. Individual responses were aggregated to the team level of analysis for the relationship between SMWT and Team Performance, but are still at individual level when testing the relationship between SMWT and IWB. In order to be able to compare teams, respondents also filled in the address of their living group, which is the same as a team number in other organizations.

Team performance: Team performance is measured with the scale Erdem et al. (2003) used in their research examining the

relationship between trust and team performance, which is a limited version of the one previously developed by Erdem & Ozen (2000). A sample item is "The quality of the work done by this team develops continuously". The response scale uses a 5-point Likert scale ranging from 1=strongly disagree to 5=strongly agree. Next to this, quantitative data from the organization itself is used, being absenteeism, client satisfaction and how much of the budget is used, which are all key performance indicators (KPI's) for this institution. Heinemann & Zeiss (2002) also pointed out that client satisfaction is an important measurement for team performance in health care organizations. They also discussed that the costs of treatment and the costs of buying equipment and different materials can be monitored to measure team performance. Although absenteeism was not addressed in the study of Heinemann & Zeiss (2002), they did mention that team commitment is critical for success. Even though absenteeism and commitment are not the same variable, one can argue that both variables do overlap in some way. The three KPI's are combined into an objective Team Performance variable.

IWB: The three identified dimensions of innovative work behavior are measured by adopting the items from De Jong and Den Hartog (2010). All the items were scored on a five-point Likert scale with possible answers ranging from 1 =never to 5 =very often. Five questions addressed idea generation, another two items concerned idea championing, and three items on innovative work behavior dealt with idea implementation. De Jong and Den Hartog (2010) asked the questions to the supervisor of the employee, but in this research the employees are rated by their team members.

LMX: Many LMX scales were developed over the years due to controversy over the measurement of the LMX construct. In this study the quality of the LMX is measured with Scandura and Graen's (1984) 7-item scale, since Cronbach's alpha is consistently high over several papers. A sample item is "I have an effective working relationship with my supervisor." The response scale uses a 5-point Likert scale ranging from 1=strongly disagree to 5=strongly agree.

TMX: The TMX construct is measured with the 10-item measure by Seers et al. (1995) which is a refined version of the original 12-item measure by Seers (1989). Sample items of the 10-item TMX scale are "Other members of my team understand my problems and needs" and "When other team members are busy, I often volunteer to help them out." The response scale uses 5-point Likert scale ranging from 1=strongly disagree to 5=strongly agree.

Control variables: The gender, tenure, age, and education level of individuals may influence the different variables used in this research. Therefore, these variables are included as control variables to measure any effects. Gender was measured as male or female (1=male, 2=female). Tenure was

measured as the number of years employed in the organization. Age was measured in the number of years at the point in time of filling in the questionnaire. The education level achieved was categorized (1 =primary school; 2=secondary school; 3=lower vocational education; 4=intermediate vocational education; 5=university).

3.1.1 Reliability

Table 1 shows the Cronbach Alpha's for the researched variables from the survey and from the composed variable of Team Performance, based on the information from the institute.

	Cronbachs Alpha	N
TeamPerformance Subj	0,725	4
TeamPerformance Obj	0,574	3
SMWT	0,888	12
IWB	0,718	10
LMX	0,361	7
TMX	0,869	10

Table 1: Reliabilty analysis

The objective measure of Team Performance and the measure of LMX have a low Cronbach alpha, meaning that these variables are not reliable. Especially the low alpha of LMX is strange, since Scandura and Graen's (1984) 7-item scale is used, which has shown a consistently high Cronbach's alpha over several papers. Especially the question "Regardless of the amount of formal authority my supervisor has, he or she will "bail me out" at his or her expense when I really need it" shows to has a negative impact on the Cronbach's alpha (if excluded, Cronbach's alpha is 0,499).

Both Team Performance (objective) and LMX are still used in this research, but it must be noted that the possible relationships need to be further examined.

3.2 Data collection

The data is collected with a survey which is handed over to the employees of the healthcare organization. A survey is used since it is easy in use for a bigger group and is not time consuming for the respondents (Babbie, 2010). An interview for example is more obtrusive as respondents will feel more that they are observed. The type of survey will be a (semi-) self-completion survey, which means that the respondents will get a paper sheet where they can fill out the questions, and where some questions can be filled out by team members. Advantages of this type of survey are that it is very cheap to do and quick (McKenzie, 2017). Respondents only need to invest around 10 minutes, depending on the amount of questions. The survey was randomly presented to 25 teams, consisting of 221 employees. The survey was filled in by 209 employees, giving a response-rate of 94,5%.

Table 2 shows a summary of the research group, including the control variables used. It can be seen that research group consists of both male and female employees, with a large age difference, multiple education levels, different serving years in the health care sector and for the institution itself, two different functions and different working hours per week.

N		209
Teams		25
Gender	Male	36
	Female	173
Age	Average	35,4
	Youngest	19
	Oldest	61
Education	MBO level 1	0
	MBO level 2	4
	MBO level 3	28
	MBO level 4	132
	HBO	39
	WO	6
Years Institute	Average	5,2
	Less	1
	Most	24
YearsHealthCare	Average	10,4
	Less	1
	Most	40
Function	Begeleider	167
	Persoonljk begeleider	42
Hours	0-12	26
	12-24	152
	24-36	31
	36+	0

Table 2: Common information research group

3.3 Multi Level

HRM researchers recently turned their attention to various levels of analysis in examining the relationship between HRM and performance (Renkema, Meijerink & Bondarouk, 2017). The integration of multiple levels – multilevel research – was inspired by empirical observations that HRM policies and practices influence individual-level outcomes such as attitudes and behaviors, and these in turn affect firm-level performance outcomes. Gaining insights in a combination of these top-down and bottom-up effects is important for two reasons. Firstly, theory that integrates multiple levels of analysis explains the mechanisms through which HRM affects firm performance. Secondly, a multilevel perspective offers a more nuanced perspective that is closer to the HRM organizational reality of managers who are confronted with problems on various organizational levels. Next to the multilevel component of HRM, innovation is also a multi-level construct because it occurs at individual, team and organizational levels and even higher industry and geographic region levels (Drazin et al., 1999; Gupta et al., 2007). Within this multi-level perspective, much research has adopted a top-down approach to examine cross-level influences and consider how HRM systems at a higher level influence the attitudes and behaviors of individual employees (Shipton et al., 2016). Because of this, the lack of a levels perspective as also a limitation since that it constrains researchers' capacity to understand the multi-level and cross-level effects involved in the relationship between HRM and innovation (Lin & Sanders, 2017).

There are different ways of doing a multilevel research, for example, it can be done on levels of internalization, HRM or organization. In this research, multilevel research is based on the different organizational levels. This means that the effect of self-managing work teams on innovation will be examined on the individual level and team level. This organizational multilevel perspective is chosen because HRM practices affect organizational learning at all three organization levels. According to Lin (2015), the knowledge and actions of individuals, teams and organizations change as a result of their experiences in the organizations, upon which HRM as a substantial effect. Knowledge generated by individuals becomes shared and common

meaning is developed within teams (Lin, 2015). Some results of team learning becomes institutionalized into organizational routines which further regulates individual and team learning (Crossan et al., 1999). More often than not, team learning is independently caries out and remains localized, but interdependently impacts on form innovation (Edmondson, 1999). The resultant outcome of learning is innovation at different organizational levels (Lin, 2015). Building on this, Lin & Sanders (2017) made a model which covers the multi-level component for HRM and innovation (see Figure 3). This model shows the different organizational levels, both top-down and bottom-up interactions and cross-level effects of HRM and innovations. This model makes it clear that it is favorable to take on a multi-level perspective when doing an HRM based research on innovation.

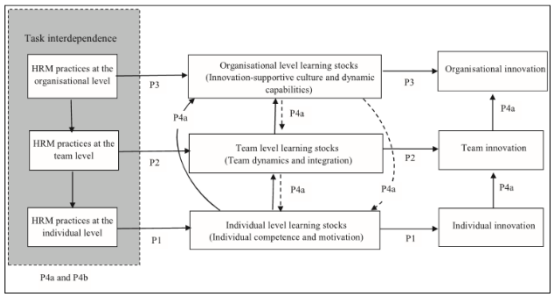

Figure 3: A multi-level model of the HRM–innovation relationship (Lin & Sanders, 2017)

Although this paper does not look at the organizational level, it still takes on this multi-level perspective looking at both individual and team level. Therefore, there is not a multi-level analysis, but the research model is tested on different levels.

3.4 Data analysis

The data is analyzed using SPSS. First, it is tested whether or not there is a significant relationship between SMWTs and team performance and IWB, and / or if this relationship is mediated by either TMX and / or LMX, by conducting regression analysis. After this, the hypotheses will be checked for the influence of third variables.

4. Results

Table 5 presents the correlations with IWB and table 6 presents the correlations with Team Performance based on linear regression modelling. It shows that IWB negatively significant correlates with Age, Function and Hours, but only on a team-level. On an individual-level IWB does not significantly correlate with any of the control variables.

At first, Team Performance seemed to correlate with Education on an individual level, but this relationship is no longer significant when SMWT is considered in the model. On a team-level, Team Performance does significantly correlate with the amount of hours.

Figure 4 shows the correlations on an individual level integrated in the causal model (Figure 2), combined with the moderating effects of both TMX and LMX. Figure 5 shows the correlations on a team-level.

N=209 (individual level)	Minimum	Maximum	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Gender	1,00	2,00	1,828	0,379											
2. Age	19,00	61,00	35,440	9,597	0,074										
3. Education	2,00	6,00	4,072	0,714	0,028	0,001									
4. Years Institute	1,00	24,00	5,215	5,157	0,100	0,684**	-0,073								
5. Years Health Care	1,00	40,00	10,426	8,727	0,113	0,881**	-0,115	0,725**							
6. Function	1,00	2,00	1,201	0,402	0,071	0,184**	0,671**	0,067	0,078						
7. Hours	1,00	3,00	2,024	0,523	0,021	-0,153*	0,614**	-0,170*	-0,180**	0,595**					
8. SMWT	1,92	4,33	3,180	0,463	-0,094	-0,221**	0,138*	-0,140*	-0,189**	-0,008	0,058				
9. LMX	2,57	4,00	3,015	0,298	-0,111	-0,041	0,047	-0,024	-0,053	-0,014	-0,024	0,081			
10. TMX	2,10	4,50	3,193	0,509	0,021	-0,143*	0,095	-0,042	-0,129	-0,066	0,019	0,235**	-0,063		
11. IWB	2,21	4,22	3,123	0,386	0,086	-0,118	0,070	-0,106	-0,110	-0,016	0,000	0,203**	-0,157*	0,393**	
12. Team Performance	2,34	4,18	3,238	0,386	-0,084	-0,228**	0,196**	-0,149*	-0,220**	0,042	0,125	0,874**	0,144*	0,247**	0,174*

**p ≤ 0,05 **p ≤ 0,01*

Table 3: Bivariate correlations on the individual level

N=25 (team level)	Minimum	Maximum	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Gender	1,63	2,00	1,828	0,117											
2. Age	28,00	43,00	35,440	3,904	0,388										
3. Education	3,75	4,38	4,072	0,168	-0,174	0,048									
4. Years Institute	2,57	9,89	5,215	1,859	0,390	0,659**	0,048								
5. Years Health Care	3,86	16,50	10,426	3,278	0,325	0,886**	-0,052	0,782**							
6. Function	1,00	1,44	1,201	0,101	0,190	0,275	0,576**	0,524**	0,305						
7. Hours	1,75	2,25	2,024	0,132	-0,277	0,275	0,379	-0,071	-0,119	0,289					
8. SMWT	2,46	3,68	3,180	0,246	-0,222	-0,257	-0,32	-0,185	-0,146	-0,606**	-0,319				
9. LMX	2,86	3,16	3,015	0,093	-0,140	0,284	-0,189	0,096	0,203	-0,361	-0,217	0,365			
10. TMX	2,46	3,67	3,193	0,247	-0,062	-0,069	-0,004	0,247	0,024	-0,082	-0,123	0,324	0,046		
11. IWB	2,94	3,43	3,123	0,128	0,349	0,199	0,149	0,240	0,265	0,196	-0,224	-0,253	-0,347	0,012	
12. Team Performance	2,43	4,30	3,230	0,504	0,079	-0,255	-0,023	-0,059	-0,201	-0,179	0,271	0,418*	0,181	0,11	-0,247

**p ≤ 0,05 **p ≤ 0,01*

Table 4: Bivariate correlations on the team level

IWB								
	Individual				Team			
R square	0,037	0,067	0,185	0,198	0,374	0,558	0,558	0,791
Constant	-0,028	-0,297	-0,328	-0,302	5,825	9,587**	9,638*	4,949
Gender	0,259	0,300	0,253	0,222	0,409	0,337	0,334	0,005
Age	-0,012	-0,005	-0,002	-0,001	-0,249	-0,413**	-0,416**	-0,236*
Education	0,155	0,108	0,038	0,034	0,517	0,731*	0,738*	0,435
YearInstitute	-0,011	-0,012	-0,020	-0,017	-0,120	-0,021	-0,008	0,293
YearHealthcare	0,003	0,000	0,003	0,002	0,350	0,496**	0,495**	0,181
Function	-0,051	-0,036	0,026	0,019	-0,015	-0,520	-0,532	-0,539*
Hours	-0,090	-0,076	-0,070	-0,058	-0,449	-0,725**	-0,730**	-0,625**
SMWT		0,183*	0,113	-0,500		-0,674*	-0,670*	-5,344**
TMX			0,360**	-0,318			-0,029	-4,813**
SMWT*TMX				1,023				7,672**

*$*p \leq 0,05$; *$p \leq 0,01$*

Table 5: Linear regression model, dependent variable IWB

Team Performance										
	Individual					Team				
R Square	0,101	0,774	0,774	0,779	0,782	0,307	0,574	0,578	0,594	0,628
Constant	1,221*	-0,037	-0,400	-0,076	-0,093	1,080	-3,452	-4,366	-3,364	-3,034
Gender	-0,192	0,001	0,003	0,019	0,021	0,303	0,390	0,358	0,389	0,306
Age	-0,026	0,003	0,003	0,003	0,004	-0,042	0,155	0,195	0,166	0,137
Education	0,267**	0,049	0,050	0,041	0,026	0,172	-0,086	-0,155	-0,172	-0,123
YearInstitute	0,008	0,005	0,005	0,005	0,004	0,264	0,145	0,147	0,115	0,179
YearHealthcare	0,001	-0,010	-0,010	-0,010	-0,011	-0,094	-0,270	-0,317	-0,300	-0,264
Function	-0,077	-0,010	-0,010	-0,008	0,005	-0,572	0,037	0,086	0,169	0,080
Hours	-0,021	0,043	0,043	0,049	0,046	0,408	0,741**	0,810*	0,812*	0,737*
SMWT		0,858**	0,860**	0,854**	0,858**		0,812**	0,876*	0,846*	0,850*
IWB			-0,008	0,005	-0,592			0,095	0,147	8,278
LMX				0,073*	-0,413				0,177	6,304
IWB*LMX					0,710					-8,367

*$*p \leq 0,05$; *$p \leq 0,01$*

Table 6: Linear regression model, dependent variable Team Performance

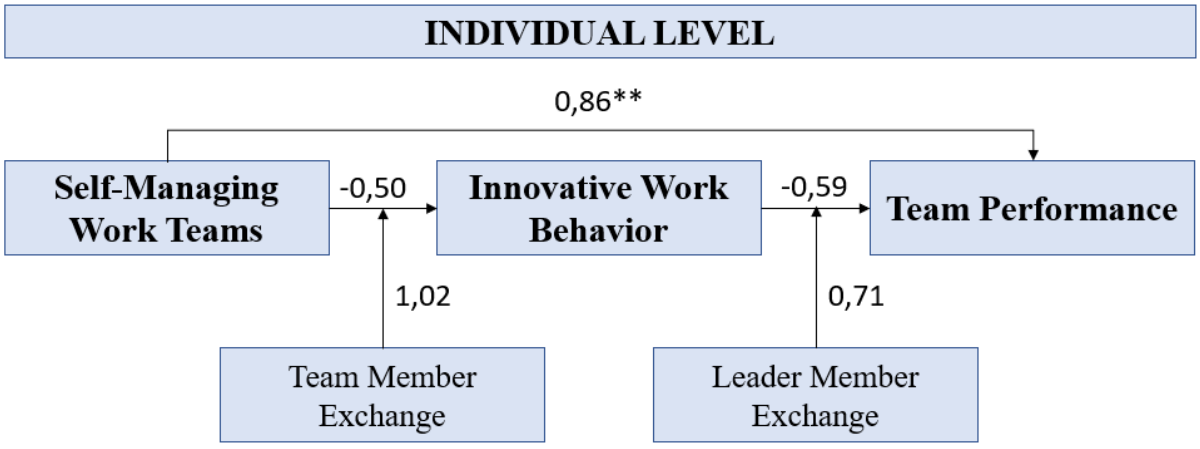

Figure 4: Causal model self-managing work teams influencing team performance on an individual level

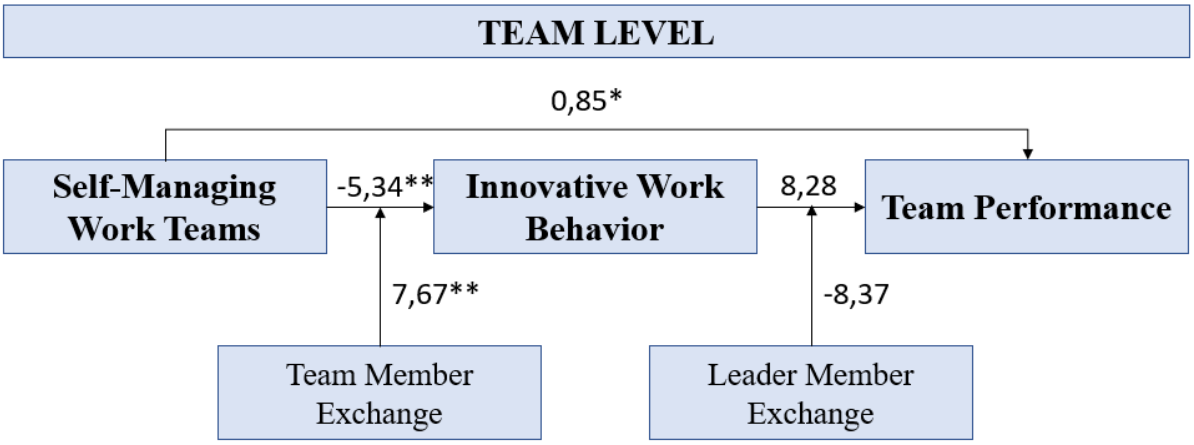

Figure 5: Causal model self-managing work teams influencing team performance on a team level

Now the hypotheses can be discussed. First, it was tested if self-managing work teams positively influences team performance. The results show that this is indeed the case. There is a strong significant positive relationship between SMWTs and Team Performance on both the individual and team level. $r(209)=0.86$, $p<0.01$; $r(25)=0.85$, $p<0.01$. Therefore Hypothesis 1 is supported by the data. Concerning the (non) reliability of the Team Performance measurement for the team-level. The conclusion above needs to be taken into context.

The second hypothesis stated that innovative work behavior positively influences team performance. The results show that this effect is not statistically significant on both measurement levels. Hypothesis 2 is thus rejected.
$r(209)=-0.59$, $p > 0.05$; $r(25)=8.28$, $p > 0.05$.

With the third hypothesis the relationship between self-managing work teams and innovative work behavior was tested. According to the data there is not a significant relationship on the individual level. However, on the team level there is indeed a significant relationship between these two variables, but the relationship is negative where a positive relationship was expected.
$r(209)=-0.50$, $p > 0.05$; $r(25)=-5.34$, $p \leq 0.01$

The fourth hypothesis is not supported by the data. Based on this research can be said that the quality of leader-member exchange does not moderate the relationship between innovative work behavior and team performance. Since the Cronbach's alpha of LMX showed a very low score, conclusions from this dataset are not representable.

Finally, it was tested if the quality of team-member exchange positively moderates the relationship between self-managing work teams and innovative work behavior. The data does support this hypothesis on a team level, but not on the individual level. Hypothesis 5 is therefore partly accepted. The effect on a team level is illustrated in Figure 6.
$r(209)=1.02$, $p>0.05$; $r(25)=7.67$, $p<0.01$

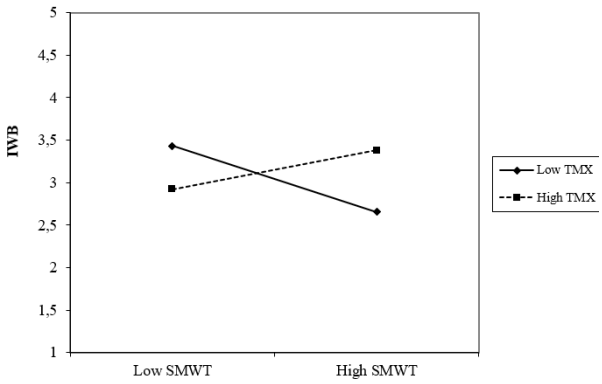

Figure 6: Moderating effect of TMX on the relationship between SMWT and IWB on a team level.

5. Conclusion & Discussion

The main contribution of this paper to the literature on self-managing work teams and performance in the health care sector concerns the multilevel view it uses. Measures are done on an individual and team level. The analysis includes innovative work behavior, which is not common in studies in such a bureaucratic environment as the health care sector.

The main research question of this paper was:

To what extent do self-managing work teams, in a bureaucratic environment such as the healthcare sector, influence team performance through innovative behavior?

The results of the data analysis confirm that self-managing work teams positively influences team performance, which is in line with the findings described by Lawler et al. (2001) and Spreitzer (2008).

But, based on this research, the relationship between self-managing work teams and team performance is not through innovative behavior. In this bureaucratic context the relationship between SMWT's and IWB is significant negative. Which would imply that the use of SMTWs leads to less innovative behavior.

Furthermore, innovative work behavior does not have an influence on team performance in this study, which may or may not be because of the bureaucratic environment of the health care sector.

Team-member exchange positively moderates the effect between SMWTs and IWB, but only on a team-level. At the individual level this relationship is positive, but not significant.

Conclusive can be stated that this study has proven some relationships in the bureaucratic health care sector. However, it may have raised more questions than it has provided answers. The relationship between SMWT and team performance was expected to rely on innovative work behavior. The results in this paper show that this is not the case.

5.1 Theoretical implications

The relationship between SMWTs and innovative work behavior was expected to be positive, based on the research of Veenendaal & Boundarouk (2015) and Smith et al., (2012). It was stated that since SMWTs do not rely on management, but on themselves and their team, it seemed logical that employees working in a SMWT recognize problems and opportunities more and therefore enhance the idea generation dimension. Next to this, the flat organizational structure, team work, autonomy and empowerment of SMWTs makes it easier to find support for ideas, and find the right persons with the power to move

the idea into practice, enhancing the idea championing and idea implementation dimensions. The results of this study are in contrast with this reasoning, which is an addition to the already known literature between SMWTs and IWB, especially in the context of the health care sector.

Since Janssen (2000) has shown significant evidence that IWB positively relates with innovation, and that innovation positively related with performance (Garcia-Morales, Jimenez-Barrionuevo & Gutiérrez-Gutiérrez, 2012) a positive relationship between IWB and team performance was expected. Since innovation itself was not measured in this study, it is impossible to control if this reasoning was incorrect. Therefore it is necessary, for further research, to also adapt innovation as a variable, or to create a better alignment between innovation and team performance.

On an individual level, TMX has a significant positive effect on IWB. This conflicts with the research done by Scott & Bruce (1994), who found that TMX was not related to innovative behavior or to climate perceptions in their study. Therefore this research can re-open the discussion if TMX and IWB are significant related. Since this study and the study of Scott & Bruce (1994) found different results, more research on this topic is necessary.

5.2 Practical implications

When an health care institution wants to increase their team performance, they can consider to achieve this with the help of self-managing work teams. This paper has shown that SMWTs are significant positive related to team performance, on both the individual and team level.

SMWTs are often implied in order to decrease costs. Since most innovations need money to be implied, in combination with the limitations of the bureaucratic environment, this could be the reason why there was no relationship between innovative work behavior and team performance. This concludes that institutions, in the researched context, do not need to invest in innovative behavior to further increase team performance.

5.3 Limitations

In this study, the value of self-managing work teams are measured as team empowerment. Since all self-managing work teams are empowered, but not all empowered teams are self-managing work teams, it is questionable if this was the correct measurement to use.

Thereby, the team empowerment scale, especially potency, lies close to the scale of the subjective team performance for the individual level. *"My team can get a lot done when it works hard"* and *"This team completes its work on time"* are questions who can easily be interpret the same way. This could mean that the found relationship between SMWT's and team performance is not correctly measured.

The object measurement of team performance for the team-level analysis consists of three individual measurements. It is possible that team performance is not measured in a correct

way. All three items did not had a significant relationship with IWB nor LMX.

Since the measurement of leader-member exchange shows low reliability, conclusions cannot be made from this research. The low Cronbach's alpha is rather surprising, since the Scandura and Graen's (1984) 7-item scale is used, which has shown a consistently high Cronbach's alpha over several papers. This can be the case because of translation issues, since the questions were translated to Dutch, or because of a lack contact with the supervisors in this specific research group, which would make the questions irrelevant. Since this research was done with only self-managing work teams, and self-managing work teams do not require a leader, it could be the case that therefore leader-member exchange is not a useful variable in this specific study. Last of all, it could be that it is unclear for the respondents who their leader is, which was not specified in the questionnaire.

Next to this, since this study has only been done within one health care organization, it cannot be excluded that certain business policies are interfering with the results. To exclude this, the research has to be done in multiple organizations and/or qualitative research has to be included to point out the interfering policies/variables.

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6. Appendices

A.1 Team empowerment

(Potency)

1. My team has confidence in itself
2. My team can get a lot done when it works hard
3. My team believes that it can be very productive

(Meaningfulness)

4. My team believes that its projects are significant
5. My team feels that its tasks are worthwhile
6. My team feels that its work is meaningful

(Autonomy)

7. My team can select different ways to do the team's work
8. My team determines as a team how things are done in the team
9. My team makes its own choices without being told by management

(Impact)

10. My team has a positive impact on this company's customers
11. My team performs tasks that matter to this company
12. My team makes a difference in this organization

A.2 Team performance

1. This team completes its work on time
2. Team members solve problems quickly
3. The quality of the work done by this team develops continuously
4. This team sometimes makes a critical quality mistake

A.3 Innovative work behavior

Innovative Work Behavior (Rated by team members)
How often does this employee...

(Idea generation)

. . . pay attention to issues that are not part of his daily work?
. . . wonder how things can be improved?
. . . search out new working methods, techniques or instruments?

. . . generate original solutions for problems?
. . . find new approaches to execute tasks?

(Idea championing)

. . . make important organizational members enthusiastic for innovative ideas?
. . . attempt to convince people to support an innovative idea?

(Idea implementation)

. . . systematically introduce innovative ideas into work practices?
. . . contribute to the implementation of new ideas?
. . . put effort in the development of new things?

A.4 Leader-member exchange

1. I know how satisfied my supervisor is with that I do.
2. My supervisor understands my problems and needs.
3. My supervisor recognizes my potential.
4. Regardless of how much formal authority my supervisor has built into his or her position, he or she would be personally inclined to use power to help solve my problems at work.
5. Regardless of the amount of formal authority my supervisor has, he or she will "bail me out" at his or her expense when I really need it.
6. I have enough confidence in my immediate supervisor that I would defend and justify his or her decisions if he or she were not present to do so.
7. I have an effective working relationship with my supervisor.

A.5 Team-member exchange

1. Other members of my team understand my problems and needs.
2. I understand the problems and needs of my team members.
3. When other team members are busy, I often volunteer to help them out.
4. When I am in a bind, my coworkers will take on extra work to help ensure the completion of my important tasks.
5. I am willing to finish work assigned to others.
6. I am flexible about switching job with others.
7. I often suggest better work methods to my coworkers in my team.
8. Others in my team let me know when I affect their work.
9. Meetings are good for resolving tension and conflict.
10. I trust my team members.