

Is WDLR (Wish for Decision Latitude Reduction) Linked to Work Engagement? An Exploratory Study Among Knowledge Workers^{*}

Birgit S. Lehner,	Brigitte	Anika Nitzsche	Natalie Pomorin	Holger Pfaff
Julia Jung	Stieler-Lorenz	University of	University of	University of
University of	Core Business	Cologne, Cologne,	Duisburg-Essen,	Cologne, Cologne,
Cologne, Cologne,	Development GmbH,	Germany	Essen, Germany	Germany
Germany	Berlin, Germany			

The present study proposes an exploratory investigation about the WDLR (wish for decision latitude reduction) in the context of work among knowledge workers. WDLR occurs when the scope of latitude is perceived as being too large, when there are too many options to choose from or too many decisions to take. WDLR may involve changing working conditions, jobs involving greater responsibility, project management, and in general, unstructured works such as knowledge work. The study examines the relationship between WDLR and work engagement from the perspective of employees working in the ICT (information and communication technology) sector in Germany. We hypothesize that WDLR is negatively linked to work engagement. Using a web-based survey, data was collected from a sample of 336 ICT workers. Results from multiple linear regression analyses show that WDLR is significantly negatively associated with work engagement. In addition, our findings suggest that this relationship is particularly prevalent among those employees with high job control. The study serves as a starting point for further investigations on WDLR and occupational health related outcomes. Implications of the findings for future research are discussed.

Keywords: work engagement, WDLR (wish for decision latitude reduction), knowledge work

Background

Drawing upon previous stress and health research, there is an overwhelming rationale for the theory that

Brigitte Stieler-Lorenz, Ph.D., professor, Core Business Development GmbH.

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Birgit S. Lehner, M.A., Institute for Medical Sociology, Health Services Research and Rehabilitation Science (IMVR), University of Cologne.

Julia Jung, Ph.D., Institute for Medical Sociology, Health Services Research and Rehabilitation Science (IMVR), University of Cologne.

Anika Nitzsche, Ph.D., Institute for Medical Sociology, Health Services Research and Rehabilitation Science (IMVR), University of Cologne.

Natalie Pomorin, Ph.D., Institute for Health Care Management and Research, University of Duisburg-Essen.

Holger Pfaff, Ph.D., professor, Institute for Medical Sociology, Health Services Research and Rehabilitation Science (IMVR), University of Cologne.

decision latitude results in positive and desirable health and job outcomes. By contrast, low decision latitude, when combined with greater demands, is supposed to cause job-related illness (Karasek & Theorell, 1990). However, with the "shift to the Information Age" (Lee, Hourquet, & MacDermid, 2002, p. 137), new developments in technology have led to considerable change in the nature of both society and the workplace. The rapid expansion of ICTs (information and communication technologies) facilitates fast knowledge and access to information from all over the world. However, on the other hand, it also adds to the burdens of information overload and an accelerating pace of work (Burke & Cooper, 2002; Ford, 2011). As a result, the growth of options and opportunities for choice may have unfortunate consequences (Burger, 1989; Schwartz, 2004). We argue that having too much decision latitude and too many options to choose from needs to obtain more attention in advanced occupational stress and health research.

Theoretical Framework of WDLR (Wish for Decision Latitude Reduction)

Increasing options require greater effort, as more information has to be searched and processed, more potentials need to be anticipated and proved, and finally more alternative options may need to be weighed up (Franz, 1986). The more options that are available and the more decisions required, the more difficult the challenge of making the correct decision becomes. In addition, the susceptibility of error increases as the number and complexity of decisions increase, while the psychological consequences of mistakes may be more severe (Schwartz, 2004).

We assume that the increase in options may be perceived as a burden or strain and may evoke the preference of having fewer options to choose from and fewer decisions to take which we call WDLR. WDLR is one dimension of a recently developed broader workplace related construct namely stress of options (Pfaff, 2013; Pfaff, Stieler-Lorenz, Jung, Nitzsche, & Lautenbach, 2010; Stieler-Lorenz, Jung, & Pfaff, 2011).

The potential increase in options corresponds closely to the nature of the workplace. In structured work, standardized working procedures are common and the scope of options and decision latitude is rather scarce. In unstructured work, such as knowledge work (Alvesson, 2004), there are few standardizations and a wide scope of decisions and options from which to choose, which is also reinforced through the high pace of digitalisation, virtualisation, and information transfer (Pfaff, 2013; Pfaff et al., 2010). In this work context, an employee's task is to develop creative ideas as well as to structure the options and set priorities in order to shape the abundance of options (Pfaff, 2013; Stieler-Lorenz et al., 2011).

According to Constraint Choice Theory (Franz, 1986), decisions are taken as a result of two successive filtering processes. The first filtering process assumes that the options and decision latitude of individuals are restricted as a result of monetary, normative, and structural frameworks. In companies, these restrictions might be rules, values, standards, tenets (belief systems), or the corporate identity. These restrict the potential number of options to be manageable, easier to handle scope of options (Pfaff, 2013). In the second process, the individual makes one decision from a reduced number of options. Similarly, in the second phase, restrictions and obligations to act and behave can influence the individual decision process (Franz, 1986). Drawing upon the Constraint Choice Theory, in knowledge and innovation work, the first restriction process is rarely applied and the number of options is purposefully kept large to ensure that creative ideas are not missed (Pfaff, 2013). The work environment, including global competition, increasing demands of employers and customer requirements, as well as fast technical developments, reinforces the abundance of options that need to be considered (Pfaff et al., 2010).

In particular, knowledge work requires an employee to structure and organize their work and to reduce the number of options to a manageable level. This work is characterized by high levels of autonomy as well as a great extent of decision that have to be taken, and thus WDLR is likely to occur (Pfaff, 2013). The overload of choice and options is the result of a complex interaction between psychological processes including awareness of opportunity costs, rising expectations, an aversion to trade-offs, as well as regret, and self-blame in the case of wrong decision-making (Schwartz, 2004). As increasing decision latitude does not automatically imply improved skills and cognitive resources of an individual, to choose from options or to search for the best alternative; this gap may produce psychological distress (Schwartz, 2004). In turn, stress has an impact on both individual and organizational outcomes (Cooper & Cartwright, 1994). To date, no study has yet investigated the relationship of the WDLR, which arises from a scope of decision latitude that is perceived to be too large, and employee engagement.

Work Engagement

Work engagement, as one indicator of occupational well-being (Seppälä et al., 2009), has been found to be linked to various positive individual and work-related outcomes, such as good health (e.g., Schaufeli, Taris, & van Rhenen, 2008), job satisfaction (Alarcon & Edwards, 2011), reduced turnover intention (e.g., Hallberg & Schaufeli, 2006), job performance (e.g., Halbesleben & Wheeler, 2008), and client satisfaction (Salanova, Agut, & Peiró, 2005). Initially, research into work engagement considered work engagement and burnout as opposite poles of one continuum, with work engagement being defined as an energetic state of involvement that enhances one's sense of professional fulfilment and efficacy (Maslach & Leiter, 2008). Since then, another body of research has described work engagement as an independent concept characterized by vigour, dedication, and absorption (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002). This independent concept of work engagement consists of three subscales, providing a thorough perspective of individuals' relationships with their work. It defines the physical component (vigour) as high levels of energy, mental resilience, and persistence while working; the affective component (dedication) as a sense of significance, enthusiasm, and challenge at work; and the cognitive component (absorption) as being deeply engrossed in one's work, feeling happy when working intensely and having difficulty detaching oneself from it (Schaufeli & Bakker, 2004). We focus on work engagement as one indicator of work-related well-being and outcome variable drawing upon theoretical (Pfaff et al., 2010; Pfaff, 2013) and empirical research (Warr, 1990) that propose when the number of decisions and options available for one or more decisions exceed a person's resources, it may have adverse effects on psychological well-being. Warr (1994) argued that very high levels of certain job features, such as decision latitude may lead to decrements in mental health.

The ICT Industry

In recent times, there has been increased interest in knowledge intensive work within academia and research (Van den Heuvel, Demerouti, Schaufeli, & Bakker, 2010; Wallgren & Hanse, 2007). This may be explained by the increasing growth rate of knowledge intensive business service sectors such as the ICT industry, as well as by its overall importance for the economy in most European countries (Wallgren & Hanse, 2007). Although ICT represents an upcoming and expanding business sector, relatively few studies have investigated the working conditions of ICT employees as regards their psychosocial work environment (Jung et al., 2012; Van de Ven, Vlerick, & de Jonge, 2008; Wallgren & Hanse, 2007). In particular, ICT jobs are associated with a high workload, innovative, competitive, and deadline-driven work (e.g., Hetland, Sandal, &

Johnson, 2007). These employees often have to deal with the conflicting priorities of supervisor and client demands and in general, they are involved in targets for more than one project assignment (Kaplan & Lerouge, 2007). In addition, their work is characterized by uncertainty, and is largely unstandardized, as ICT employees have to continually deal with non-standard requirements originating from the clients, and try to provide satisfactory solutions (Pfaff et al., 2010, Stieler-Lorenz et al., 2011). Therefore, exploring the association between WDLR and employee engagement in this specific occupational group is of particular interest.

The present study investigates whether employees' WDLR has an impact on work engagement. We investigate this question by controlling for all variables which have been proven to be associated with work engagement in the considerable engagement research literature (Halbesleben, 2010). Based on Warr's (1994) vitamin model suggesting that job characteristics are likely to impact employee mental health predominantly if they occur in especially high or low levels, we then focus on employees who have high/low job control using our analysis model.

The following hypothetical relationships are assumed:

H1. WDLR is negatively related to work engagement among ICT employees;

H2. WDLR is negatively related to work engagement, particularly among those employees with greater job control.

Methods

Data Collection and Respondents

This investigation was conducted as part of the PraeKoNet (Prevention Competence Network) project, a study aimed at exploring the relationship between working conditions and the health of employees within the German ICT sector (see also Jung et al., 2012). The study was approved by the Ethics Committee of the University Hospital of Cologne and funded by the German Federal Ministry of Education and Research, the European Union, the European Social Fund, and Köln Fortune (a grant from the University Hospital of Cologne).

An online survey was conducted from 2009 to 2010 from the full population of employees working in German ICT companies (N = 575). The study sample included software and solution developers, marketing management employees, as well as administrative and technical employees. Each of the companies' employees received an anonymous link to the online survey via e-mail. Three contact attempts were made inviting employees to complete the questionnaire (Dillman, 2007). A total of 336 employees participated, resulting in a response rate of 58.4%.

Measures

Dependent variable. Work engagement was assessed with the UWES-17 (Utrecht Work Engagement Scale) (Schaufeli et al., 2002) a widely used and well-established measure of well-being in the workplace. Item responses were scored on a 7-point Likert scale ranging from 1 ("Never") to 7 ("Every day") (Cronbach's a = 0.94). An example item is "At my job, I feel strong and vigorous".

Independent variable. WDLR scale was designed to measure the preference to have a smaller scope of decision latitude, from the perspective of employees. The scale incorporates quantitative aspects reflecting the preference for having fewer decisions to take. The index consists of the following three item statements:

1. "Sometimes I would prefer to have somewhat less latitude to act";

- 2. "Sometimes I would prefer to have somewhat fewer options when deciding what to do";
- 3. "Sometimes I would rather have to make fewer decisions".

Respondents were asked to score the degree to which extent these statements were appropriate on a 4-point Likert scale ranging from 1 ("Strongly disagree") to 4 ("Strongly agree"). Alpha coefficient of internal reliability (Cronbach's α) was 0.81.

Control variables. A range of variables were assumed to potentially affect the relationship between work engagement and WDLR and therefore were included in our model.

Job control and job demands. Job control and job demands were assessed with the Job Content Questionnaire (JCQ) (Karasek, 1985). Responses were given on a 4-point Likert scale, ranging from 1 ("Strongly disagree") to 4 ("Strongly agree"). Job control was measured by nine items reflecting two components decision authority and skill discretion, e.g., "My job allows me to make a lot of decisions on my own" (Cronbach's $\alpha = 0.79$). Job demands were assessed using the recommended short version of the JCQ covering work pace, work load, and conflicting demands. The Job demands measurement consists of five items, e.g., "My job requires working very hard" (Cronbach's $\alpha = 0.68$).

Social support. We assessed supervisor/co-worker support using an adaptation of the original scales from Caplan and colleagues (Caplan, Cobb, French, Van Harrison, & Pinneau, 1980). The items (3 items each) were scored on a 4-point Likert scale ranging from 1 ("Not at all") to 4 ("Completely"), e.g., "How much can you depend on your direct supervisor when things get difficult at work?" (Cronbach's $\alpha = 0.85$ and 0.80, respectively).

Demographics

Age and gender. A set of single items was used to measure demographic characteristics. Personal demographics included age and gender. Age was measured continuously; gender was measured dichotomously (men vs. women).

Education level. Data about education levels were collected on the basis of an index including all relevant professional education that could be achieved and was then divided into two categories (high = university/technical college degree/low = else).

Employment contract. Previous studies found associations between different kinds of employment contracts and both subjective well-being (De Cuyper & De Witte, 2006) and employee effort (Engellandt & Riphahn, 2005). Thus, we included employment status in our analyses (permanent vs. fixed-term contract).

Analyses

Sum scores were built for the study variables. For job control and job demands, scales were compiled according to the JCQ guidelines (Retrieved from http://www.jcqcenter.org). For stratified analyses, the scores were dichotomized by median, and split into two categories (high control/low control). These job categorizations are commonly used in stress research (Karasek & Theorell, 1990).

Missing values of study variables were imputed using the EM (expectation maximization) algorithm in the NORM (version 2.03 for Windows) software program (Schafer, 1999). This technique imputes missing data by employing an iterative maximum-likelihood algorithm estimation procedure and is recommended to prevent bias caused by data that is not missing completely at random (Schafer & Graham, 2002). Demographic data (age, gender, education, and job contract information) were not imputed. The data from respondents with \geq 30% missing values for the scale items were excluded prior to further analyses to ensure appropriate data

quality (Wirtz, 2004). The statistical analyses were conducted using IBM® SPSS® Statistics 20.0 (SPSS Inc., Chicago). We first calculated bivariate correlations and tested for heteroscedasticity (Hair, Black, Babin, Anderson, & Tatham, 2006). Secondly, multivariate linear regression analyses were conducted in order to determine whether WDLR was associated with work engagement. Standardised beta coefficients were calculated. Tolerance values and VIF (variance inflation factors) were calculated in order to test for multicollinearity. In a further step, we performed analyses with stratified data. Respondents were grouped into two categories: those who experience greater job control and those who experience less control, in order to test the relationship between WDLR and engagement.

Results

Out of 336 respondents, 13 had to be excluded because of \geq 30% missing values for the scales. The resulting study sample of N = 323 participants did not differ substantially from the full eligible study population: 75% were men (N = 235; missing = 9) in the study sample versus 84% in the population; the average age was 36.4 years (N = 305; missing = 18; SD (standard deviation) = 10.0) in the sample versus 37 in the population; 78.3% of participants (N = 253; missing = 6) had a permanent job contract versus 84% in the population. Participants included software and solution developers (64.7%), marketing management employees (12.7%), technical employees (10.2%), and administrative staff $(16.7\%)^1$. More than half the respondents held a university or advanced technical college degree (56.9%). Table 1 shows the mean scores, SD, and reliabilities (Cronbach's α) for the independent and the outcome variables. On average, respondents rated WDLR as 1.7 out of 4 (SD = 0.55) and their work engagement as 5.44 out of 7 (SD = 0.91). More than half the participants, (56.3%) were classified as having high job control. The distribution of the dependent variable work engagement was found to be approximately normal (skewness = -0.70; and kurtosis = 0.42). A scatterplot showing that the standardised residuals and the standardised predicted values of the work engagement variable did not indicate an assumption of heteroscedasticity.

	M	SD	Cronbach's α
1. WDLR	1.73	0.55	0.81
2. Job demands	2.54	0.31	0.68
3. Job control	3.17	0.40	0.79
4. Co-worker support	3.18	0.54	0.80
5. Supervisor support	3.18	0.64	0.85
6. Work engagement	5.44	0.91	0.94

Table 1

In Table 2 results of the regression analyses are displayed in three groups: Analyses were first conducted

Means, SD, and Reliabilities (Cronbach's α); N = 323

within the complete study sample; then the sample was divided into two categories (high control/low control). The collinearity statistics indicate that all VIF values were far below the threshold value of 10.0 and none of the tolerance values was < 0.1 (Hair et al., 2006).

In model 1, job demands, job control, supervisor/co-worker support, and WDLR demonstrated significant relationships to work engagement. The strongest association was found for job control (beta = 0.34, p < 0.001). WDLR turned out to be significantly negatively related to work engagement (p < 0.01) indicating that higher

¹Sum is not 100% because multiple answers were possible.

levels of WDLR were associated with lower levels of work engagement. Supervisor support as well as job demands was positively related to work engagement and job demands were positively associated with engagement.

Table 2

Multivariate Linear Regression Analyses on Work Engagement

	Unstand coefficients	Stand. coefficients		R^2	Collinearity st	Collinearity statistics	
	В	SE	Beta		Tolerance	VIF	
Model 1(all participants; $N = 302$)					·		
Constant	1.43	0.58		0.29			
Job control	0.03	0.01	0.34***		0.73	1.37	
Job demands	0.02	0.01	0.13*		0.86	1.16	
Co-worker support	0.09	0.10	0.05		0.70	1.43	
Supervisor support	0.28	0.08	0.19**		0.73	1.37	
WDLR	-0.25	0.09	-0.15**		0.90	1.11	
Age	0.01	0.01	0.10		0.77	1.30	
Sex (men = 1, ref. women = 0)	0.01	0.11	0.01		0.92	1.09	
Education level (high = 1, ref. low = 0)	-0.11	0.10	-0.06		0.92	1.09	
Employment contract (fixed-term = 1, ref. permanent = 0)	0.03	0.13	0.01	0.17	0.77	1.31	
Model 2 (employees reporting high j	ob control; $N =$	-					
Constant	4.46	0.71					
Job demands	0.03	0.01	0.21**		0.89	1.12	
Co-worker support	0.03	0.13	0.02		0.78	1.29	
Supervisor support	0.25	0.10	0.19*		0.82	1.22	
WDLR	-0.34	0.10	-0.25**		0.89	1.12	
Age	0.01	0.01	0.07		0.72	1.39	
Sex	0.25	0.15	0.13		0.87	1.15	
Education level	-0.09	0.12	-0.06		0.89	1.12	
Employment contract	0.29	0.15	0.16	0.22	0.76	1.31	
Model 3 (employees reporting low jo	ob control; $N =$	130)					
Constant	1.49	1.01					
Job demands	0.03	0.02	0.18*		0.84	1.19	
Co-worker support	0.35	0.17	0.20^{*}		0.71	1.40	
Supervisor support	0.43	0.14	0.27**		0.79	1.27	
WDLR	-0.28	0.17	-0.13		0.92	1.09	
Age	0.02	0.01	0.17		0.76	1.32	
Sex	-0.09	0.18	-0.04		0.92	1.09	
Education level	0.06	0.17	0.03		0.90	1.12	
Employment contract	-0.15	0.25	-0.06		0.71	1.40	

Notes. SE = Standard error; VIF = Variance inflation factor; p < 0.05; p < 0.01; p < 0.001.

Model 2 shows the results of regression analysis amongst those who scored highly in job control (N = 182/56.3%). WDLR showed the strongest and most negative relationship with work engagement (beta = -0.24, p < 0.01). Job demands and supervisor support both were positively associated with work engagement (p < 0.05). Model 3 displays the results of regression analysis among those employees with low control (N = 0.05).

141/43.7%). Results indicate that WDLR was not related to work engagement; whereas job demands, co-worker, and supervisor support were positively associated with the dependent variable work engagement.

Discussion

The aim of the present study was to explore the associations between WDLR and work engagement among ICT-employees.

We found that WDLR was negatively related to work engagement in the full sample of ICT employees (H1 supported). Higher levels of WDLR in the workplace were associated with lower levels of work engagement. As we focused on employees reporting high job control, WDLR showed the strongest negative association with work engagement (H2 supported). In contrast, for those with low job control, WDLR showed no significant relationship with work engagement. Our results confirm the theoretical framework indicating that WDLR is experienced when the number of available options for one or more decisions is perceived or to exceed a person's resources and endanger his or her well-being (Pfaff et al., 2010). Moreover, our findings suggest that although only a small proportion of ICT employees in our study sample reported WDLR, it had a large effect on work engagement. Therefore, WDLR should be considered in occupational health research because of its potential considerably negative consequences on psychological well-being (Pfaff, 2013).The associations we found in the present study may not be described in purely linear terms. It may be conceivable that engagement decreases at very low and likewise at extremely high values of the job characteristic decision latitude. Some research has found evidence that job demands and decision latitude are non-linearly related to aspects of well-being and job satisfaction, respectively (Warr, 1990).

According to the JD-R (Job Demands-Resources) model, job and personal resources become more salient and gain their motivational potential when employees are confronted with high job demands (Bakker & Demerouti, 2008). This may explain why high job demands are positively related to work engagement. However, job demands may have both stimulating potential (e.g., Bakker, van Veldhoven, & Xanthopoulou, 2010) and energy-depleting components (e.g., Van den Broeck, De Cuyper, & De Witte, 2010). Notably, in the long run, job demands have been found to have a negative impact on well-being and engagement (e.g., Mauno, Kinnunen, & Ruokolainen, 2007). Furthermore, the findings confirm results of a previous study (Lehner et al., in press) indicating that supervisor support has a significant positive relationship to work engagement in model 1-3.

In field work in ICT companies, we observed that WDLR is produced by the interaction of many factors, for instance, when the amount of options and decisions required prioritising efforts. In addition, the effect of WDLR increased when the consequences of prioritization in decision-making remained unclear (Pfaff et al., 2010; Stieler-Lorenz et al., 2011). Interventions to face WDLR may be conceived at both the individual level (e.g. through time management and training in priority-making), and the organizational level. At the organizational level, WDLR may be prevented through measures that reduce the abundance of options (Pfaff et al., 2010). Supervisors may provide assistance, for instance, by minimizing the number of project assignments per employee, developing standard operating procedures, and other auxiliary means in order to reduce WDLR. Findings from a recent study suggest that the decent level of control is linked to individual factors such as self-determination (Parker, Jimmieson, & Amiot, 2013). Therefore, decision latitude and decision authority of individual employees should be well balanced and enhanced according to individual competences, particularly in knowledge intensive work processes (Pfaff et al., 2010; Stieler-Lorenz et al., 2011).

Limitations and Future Research Directions

Our study contains some limitations. First, all observations were based on self-reports. Study variables were measured according to the perceptions of ICT employees which may cause common method bias (P. M. Podsakoff, MacKenzie, Lee, & N. P. Podsakoff, 2003). Furthermore, the generalization of our findings is limited due to the study sample originating from one specific occupational group.

Second, our analyses were based on cross-sectional data; hence we were not able to draw causal conclusions. It is also conceivable that work engagement has an impact on the WDLR. Engaged employees may experience less WDLR because they may value having a large number of options and opportunities to a greater extent than those who perceive less engagement. This assumption has yet to be tested.

With this study, we aimed to provide an initial insight into the psychological concept WDLR and its association with work engagement. Our findings may serve as a starting point for future (longitudinal) investigations on the subject, and a reason to investigate practical solutions for alleviating WDLR. This could be done by the means of a qualitative research approach. For instance, focus groups and expert interviews might provide solutions for tackling the issue within knowledge work and other occupational settings.

Conclusion

Our study provides a first valuable insight into the relationship of WDLR and work engagement. Employees who experience high levels of WDLR experience lower levels of work engagement. Our findings suggest that this is particularly the case among those who have greater control in their jobs. Future research should address the issue in order to better understand the mechanisms of the impact of WDLR on occupational health and well-being. Our findings suggest that WDLR is prevalent in occupations with a high proportion of elements of unstructured work such as the ICT sector.

References

- Alarcon, G. M., & Edwards, J. M. (2011). The relationship of engagement, job satisfaction and turnover intentions. Stress and Health, 27(3), e294-e298.
- Alvesson, M. (2004). Knowledge work and knowledge-intensive firms. Oxford: Oxford University Press.
- Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International*, 13(3), 209-223.
- Bakker, A. B., van Veldhoven, M., & Xanthopoulou, D. (2010). Beyond the demand control model: Thriving on high job demands and resources. *Journal of Personnel Psychology*, 9(1), 3-16.
- Burger, J. M. (1989). Negative reactions to increases in perceived personal control. *Journal of Personality and Social Psychology*, 56(2), 246-256.
- Burke, R. J., & Cooper, C. L. (2002). Introduction: The new world of work. In C. L. Cooper, & R. J. Burke (Eds.), *The new world of work: Challenges and opportunities* (pp. xi-xxi). Oxford: Blackwell.
- Caplan, R. D., Cobb, S., French, J. R. P., Van Harrison, R., & Pinneau, S. R. (1980). Job demands and worker health: Main effects and occupational differences. Ann Arbor, Michigan: Institute for Social Research, The University of Michigan.
- Cooper, C. L., & Cartwright, S. (1994). Healthy mind; healthy organization—A proactive approach to occupational stress. *Human Relations*, 47(4), 455-471.
- Cooper, C. L., Dewe, P., & O'Driscoll, M. P. (2001). Organizational stress: A review and critique of theory, research, and applications. London et al.: Sage Publications.
- De Cuyper, N., & De Witte, H. (2006). The impact of job insecurity and contract type on attitudes, well-being and behavioural reports: A psychological contract perspective. *Journal of Occupational and Organizational Psychology*, 79(3), 395-405.
- Dillman, D. A. (2007). Mail and internet surveys: The tailored design method-2007 update with new internet, visual, and mixed-mode guide. New Jersey: Wiley.
- Engellandt, A., & Riphahn, R. T. (2005). Temporary contracts and employee effort. Labour Economics, 12(3), 281-295.
- Ford, S. M. (2011). Reconceptualizing the public/private distinction in the age of information technology. Information

³⁹⁴ IS WISH FOR DECISION LATITUDE REDUCTION LINKED TO WORK ENGAGEMENT?

Communication & Society, 14(4), 550-567.

- Franz, P. (1986). Der "Constrained Choice"—Ansatz als gemeinsamer Nenner individualistischer Ansätze in der Soziologie: Ein Vorschlag zur theoretischen Integration (The "Constrained Choice"—Approach as common denominator of individualistic approaches in sociology: A proposal for theoretical integration). Kölner Zeitschrift für Soziologie und Sozialpsychologie, 38(1), 32-54.
- Graham, J. W., Cumsille, P. E., & Elek-Fisk, E. (2003). Methods for handling missing data. In J. A. Schinka, & W. F. Velicer (Eds.), *Research methods in psychology* (pp. 87-114). New York: Wiley.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River: Pearson Prentice Hall.
- Halbesleben, J. R. B. (2010). A meta-analysis of work engagement: Relationships with burnout, demands, resources, and consequences. In A. B. Bakker, & M. Leiter (Eds.), Work engagement: A handbook of essential theory and research (pp. 102-117). New York: Psychology Press.
- Halbesleben, J. R. B., & Wheeler, A. R. (2008). The relative roles of engagement and embeddedness in predicting job performance and intention to leave. *Work & Stress*, 22(3), 242-256.
- Hallberg, U., & Schaufeli, W. B. (2006). "Same same" but different? Can work engagement be discriminated from job involvement and organizational commitment? *European Psychologist*, 11(2), 119-127.
- Hetland, H., Sandal, G., & Johnson, T. B. (2007). Burnout in the information technology sector: Does leadership matter? *European Journal of Work and Organizational Psychology*, 16(1), 58-75.
- Jung, J., Ernstmann, N., Nitzsche, A., Driller, E., Kowalski, C., Lehner, B., et al. (2012). Exploring the association between social capital and depressive symptoms: Results of a survey in German information and communication technology companies. *Journal of Occupational and Environmental Medicine*, 54(1), 23-30.
- Kaplan, D. M., & Lerouge, C. (2007). Managing on the edge of change: Human resource management of information technology employees. *Human Resource Management*, 46(3), 325-330.
- Karasek, R. A. (1985). Job content questionnaire and user's guide. Lowell (MA): University of Massachusetts, Department of Work Environment.
- Karasek, R. A., & Theorell, T. (1990). *Healthy work. Stress, productivity and the reconstruction of working life.* New York: Basic Books.
- Lee, M. D., Hourquet, P. G., & MacDermid, S. M. (2002). Reduced-load work arrangements: The changing nature of professional and managerial work. In C. L. Cooper, & R. J. Burke (Eds.), *The new world of work: Challenges and opportunities* (pp. 137-156). Oxford: Blackwell.
- Lehner, B. S., Jung, J., Stieler-Lorenz, B., Nitzsche, A., Driller, E., Wasem, J., & Pfaff, H. (in press). Psychosocial factors in the information and communication technology sector. *Management Decision, expected*, 51(9).
- Maslach, C., & Leiter, M. P. (2008). Early predictors of job burnout and engagement. *Journal of Applied Psychology*, 93(3), 498-512.
- Mauno, S., Kinnunen, U., & Ruokolainen, M. (2007). Job demands and resources as antecedents of work engagement: A longitudinal study. *Journal of Vocational Behavior*, 70(1), 149-171.
- Parker, S. L., Jimmieson, N. L., & Amiot, C. E. (2013). Self-determination, control, and reactions to changes in workload: A work simulation. *Journal of Occupational Health Psychology*, 18(2), 173-190.
- Pfaff, H. (2013). Optionsstress und Zeitdruck (Stress of options and pressure of time). In Bundesanstalt für Arbeitsschutz und Arbeitsmedizin et al. (Eds.), *Immer schneller, immer mehr?Psychische Belastung bei Wissens-und Dienstleistungsarbeit (The faster, the more? Psychological demands in knowledge work and service sector jobs)* (pp. 113-143). Wiesbaden: Springer.
- Pfaff, H., Stieler-Lorenz, B., Jung, J., Nitzsche, A., & Lautenbach, C. (2010). Optionsstress in derWissensarbeit (Stress of options in knowledge work). *Wirtschaftspsychologie*, 12(3), 29-37.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- Salanova, M., Agut, S., & Peiró, J. M. (2005). Linking organizational resources and work engagement to employee performance and customer loyalty: The mediation of service climate. *Journal of Applied Psychology*, 90(6), 1217-1227.
- Schafer, J. L. (1999). NORM users' guide (Version 2). Penn State: University Park, the Methodology Center.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, 7(2), 147-177.
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Occupational Behavior*, 25(3), 293-315.
- Schaufeli, W. B., Salanova, M., Gonzalez-Roma, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), 71-92.
- Schaufeli, W. B., Taris, T. W., & van Rhenen, W. (2008). Workaholism, burnout, and work engagement: Three of a kind or three different kinds of employee well-being. *Applied Psychology: An International Review*, 57(2), 173-203.

Schwartz, B. (2004). The paradox of choice: Why more is less. New York: Harper Collins Publishers.

- Seppälä, P., Mauno, S., Feldt, T., Hakanen, J. J., Kinnunen, U., Tolvanen, A. et al. (2009). The construct validity of the Utrecht Work Engagement Scale: Multisample and longitudinal evidence. *Journal of Happiness Studies*, 10(4), 459-481.
- Stieler-Lorenz, B., Jung, J., & Pfaff, H. (2011). Gesundheitsförderliche Prozessoptimierung zur Reduzierung psychischer Beanspruchungen/stress in der ITK-Branche—Konsequenzen für die Führung (Health promoting process optimisation for reduction of psychological strain/stress in the ICT sector—Consequences for leadership). In B. Badura, A. Ducki, H. Schröder, J. Klose, & K. Macco (Eds.), Fehlzeiten-Report 2011: Führung und Gesundheit; Zahlen, Daten, Analysen aus allen Branchen der Wirtschaft (Report on absenteeism at work 2011: Leadership and health; figures, facts and analyses from all economic branches)(pp. 159-168). Berlin: Springer.
- Van de Ven, B., Vlerick, P., & de Jonge, J. (2008). The interplay of job demands, job resources and cognitive outcomes in informatics. *Stress and Health*, 24(5), 375-382.
- Van den Broeck, A., De Cuyper, N., & De Witte, H. (2010). Not all job demands are equal: Differentiating job hindrances and job challenges in the job-demands-resources model. *European Journal of Work and Organizational Psychology*, *19*(6), 735-759.
- Van den Heuvel, M., Demerouti, E., Schaufeli, W. B., & Bakker, A. B. (2010). Personal resources and work engagement in the face of change. In J. Houdmont, & S. Leka (Eds.), *Contemporary occupational health psychology: Global perspectives on research and practice* (pp. 124-150). Chichester: John Wiley & Sons.
- Wallgren, L. G., & Hanse, J. J. (2007). Job characteristics, motivators and stress among information technology consultants: A structural equation modeling approach. *International Journal of Industrial Ergonomics*, 37(1), 51-59.
- Warr, P. B. (1990). Decision latitude, job demands, and employee well-being. Work & Stress, 4(4), 285-294.
- Warr, P. B. (1994). A conceptual framework for the study of work and mental health. Work & Stress, 8(2), 84-97.
- Wirtz, M. (2004). Über das Problem fehlender Werte: Wie der Einfluss fehlender Information auf Analyseergebnisse entdeckt und reduziert werden kann (On the problem of missing data: How to identify and reduce the impact of missing data on findings of data analysis). Die Rehabilitation, 43(2), 109-115.