



**INTERNATIONAL WORKSHOP ON TEAMWORKING 22:
TEAMWORKING AND TECHNOLOGY AT WORK**

Book of Abstracts IWOT22

International Workshop On Teamworking, 22nd Edition

Leiden, September 6-7, 2018

Keynote speakers:
Prof.dr. Amy Edmondson
Prof.dr. Steven Dhondt

Editing:
Peter Oeij, Henny Knijnenburg, Steven Dhondt, Friso van der Meulen, Sarike Verbiest

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International Workshop On Teamworking

22nd Edition

Teamworking and Technology at Work

Today's work faces both disruptive and incremental innovations regards new technology - such as digitisation, robotics, nanotechnology, Internet-of-Things, Big Data, and Blockchain, just to mention a few -, and new organisational forms like platforms, networks, project based organisations, and web-based/virtual organisations. These developments will have significant consequences for teamworking and the work of team members. The 22nd edition of the International Workshop on Teamworking provides a forum for discussing the origins, causes and effects of 'new technology and work' for teamworking and the organisation and execution of team work and working in teams.

We especially welcomed submissions that explore theoretical, empirical and practical aspects of teamworking from different scientific disciplines (sociology, psychology, management science and related disciplines).

Keynote speakers

We are very proud to present professor **Amy C. Edmondson**, Novartis Professor of Leadership and Management, HARVARD BUSINESS SCHOOL (Boston, MA, USA) as our keynote speaker on the topic of 'New technology and consequences for teaming'. She is a renowned expert on innovation, teaming and psychological safety and team learning. Professor Edmondson is the author of *Teaming. How organizations learn, innovate, and compete in the knowledge economy* (2012), and co-author of *Building the Future: Big Teaming for Audacious Innovation* (2016), and numerous articles and papers.

We are very happy to announce that our other keynote speaker is professor **Steven Dhondt**, chair of Social Innovation/Workplace Innovation at KU LEUVEN (Belgium) and manager of the program Smart Industry/Industry4.0 at TNO (NL). He has been leading EUWIN, (EU network on Workplace Innovation) commissioned by the EC. He will share his ideas and insights about Team work and Technology, notably the recent developments regarding Blockchain.

Venue

IWOT22 takes place in Leiden, The Netherlands on September 6-7, 2018. The venue is Stadsgehoorzaal (city music hall), Breestraat 60, 2311 CS Leiden. The hosting organisation is TNO, The Netherlands Organisation for applied scientific research (www.tno.nl/en).



Websites

IWOT22: <https://iwotblog.wordpress.com>

TNO: <https://www.tno.nl/en/about-tno/events/2018/international-workshop-on-teamworking-iwot/>

Workshop Program

Thursday September 6, Aalmarktfoyer		
13.00-13.30	Registration and coffee/tea	
13.30-13.45	Welcome and information	
13.45-14.45	Keynote Steven Dhondt	
14.45-16.00	Session 1	
	Alexander Bendel & Erich Latniak	On the impact of digitalization on team-based organization structures and working conditions - experiences from change processes in German companies.
	Hardy van de Ven, Cora van Horssen, Wouter van der Torre & Paul Preenen	Does new technology make employees more or less social?
	Yennef Vereycken, Arne Vanderstukken & Monique Ramioul	On the coordination of virtual teams: a case study of 10 virtual teams in office work in Flanders
	Kristin Lebesby	Participation-based organization development: Why efforts might result in unsatisfied employees.
16.00-17.15	Session 2	
	Frederik De Naeyer, Ans De Vos, Steven Dhondt	Digital transformation, organisation of work and skills in the Belgian accounting services industry. A conceptual pre-study.
	Katarina Putnik, Peter Oeij, Wouter van der Torre, Ernest de Vroome & Steven Dhondt	Role of workplace innovation, teamwork, and employee characteristics and perceptions in the actual use of innovation.
	Hans Kristian Omenaas, Trond Richard Olsen, Endre Sjøvold	New technology in developing interdisciplinary teams.
17.30	Evening program & dinner (outside Leiden)	

Friday September 7, Aalmarktfoyer

08.30-09.00	Reception and coffee/tea	
09.00-10.15	Keynote Amy Edmondson	
10.15-11.30	Session 3	
	Leslie, DeChurch, Alexa Harris, Digeo Gómez-Zar4, Anup Sawant, Xiang Li & Noshir Contractor	My Dream Team: facilitating the assembly of teams.
	Martin Hetebrij & Els Oosthoek	Power as a positive force. Navigating professional powerplay during a complex technology project
	Hans Kristian Ommenaas	Measuring communication patterns in groups by individual behavior and interaction patterns using Sociometric Instruments
11.30-12.30	Session 4	
	Oana Fodor, Petru Curşeu, Mara Bria & Alina Fleştea	Autonomy to fail: An investigation of workload, work autonomy, interpersonal relations and performance in service teams.
	Seth Maenen & Laura Nurski	Teams, transaction costs and stress.
	Nicoleta Meslec, Daniel Graaf & Mark Clark	Fostering team creativity: an exploration of analogical thinking techniques.
	Lucia Ratiu & Claudia Lenuţa Rus	Leader coaching behaviors and learning within teams: The mediating role of psychological safety and conditional effects of task non-routineness
12.30-13.30	Lunch	

Friday September 7, Aalmarktfoyer

13.30-15.15	Session 5	
	Alissa van Zijl, Brenda Vermeeren, Ferry Koster, Joris van der Voet & Bram Steijn	Functional heterogeneity and team innovation: effects of team conflict and team learning behaviors.
	Stephen Procter & Stewart Johnstone	Becoming a high performance organization: developing high performance teams (hpts) in a UK manufacturing group.
	Anniken Solem, Eval Amdahl Seim & Mart Pettersen Buvik	"Team" as a barrier to teamwork: Involuntary non-utilization of the potential of teamwork.
	Raymond Opdenakker & Carin Cuypers	Developing strategic momentum in virtual teams
	Endre Sjøvold & Odd Arne Nissestad	Micro processes leading to behavior change in demanding context.
15.15-15.45	Coffee/tea break	
15.45-17.00	Session 6	
	Mara Bria, Petru Curșeu, Alina Fleștea & Oana Fodor	Tempted to mock, doomed to burnout? The relational costs associated with the dark personality triad in teams.
	Asiya Ali	A critical analysis of the mostly harmless effects of current BIM strategies on the project team in the regional, roadway sector in the Netherlands: BIM implementation versus BIM adoption
	Lander Vermeerbergen, Jos Benders, A. van den Broeck & Geert van Hootegem	From healthy work to healthy organisation designs: work and health outcomes in sociotechnical and conventional organisations
	Galina Leonidova & Elena Kabakova	Trust as a factor of successful team work.
17.00	Closing and Farewell	

Keynote speakers

Prof.dr. Amy Edmondson

Amy Edmondson, the Novartis Professor of Leadership and Management at the Harvard Business School, studies people and teams seeking to make a positive difference through the work they do. Her work sheds light on the related questions of why teamwork is so critically important in today's organizations and why it is so challenging. Amy has been named one of the top management thinkers in the world by Thinkers50 since 2011. She is the author of more than 70 scholarly papers and six books, including *The Fearless Organization: Creating Psychological Safety for Learning, Innovation and Growth* (Wiley: forthcoming) and *Teaming: How Organizations Learn, Innovate, & Compete in the Knowledge Economy* (Jossey-Bass, 2012). Amy received her PhD in organizational behavior, AM in psychology, and AB in engineering and design, all from Harvard University. She lives in Cambridge, Massachusetts with her husband, George Daley, and their two teenage sons.

Content of talk

Speaking Up and Teaming Up: A Research Journey:

This talk will review Edmondson's field research on psychological safety and team learning over the past two decades to develop implications for researchers and practitioners in an increasingly complex and interdependent world.

Prof.dr. Steven Dhondt

Steven Dhondt (Prof., PhD) has a doctoral degree in social sciences and is currently senior researcher at TNO and visiting professor at the University of Leuven (Belgium). His main focus is on the impacts of the newest technologies on organisational and work practices. He coordinates at TNO the Smart Working-research programme, developing insights on the impacts of robotics and digitization on organisational practices. You can hear in the press a lot about the platform economy, cobotisation of industry and other new developments in the Dutch economy: most of this research is connected to the work of Steven and his team. In the past years, he has been closely following the blockchain developments in the fields of healthcare and education. Smart Working means new practices in organisations and in society, building on smart systems and on smart employees. He sees it as his challenge to find this connection. He also believes that workplace innovation (Oeij *et al.*, 2017) is the only way forward to achieve this smart connection. Next to his research work, he also coordinated over the past four years the European learning network on Workplace Innovation (EUWIN) for the European Commission (DG GROW).

Content of talk

Blockchain is a mystifying technology for organisational researchers. The technology holds promises that are extremely enticing for such researchers. In contrast with major centralizing Information Technologies, blockchain promises a decentralized world: everyone is part of the production of the databases, everyone is owner of the data and can use the material to his/her own interests. Organisational researchers, certainly in the teamworking environment, adhere to concepts, solutions and models that support the decentralization of decision making in organisations as a means to achieve two goals simultaneously: better organisational performance and better quality of work. In the past decades, we can see that Information and Communication Technologies have mainly been instrumental to support more centralization within organisations (Bloom *et al.*, 2014). How does blockchain technology then fit in the discussion. Does a decentralizing technology also support decentralizing processes in and between organisations? In his keynote, Dhondt will address five innovations in blockchain technology that relate to organising processes. For each of these innovations (immutable ledger, smart contracts, the DAO, tokens, forking), he will discuss the impact on centralizing/decentralizing elements. His keynote ends with directions for future research and development with this exciting new technology.

Abstracts (Alphabetical order)

Asiya Ali

Dura Vermeer Infra Regio Zuid West, Rotterdam, The Netherlands

A critical analysis of the mostly harmless effects of current BIM strategies on the project team in the regional, roadway sector in the Netherlands: An empirical study.

Abstract

Building information modelling (BIM), both a technical and conceptual innovation, was introduced in the Netherlands with the promise of facilitating integrated workflows, improving transparency and project delivery efficiency. Since then, the push from national and local governments on the construction industry to implement it has been ever strong. While the building industry is thriving with the addition of BIM, the roadway industry is falling behind, especially the regional roadway sector. When implementing BIM in this particular sector that is heavily dependent on knowledge and project experience, the lack of knowledge and experience of BIM has had dire effects on integrating it in the workplace. The assumptions are made based on the context of the critical analysis of the contractor-client-consultant relationships made during BIM pilot projects and workshops. The research analysis revealed particular behaviours and actions that can be traced to supply-induced demand, while appearing to be harmless, negatively impacted the very people that directly affect the sustainable implementation of BIM. As a result, two groups have been identified; sceptics and optimists of BIM within the industry. *Mostly harmless* factors were identified that could have influenced this gulf between industry members. The paper will demonstrate how focussing on BIM adoption reduces the gap between industry experience and BIM knowledge and skills. By aiming to create experiences where sceptics turn into possible optimists, a dynamic behaviour can be forced where sceptics become active participants in the BIM implementation process. In doing so, the transition workflows from traditional to BIM can be developed that are both effective and efficient; workflows that subsequently help organisations stay competitive.

Keywords: BIM; BIM adoption; BIM implementation; stakeholder relationships; BIM transition workflows; competitive advantage; roadway industry; supply-induced demand; mostly harmless factors.

Alexander Bendel, Erich Latniak

Institut Arbeit & Qualifikation (IAQ), Universität Duisburg-Essen (Germany)

On the impact of digitalization on team-based organization structures and working conditions – experiences from change processes in German companies

Presently, digitalization of German industry is gaining a lot of attention in German public debate: Based on the notion of “Industry 4.0” (BMW, 2018) (BMBF 2018), there is a strong emphasis on technical solutions and the use of IT-based technologies and communication tools for the companies. But as recent research indicates (e.g. Baethge-Kinsky *et al.*, 2018; Guhlemann *et al.*, 2018; Klippert *et al.*, 2018), many companies still tend to be cautious in applying the new remedy. The joint research project “Arbeits- und prozessorientierte Digitalisierung in Industrieunternehmen - Weiterentwicklung kompetenter Arbeitssysteme (APRODI) (= Work and process oriented digitalization in industrial enterprises - further development of competency oriented work systems)” is aiming to improve and apply digitalization processes in typical production environments in five companies by implementing digital technologies in a way that employees in the teams can broaden their skills and competencies and, at the same time, improve the ability to solve production related challenges.

The project's objective is to contribute to a use of digital technologies that will foster productivity and competition related aspects on the one hand, while adapted, culture sensitive, and competence oriented

approaches will be applied on the other. Based on socio-technical ideas and concepts (e.g. Ulich, 2011, 2013; Baxter & Sommerville, 2011; Winter *et al.*, 2014), change projects in the five joining companies are about to develop adapted approaches of a participative and integrated design and the implementation of selected IT-supported work systems. Solutions will be developed based on specifications jointly discussed by stakeholders and participants. Joining companies stem from different industries and they all have extended experience in introducing and (further) developing team structures.

The companies' learning processes will be supported by joint efforts, i.e. by external and scientific input, and by joint feedback and consideration. The aim is to identify success factors and obstacles in the ongoing and supported change processes (c.f. Zink *et al.*, 2015), and to adapt these company experiences for transfer purposes. Based on interviews, participatory observation, formative evaluation, and action research methods, intervention oriented case studies will be analyzed.

An aspect of specific interest is the interface between the teams' needs and organizational demands and prerequisites. In this respect, communication and interaction between different company units is changed by the introduction of the new systems or tools. This has implications on the role of the teams involved and their work structures. As different company units and teams will be involved in the development, design, and use of the digital technologies, these changes will be focused in the case studies. Furthermore, the tension between (still existing) individual responsibilities (hierarchy) and team structures will be investigated.

We will present preliminary findings of selected case studies emphasizing the implications on the team-based organization structures. In addition we will discuss conclusions of these findings for a participatory work design and concepts of change processes.

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Mara Bria, Petru L. Curşeu, Alina M. Fleştea, Oana C. Fodor

Psychology Department, Babeş-Bolyai University, Cluj-Napoca, Romania

Tempted to mock, doomed to burnout? The relational costs associated with the dark personality triad in teams

Contemporary working teams are fluid socio-technical systems displaying complex affective dynamics. As such, teams impact the affective experiences of their members. Employee well-being is central to most modern organisations, yet literature about the role of team dynamics on well being is rather scarce. The present study tackles this gap and aims to explore the interplay between dark personality nuances and team relational aspects on team members burnout. Dark triad personality traits (Machiavellianism, narcissism, and psychopathy) have been generally investigated as drivers of dysfunctional behaviour in interpersonal settings. In particular Machiavellianism and narcissism were associated with using aggressive humour in relational settings (Furnham *et al.*, 2013; Veselka *et al.*, 2011; Martin *et al.*, 2012). Aggressive humour has been defined as an emergent group level phenomenon resulting from team members' pattern of aggressive communication (Curşeu & Fodor, 2016). For the present research we argue that in team settings, the tendency to use aggressive humour ultimately erodes the interpersonal relationships generating negative interpersonal ties that are taxing for the well-being of the individual group members. We build an argument stating that the dysfunctional interpersonal tendencies associated with the dark triad bear relational consequences in teams, ultimately leading to burnout (Furnham *et al.*, 2013). Building on the results reported in Aghababaei and Blanchino (2015) we hypothesise that narcissism has a negative association with burnout, while psychopathy and Machiavellianism have a positive association with burnout.

Sample

Data was collected via an online survey between march and may, 2018. The sample consists of 422 respondents (mean age of 26,62 years old and 198 women) employed in teams from multinational organisations.

Measures

Burnout was measured with the Oldenburg Burnout Inventory (OLBI); the positively keyed items were recoded so the scale in general illustrates exhaustion and disengagement, the two core dimensions of burnout as stated in Demerouti and Bakker (2008). We performed an exploratory principal component analysis that uncovered a dominant factor with an eigenvalue of 4,767 that explained close to 29,223 of the variance in items scores. We have used the Bartlett factor score as an indicator of burnout, as the Bartlett score is a very accurate indicator of the "true factor scores" (DiStefano *et al.*, 2009).

The three dimensions of the dark triad, narcissism, Machiavellianism, and psychopathy were self-evaluated with the short dark triad scale proposed by Jones and Paulhus (2014).

The use of aggressive humour in groups was evaluated with a scale described in Curşeu and Fodor (2016).

The negative relations in teams was measured with a six item scale recommended by De Jong *et al.* (2014). To capture aggressive humour and negative relations as a group level phenomena and to deal with the concerns related to the common method bias, we have used the scores reported by the teammates, excluding the score of the focal person (Glomb & Liao, 2003; Pluut & Curşeu, 2013).

Results

We conducted three mediation analysis using the PROCESS macro for the statistical software package SPSS (Hayes, 2012). We tested an indirect effect for each self-rated dark triad dimension on burnout through perceived negative relations and aggressive humour. Results partially confirmed our hypothesis. We found no effects (direct or mediated) between Machiavellianism and self rated burnout. The direct effect between Machiavellianism and burnout is not significant (estimate .16 at $p=.12$). The indirect effects of aggressive humour (effect size $=.002$, $SE=.008$), negative relations (effect size $=-.01$, $SE=.01$), or their interaction (effect size $=-.007$, $SE=.009$) on burnout is also not statistically significant.

Psychopathy is positively associated with burnout both directly (estimate .39, $p=.00$) and indirectly - through the interaction of aggressive humour and negative relations (effect size=.03, $SE=.02$). Narcissism, as hypothesised, has a negative association with burnout directly (estimate -.34, $p=.00$) but a positive association indirectly, through the cumulative impact of aggressive humour and negative relations (effect .01, $SE=.01$)

Discussion

Our results highlight the negative echo the socially aversive traits of narcissism and psychopathy have on team dynamics and ultimately on team members' well being. It is one of the first studies which highlight the snowballing effect of aggressive humour and negative relations on the team member' well being when teams integrate individuals with high narcissism and psychopathy scores.

The study has a cross-sectional design and although we addressed the common method bias issues, results should be interpreted with vigilance. Our results are a helpful resource for practitioners preoccupied with managing team processes.

Frederik De Naeyer, Ans De Vos, Steven Dhondt

Antwerp Management School/TNO

Digital transformation, organisation of work and skills in the Belgian accounting services industry. A conceptual pre-study.

Although the fear for unemployment due to technological progress is as old as the emergence of the guilds in the Middle Ages, the tension between technology and employment is now more topical than ever. This is especially true for the accounting industry, which is facing a rapid and disruptive digital transformation. Frey and Osborne (F&O) (2013) predict with a probability factor of 0.94 that the jobs of accountants and auditors will become automated over the next two decades. This occupation based approach is heavily criticized in three ways. According to Arntz *et al.* (2016), not occupations but single job tasks are being automated, following also the argument of Autor and Handel (2013): when tasks are being automated, workers strategically take on other job tasks to avoid becoming unemployed. Arntz *et al.* further criticize the F&O-method in terms of reliability, validity and generalizability. F&O only assess 70 occupations of the 903 occupations of the US O*Net classification scheme and use no more than three so-called engineering bottlenecks and nine related attributes. The OECD-PIAAC data (Arntz *et al.*, 2016) also provides counterfactual results: 76% of the accountants also perform interactive tasks containing group work, face-to-face interaction, problem solving and influencing, which are difficult to automate (Arntz *et al.*, 2016).

Suphan and Pfeiffer (2015) offer a second critique in which they question the use of only Machine Learning Experts in expert panels to assess the automatability of the different occupations. This would lead to a "déformation professionnelle".

A third critique of the F&O approach is that the adoption of new technologies is a slow process due to ethical, legal, economic and societal hurdles (Arntz *et al.*, 2016; Pfeiffer & Suphan, 2015; Sels *et al.*, 2017; Nübler, 2016; Atkinson & Wu, 2017) and that digital transformation creates also new additional jobs, often complementary to the use of technology (Arntz *et al.*, 2016; Spits & Oener, 2006; Gregory *et al.*, 2016; Ford, 2015).

Notwithstanding the critique on F&O, it is clear that the profession of an accountant and bookkeeper will change in the future, due to new technologies. We mean to investigate which change will be most likely, taking into account more than a job perspective. In our research we shall scrutinize the predictions of F&O and what the result of the F&O approach would be if we perform a more accurate and fine-meshed breakdown of the profession of accountant and bookkeeper into job tasks in stead of using the more rough and generalist descriptions of classification schemes like O*NET and ISCO88. At the same time we shall also scrutinize what the result of the F&O approach would be if we compose a more

balanced panel of experts (instead of machine learning experts only) to assess the computerisation of accounting job tasks, thus avoiding bias and “déformation professionnelle”.

As an alternative to the F&O approach for analyzing the automatability of job tasks we shall develop a broader assessment, including the Labouring Capacity Index of Suphan and Pfeiffer (2015) and integrating the frameworks from the area of technology and organisational change (Bloom *et al.*, 2014; Ter Weel *et al.*, 2010). We will use a combination of quantitative and qualitative approach to the subject. Next to the development of broader concept to analyze job changes, we will look into one single case study and show the importance of team environments on the actual allocation of tasks within the profession of accountants and bookkeepers. Finally, the study will outline a programme of further research to assess the validity of the new framework.

Leslie DeChurch, Alexa Harris, Diego Gómez-Zarà, Anup Sawant, Xiang Li, Noshir Contractor
Northwestern University, USA

My Dream Team: Facilitating the Assembly of Teams

Purpose

On and offline, teams perform a wide variety of important tasks. Online, open source software teams, flash teams, and peer production teams are some of the teams who come together to accomplish shared goals. Offline, teams are just as prevalent. Product design teams, hackathon teams, healthcare teams, scientific teams, and disaster response teams (to name a few) work collaboratively in pursuit of shared goals.

Despite the ubiquity and importance of teams, finding the right teammates is challenging for at least two reasons: (1) individuals only know who they know, ruling out many prospective teammates, and (2) deep level information, allowing one to determine if someone would be a good collaborator, requires time and interaction. Working in teams allow individuals to transcend the limitations of their skills, experience, and social networks by partnering with others who can bring additional capabilities to the task, but finding diverse individuals is difficult to implement in practice. How can individuals extend beyond “who they know” to form teams?

Design/methodology/approach

We developed MyDreamTeam (MDT), an online team formation platform, designed to recommend potential teammates to an individual wishing to form a team, or to an already established team that needs to fill an open position. MDT has two stages: the data capture phase and the teaming phase. The data capture phase acquires survey data from individuals, eliciting scheduling, demographics, and practical skills, as well as deep level characteristics, such as their personality and social network position. During the teaming phase, users input preferences for characteristics they believe would be best suitable for the team they wish to build. Next, they receive a rank-ordered list of potential teammates, and can send invitations to team up.

We report a study utilizing MDT to form teams for an interdisciplinary, cross-university project. Teams comprised of undergraduate students were formed in order to complete a 10 week interdisciplinary learning project on environmental behavior change. The project was integral to the objectives of one of two courses: Environmental Ecology or Social Psychology. A significant portion of the course grade was based on the quality of the team’s project. A total of 579 students participated in this team project and used MDT to form teams, we have complete survey data from 375 individuals.

After teams were formed, we measured participants evaluations of MDT compared to other team formation methods on five dimensions: process satisfaction (2 items; $\alpha = 0.56$), general affect (4 items; $\alpha = 0.91$), network efficacy (5 items; $\alpha = 0.93$), relational efficacy (3 items; $\alpha = 0.92$), and teaming cognition (6 items; $\alpha = 0.96$). Next we measured members team assembly satisfaction (4 items; $\alpha = 0.75$), team efficacy (4 items; $\alpha = 0.81$), and team member self-efficacy (5 items; $\alpha = 0.89$).

Findings

Users reported on their experiences forming teams with MDT as compared to previous projects, indicating MDT enabled them to find teammates from a wider, more diverse set of individuals, and that it prompted more deliberative thinking about who to work with. The second set of analyses finds members were especially satisfied with the team they were in and perceived the method they used to build their team was fair. Users also reported that they felt their team had the right people for doing a great job, and that they were confident that their team would be successful. Finally, users reported that they felt they fit into the team they were on well; for example, they felt they were confident in their ability to work well with other members of the team, perform very well on the team, and that they felt that being a part of the team motivated them to do well on the project.

Research limitations/implications

We present a new platform that aids in the search and formation of teams, and consider a variety of implications of using online technologies to form teams on individuals attitudes toward their future teammates.

Originality/value

As more teams work at a distance, and use new technologies to team up, we contribute an empirical study exploring the use of technology for the purpose of forming teams. MDT has the potential to better enable people to form teams as well as for researchers to study team formation.

Keywords: team formation, team composition, virtual teams, technology, team attitudes.

Fodor, O.C.*, **Curşeu, P.L.*** γ , **Bria, M.***, **Fleştea, A.M.***

* Department of Psychology, Babeş-Bolyai University, Cluj-Napoca, Romania γ Open University, Heerlen, The Netherlands

Autonomy to fail: An investigation of workload, work autonomy, interpersonal relations and performance in service teams

Teams are often used in service delivery in a variety of settings. Service organizations are therefore increasingly focused on improving the teamwork quality and performance in order to maintain satisfied customers. In this study, we build on the work design literature and aim to explore the impact of workload and work autonomy on the objective performance of service delivery teams. Additionally, we address the rather neglected role of the social environment at work (i.e. the negative relations in teams and the quality of leader-member exchange/LMX) for team performance.

Data for the study were collected among professionals working in a local division (based in Romania) of a multinational company that provides digital marketing, customer service and technical support services to its clients. 433 call-center operators (231 women, mean age = 28.52 years, SDage = 6.92, mean tenure = 21.02 months, SDtenure = 26.64) nested in 42 teams (mean size = 10.30, SDsize = 7.54) answered the questionnaire.

In order to test our hypotheses, we have used stepwise OLS regressions with and without controls. The results show that the influence of negative relations on team performance is qualified by the interaction with LMX: the negative association between negative relations and team performance decreases as the quality of LMX increases. Workload has a negative and significant effect on team performance, the effect of work autonomy is, contrary to the predictions: negative and only marginally significant. Finally, the interaction effect between workload and work autonomy is negative and significant, such that the negative association between workload and team performance increases as work autonomy increases.

Although the interaction effect is significant, it is not aligned with what we have hypothesized. Work autonomy does not seem have the buffering effect against workload as originally expected, on contrary, work autonomy seems to increase the negative association between workload and team performance. Implications for theory and practice are discussed.

Martin Hetebrij, Els Oosthoek

De Politieke Dimensie/BDO

Power as a positive force: Cutting through complexity with a 'four games of influence' model

Power within organizations does not come with subtitles. Experiments in wielding power often have their price: the process of improving political skills can either lead to a result or to a more painful lesson. As authors of this article, we are fascinated by influence in organizations. In this case study we analyzed a multidisciplinary technology project through the lens of power and influence. We followed a leader of a multidisciplinary team, responsible for preparing and building a learning procurement platform for a social-profit company.

Context: no Switzerland

If we compared a company to a map of Europe, there would be no Switzerland. There is no neutral ground; everybody is involved. Professionals, teams, and managers: everybody rules their own agenda. If we label this interdependence as politics, an immediate reaction often follows. Professionals can be loud in their reactions: "All those office politics; if that is the way forward, than I'm out." Because a stakeholder decision once again delays the tight project deadline.

Influence can be difficult to trace; it is everywhere - and nowhere to be seen (Ten Bos, 2015). Formal and informal decision paths get entwined; they concur at the same time and in a different speed. Organizations can often feel as a four-dimensional, complex field of interests. Plays are being played simultaneously; both players and audience change position.

Relevance: technological complexity

Addressing power is more relevant than ever. Working environments are far more demanding than they were 20 years ago. New technology, legislation and market trends increase the level of complexity in organizations. In this setting, political skills are even more important. Multilayered issues ask for a productive and at the same time constructive collaboration of disciplines. Influence has always been organized formally within organizations and distributed through managers or the C-suite. Now, not just managers but also professionals and teams have to be able to handle influence and power - even if they don't really like to.

Cold case

This article is based on the notes and research essay Els Oosthoek wrote during her master's program in Change Management (MCM) at Sioo (interuniversity center on change management and organizational design). At that time, she analyzed her own working practice by means of an action model derived from research on informal influence by Harvard professor Debra Meyerson PhD. The case is now being analyzed again - like reopening a cold case murder mystery.

As a diagnostic model, we used the model of four 'games of influence' that Martin Hetebrij PhD described in earlier work (Hetebrij, 2006):

The four 'games of influence' are:

- > The game of content;
- > The game of relationships;
- > The game of power;
- > The game of direction.

In this article, a reconstruction is made of relevant situations from an actual working practice, addressing the following questions: In what way did a project leader exercise power and influence without formal authorization? In what way can the model of 'four games of influence' function as a diagnostic tool to evaluate the use of power and influence?

Conclusion

If we want to strive towards a constructive and productive collaboration of different disciplines, an honest and well-designed use of influence is crucial. In this case study we reviewed an existing model of 'four games of influence' as a diagnostic tool to reflect on the proceedings of a multidisciplinary technology project team. The case study provided an example of an informal and positive approach in which a well-balanced use of power can lead to results for a multidisciplinary project team. And can contribute to bottom-up organizational development.

What proved to be an essential ingredient, was the ability to go above and beyond professional boundaries. The classic 'pigeonhole' of a professional discipline (Mintzberg, 1993) needs to be avoided to be able to handle complex decision-making. This proved to be especially important in this case where also complex technology was involved, because 'it is the framework which changes with each new technology and not just the picture within the frame' (McLuhan, 1968). Concluding we agree that the quality of a decision process is a telltale sign of the quality of its outcomes. Organizational development is more and more a learning process for all involved, and success isn't always one of the options.

The diagnostic tool helped assess the use of power and influence from hindsight. Going forward, the model could support leaders and multidisciplinary teams to be more effective in wielding power during a project. The 'four games of influence' model could be used by professionals and (project)managers to help navigate power in a more skillful way. It might help dispersing the complexity that often disguises the use of power - if only for a moment.

Kristin Lebesby

Department of Industrial Economy and Technology Management, Norwegian University of Science and Technology (NTNU)

Participation-based organization development: Why efforts might result in unsatisfied employees

Researchers and practitioners have experimented with efforts to increase employee involvement and participation since the 1920s. As early as the 1930s, companies started to implement suggestion systems (Appelbaum & Batt, 1994; Foley & Polanyi, 2006; Hardy & Leiba-O'Sullivan, 1998). The notion of joint optimization, flat organization charts and employee participation seems to be just as applicable to organizations now - as it was when Trist and Bamforth (1951) introduced readers to socio-technical systems. Both contemporary and recent research, however, shows that employees will not always comply to more participation in their day-to-day work – and sometimes do anything in their power to avoid it (Crozier, 2010; Dent & Goldberg, 1999; Hardy & Leiba-O'Sullivan, 1998).

Trist (1981) and the Tavistock Institute conducted action research (AR) field projects, and this particular approach is highly relevant in this paper. As described in more detail in the following paper, the case of this study was an action research project within a Norwegian public organization. Greenwood and Levin (2007) claim that "AR is social research carried out by a team that encompasses a professional action researcher and members of an organization, community, or network ('stakeholders') who are seeking to improve the participants' situation" (Greenwood & Levin, 2007:3). They also claim that "action research promotes broad participation in the research process and supports action leading to a more just, sustainable, or satisfying situation for the stakeholders" (Greenwood & Levin, 2007:3).

This article reviews the research on employee participation in organization development efforts, and what the literature say about the reasons employees would have for participating in such efforts. With

that in mind, I ask; *Why are employees not embracing change and participating in organizational development efforts?* The majority of contemporary and recent research points to positive connections between employee participation and organizational effectiveness, productivity and job satisfaction (Locke *et al.*, 1986). However, when the participative development efforts fail, it seems that there are some discrepancies between early STS promotion of a systems view and what researchers and practitioners in reality are focusing on - behavioristic and individual factors. This entails that managers often blame employees' resistance to change for not achieving desired goals, and the literature often promotes participation as a tool for overcoming this problem. As illustrated in the article, employees might in fact have rational reasons for not participating, and this does not mean that they resist the change, *per se*.

Some researchers promote employee participation in decision-making, problem-solving and involving employees in organizational development efforts (Cheney, 1995; Deetz, 1992; Greenwood & Levin, 2007; Harrison & Freeman, 2004; McLagan & Nel, 1995). This was also the case for The Norwegian Public Roads Administration, where an action research project was initiated in 2015 with a goal of strengthening the cooperating across organizational levels and making it possible for employees to have a more active role and participate in the decision-making and development efforts. When talking to the employees of this department, however, several of them found that participating in this project might not benefit them, of different reasons. When observing and participating in this action research project for two years, I wondered if increased employee participation in development projects should be a given - as what these workers said and did show me something different.

The aim in this paper is to examine existing literature on the topic of participation in organization development efforts, and then illustrate how increased employee participation might not always be 'best practice' or should be a given when initiating development programs within organizations and different contexts. Firstly, relevant literature on employee participation in change efforts is presented. Secondly, a short presentation of the case will be presented. Finally, the findings will be discussed, and I will try to suggest some implications for future research and practice.

Keywords: employee participation, organizational development, resistance to change.

Galina V. Leonidova, Elena A. Kabakova

Vologda Research Center of the Russian Academy of Sciences, Russian Federation

Trust as a factor of successful team work

Introduction

The most significant and valuable resource for successful business is the strong and coordinated team, which is necessary, primarily, for elaboration of major solutions/projects. Team is the set of personalities, possessing certain qualities, attitudes, ambitions and competences, working for achievement of common purposes and tasks.

Successful team work depends on different factors. Trust is one of such factors. Trust is one of the empiric indicators of the "social capital" phenomenon, conception of which is quite new in the context of mesolevel's analysis (firms and organizations). J. Coleman, for instance, marks that compared to other forms of capital social capital "...is appropriate for the relations structure between factors and among them" (Coleman, 2001: p. 124).

R. Putnam, considering such phenomenon as one of the factors influencing public welfare, confirms that in case of proper development of trust and social networks "individuals, firms, areas and even nations thrive" (Putnam, 1995: c. 67).

It is worth noting that social networks, general provisions, rules and views are included to the circle of social capital's components along with trust. F. Fukuyama makes emphasis on trust, considering that it

stimulates cooperation among the organization's employees, which leads to its successful functioning and increasing the results of its activity (Fukuyama, 2004).

S.I. Ozhegov's "Explanatory Dictionary of the Russian Language" determines trust as "the assurance in someone's reliability and sincerity, and in accuracy of something" and the attitude to someone or something based on it (Ozhegov, 1982:, c. 154). In N. Abramov's "Dictionary of Russian synonyms and expressions similar in meaning" we can find the words similar in meaning to trust: credit, assurance (Abramov, 1999: c. 96).

According to the *theory of trust* (F. Fukuyama), domination of mistrust in society is equal to introducing additional tax on all forms of economic activity, which societies with high level of trust are free from. In the absence of trust economic activity's expenses increase by 50% approximately as the result of establishing supervising and control procedures (Fukuyama, 2004: c. 83).

In *P. Sztompka's* opinion, trust becomes the necessary condition of organization's development due to the increase in complexity and non-transparency of modern societies and economic ties (Sztompka, 2012: c. 37). He considers that *trust mobilizes human acts, encourages creative, innovative and entrepreneurial activity towards other people, reduces uncertainty and risk*, related to human acts, and, as the result, opportunities of action grow in proportion to trust enhancement.

Materials and methods

With reference to the above mentioned, *the analysis of employees' trust level* based on respondents' estimations gained in the course of conducting opinion survey "Region's social capital" seems to be interesting. The investigation is conducted by the Vologda Research Center of the Russian Academy of Sciences in such cities as Vologda, Cherepovets and Pskov in 2017. In total, 900 people were surveyed according to the representative sample (Guzhavina & Silina, 2016).

The analysis was conducted regarding the question "Could you, please, tell us how much do you trust or do not trust..?" with the following variants of responses - *completely trust, rather trust, rather do not trust, do not trust completely and not sure* - on such positions as co-workers, your organization's chief, your subordinates.

One more tool that helped to analyze the degree of employees' trust in appearance of difficult situations in labor activity - the question "Whom could you address in appearance of challenging life situation to?" Respondents could mark the frequency of such addresses choosing the following responses: *always, often, rarely, almost never* on the same positions.

Results and their discussion

Results of the investigation testify that in most cases respondent trust their team, in which they work. Therewith, respondents put most trust in their co-workers (51%) rather than their chief (46.3%) or their subordinates (31.6%; table 1).

The analysis reveals that the trust level in various cities differs. So, workers from Pskov feel the highest level of trust regarding all positions mentioned above. In particular, 53% of Pskov residents, 48% of Vologda residents and 38% of Cherepovets residents trust in the leadership; 51, 56, and 46% of respondents respectively trust their co-workers. In relation to the subordinates all the respondents have the same level of trust regardless their place of residence.

Table 1 Distribution of responses to the question: “Could you, please, tell us how much do you trust or do not trust..?”, % from all respondents (N=900)

Trust objects	Variants of responses	Vologda	Cherepovets	Pskov	Average
Co-workers	Completely trust	11.7	5.3	6.0	7.7
	Rather trust	44.0	41.0	45.0	43.3
	Rather do not trust	15.7	17.0	24.0	18.9
	Do not trust completely	15.7	15.0	11.3	14.0
	Not sure	13.0	21.7	13.7	16.1
Your chief	Completely trust	10.3	5.7	15.0	10.3
	Rather trust	38.0	32.0	38.0	36.0
	Rather do not trust	19.7	18.0	18.0	18.6
	Do not trust completely	15.3	17.3	12.0	14.9
	Not sure	16.7	27.0	17.0	20.2
Your subordinates	Completely trust	7.7	3.3	4.7	5.2
	Rather trust	25.3	25.7	28.3	26.4
	Rather do not trust	17.0	18.0	21.7	18.9
	Do not trust completely	15.3	14.0	10.3	13.2
	Not sure	34.7	39.0	35.0	36.2

Source: data from opinion survey “Region’s social capital”, VoIRC RAS, 2017

Conclusion

Consequently, the data of the opinion survey testifies a quite low trust level in labor forces, which is mostly oriented on inner circle (co-workers). The low trust level to everyone, who is beyond the circle of team, can be the indicator of crisis phenomena in organization and has a negative influence on the work of the whole staff and its competitiveness. The results of this survey can be used in human resources management practice at the enterprises and organizations for evaluating the situation and taking measures for its improvement.

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Seth Maenen, Laura Nurski

Flanders Synergy, Belgium

Teams, transaction costs and stress

In general, social support in a team is an important resource for workers, that shields them from job strain. This assertion strongly corroborates with many studies, and is therefore widely accepted in the

academic research. However, the positive effect of social support may not be helpful as a measure against job strain in all conditions. One of the key intermediary variables is likely to be task interdependence among team members. Task interdependence has been found to be a strong intermediary variable in team effectiveness. For example, Aubé and Rousseau (2005) found that in conditions of low task interdependence, teams that have a strong shared sense of commitment to team goals do not perform any better than teams that do not have such strongly shared team goals. In other words, the idea that comes out this study is that in the absence of interdependence, team commitment is irrelevant for performance. However, in conditions of high task interdependence, team goal commitment is a powerful predictor of team performance. We suspect that a similar intermediary effect may be found in the case of work stress. In particular, we hypothesize that in teams that are characterized by strong task interdependence among team members, social support will have a much stronger impact on work stress, than in teams where there is low task interdependence. If this is confirmed empirically, it means that the effect social support on job strain is conditional on task interdependence. If the job is stressful, and the nature of the task implies that colleagues can do little to help, then social support might not make much difference in minimizing job strain.

A second novelty that we will elaborate in the paper is to link the concept of interdependence to the notion of transaction cost. Transaction cost economics (TCE) is a theory about the costs of economic adaptation (Williamson, 1996). TCE sets out to investigate what drives these costs, and to uncover which kind of governance arrangements are most efficient in minimizing these costs. In other words, TCE scholars study what kind of coordination demands are associated with which kind of economic activities. TCE therefore analyzes how different kinds of organizational controls are needed to manage these coordination demands efficiently.

Even though this connection has not been made as yet in the literature to the best of our knowledge, we propose that TCE theory is very relevant, both conceptually and empirically, to investigate interdependence in teams. Core transaction attributes are asset specificity and uncertainty. Asset specificity refers to the fact that work often requires sunken costs, thus investment that are non-redeployable, and cannot be reused for other kinds of work. The type of job demands that asset specificity provokes in the context of teams are investing in knowledge and skills, handling the information flows that provide critical information to get the job done, and learning to master a wide variety of different kinds of work and work methods. Whereas asset specificity points to the inherent nature of the activities that are required to get the job done, uncertainty refers to any type of disturbances that have to be dealt with during the execution of economic activities. Different sources of uncertainty can exist. A particularly important source of uncertainty in teams are planning disturbances. Planning disturbances occur when the urgency, the amount time needed to execute tasks, or the sheer volume of work varies in unpredictable ways.

We have devised a questionnaire that measures to what extent individual workers can handle such circumstances by themselves (individual autonomy), as well as to what extent workers depend on their colleagues (interdependence both within and outside the team) to handle these transaction costs. The second condition is the interdependence condition. At the time of writing this abstract, data collection in an industrial company has just been finalized. At the IWOT-conference we will be able to present empirical results. If our hypotheses are correct, then our study might open up new avenues for theoretical and empirical studies on interdependence, teams and job strain.

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Nicoleta Meslec, Daniel Graff, Mark Clark

Tilburg University, The Netherlands, Loughborough University, UK, American University, USA

Fostering team creativity: an exploration of analogical thinking techniques

In order to become competitive, modern organizations have to capitalize on individual and team creative performance. During the last decades, considerable research efforts have explored factors related to team creativity in the workplace (Hulsheger *et al.*, 2009). Team creativity has been conceptualized as the extent to which the products or ideas generated by a team are novel and useful (Amabile, 1996; Zhou & Shalley, 2010).

Theoretically, groups should be successful in creativity tasks due to the large pool of ideas coming from its various members. However, previous empirical studies have shown that when teams engage in solving creativity tasks, their performance is more likely to decrease due to various social and cognitive processes. Within teams, individuals are more likely to engage in: 1) social comparison processes which leads to social loafing (inhibition to generate ideas in the presence of others) and social matching (e.g. team members competing to come up with similar number of ideas) (Paulus & Brown, 2003); 2) production blocking (inability to express and come up with new ideas due to the fact that members have to listen to the ideas of other group members, Diehl & Stroebe, 1987); 3) fixation, group members are limiting the range of ideas explored and conform to the few categories of ideas already proposed (Smith *et al.*, 1993).

Various techniques have been proposed in the team literature to overcome the negative effects of the processes described above on team creativity. For example, the brainwriting technique or the forgetting fixation of incubation technique (Smith, 1993). Despite the various connections that have been made between analogical thinking and creativity at an individual level, it is surprising how little empirical evidence there is concerning analogical thinking and creativity at a team level. In the current paper we are using insights from the analogical thinking field of research to develop and test the usefulness of two team creativity techniques: analogical technique same domain (ASD), analogical technique different domain (ADD).

Our sample consisted of 403 students (57.8% women, average age=23.9) nested in 103 teams (average group size=3.95) enrolled at an UK university. Participants were part of a large design course running for four months. In a repeated measures design we exposed the teams to a creativity task at T1 (baseline), then we exposed them to one of the three conditions (ASD, ADD or a neutral cognitive task) and we measured team creativity again at T2 (team creativity post-intervention). At T1 (baseline), as expected, no differences in team creativity were identified. At T2, however, after the exposure to one of the three conditions, teams differentiated themselves in the level of creativity developed. Our results indicate that teams exposed to ADD technique experienced the highest increase in creativity (in comparison to T1), while the teams exposed to the ASD did not experience an increase in their level of creativity (in comparison to T1). Our results are relevant as they suggest that analogical reasoning (especially from distant cognitive domains) can create the foundation for team creativity interventions. From a managerial perspective our study is insightful as it suggests a new technique that can be used for the development of team creativity.

Hans Kristian S. Omenaas

Department of Industrial Economics and Technology Management, NTNU

Measuring communication patterns in groups by individual behavior and interaction patterns using Sociometric Instruments

Introduction

To improve team performance it is necessary to increase team-members awareness of their behavior and interaction patterns. Direct observation has been the method to get information on teams dynamics during short duration interaction. Recent technology promise to speed up this process of direct observation and to make it useful for the team.

In this paper a sociometric instrument or wearable sensor have been evaluated for validity and reliability by use of reference experiments. The reference experiments were designed to investigate how sociometric instruments were able to capture individual behavior and interaction patterns between individuals in a group or a team.

Individual behavior and interaction patterns between group members can be looked upon as the building blocks of a group's communication pattern. By measuring the individual group members' behavior as well as the interaction pattern between group members the intra-group communication pattern can be measured for the given transmission channel.

The type of sociometric instrument evaluated have several weaknesses and blind spots. When developing new instruments it is important to seek to minimize these weaknesses and provide researchers information about precision and blind spots so that results can be validated.

Aim

The aim of this paper is to show how individual behavior and interaction patterns should be measured and to describe a method for how a sociometric instrument can be evaluated for validity and reliability using reference experiments.

Materials and methods

The research group Operational Leadership (NTNU), has tested the use of sociometric instruments in various settings to see how they can capture elements of team-dynamics. A set of reference experiments has been designed and conducted to show the validity and reliability of the instrument.

Results

It is found that use of data analysis based on data from sociometric instruments have a large potential for use by both researchers and practitioners on teams. The collected data is particularly valuable for mapping the individual behavior and interaction patterns of team members. Until a set of reference data is created it should be used in combination with the direct observation as method and be compared to the results from validated tools on group dynamics (e.g., SPGR).

Conclusion

In this paper the potential of using sociometric instruments to measure individual behavior, interaction patterns and by this group level communication patterns is evaluated and discussed. Several weaknesses and strengths of the instrument is described together with a set of reference experiments that enables the use of the instruments within their limitations.

Keywords: Measuring behavior, interaction patterns, Group-dynamics, interdisciplinary teams, Sociometric Instruments, Electronic sensors, Group-observation, SPGR.

Hans Kristian Omenaas, Trond Richard Olsen, Endre Sjøvold

Department of Industrial Economics and Technology Management, NTNU

New technology in developing interdisciplinary teams

Introduction

In the last decades we see an increasing specialization between hospital professions, and thereby demands for efficient communication between professionals that are only possible when they are able to perform in teams. The high impact and tight time schedules in medical groups, emphasize the groups' ability to make the best decisions under rapidly changing conditions and/or high levels of stress. To improve interdisciplinary team's performance it is necessary to increase team-members awareness of their interaction. Direct observation has been the only method to get information of a teams dynamics over short periods of interaction. Since direct observation requires trained observers and extensive labor and time, it is frequently replaced by quick and easy measures (e.g. questionnaires), with often disastrous results for teams-performance. Advanced Technology may speed up the process of direct observation of team interactions and make it useful for real-time feedback.

Aim

The aim of this paper is to show how the use of electronic sensors to measure interaction in teams can be used for feedback purposes in team-building.

Materials and methods

Our research group Operational Leadership (NTNU), has tested the use of electronic sensors, to see how they can capture elements of team-dynamics that relates to existing academic work on groups. We have gathered sensor data from a variety of different groups. In addition data is gathered using the SPGR (Systematizing the Person-Group Relation) method.

Results

We found that electronic sensors definitively have a large potential for both researchers and practitioners on teams. We also find that the extensive data collected are particularly valuable for mapping the dynamics of a team and can be used in combination with, or even replacing, direct observation as method. Focusing the dynamics of influence within high performing teams, we found a consistency between the sensor data and data gathered from a validated tool on group dynamics, (SPGR).

Conclusion

In this paper we discuss the use of electronic sensors as method for observation of group interaction, and how the technology can be used to improve interdisciplinary teamwork in hospitals.

Keywords: Group-dynamics, interdisciplinary teams, Electronic sensors, Group-observation, SPGR.

Raymond Opdenakker, Carin Cuypers

Bureau Lara, Open University of the Netherlands, and Eindhoven Technical University

Developing strategic momentum in virtual teams

Purpose

A specific field problem concerning virtual teams is that management can not look over the shoulder of team members on a daily basis to see, what they are doing. To come up to this field problem, the strategic momentum is introduced, which is defined as the 'perseverance of virtual team strategy'; a 'flying wheel' concept that drives the team members in such a way that they will continue working on

the project tasks until they have reached the team goal. The emergence and sustenance of the strategic momentum is dependent on three determinants: empowerment, team task insight, and collective commitment. These three determinants can be emerged and sustained by starting conditions and management interventions. In this paper, we present this model of the strategic momentum in virtual teams, based on a qualitative and in-depth study of eight virtual R&D project teams, which validated the model.

Design/methodology/approach

For conducting this research, a relatively new research method was used, called Design Science Research. Design science as a concept is first introduced by Herbert Simon in his book 'The Sciences of the Artificial' from 1969. The definition of design science research is 'the research within a discipline, aimed at developing general substantive and procedural design knowledge to support the design of solutions for field problems in that discipline' (van Aken, 2007: p. 69). Design science research is a research paradigm that aims to bridge the gap between rigor and relevance, where the emphasis is on rigor. Starting with a field problem - a problem that practitioners face - a solution concept was developed, the causal model of the strategic momentum. This model was validated by qualitative research. For this study, we interviewed a total of 24 members of eight virtual R&D project teams. Seven cases were ex post studies of virtual R&D project teams and one case a longitudinal study of a virtual R&D project team. The virtual R&D project teams consisted of partners from different organisations. The virtual R&D project teams were all started to establish high-tech innovation.

In the end, we also present design propositions how to develop and sustain such a strategic momentum in virtual R&D project teams.

Findings

On the basis of profound qualitative research, the causal model was validated and design propositions were formulated. Design propositions were formulated for developing and sustaining the strategic momentum in virtual R&D project teams.

Research limitations/implications

There are three limitations concerning the analysis conducted in this research. Concerning team task insight and collective commitment and their causal relation with strategic momentum, enough evidence could be found in this research. However, because empowerment was in almost all projects interwoven with the project structure (virtual teams consisting of team members from different organisations and a funding structure for which empowerment was almost a necessity) the causal relation between empowerment and strategic momentum is more difficult to find. The second limitation is that we have not found a virtual team in which no strategic momentum emerged, or broke up at some point in the process, before reaching the end. The third limitation is that no attention has been given explicitly to 'efficiency', whereas 'efficiency' can be defined as 'the degree to which a set of goals is achieved while using up a minimum of resources, leading to technical and economic efficiency' (Keuning, 2010: p. 53).

Practical implications

Practitioners, i.e. the management, can use especially the design propositions by translating them to their specific context or situation. In this way, the design of context specific interventions is aimed to develop and sustain strategic momentum in one's own virtual R&D project team.

Originality/value

The research is based on a new paradigm, Design Science Research. It is used in this research to build and validate the causal model of the strategic momentum, which can establish a 'flying-wheel' effect in a virtual R&D project team.

Stephen Procter, Stewart Johnstone

Newcastle University Business School, Newcastle University, Newcastle upon Tyne, UK

Becoming a high performance organization: developing high performance teams (HPTs) in a UK manufacturing group

Introduction

Research in the area of high performance work systems (HPWS) or the high performance organization (HPO) continues to be dominated by quantitative research. Despite this having been pointed out almost ad nauseam since the mid-1990s, we still have very few qualitative case studies. Partly as a result of this, as Guest and Bos-Nehles (2013: 85) express it, 'We know surprisingly little about why some organizations report more practices in place than others, or about how decisions are arrived at to introduce new or improved practices'.

The present paper attempts to help make good this deficiency, by focusing on the development and implementation of high performance practices in a single large organization. For this company, the idea of high performance was embodied in 'high performance teams' (HPTs), and it is the issues raised by the implementation of HPTs that we examine here.

Conceptual background

This focus on the 'how' and 'why' of implementation means we need to be concerned at a conceptual level with two main things: antecedent conditions and organizational processes. With regard to the first of these, Boxall and Winterton's (2018) recent review paper identify six sets of conditions favourable to 'high-involvement' work practices, and these provide a useful initial framework within which to consider our case study material (see also Mirfakhar *et al.*, 2018). Two of particular pertinence: the first being technology, uncertainty and plant strategy; and the second, the 'ambiguous impact' of lean production.

As for organizational processes, we start with Guest and Bos-Nehles (2013), who base their model of HR implementation on four stages: the decision to introduce HR practices; the quality of HR practices; the implementation of HR practices; and the quality of implementation. Guest and Bos-Nehles's model also has the virtue of distinguishing between groups within the organization who operate as 'implementers' or as 'evaluators' or in both these roles. The important groups are HR managers, senior executives, line managers and employees. While the Guest and Bos-Nehles model provides a useful starting point, however, a fuller understanding of the process of implementation also requires a more direct engagement with concepts drawn from the area of organizational change management (see e.g., By *et al.*, 2018).

Research setting and methods

The research upon which the paper is based was conducted in a large US-headquartered manufacturing organization, here given the pseudonym Probert Fisher. The company employs over 50,000 people worldwide, operating in around 300 locations spread across nearly 50 countries. This paper focuses on three of its plants, all part of the same technological group within the company, and all located in northern England in the UK. The three plants all became part of Probert Fisher through a process of acquisition.

Probert Fisher has what appears to be a highly structured approach to the development and operation of high performance teams or HPTs. They form an explicit part of the company's overarching 'Hit' strategy and are linked closely to the bi-annual company-wide engagement survey.

Initial contact with the company was made through the European group-level HR function - in particular through two senior members of the function who have been closely associated with the HPT initiative. Data was collected primarily in the form of a series of more than 30 semi-structured interviews conducted across the three sites. The researchers also had access to range of company documentation.

Findings: becoming a high performance organization

Analysis of the research data is an intensive, iterative - and continuing - process. Four main themes or issues appear to be emerging:

1. The process through which the idea of HPTs is communicated to and within the company is a complex one. At first sight it appears that the idea of HPTs was developed centrally at corporate HQ and subsequently disseminated uniformly throughout the company's operations. The interviews revealed, however, that HPTs had gained traction at corporate HQ largely as a result of the influence of a British manager whose experience (and academic understanding) of autonomous work groups had been developed in a UK setting. Subsequent to corporate-level adoption, dissemination in the UK, moreover, was considered to be well ahead of that in other countries, largely because of the commitment of the two managers through whom the present research had had its initial contact with Probert Fisher;
2. From the point of view of employees (at all levels in the organization) there was huge variety in experiences of, and attitudes towards, the operation of HPTs. Some of this might be accounted for by what could be considered structural determinants: the particular site, for example, or the nature of the product being produced. At the same time, and despite the seemingly detailed guidelines within which HPTs were supposed to operate, the sheer variety of types of teams ('natural' work teams, project teams, management teams, office teams, market teams etc) meant that anything approaching uniformity was difficult to achieve. On top of this was the 'ambiguity' familiar to researchers in organizational change: it is not just that there are differences in attitudes, but there are differences in what these are attitudes to;
3. The issue from the point of view of more senior/HR managers was how the activities of the various forms of teams could be understood and coordinated. Part of this was around different interpretations of what (different forms of) HPTs were intended to achieve. Although the broad idea of 'performance' offered an ultimate goal, the routes through which this was to be achieved were many and various - and some more direct than others. One particular issue here was that of flexibility, and how it could be achieved at an organizational level. Also important were the limitations imposed by product market and labour market conditions. One of the three sites made extensive use of temporary agency workers, for example, and all were affected by the continued difficulties of operating in a recessionary environment;
4. One issue that emerged strongly in the course of the research was the relationship between HPTs and Lean. The use of Lean - both as a practice and as a language - was widespread in Probert Fisher, and its relationship with HPTs is of especial interest because it can be seen both in terms of ideas and in terms of interests. At the level of ideas, HPTs and Lean were most often seen as quite compatible and even as essential to each other. HPTs were sometimes described as the 'human face' of Lean, and for some the two terms could be used interchangeably. Tension could arise, however, and this could be taken as a reflection more of the clash of functional interests between HR and operations management.

Conclusions

The research presented here goes some way to addressing the glaring lack of high quality case study findings in the area of high performance work systems (HPWS). The paper offers a deep understanding of the process of implementing and developing high performance teams in the UK operations of a US-headquartered manufacturing corporation. The analysis can in part be understood in terms of the initial frameworks offered by the work of Boxall and Winterton (2018) and Guest and Bos-Nehles (2013). The analysis also suggests, however, that an understanding of HPWS would be enhanced by a more direct and sustained engagement with the literature on the management of organizational change.

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Katarina Putnik¹, Peter Oeij¹, Wouter van der Torre¹, Ernest de Vroome¹, Steven Dhondt^{1,2}

¹ TNO, the Netherlands, ² KU Leuven, Belgium

Role of workplace innovation, teamwork, individual characteristics and perception of innovation in relation to actual use of (technological) innovation

Due to fast technological changes organisations need to innovate to remain economically viable. However, innovations do not always succeed in their implementation, one of the reasons being lack of acceptance of innovation by employees.

Previous research under managers in the logistics sector has shown that workplace innovation has a direct positive relationship with innovation adoption, while innovative behavior has an indirect positive relation (Putnik *et al.*, 2018). Furthermore, the same study has found that perception of innovation (namely usefulness of innovation and ease of use of innovation) were related to innovation adoption. Question we wish to explore further is whether similar processes play a role from a perspective of employees when it comes to innovation adoption, paying attention to the role of teamwork and distinguishing between technological and non-technological innovations.

Aim

Aim of the study is twofold: Firstly, we explore the role of team work (working in teams and team psychological safety) in relation to presence of innovations in an organization, and actual use of innovation. Secondly, we examine the similarities and differences in individual and work characteristics and perception of innovation concerning the actual use of technical and non-technical innovations.

Our hypotheses are that team work (working in teams and team psychological safety) will be positively related to presence of innovations in an organization; and that team work is positively associated to use of innovation.

We hypothesize that individual characteristics of employees (innovative behavior and risk taking behavior) as well as presence of workplace innovation (Oeij *et al.*, 2017) are positively associated with actual use of innovation. We also hypothesize that the relationships are stronger for technological rather than non-technological innovations.

Methods

Electronic surveys for the study were distributed in summer 2018 among employees of logistics companies in the Netherlands (n=985). We (also) approached employees that took part in the Netherlands Working Conditions Survey (Dutch abbreviation NWCS) in 2017 and who have agreed to be approached for future research.

Data will be analysed in the following way: Firstly, correlations between variables will be examined to rule out multicollinearity. Secondly, descriptive data analysis between employees working in teams and those not working in teams will be compared in relation to presence of innovation, and use of innovation in their organisations. Lastly, multiple regression analyses will be conducted to explore the relations between individual and work characteristics, as well as perception of innovation in relation to technological and non-technological innovations.

Results will be analysed and reflected on in view of the literature and theory. Implications for practice and further research will also be discussed.

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Lucia Ratiu, Claudia Lenuța Rus

Babeş-Bolyai University, Cluj-Napoca, Romania

Leader coaching behaviors and learning within teams: The mediating role of psychological safety and conditional effects of task non-routineness

Team coaching has emerged as a growing practice leading to a range of positive outcomes on team members and team processes as well. This study aims to investigate the relationship between team leader coaching behaviors and team learning behaviors and the mediating role of psychological safety. In addition, we explored the way the task non-routineness moderated the aforementioned mediated relationship. Team learning behaviors were assessed separately by team leaders and team members. Furthermore, team learning behaviors were considered both as a global and multidimensional construct. In line with the multidimensional perspective of team learning, we focused on the following behaviors: exploration of perspectives, co-construction of meaning, analysis of errors, communication of errors, reflection on process, reflection on outcomes, feedback seeking, and experimenting.

Using a cross-sectional design, we collected data from 50 work teams consisting of 298 members. Fifty team leaders provided data on team learning process, while 248 team members self-rated team leader coaching behaviors, team psychological safety, team learning behaviors, and task non-routineness. The data were analyzed at the team level by conducting mediation, conditional process and path analyses.

Results of the mediation analyses showed that psychological safety partially mediated the relationship between team leader coaching behaviors and global team learning behaviors assessed by team members. Analytically, a similar pattern of mediation was found in the case of the relationships between team leader coaching behaviors and reflection on outcomes, on one side, and experimenting, on the other side. Team leader coaching behaviors only directly stimulated reflection on processes and feedback seeking behaviors, while it had only an indirect relationship through psychological safety with the following team learning behaviors: co-construction of meaning, exploring different perspectives, error analysis and communication. These findings are inconsistent with those of the previous studies focused on team leaders' perspective and team learning behaviors. Team leader coaching behaviors had only a positive direct relationship with global team learning behaviors. A similar direct relationship was identified between team leader coaching behaviors and error analysis, reflection on outcomes, feedback seeking behavior, and experimenting. Furthermore, team leader coaching behaviors and exploring different perspectives were related directly and indirectly through psychological safety. No significant relationships were identified between team leader coaching behaviors and co-construction of meaning, on one hand, and error communication, on the other hand.

Similar results were identified when simple mediation analyses (including at one time only one of the team learning behaviors as dependent variable) and path analyses (including simultaneously multiple team learning behaviors as dependent variables) were performed.

Results of the conditional process analyses partially supported the hypothesis that task non-routineness moderated the partially indirect relationship between team leader coaching behaviors and global team learning behaviors assessed by team members through team psychological safety, such that the positive indirect relationships became stronger when task non-routineness was high than when task non-routineness was low. Also, mixed results were found in the case of the conditional process analyses including individual team learning behaviors assessed by team members as dependent variables. Furthermore, findings showed no conditional effects of task non-routineness on the partially indirect rela-

relationship between team leader coaching behaviors and global team learning behaviors assessed by team leaders through team psychological safety. Also, similar nonsignificant conditional effects of task non-routineness were identified when multiple team learning behaviors assessed by team leaders were included.

The results derived in our study should be interpreted considering several limitations. The data were collected from different organizations and industries using a research design weak in detecting the causality nature of the relationships between variables. The sample size was rather small. Although team learning was investigated as a global and multidimensional concept, our study measured team leader coaching behaviors only as a global concept. Thus, future studies using larger samples, controlling for team organizational membership and investigating team leader coaching behaviors from a multidimensional perspective are welcomed. Also, longitudinal and experimental studies are needed to approach causality inferences of the variables investigated in this study.

Our findings provide an insight for managers and team leaders on a possible mechanism through which team leader coaching behaviors facilitate team learning behaviors by creating psychological safety in team and considering the conditional effects of the task characteristics such as task non-routineness. The present study contributes to team coaching research by stressing the conditions and the mechanism through which it can facilitate team learning considered as a global and multidimensional construct assessed separately by the team leaders and team members.

Endre Sjøvold, Odd Arne Nissestad

Department of Industrial Economics and Technology Management, NTNU, and Operational Training Academy, Statoil ASA

Micro processes leading to behavior change in demanding context

Purpose

In this study we investigate the micro processes leading to significant behavior change during a demanding exercise onboard the bark Statsraad Lehmkühl. Two cohorts of naval cadets were studied participating in the same type of exercise, but with significant different results.

Design/methodology/approach

This is an analysis of two cohorts of cadets at RNoNA (Royal Norwegian Naval Academy). Both cohorts went through the same ten week exercise on board a bark. Comparing the cadets behavioral change, the results were very different over the exercise. There were no significant initial difference between the cohorts, but the second exercise was more structured and included specific training for the mission. In the first the cadets were left by them self to figure out how to complete the mission.

To identify degree of behavioral change, the SPGR (Systematizing Person-Group Relation) method was used. To identify patterns and processes leading to the significant change for the first cohort, analysis of interviews and debriefs performed immediately after the exercise were analyzed.

Findings

The cadets from the cohort being the first to try out this approach to leadership development, reported dissatisfaction with the way the exercise were carried out. When the cohort returned to RNoNA after the exercise the SPGR results showed a positive development. However during the team briefings and interviews they expressed very negative reactions. They found the exercise very unpredictable, chaotic and lacking structure. This negativity was in contrast to their significant positive personal development. Our analysis of interviews and debriefs, indicate that the unpredictable and demanding environment and lack of training forced the cadets to developed their role taking ability, hence role repertoires, making them better able to deal with the shifting contexts over the ten week journey. This was not the case for the second cohort which received both training and more outside structure.

Practical implications

The practical implications which might be drawn from this study, is that to develop leaders who will be able to thrive and adapt to unpredictable environments, we need to exposed them to training and development which contains just that. This seem to be a necessity to develop a behavioral repertoire making leaders agile and able to thrive in a complex and dynamic world.

Conclusion

Our conclusion is that if leaders should be prepared to meet challenges characterized by uncertainty, chaos and emotional stress, it is of utmost important to create a training environment reflecting such situations. The main purpose is to force the participant outside their comfort zone. Even a limited amount of structure introduced will destroy the positive effect.

Keywords: Group-dynamics, Team context, Leadership development, SPGR.

Anniken Solem, Eva Amdahl Seim, Marte Pettersen Buvik

NTNU, Norway

"Team" as a barrier to teamwork: Involuntary non-utilization of the potential of teamwork

Within software engineering, agile development is the dominant organization concept. This concept asserts that it attends to the uncertainty and complexity inherent in software development. This is done by promoting autonomous teams as the work unit, and by prescribing coordination of work through structured, iterative, customer-focused practices. This understanding of what teamwork is, is consistent with most organizational theory on teams, which emphasizes mutual task interdependency and shared goals as key factors for being a team and not a group of people.

Through studies of autonomous teams in a software development firm, the consequent use of the terms "team" and "teamwork" regardless of the way work is truly organized and carried out is unveiled. Some of the work constellations have employees working in parallel, others perform parts of their assigned tasks as a team, while others work as autonomous team. This study has revealed that the teams vary as to the degree of teamness they posit, i.e. the degree of being an agile autonomous team. Simply organizing people in teams does not make them work as a team. Referring to a group of people as an "autonomous team" and act towards them as if they are an autonomous team, does not make them an autonomous team. Using the terms "team" and "teamwork" on all these constellations, and approaching them the same way, may on the contrary lead to involuntary non-utilization of the potential of teamwork. This gap between the interpretation inherent in the concept of agile development of what an autonomous team is, and the understandings and interpretations shown in the daily practices in this organization, may in fact blur the work process and become a barrier to utilizing the strength of teamwork. When everything and anything is named teamwork, the instances where autonomous teams with task interdependencies and shared goals are present, is concealed. When consciousness of the requirements for teamwork inherent in the agile concept is low, there is a risk of moderating the contributions needed to achieve this type of teamwork and perform work as normal, i.e. regardless of the degree of teamness, and the result is involuntary non-utilization.

Due to the concept of agile development, which simply states that using autonomous teams is the best way to ensure results, the existing knowledge of the need for proper training, instructions etc to make a team work is neglected. The claim of this organization concept, i.e. that agile software development should be conducted in autonomous teams, may not be wrong, but the dispersed interpretations and practices under the umbrella terms "team" and "teamwork" seems to be a barrier to utilizing their full potential.

Hardy van de Ven¹, Cora van Horssen², Wouter van der Torre¹, Paul Preenen¹

¹ TNO, Sustainable Productivity and Employability, Leiden, the Netherlands; ² UWV, Strategy, Policy and Knowledge, Amsterdam, the Netherlands

Does new technology make employees more or less social?

The development and introduction of new technology (e.g., digitalization, robotization, nanotechnology, Big Data, 3D-printing and IoT) is going faster and faster. Labor market specialists speculate about the potential massive impact of these new technologies on employment. New jobs will arise, other jobs will become obsolete or change considerably, impacting tasks and employee skills. One of the skills often suggested to become more important are social skills, i.e. the ability to work in teams and/or with external professional relations and end-users. But how does technology itself impact social skills?

In this exploratory study, we therefore examine the impact of new technology on social skills using concrete job profiles from the 'New Technology and Work' study (Oeij *et al.*, 2017). We examine 1) if and how new technology affects social skills, 2) whether there can be differentiated between internal and external collaboration, and 3) if specific technology increases or decreases collaboration. Finally we reflect on the methodology of this explorative study.

The impact of new technology in the next five years on tasks and skills was tested on twelve job profiles based on the 'New Technology and Work' study (welder, assembly worker, nurse, home care, truck driver, orderpicker, ICT system administrator, ICT service desk assistant, financial administrator, secretary, sales assistant, shop manager) through interviewing responsible HR and production managers. Preliminary results indicate that new technology seems to foremost impact external social skills, by increasing communication opportunities with and for external partners and clients. Impact on internal social skills (i.e. teamwork) seems to depend on the type of job and organizational design choices. Communication technology, like Skype, decreases internal communication efforts. Furthermore, information technology, like digitalization, IoT and Big Data, makes data easier accessible.

Further results are presented and the employment Agency of the Netherlands will reflect on the methodology and discuss the possibilities to use it to improve their services. Finally implications for (future) research, theory and practice are discussed.

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Alissa van Zijl¹, Brenda Vermeeren¹, Ferry Koster¹, Joris van der Voet² and Bram Steijn¹

¹ Erasmus University Rotterdam, Netherlands; ² Leiden University, Netherlands

Functional Heterogeneity and Team Innovation: Effects of Team Conflict and Team Learning Behaviors.

[Work in progress, please do not cite without permission of the authors]

Various areas of work have reached a level of complexity that requires teams to continuously develop and implement new ideas, also referred to as team innovation (Amabile & Fisher, 2000). A basic proposition is that a wide range of knowledge and skills stimulates elaboration and integration of various informational resources, which in turn results in team innovation (Van Knippenberg, 2017). Based on this logic, literature has suggested functional heterogeneity, which refers to a team composition that is characterized by different job roles (Jackson, 1992), as a promising method to enhance team innovation (Qian *et al.*, 2013; Somech & Drach-Zahavy, 2013).

The empirical examination of this supposed positive relationship between functional heterogeneity and team innovation has however revealed mixed results (e.g., Guo *et al.*, 2017; Lovelace *et al.*, 2001). In

response, scholars have called for more research examining the influence of team processes (Drach-Zahavy & Somech, 2001; Yin *et al.*, 2016). This study answers their call by investigating the intervening role of two team processes (e.g., team conflict and team learning behavior).

The first team process is team conflict, which entails the process where team members disagree (Cronin & Weingart, 2007; Van Knippenberg, 2017). Functional heterogeneity provokes team conflict due to the different professional socializations and professional languages which causes miscommunication and conflicts of interest (Lovelace *et al.*, 2001; Yeh & Chou, 2005; Van Knippenberg, 2017). Moreover, functional heterogeneity induces subgroup categorization between team members with different job roles, which in turn increases team conflict too (Chatman & Flynn, 2001; Williams & O'Reilly, 1998).

The second team process is team learning behavior, which is defined as the “ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results and discussing errors or unexpected outcomes of actions” (Edmondson, 1999: p.353). These team learning behaviors stimulate team members to make cognitive, attitudinal and behavioral changes, and thus increases teams’ innovation (Timmermans *et al.*, 2012; Edmondson *et al.*, 2001; Drach-Zahavy & Somech, 2001).

In conclusion, both team conflict and team learning behavior are suggested to intervene in the functional heterogeneity-team innovation relationship. Consequently, this paper hypothesizes that the relationship between functional heterogeneity and team innovation evolves through team conflict and team learning behavior, in this sequential order. This double mediation relationship is expected to be negative. The logic behind is that team members with different job roles are likely to experience miscommunication and conflict of interest (Lovelace *et al.*, 2001; Yeh & Chou, 2005; Van Knippenberg, 2017). Conflict subsequently restrains team learning behaviors like discussing errors and asking feedback due to feelings of stress and interpersonal threat (De Dreu, 2006). Limited team learning behaviors consequently hampers team innovation (Drach-Zahavy & Somech, 2001; Edmondson *et al.*, 2001). The central research question is therefore: “to what extent has functional heterogeneity a negative effect on team innovation through the processes of team conflict and team learning?”.

In answering this research question, this study contributes to the literature on team innovation in two ways. First, by studying the role of two team processes within the functional heterogeneity-team innovation relationship (Drach-Zahavy & Somech, 2001; Yin Cheung *et al.*, 2016). Second, by studying a negative effect of functional heterogeneity and team conflict, which has remained relatively unexplored in previous studies (De Dreu & Weingart, 2003; Van Knippenberg, 2017).

Data was collected (between May 2016 and January 2017) through an online survey from 853 primary healthcare professionals in 79 neighborhood teams in the Netherlands.

Neighborhood teams commonly consisted of a range of professionals (e.g., social worker, community psychiatric nurse, psychologist, youth worker) collectively responsible for the social work and curative and preventive healthcare of citizens in a specific neighborhood (Dijkhoff, 2014; Thylefors *et al.*, 2005). The regression analysis was conducted with the PROCESS-tool (Hayes, 2017) in SPSS. The preliminary results confirmed the hypothesized negative double mediation effect of functional heterogeneity on team innovation through team conflict and team learning, in this specific order ($\beta = -.04$, 95% CI [-0.123, -.003]). The effect of functional heterogeneity on team conflict was relatively weak ($\beta = .20$, $p = .045$), and the direct effect of functional heterogeneity on team innovation was non-significant ($\beta = -.03$, $p = .76$).

The implications of this study are twofold. First, this study contributes to understanding of prior mixed results by explaining how functional heterogeneity hampers team innovation through increased team conflict and reduced team learning behaviors. The second implication is that this study critically questions the advantages of functional heterogeneity for team innovation. This inquiry requires further research to gain better understanding of how and when functional heterogeneity influences the innovative outcomes of teams.

On the coordination of virtual teams: a case study of 10 virtual teams in office work in Flanders

Although increasingly popular, virtual teamwork is often associated with communication and collaboration challenges (Dulebohn & Hoch, 2017). The mere availability of digital communication technologies does not seem to be sufficient to facilitate virtual teamwork. In an organizational theoretical perspective, communication and collaboration relate to the coordination of virtual teams. Successful coordination favours a unity of place, time and action (de Sitter *et al.*, 1997). The spatial or temporal division introduced by virtual teamwork exactly breaches this unity. In addition, successful coordination requires reliable, actual, complete and relevant information (Kuipers *et al.*, 2010). Such information is more difficult to acquire in a virtual team context compared to a collocated team. In sum, coordinating virtual teams is more complex than coordinating collocated teams.

In response, research often focuses on managerial or psychological factors such as team leadership or team trust to solve the coordination problem of virtual teams (Dulebohn & Hoch, 2017). Technological solutions are another often advocated solution (Painter *et al.*, 2016). Organizational theory, however, states that the required coordination depends on the virtual team's production structure (de Sitter *et al.*, 1997; Kuipers *et al.*, 2010). If coordination becomes more complex, virtual teams could opt for reducing the required coordination by adapting the production structure such that internal and external control capacity of team members increase. The opposite is likely as well: adding procedures to the production structure combined with fragmenting the tasks of team members could facilitate coordination, however, the required coordination will increase substantially.

This paper investigates the relationship between the production structure and the required coordination of virtual teams in 10 virtual teams in 5 different companies. Little attention is paid to the organisational consequences of converting collocated teams into virtual teams, or implementing virtual teams within an existing organization (Gibbs *et al.*, 2017; Painter *et al.*, 2016). We expect that teams will change their production structure to tackle the increased complexity of coordination in a virtual context (Gibson & Cohen, 2003).

A qualitative research design was used to collect and analyse the data. Our findings show that organizations seldom consider the production structure of a team when converting it to a virtual one. Nonetheless, we see a clear link between the existing production structure and the impact working in a virtual context has on the coordination of the team. Teams with limited required coordination absorb the complexity of working in a virtual context. Technologically mediated as well as face to face communication is used to organize the team's coordination. In contrast, teams which require high levels of coordination seem to reinforce the complexity of coordinating a virtual team. Technology is expected to solve the coordination within the team. Both options have contrasting consequences for the level of disturbances encountered and the quality of working life of the team members. Therefore, we advise organizations to include the design of the production structure when implementing virtual teamwork.

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From healthy work to healthy organisation designs: work and health outcomes in sociotechnical and conventional organisations

Purpose

“We need to build better bridges between sociotechnical systems perspectives and the individual work design perspectives” (Parker *et al.*, 2017).

This study challenges the generally accepted notion that individual work designs impact work and health outcomes. Past studies examined the impact on work and health outcomes, without addressing the embeddedness of these work designs within organisations (Parker *et al.*, 2017). This paper examines the impact of the individual and organisational work design on work and health outcomes and responds to calls for relating individual work design theory with sociotechnical work design theory (Parker *et al.*, 2017) as studies have proven that the sociotechnical organizational job design impact individual work designs (De Sitter *et al.*, 1997; Delarue *et al.*, 2008).

One of the most important models on individual work designs is the job demands-control model (Karasek & Theorell, 1990). This last demonstrates that jobs with high job demands and low job control - i.e., high strain jobs - have higher stress risks and related worsened work and health outcomes. This is exemplified with higher needs for recovery (Sonnetag & Zijlstra, 2006) and more undesirable behavior (Janssens & Zanoni, 2014). When high job demands are compensated with high job control active jobs emerge where the stress risks are buffered and more learning opportunities are offered to employees. This leads to more engagement and more innovative work behavior (Bakker & Demerouti, 2007). The organisational embeddedness of individual work divisions is often overlooked, although it has proven to structurally shape the level of job demands and job control.

The traditional sociotechnical literature (Trist & Bamforth, 1951; Mumford, 2000) allows to fill this gap as it examines the impact of organisational work designs on individual work designs. The Modern Sociotechnical Theory integrates the job demands-control model with an organisation theory describing how tasks are divided in organisations (De Sitter *et al.*, 1997). The main idea is that the level of job demands and job control depend on the work design of organisations. We test the impact of organisational work designs on work and health outcomes, and whether this impact goes through changed individual work designs.

Methodology

We use comparative case and quantitative research design in a unique case in the nursing home sector - where employees are working in three different organisational work designs in one nursing home. These three organizational work designs can be categorized as a) conventional where work flows are organized by grouping specific tasks (e.g. care, meal preparation, ...) and autonomy is centralized among management or staff units, b) sociotechnical as work flows are organized in parallel, where each division is specialised in a subset of orders (i.e., residential groups) and regulation capacity has been transferred from management, supervisory or administrative units to the shop floor (i.e. to caregivers), and thus placed as close as possible to jobs in the parallel order divisions; c) semi- sociotechnical where one aimed to organize work in parallel flows, but the architecture hampered the full realization of autonomous work units.

Results

Using mixed method methodology based on interviews, observations and the quantitative data of 230 employees, we find that the sociotechnical organisational design led to an improved individual work designs (more active jobs and less high-strain jobs) in comparison to the conventional organisational design. We showed that these individual work designs lead to more desirable work and health outcomes (i.e. more innovative work behavior, more engagement, less need for recovery and less discrimination). It is also outlined how care workers may craft their own job control and job demands within the soci-

otechnical organizational work design. Therefore, some care workers had an active job while others created for themselves for instance a passive or low-strain job.

Conclusions and implications

This study is to our knowledge one of the first to combine sociotechnical systems theory and individual work design theory, and examines by using both theories the impact of both individual and organisation work design on work and health outcomes. These findings provide important theoretical implications for both the individual as the sociotechnical perspectives on work design. This study shows that 'healthy work' (see: title of the seminal work of Karasek & Theorell, 1990) can be shaped by creating 'health organisation designs', as structures impact individual work designs in organisations. Results of the semi-sociotechnical system detailed that technical systems (in this case the built environment) need to follow the organisation design, when the aim is to create an improved work design. This study shows that scholars and practitioners involved in individual work design, need to take the organizational context into perspective, whereas sociotechnical researchers and practitioners need to gain understanding in the way how employees craft their own job within an organizational design.

Keywords: socio-technical design, quality of working life, nursing home.

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IWOT22 List of participants

First name	Last name	Organization	Email address
Asiya	Ali	Dura Vermeer (NL)	asiya.ali24@googlemail.com
Michiel	Bal	KU Leuven (BE)	michiel.bal@kuleuven.be
Alexander	Bendel	University of Duisburg-Essen (DE)	alexander.bendel@uni-due.de;
Jos	Benders	NTNU & KU Leuven (BE)	jos.benders@ntnu.no
Ewout	Boogaard	Courageous Teaming	ewout.boogaard@courageousteaming.com
Mara	Bria	Babes-Bolyai University (RO)	marabria@psychology.ro
Frederik	De Naeyer	Antwerp Management School (University of Antwerp) (BE)	frederik.denaeyer@gmail.com
Ans	De Vos	Antwerp Management School (University of Antwerp) (BE)	ans.devos@ams.ac.be
Leslie	DeChurch	Northwestern University (USA)	lesliedechurch@gmail.com
Steven	Dhondt	TNO / KU Leuven (NL / BE)	steven.dhondt@tno.nl
Amy	Edmondson	Harvard Business School (USA)	aedmondson@hbs.edu c/o snicholson@hbs.edu
Thomas	Ellwart	Trier University (DE)	ellwart@uni-trier.de
Oana	Fodor	Babeş-Bolyai University (RO)	oanafodor@psychology.ro
Lukas	Heijs	Altrecht GGz (NL)	lh.heijs@planet.nl
Martin	Hetebrij	De Politieke Dimensie (NL)	martin@depolitiekedimensie.nl
Jonas	Ingvaldsen	NTNU (NO)	jonas.a.ingvaldsen@ntnu.no
Arjen	Kaarsemaker	Kade Leren (NL)	a.kaarsemaker@gmail.com
Erich	Latniak	Universität Duisburg-Essen (DE)	erich.latniak@uni-due.de
Kristin	Lebesby	NTNU (NO)	kristin.lebesby@ntnu.no
Seth	Maenen	Flanders Synergy (BE)	Seth.Maenen@flandersssynergy.be
Nicoleta	Meslec	Tilburg University (NL)	M.N.Meslec@uvt.nl
Laura	Nurski	Flanders Synergy (BE)	Laura.Nurski@flandersssynergy.be
Peter	Oeij	TNO (NL)	kristin.lebesby@ntnu.no
Hans	Omenaas	Norwegian University of Technology and Science (NO)	hans.omenaas@gmail.com
Els	Oosthoek	BDO (NL)	els.oosthoek@xs4all.nl
Raymond	Opdenakker	TU Eindhoven (NL)	R.J.G.Opdenakker@tue.nl
Frank	Pot	Radboud University Nijmegen (NL)	frank.pot@ardan.demon.nl
Stephen	Procter	Newcastle University	stephen.procter@newcastle.ac.uk
Katarina	Putnik	TNO (NL)	katarina.putnik@tno.nl
Monique	Ramioul	HIVA-KU Leuven (BE)	monique.ramioul@kuleuven.be
Lucia	Ratiu	Babes-Bolyai University (RO)	luciaratiu@psychology.ro
Endre	Sjøvald	NTNU (NO)	endre.sjovold@ntnu.no
Anniken	Solem	NTNU (NO)	anniken.solem@ntnu.no
Fietje	Vaas	TNO	fietje.vaas@tno.nl
Hardy	van de Ven	TNO (NL)	hardy.vandeven@tno.nl
Friso	van der Meulen	TNO (NL)	friso.vandermeulen@tno.nl
Cora	van Horssen	UWV (NL)	cora.vanhorssen@uwv.nl
Alissa	van Zijl	Erasmus University Rotterdam (NL)	asiya.ali@duravermeer.nl
Arne	Vanderstukken	HIVA-KU Leuven (BE)	arne.vanderstukken@kuleuven.be
Sarika	Verbiest	TNO (NL)	sarika.verbiest@tno.nl
Yennef	Vereycken	HIVA-KU Leuven (BE)	yennef.vereycken@kuleuven.be
Lander	Vermeerbergen	KU Leuven (BE)	lander.vermeerbergen@kuleuven.be
Andre	Wouters	Courageous Teaming	info@courageousteaming.com

Local organizing committee

Peter Oeij, TNO, The Netherlands

Steven Dhondt, TNO, The Netherlands & KU Leuven, Belgium

Friso van der Meulen, TNO, The Netherlands

Sarika Verbiest, TNO, The Netherlands

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Situated at what has traditionally been an important junction where waterways and roads cross stands a city that will enchant you: Leiden. The city is famous for its almshouses, university, museums and glorious history. The spirit of the Golden Age lives on here, a place where Rembrandt was born and inspired so many other influential painters. But even after this era Leiden continued to attract scientists, artists and industry. The canals, the historical buildings, the alleyways, the treasures of knowledge, culture and science: Leiden is definitely worth seeing.

For more information visit the website:

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You can also find information in the 'Leiden City Guide' (which is in your goodie bag).

