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Karoline Grødal

Work-Related Sense of Coherence and Relationships with Well-Being among Nursing Home Employees

NTNU
Norwegian University of Science and Technology
Thesis for the Degree of
Philosophiae Doctor
Faculty of Medicine and Health Sciences
Department of Public Health and Nursing



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Arbeidsrelatert opplevelse av sammenheng og assosiasjoner med well-being blant ansatte i sykehjem

Arbeidsrelatert opplevelse av sammenheng (work-related sense of coherence, arbeids-SOC) handler om i hvilken grad man opplever sin arbeidssituasjon som begripelig, håndterbar og meningsfull. Begrepet har sin opprinnelse fra salutogenese, et teoretisk perspektiv med fokus på mestring og god helse, framfor sykdom og uhelse. Målet for denne avhandlingen var å belyse arbeids-SOC og sammenhenger med well-being blant ansatte i norske sykehjem. Dette fokuset er aktuelt med tanke på noen av utfordringene som eldreomsorgen står ovenfor i dag, som høyt sykefravær, turnover og lav rekruttering av utdannet personell. I tillegg gir en aldrende befolkning økt behov for omsorg i sykehjem i årene som kommer. Dette understreker viktigheten av å ha kvalifiserte, friske og motiverte ansatte i denne sektoren.

Som grunnlag for tre studier ble kvantitative longitudinelle data samlet inn ved hjelp av spørreskjema til ansatte i norske sykehjem. Den første studien inneholdt også analyser gjort på data fra ansatte i høyere utdanningsinstitusjoner. De statistiske metodene som ble brukt var konfirmerende faktoranalyse og strukturligningsmodellering. Den første studien undersøkte de psykometriske egenskapene til en norsk versjon av et måleinstrument for arbeids-SOC. Resultatene støttet at arbeids-SOC var et tredimensjonalt begrep og at måleinstrumentet var valid og reliabelt. Unntaket var utfordringer med diskriminant validitet for faktorene begripelighet og håndterbarhet. Den andre studien testet longitudinelle sammenhenger mellom arbeids-SOC og well-being i form av jobbengasjement og jobbtilfredshet. Resultatene viste at arbeids-SOC var positivt relatert til fremtidig jobbengasjement. Det ble derimot ikke funnet støtte for en longitudinell sammenheng mellom arbeids-SOC og jobbtilfredshet. Den tredje studien fokuserte på sammenhengen mellom arbeids-SOC og well-being i form av affektiv organisasjonstilknytning. Funnene viste at denne sammenhengen var sterk. I tillegg viste studien at jobbkrav og -ressurser var henholdsvis negativt og positivt relatert til arbeids-SOC, men ikke direkte relatert til affektiv organisasjonstilknytning. Jobbressursene autonomi og sosial støtte fra leder hadde imidlertid en positiv indirekte effekt på affektiv organisasjonstilknytning via arbeids-SOC.

Avhandlingen bidrar med ny kunnskap om arbeids-SOC, et begrep som fortsatt er relativt lite studert. Jobbengasjement og affektiv organisasjonstilknytning er former for well-being som preges av aktivering, motivasjon og involvering, mens jobbtilfredshet kan anses som en mer passiv tilstand. Tidligere forskning har vist at de aktive formene for well-being har betydning for blant annet produktivitet, arbeidsevne, sykefravær og turnover. Avhandlingens funn om positive assosiasjoner mellom arbeids-SOC og aktiv well-being viser dermed at arbeids-SOC kan være et relevant begrep å ta i betraktning for ledere, som svar på eldreomsorgens utfordringer som ble nevnt innledningsvis. Avhandlingen bidrar også med den første valideringen av et norsk måleinstrument for arbeids-SOC. Dette gir et grunnlag for videre forskning på arbeids-SOC i en norsk kontekst, som vil være essensielt for å oppnå en ytterligere forståelse av begrepet og dets betydning for well-being.

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Table of Contents

Summary.....	v
Acknowledgements	vii
List of Papers	ix
Abbreviations	xi
Introduction	1
Background.....	3
Employee Well-Being	3
Job Demands-Resources Model.	5
Work Engagement.	7
Job Satisfaction.....	9
Affective Organizational Commitment.	11
Salutogenesis and the Sense of Coherence.....	12
Salutogenesis and Sense of Coherence in Work.	15
Work-Related Sense of Coherence.....	18
Aims of the Thesis.....	19
Method.....	23
Design and Procedure.....	23
Participants	24
Instruments	25
Work-Related Sense of Coherence.....	25
Job Satisfaction.....	26
Work Engagement.	26

Affective Organizational Commitment.....	26
Job Demands.....	27
Job Resources.....	27
Statistical Analyses.....	28
Ethical Considerations.....	29
Results.....	30
Results from Paper I.....	30
Results from Paper II.....	30
Results from Paper III.....	31
Discussion.....	31
Discussion of Main Findings.....	32
The Concept of Work-Related Sense of Coherence.....	32
Work-Related Sense of Coherence and Relationships with Well-Being.....	33
Methodological Considerations.....	37
Longitudinal Design.....	37
Sample and Response Rate.....	38
Questionnaire and Instruments.....	39
Practical Implications.....	40
Recommendations for Future Research.....	41
Conclusion.....	43
References.....	45
Papers I-III	
Appendices A-B	

Summary

Background: The world population is ageing, which means that more people have conditions that require long-term care. This places increased pressure on eldercare services. In Norway, the eldercare sector already deals with issues such as hiring challenges, absenteeism, and a shortage of qualified personnel. Thus, attention must be paid to the matter of how to attract and retain qualified, healthy, and productive personnel in the eldercare sector. This thesis responds to this need by focusing on the concept of work-related sense of coherence (work-SOC) and how it relates to employee well-being. Work-SOC reflects the degree to which employees perceive their work situation as comprehensive, manageable, and meaningful – factors that, according to salutogenic theory, indicate a health-promoting work environment. In addition to salutogenesis, the thesis takes on the perspective of occupational health psychology, which is founded on the idea that performance should be sustainable and not come at the cost of well-being. Relating to occupational health psychology and employee well-being, the thesis relies on theory and models such as the circumplex model of affect and the job demands-resources model.

Aim: The overall aim of the thesis was to investigate the concept of work-SOC and its relationships with well-being among nursing home employees in Norway. This was illuminated by studies presented in three papers: (I) a validation study of the Norwegian version of a scale measuring work-SOC, (II) an investigation of longitudinal relationships between work-SOC, work engagement, and job satisfaction, and (III) an investigation of relationships between work-SOC and affective organizational commitment (AOC). The latter study also considered job demands and job resources.

Methods: Data were collected in two waves by questionnaires among nursing home employees in two Norwegian municipalities. In addition to these data, Paper I utilized data from a second sample comprising employees from higher education institutions. Confirmatory factor analyses were used to investigate the factorial validity of the work-SOC scale, the discriminant and convergent validity of the factors, and the factorial

invariance across occupational groups. Paper II used structural equation modeling to analyze potential causal, reversed, and reciprocal relationships between work-SOC, job satisfaction, and work engagement. Paper III used structural equation modeling to investigate direct and indirect relationships between job demands and resources, work-SOC, and AOC.

Results: Paper I showed that a three-factor structure of work-SOC was valid and reliable among both nursing home employees and employees in higher education institutions. However, there were issues with discriminant validity concerning the factors of comprehensibility and manageability. Hence, the additional analyses dealt with work-SOC as an overall concept rather than focusing on the three dimensions. Paper II demonstrated that work-SOC was related to future work engagement. No significant association was found between work-SOC and future job satisfaction. The analyses did not support the hypotheses that work-SOC was reversely or reciprocally related to work engagement or job satisfaction. Paper III showed that work-SOC was strongly related to AOC. Job resources were positively related to work-SOC but not to future AOC. Job demands were negatively related to work-SOC but not to future AOC. The analyses yielded significant indirect effects of autonomy and supervisor support on AOC via work-SOC. The indirect effects of social community at work, emotional demands, and role conflict were unclear.

Conclusion: This thesis adds an important step to the validation of the Norwegian version of a measure of work-SOC. In addition, the results indicate that work-SOC is related to work engagement and AOC, which are states of employee well-being that are characterized by activation, in contrast to job satisfaction, which can be described as a relatively more passive state. Knowledge about the measurement and relationships of work-SOC is a relevant consideration for nursing home leaders, municipal administrations, and policymakers. For example, the measure may be used in employee surveys, and the data provide a basis for interventions and actions aimed at strengthening employee well-being. However, issues regarding discriminant validity concerning the measurement of work-SOC and ambiguous results regarding relationships between work-SOC and work characteristics are among the findings that prompt further investigation.

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List of Papers

Paper I

Grødal, K., Innstrand, S. T., Bauer, G. F., Haugan, G., Rannestad, T., & André, B. (2018). Validation of the Norwegian version of the work-related sense of coherence scale. *Scandinavian Journal of Public Health, 46*(7), 711–717.
<https://doi.org/10.1177/1403494817725466>

Paper II

Grødal, K., Innstrand, S. T., Haugan, G., & André, B. (2019). Work-related sense of coherence and longitudinal relationships with work engagement and job satisfaction. *Scandinavian Journal of Work and Organizational Psychology, 4*(1), 1–11.
<https://doi.org/10.16993/sjwop.73>

Paper III

Grødal, K., Innstrand, S. T., Haugan, G., & André, B. (2019). Affective organizational commitment among nursing home employees: A longitudinal study on the influence of a health-promoting work environment. *Nursing Open, 6*(4), 1414–1423.
<https://doi.org/10.1002/nop2.338>

Abbreviations

AOC	Affective organizational commitment
ARK	Arbeidsmiljø- og klimaundersøkelser [Work Environment and Climate Surveys]
CFA	Confirmatory factor analysis
COPSOQ	Copenhagen Psychosocial Questionnaire
EFA	Exploratory factor analysis
JD-R	Job Demands-Resources
KIWEST	Knowledge-Intensive Work Environment Survey Target
SEM	Structural equation modelling
SOC	Sense of coherence
T1	First measurement point
T2	Second measurement point
Work-SOC	Work-related sense of coherence

Introduction

Several circumstances call for attention to be paid to the matter of how to attract and retain qualified, healthy, and productive personnel in the eldercare sector. The United Nations (2017) estimates a worldwide threefold increase in the number of persons aged 80 years or older by the year 2050. This implies that more people will have conditions such as dementia and a reduced ability to live independently, which will boost the need for long-term care (World Health Organization, 2014). In many countries, including Norway, this situation is accompanied by decreasing fertility rates, which means that the dependency ratio of old people to working-age people is increasing (United Nations, 2017, 2019).

Furthermore, high nursing turnover is an internationally recognized issue (e.g., Buchan, 2013; Hayes et al., 2012). In Norwegian eldercare, which is organized mainly within the municipalities, there is already a major shortage of nurses due to hiring challenges and long-term absences that are often covered by lesser qualified personnel or are not even covered at all (Gautun, Øien, & Bratt, 2016). It seems that hospitals are more attractive workplaces for nurses, and it is also difficult to recruit sufficient apprentices of other health- and social-related professions to the municipal health care services (Aamodt & Tjerbo, 2012; Gautun et al., 2016). In addition, a study showed that over half of the nurses who responded were uncertain or wanted to leave the field of working in nursing homes (Bratt & Gautun, 2018). Such answers were strongly predicted by demanding work conditions involving time pressure and high physical and psychological workloads.

It can be argued that to attract and retain employees in nursing homes, it is essential that organizations provide work environments that care for the employees, just as the employees are expected to care for the patients and residents (Bakker, 2017; Chenoweth, Jeon, Merlyn, & Brodaty, 2010). This is in line with the perspective of occupational health psychology, a scientific field in which employees' health and well-being are the main topics of interest (Christensen, Saksvik, & Karanika-Murray, 2017). A positive perspective

on this emphasizes opportunities by promoting resources in the work environment to obtain good health, well-being, motivation, and sustainable performance (Bakker & Derks, 2010; Christensen et al., 2017). This balances out an exclusive focus on stress and other negative aspects of work, which has historically been widespread in this field.

The relatively new concept of work-related sense of coherence (work-SOC) reflects the degree to which employees perceive their work situation as comprehensive, manageable, and meaningful – factors that are thought to indicate a health-promoting work environment (Bauer & Jenny, 2007; Vogt, Jenny, & Bauer, 2013). Work-SOC is compatible with the positive perspective of occupational health psychology and has its basis in the salutogenic theory, which was developed to understand why some people manage to stay healthy even though they experience stress and severe trauma in their lives (Antonovsky, 1987b). Nursing home employees are certainly challenged by demanding working conditions, some of them unavoidable, such as work pressure, heavy workloads, challenging behavior of residents, and emotionally demanding contact with patients and relatives (Demerouti, Bakker, Nachreiner, & Schaufeli, 2000; Hasson & Arnetz, 2008; K.–H. Schmidt & Diestel, 2013; S. G. Schmidt, Dichter, Palm, & Hasselhorn, 2012). Based on this, work-SOC is an interesting concept to consider in relation to the well-being of nursing home employees. However, the research on work-SOC is in its early stages and the concept has, to my knowledge, not been applied in this specific context in any earlier studies.

This leads to the overall aim of the current thesis, which is to investigate work-SOC and relationships with well-being among nursing home employees in Norway. This will be investigated through the lens of positive occupational health psychology and salutogenesis. The thesis is structured as follows: The background section provides conceptual definitions, theories, and models relevant to the research. Further, specific aims for the three included papers are defined before the methods are described. A summary of the results is then provided before the results are discussed in relation to the overall aim and background. The discussion section also includes methodological considerations, practical implications, and

recommendations for future research before the overall conclusions are presented. The specific papers are attached to the thesis.

Background

Employee Well-Being

The topic of employee health and well-being has been a significant area of focus among researchers in different behavioral sciences, with attention paid to both antecedents and outcomes. Some researchers have based their work on the hypothesized link between well-being and job performance and productivity, also called the happy-productive worker thesis, while others have focused on, for example, safety and injuries (for an overview, see Wright & Cropanzano, 2000). A perspective considered relevant to this thesis is the basis for the scientific field of occupational health psychology, which is that performance should be sustainable and not come at the cost of well-being (Taris & Schaufeli, 2015).

Well-being has been conceptualized primarily as an affective state but also by including other aspects such as behavior, motivation, efficacy, and health (Taris & Schaufeli, 2015). In a broad definition of well-being, Danna and Griffin (1999) included measures of physical and physiological symptoms and diagnoses related to health, as well as experiences related to work, other domains, and life in general. The present thesis deals with three outcomes relating to the specific domain of work, namely (1) work engagement, (2) job satisfaction, and (3) affective organizational commitment (AOC).

The circumplex model of affect is a framework that distinguishes between different forms of subjective well-being based on two dimensions of pleasure and activation (Russell, 1980). The dimensions of pleasure and activation are considered neurophysiological systems on which every affective state is based. Figure 1 shows the circumplex model that Bakker and Oerlemans (2011) adapted for the work context. The model demonstrates that negative employee well-being may vary from burnout, including

low levels of activation, to workaholism, which reflects high levels of activation. Positive states of well-being may also differ in their level of activation, with job satisfaction at the lower end of the continuum and work engagement at the higher.

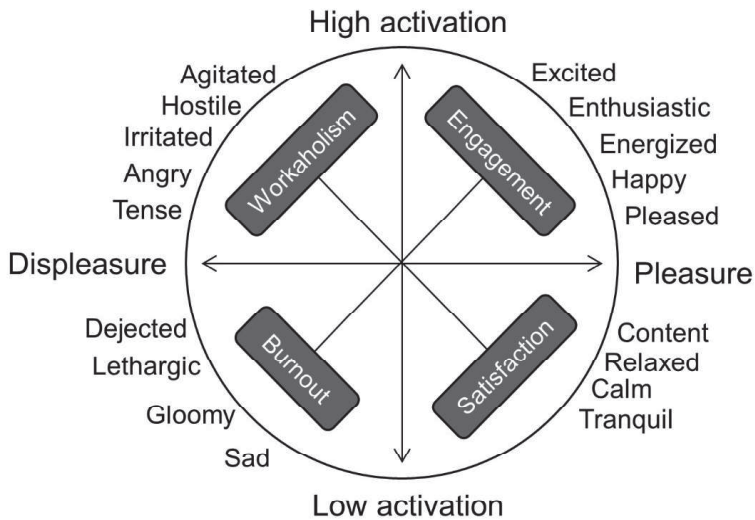


Figure 1. The circumplex model adapted for the work context (Bakker & Oerlemans, 2011).

The circumplex model does not account for how well-being develops. Nevertheless, potential mechanisms are postulated in the job demands-resources (JD-R) model, which will be presented in the next section. Subsequently, the backgrounds of the three well-being concepts of job satisfaction, work engagement, and AOC will follow. These concepts are all individual-level, work-specific, well-being concepts on the positive side of the pleasure continuum. However, they differ in their degree of activation as interpreted by the circumplex model as well as other characteristics.

Job Demands-Resources Model. The JD-R model (Bakker & Demerouti, 2017; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) aims to explain the mechanisms through which work characteristics influence different kinds of employee well-being. Since the model was first introduced in 2001 to explain burnout (Demerouti et al., 2001), it has been applied in numerous empirical studies and has gradually evolved into a more comprehensive theoretical framework that accounts for positive outcomes as well (Bakker & Demerouti, 2017). Figure 2 shows the JD-R model (Bakker & Demerouti, 2017).

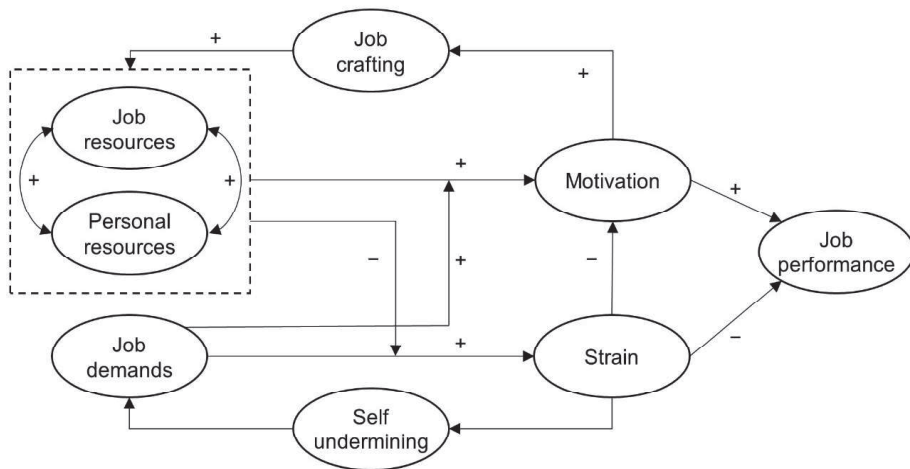


Figure 2. The job demands-resources model (Bakker & Demerouti, 2017).

According to the JD-R model, all work characteristics can be classified as either job demands or job resources (Demerouti et al., 2001). Job demands are defined as “physical, psychological, social or organizational aspects of the job that require sustained physical or psychological effort and are therefore associated with certain physiological and/or

psychological costs” (Bakker & Demerouti, 2017, p. 274). The job demands that are investigated in this thesis are emotional demands and role conflict, while other examples are workload, job insecurity, and conflicts. Job resources are aspects of the job that are “functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, or stimulate personal growth, learning, and development” (Bakker & Demerouti, 2017, p. 274). The job resources that this thesis investigates are autonomy, supervisor support, and social community at work. Other examples of job resources are opportunities for development, feedback, and goal clarity.

The core of the JD-R model is that job demands and job resources each give rise to two different processes of health-impairment and motivation, respectively (Bakker & Demerouti, 2017). High levels of job demands are, over time, expected to induce strain, health problems, and poorer job performance, while high levels of job resources have the potential to be motivating and to induce work engagement and good job performance. Further, it is assumed that job resources can buffer the negative outcomes of job demands, while job resources are most effective at influencing motivation under conditions of high job demands. Many studies have examined and yielded support for the motivational and health-impairment processes (for reviews and meta-analyses, see: Alarcon, 2011; Christian, Garza, & Slaughter, 2011; Crawford, LePine, & Rich, 2010; Halbesleben, 2010; Lesener, Gusy, & Wolter, 2019).

As an extension of the motivational and health impairing processes, the JD-R model illustrates gain and loss spirals (Bakker & Demerouti, 2017). A gain spiral occurs when motivated employees are, through job-crafting behavior, able to increase their job resources and thereby reach even higher levels of motivation. Similarly, loss spirals are evident when job demands lead to strain, which may result in more job demands over time. A hypothetical situation is when an exhausted employee makes mistakes and does not have the energy to communicate clearly, thereby ending up in a situation of conflict, which

induces even more strain. This reasoning is consistent with the theories of broaden-and-build (Fredrickson, 1998) and conservation of resources (Hobfoll, 1989).

The JD-R model also accounts for personal resources, which are “the beliefs people hold regarding how much control they have over their environment” (Bakker & Demerouti, 2017, p. 275). These are assumed to be interrelated with, and influential in, the motivational process in the same manner as job resources. For example, a study by Xanthopoulou, Bakker, and Fischbach (2013) found that self-efficacy was positively related to work engagement, particularly under conditions of high emotional demands and emotional dissonance. One unresolved issue in the JD-R model is that all job demands do not seem to instigate negative outcomes. Some researchers operate with a distinction between *challenging* and *hindering* job demands (e.g., Crawford et al., 2010; N. P. Podsakoff, Lepine, & Lepine, 2007). Hindering job demands involve undesirable constraints and interfere with the ability to achieve work goals and personal growth, whereas challenging demands are perceived as obstacles to overcome so as to achieve accomplishment and future gains (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Crawford et al., 2010; N. P. Podsakoff et al., 2007).

Work Engagement. Work engagement is most commonly defined as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli, Salanova, González-Romá, & Bakker, 2002, p. 74). This affective-cognitive state is pervasive and not limited to particular objects, events, individuals, or behaviors (Schaufeli & Bakker, 2004). Vigor refers to having “high levels of energy and mental resilience while working, the willingness to invest effort in one’s work, and persistence also in the face of difficulties” (Schaufeli & Bakker, 2004, p. 295). Dedication involves “a sense of significance, enthusiasm, inspiration, pride, and challenge” (Schaufeli & Bakker, 2004, p. 295). Absorption refers to being fully concentrated on, and happily engrossed in, work, which creates an experience of time passing quickly and of having difficulties detaching from work (Schaufeli & Bakker, 2004).

The antecedents of work engagement have been investigated in numerous studies that have been subject to several systematic reviews and meta-analyses (e.g., Crawford et al., 2010; Halbesleben, 2010; Keyko, Cummings, Yonge, & Wong, 2016; Lesener, Gusy, Jochmann, & Wolter, 2019; Lichtenthaler & Fischbach, 2019; Young, Glerum, Wang, & Joseph, 2018). Personal resources such as having a proactive personality, positive affect and conscientiousness seem to be relevant to the development of work engagement (Young et al., 2018). Further, cross-sectional relationships have been detected with a wide range of job resources, such as autonomy, opportunities for development, and job variety (Crawford et al., 2010; Halbesleben, 2010). There is longitudinal evidence that promotion-focused job crafting exerts a positive influence on work engagement (Lichtenthaler & Fischbach, 2019). In a meta-analytic review of longitudinal studies, Lesener, Gusy, and Jochmann et al. (2019) found that organization-level resources were more influential than group- and leader-level resources. Job demands seem to be negatively related to work engagement (Halbesleben, 2010). However, it seems that job demands that are experienced as challenging have a positive impact, while hindrances are associated with weaker work engagement (Crawford et al., 2010).

Among professional nurses in direct-care positions, a wide range of antecedents has been identified, representing categories of organizational climate (e.g., authentic and transformational leadership), job resources, professional resources (e.g., professional practice environment and identity), personal resources, and a lack of job demands (Keyko et al., 2016). Mauno, Kinnunen, and Ruokolainen (2007) found, in a longitudinal study among Finnish health care workers, that job resources – and particularly, job control – were strongly related to work engagement. Conversely, care burden seems to exert a negative influence on work engagement, whereas instrumental, informational, and relational support seem to buffer that effect (Zacher & Winter, 2011).

Numerous studies have pointed to different favorable outcomes or factors related to work engagement. Examples are good mental and physical health, job performance, work

ability, work-family enrichment, and financial returns for the organization (Airila et al., 2014; Christian et al., 2011; Hakanen & Lindbohm, 2008; Hakanen, Peeters, & Perhoniemi, 2011; Schaufeli, Taris, & van Rhenen, 2008; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009b). Negative associations have been found between work engagement and factors such as depressive symptoms, burnout, sleeping problems, and physical health issues (Hakanen & Lindbohm, 2008; Hallberg & Schaufeli, 2006). Studies within the health care sector have shown significant relationships with quality of care, higher job satisfaction, less burnout, and lower intent to leave the nursing profession (García-Sierra, Fernández-Castro, & Martínez-Zaragoza, 2016; Keyko et al., 2016).

Job Satisfaction. Job satisfaction is a widely studied form of employee well-being and has been defined in various ways (Judge, Weiss, Kammeyer-Mueller, & Hulin, 2017). Warr and Inceoglu (2012) argued that satisfaction refers to an acceptable level rather than an energized state, consistent with the meaning of the Latin word *satis*, which means “enough”. Locke (1969) defined job satisfaction as “a pleasurable emotional state resulting from the appraisal of one’s job as achieving or facilitating the achievement of one’s job values” (p. 316). Spector (1997) defined it more simply: as the extent to which people like their jobs. Job satisfaction can refer to either an affective evaluation of the job as a whole or a constellation of cognitive evaluations of different facets of the job (Bakker & Oerlemans, 2011; Spector, 1997). This thesis operationalizes job satisfaction through a measure that covers employees’ ratings of how pleased they were with aspects of their job, such as physical work conditions and the way in which their abilities were used, as well as their job as a whole (Pejtersen, Kristensen, Borg, & Bjorner, 2010).

As mentioned in the earlier section about employee well-being, describing the circumplex model, job satisfaction is described as a more passive or de-activated state than work engagement (Bakker & Oerlemans, 2011). While engaged workers are vigorous and enthusiastic, satisfied workers are calm and content (Schaufeli, 2017). To demonstrate this, some researchers use the philosophical distinction between hedonistic and eudaimonic

well-being (e.g., Straume & Vittersø, 2012; Vittersø, 2013; Warr & Inceoglu, 2012), while some also point to the arguments of the motivation-hygiene theory of Herzberg (Herzberg, Mausner, & Snyderman, 1959). This theory states that motivators induce growth and motivation, while hygiene factors reflect conditions that the employee expects to be fulfilled. Job satisfaction may be a function of having relevant hygiene factors in place, while motivators are not necessarily relevant in this context.

A meta-analysis by Judge and Bono (2001) showed that the personal resources of self-esteem, locus of control, emotional stability, and self-efficacy were significant predictors of job satisfaction. A systematic review of studies on job satisfaction among long-term care workers concluded that autonomy, empowerment, facility resources, and workload were important antecedents of job satisfaction, while factors such as age, education level, job performance, and satisfaction with salary did not seem to be important (Squires et al., 2015). A study among the more specific population of nursing home employees found that feedback, role clarity, organizational quality improvement environment, feeling physically safe at work, and having a work schedule that meets personal needs were significant predictors (Karsh, Booske, & Sainfort, 2005).

A meta-analysis of about 500 studies showed consistent negative relationships between job satisfaction and poor health and well-being, while especially strong relationships were found regarding burnout, anxiety, and depression (Faragher, Cass, & Cooper, 2005). A meta-analysis of studies among nurses revealed a strong negative relationship between job satisfaction and job stress (Zangaro & Soeken, 2007). Studies among nursing home employees have shown that job satisfaction is negatively related to turnover intention, work stress, and work-related exhaustion, while job satisfaction is positively related to skills development and mental energy (Hasson & Arnetz, 2008; Karsh et al., 2005).

Affective Organizational Commitment. Commitment refers to being bound to a target and a course of action relevant to that target (Meyer, Becker, & van Dick, 2006). Meyer and Allen (1991) conceptualized organizational commitment by using three components of affective, continuance, and normative commitment. Continuance commitment is a sense of needing to remain in the organization because of the perceived costs of leaving, whereas normative commitment is a felt obligation to stay. Affective organizational commitment (AOC) reflects the notion that employees are emotionally attached to, can identify with, and are involved in their organizations. In addition to being the component of interest in this thesis, AOC has traditionally been the most studied component of organizational commitment due to its relationships with organizational outcomes such as turnover, absenteeism, and organizational citizenship behavior (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002).

Like work engagement, AOC involves action and involvement. AOC and work engagement have been found to be closely related, though distinct (Hallberg & Schaufeli, 2006). A possible explanation for this is that work engagement has a stronger health component than does commitment. Also, the correlation between AOC and job satisfaction has proven to be strong (Markovits, Davis, Fay, & van Dick, 2010; Meyer et al., 2002). Commitment is expected to arise through the gradual development of identification and internalization of the work role, meaning that it may emerge at a later stage than job satisfaction (Judge et al., 2017; O'Reilly & Chatman, 2016). In addition, commitment is thought to be more stable than job satisfaction when measured as a short-term response to specific job facets (e.g., Graf, Cignacco, Zimmermann, & Zúñiga, 2015). All in all, these concepts have their unique properties, which are important to consider when one is seeking to understand employee behavior (Meyer et al., 2002; Tett & Meyer, 1993).

Although a considerable amount of research on organizational commitment has focused on beneficial outcomes for the organization, there is also evidence suggesting that AOC is related to the health and well-being of employees (Meyer & Maltin, 2010). As

mentioned, examples are work engagement (Hallberg & Schaufeli, 2006) and job satisfaction (Meyer et al., 2002). Studies have shown that relevant antecedents of AOC are a supportive organizational climate, positive psychological capital, inclusive leadership, task self-efficacy, and perceived organizational support (Choi, Tran, & Park, 2015; Luthans, Norman, Avolio, & Avey, 2008; Meyer et al., 2002). External locus of control and role conflict are negatively related to AOC (Meyer et al., 2002). Work-related factors seem to be more important than individual factors in explaining AOC (Meyer et al., 2002).

Studies among nursing home employees have found that variables such as quality of leadership, influence at work, team climate, organizational environment for quality improvement, feeling physically safe at work, having a work schedule that meets personal needs, collaboration with leaders and colleagues, and staffing adequacy are positively related to AOC (Clausen & Borg, 2010; Graf et al., 2015; Karsh et al., 2005). Work pressure, role ambiguity, and the underuse of skills are negatively related to AOC (Clausen & Borg, 2010; Graf et al., 2015; Karsh et al., 2005).

Salutogenesis and the Sense of Coherence

Salutogenesis entails a focus on the origins and assets of health, in contrast to pathogenesis, which focuses on disease and risk factors (Mittelmark & Bauer, 2017). The salutogenic perspective and model originated after an initially-pathogenically-oriented study of menopausal symptoms among women in Israel conducted by Aaron Antonovsky in the 1970s (Antonovsky, 1987b). After observing that many Holocaust survivors experienced relatively good health, despite having undergone such a degree of trauma, Antonovsky was curious about which factors contributed to good health (Antonovsky, 1987b). Antonovsky realized that stressors are not necessarily pathogenic and that factors such as how individuals cope with stressors are also influential and could even result in circumstances in which stressful situations culminate in positive health outcomes. The salutogenic model was then gradually developed to explain individuals' movements on a

continuum between ease and disease. Thus, health was considered a process rather than a state of being either sick or healthy, which is a typical dichotomy seen from a pathogenic perspective.

According to the salutogenic model, individuals are constantly exposed to change and stressful events (Eriksson, 2017). Here, stressors are demands that do not immediately or automatically induce an adaptive response and, thereby, lead to tension (Antonovsky, 1979). The potential reactions to stressors are either (1) being neutral towards them, (2) managing them and moving towards the healthy end of the continuum, or (3) being unable to deal with them, which leads to disease (Antonovsky, 1987b). Stressors that negatively affect health in the short-term may potentially be beneficial in the long-term because they give rise to experiences of how to manage similar situations later (Eriksson, 2017).

Emerging from the interviews with the Israeli women, and becoming the key concept of the salutogenic model, was the sense of coherence (SOC). Antonovsky (1987b) defined SOC as

a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli from one's internal and external environments in the course of living are structured, predictable, and explicable; (2) the resources are available to one to meet the demands posed by these stimuli; and (3) these demands are challenges, worthy of investment and engagement. (p.19)

SOC consists of three dimensions: (1) comprehensibility, (2) manageability, and (3) meaningfulness. Comprehensibility is the cognitive component of SOC, explaining the extent to which individuals perceive internal or external stimuli as cognitively understandable, ordered, consistent, and clear, as opposed to chaotic, disordered, and unpredictable (Antonovsky, 1987b). Manageability is the instrumental component of SOC, explaining the degree to which individuals perceive that they have adequate resources to

deal with the demands created by the stimuli with which they are confronted. Meaningfulness is the motivational component of the SOC concept, referring to the extent to which individuals see demands as worthy of energy investment, commitment, and engagement, and as challenges rather than burdens (Antonovsky, 1987b, 1987a). A high degree of meaningfulness involves seeing life as making sense both emotionally and cognitively.

Antonovsky (1987b) postulated that SOC is essential to maintaining or gaining a position on the ease-disease continuum. SOC is about managing and adapting to a life of chaos, which he saw as a normal state (Eriksson, 2017). Though functional in coping with stressors, SOC is described as different from coping styles or personality traits. It could better be described as a generalized emotional-cognitive perception of stimuli that affects the effectiveness of coping (Antonovsky, 1987a).

Comprehensibility, manageability, and meaningfulness are inextricably connected to each other, while effective coping depends on SOC as a whole (Antonovsky, 1987b). However, meaningfulness is described as the most important component, necessary to experience a high degree of comprehensibility and manageability. Further, comprehensibility is the second most important dimension because managing a situation requires that it is understood. Experiencing a high degree of SOC is not dependent on every area of life but, rather, on those areas that the individual perceives as being most important. Antonovsky (1987b) assumed that one's inner feelings, immediate interpersonal relations, major activities, and existential issues are universal areas in that regard.

The development of SOC can be explained using the background of life experiences involving persistent stress or major life events, whereas daily hassles are not assumed to impact SOC to a noticeable extent (Antonovsky, 1987b). SOC was originally assumed to be formed mainly by experiences during early life and to become relatively stable from early adulthood, with only minor modifications (Antonovsky, 1979, 1987b). However, research

has contradicted this assumption by showing that SOC increases with age throughout one's entire life span (Eriksson & Lindström, 2005) and that SOC can be improved through interventions (e.g., Kähönen, Näätänen, Tolvanen, & Salmela-Aro, 2012; Langeland et al., 2013).

Another central concept in the salutogenic model is generalized resistance resources, which can be defined as the characteristics (e.g., physical, cognitive, emotional, interpersonal-relational) of the individual, primary group, subculture, or society that are effective in avoiding or combating stressors and, thus, in preventing stress (Antonovsky, 1979; Eriksson, 2017). Examples are identity, social support, cultural stability, money, and material. According to the theory, generalized resistance resources are essential to developing SOC and depend upon SOC to function as actual resources that make stressful situations culminate in salutogenic outcomes. In addition, the absence of certain generalized resistance resources can directly become a source of stress (Antonovsky, 1979).

In summary, the salutogenic model assumes that SOC influences the position and movement on the ease-disease continuum through several mechanisms. SOC influences (1) whether a situation is perceived as being stressful, (2) the confidence that a stressor can be managed successfully, (3) the likelihood of having a variety of available generalized resistance resources, (4) the way in which generalized resistance resources are mobilized and used appropriately, and (5) the avoidance of detrimental stressors (Antonovsky, 1979, 1987b; Vogt, 2014). A systematic review of a large number of studies conducted between 1992 and 2003 concluded that SOC has a strong relationship with health – and, especially, mental health (Eriksson & Lindström, 2006). Studies have supported direct, moderating, and mediating effects and have shown these relationships in a variety of populations.

Salutogenesis and Sense of Coherence in Work. Underlining the importance of work to health, Antonovsky (1987a) regarded unemployment as the life situation that, among all situations, is most destructive to SOC. Moreover, he frequently used examples

from work life to explain the meaning of SOC and the salutogenic model and strongly argued for the value of adopting a salutogenic perspective in the field of occupational health (e.g., Antonovsky, 1987a, 1987b). Antonovsky (1987a) reasoned that, instead of an exclusively pathogenic focus, accentuating a positive vocabulary for work factors would contribute to more positive health consequences resulting from work. It was asserted that psychosocial stressors at work are ubiquitous and that the variation in how individuals perceive characteristics of the work environment is decisive in terms of their outcomes. While Antonovsky acknowledged that some stressors are very harmful, he argued that individuals' coping might also culminate in positive experiences and health effects of stressors at work, as well as for life in general.

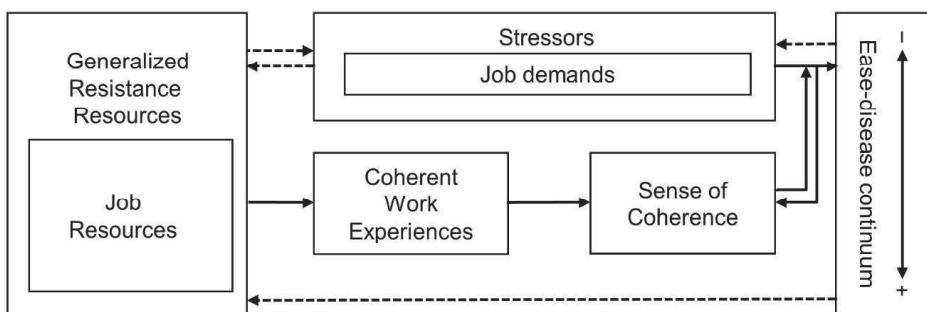


Figure 3. Salutogenic model applied to the work context (based on Jenny, Bauer, Vinje, Vogt, & Torp, 2017; Vogt, 2014).

Figure 3 shows a simplified version of the salutogenic model applied to the work context (based on Jenny, Bauer, Vinje, Vogt, & Torp, 2017; Vogt, 2014). A parallel is drawn between job resources, as known from the JD-R model, and generalized resistance resources that are relevant to work. These job resources enable coherent work experiences that further strengthen SOC and promote movement towards the positive end of the ease-disease continuum. Job demands correspond with stressors that induce tension, which may

lead to a movement towards the negative end of the continuum. However, SOC may counteract the negative effects of job demands by either affecting the way in which the job demands are perceived (e.g., threatening versus challenging) or the way in which SOC (comprehending, managing, finding meaning) influences appropriate coping and allocation of resources. Successful coping will also contribute to a strengthened SOC. Lastly, maintaining and building resources is dependent on having good health, while stressors may contribute to the weakening of resources. This demonstrates a reasoning of reciprocal relationships or gain spirals that was described earlier in the section about the JD-R model.

Several studies have investigated the role of SOC in the work context. The results have shown that SOC is a significant predictor of job satisfaction (Rothmann, 2001), the presence of fewer stress symptoms (Albertsen, Nielsen, & Borg, 2001), and burnout (Kalimo, Pahkin, Mutanen, & Toppinen-Tanner, 2003). In a sample of nurses, van der Colff and Rothmann (2009) found that SOC predicted low burnout, high personal accomplishment, and work engagement. The assumption that SOC is a protective factor against the negative effects of job demands has been demonstrated by the results of the moderating effects of relationships in terms of work-home conflict and psychological distress (Kinman, 2008), workplace bullying, and posttraumatic stress symptoms (Nielsen, Matthiesen, & Einarsen, 2008), as well as organizational change appraisal and mental health (Pahkin, Väänänen, Koskinen, Bergbom, & Kouvonen, 2011).

Several studies have also reported the mediating effects of SOC. Albertsen et al. (2001) showed that SOC was a mediator of relationships between different factors in the work environment and stress symptoms. A longitudinal study by Feldt, Kinnunen, and Mauno (2000) demonstrated that a good organizational climate and low job insecurity were related to a strong SOC, which, in turn, was related to low levels of psychosomatic symptoms and emotional exhaustion at work. Vogt, Hakanen, Jenny, and Bauer (2016) found a reciprocal relationship between job resources and SOC, and, further, a mediating effect of SOC on the relationship between job resources and work engagement. Vastamäki,

Wolff, Paul, and Moser (2014) found a mediating effect of SOC on the relationship between impaired workability and psychological distress. A qualitative study by Geving, Torp, Hagen, and Vinje (2011) pointed to SOC, and especially the meaningfulness component, as important to employees' ability to be present at work despite musculoskeletal symptoms.

Work-Related Sense of Coherence. As for other settings such as families (Antonovsky & Sourani, 1988) and universities (Gräser, 2003), a context-specific conceptualization of SOC has been introduced for work (Bauer & Jenny, 2007). It has been argued that a high level of work-SOC indicates a health-promoting work environment (Bauer & Jenny, 2007). Therefore, the concept is relevant for practical purposes such as planning and evaluating health-related organizational interventions (Vogt et al., 2013).

Work-SOC is defined as “the perceived comprehensibility, manageability and meaningfulness of an individual’s current work situation” (Vogt et al., 2013, p. 2). Thus, it is directly derived from the global SOC concept with cognitive, instrumental, and motivational components. Comprehensibility in the work setting is defined as “the extent to which a work situation is perceived as structured, consistent, and clear”, manageability is “the extent to which an employee perceives that adequate resources are available to cope with demands in the workplace”, and meaningfulness is “the extent to which a situation at work is seen as worthy of commitment and involvement” (Vogt et al., 2013, p. 2). In addition to the current work environment, these perceptions are assumed to be influenced by individual characteristics and previous experiences (Bauer & Jenny, 2007; Vogt et al., 2013). This implies that work-SOC, to a larger extent than global SOC, is assumed to vary throughout one’s work life.

Work-SOC is an operationalization of the coherent work experiences that were presented in Figure 3 and is, therefore, a central concept when one is combining salutogenesis with the perspectives from occupational health psychology and the JD-R

model. Initial studies have supported the relationships drawn in Figure 3, though these relationships have been sparsely researched. For example, in cross-sectional analyses, Vogt et al. (2013) found support for the idea that that work-SOC is a partial mediator of the relationships between job resources and work engagement as well as job demands and exhaustion. These results were not replicated in longitudinal analyses. van der Westhuizen (2018) found that work-SOC, to a greater degree than global SOC, predicted variance in work engagement and that work-SOC, to a lesser extent than global SOC, predicted variance in fatigue. Zweber (2014) found that comprehensibility mediates the relationships between the workgroup- and organization-level health climate and employee mental health.

Work-SOC is measured by a semantic differential scale developed by Bauer, Vogt, Inauen, and Jenny (2015). A three-factor structure of this measure has been confirmed valid in studies among Swiss workers with various occupations (Bauer et al., 2015) and South African motor retail workers (van der Westhuizen & Ramasodi, 2016). Prior to this doctoral project, no Norwegian studies on work-SOC had been published. A Norwegian translation of the work-SOC scale existed from the survey KIWEST (Knowledge-Intensive Work Environment Survey Target; Undebakke, Innstrand, Anthun, & Christensen, 2015). In the process of adapting the instrument to Norwegian, a bilingual (German and Norwegian) researcher was consulted and a back-translation procedure was applied. However, no statistical validation had been done. Consequently, this was considered a natural first step in this doctoral project.

Aims of the Thesis

The overall aim of this thesis was to investigate the concept of work-SOC and its relationship with well-being among nursing home employees in Norway. The thesis includes three papers, which are presented below, accompanied by figures that demonstrate the research models in relation to the overall thesis. The papers had the following aims:

1. To investigate the psychometric properties of the Norwegian version of the work-SOC scale (Paper I; Figure 4). In addition to testing factorial validity, convergent validity, discriminant validity, and scale reliability among nursing home employees, this paper included analyses conducted using data from employees in higher education.

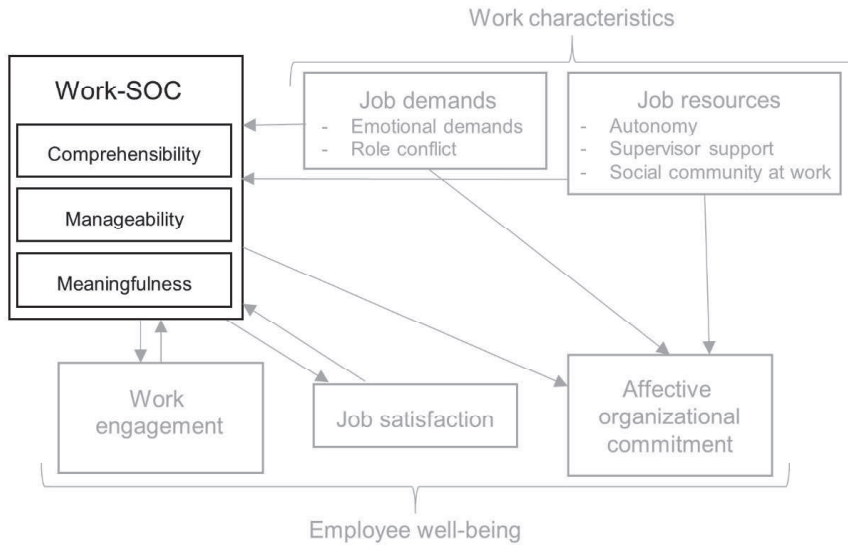


Figure 4. Research model of the study in Paper I in relation to the overall thesis.

2. To investigate longitudinal relationships between work-SOC and the concepts of job satisfaction and work engagement among nursing home employees (Paper II; Figure 5).

The hypotheses were:

- H1a: Work-SOC is positively related to future job satisfaction.
- H1b: Work-SOC is positively related to future work engagement.
- H2a: Job satisfaction is positively related to future work-SOC.
- H2b: Work engagement is positively related to future work-SOC.
- H3a: Work-SOC is reciprocally related to job satisfaction.
- H3b: Work-SOC is reciprocally related to work engagement.

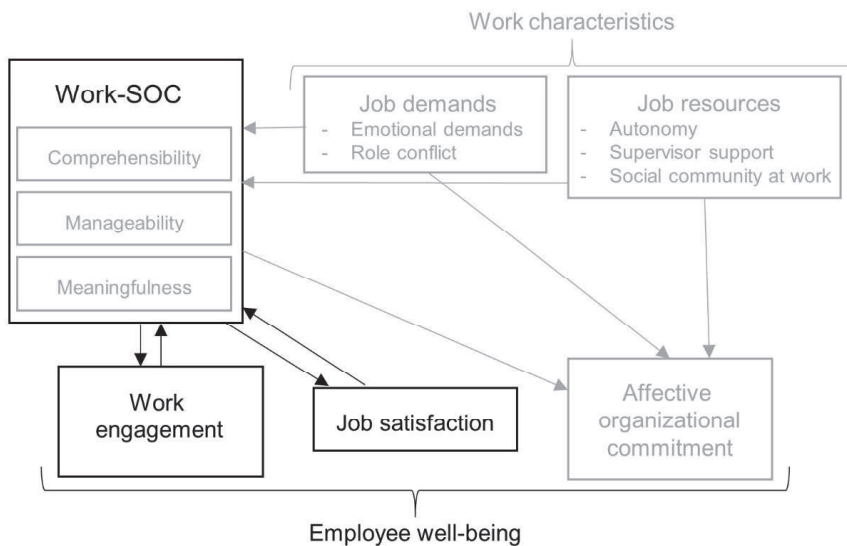


Figure 5. Research model of the study in Paper II in relation to the overall thesis.

3. To investigate whether a health-promoting work environment, operationalized as high levels of work-SOC and job resources (autonomy, supervisor support, and social community at work) and low levels of job demands (role conflict and emotional demands) enhances AOC among nursing home employees (Paper III; Figure 6).

The hypotheses were:

- H1: Work-SOC is positively related to AOC.
- H2: Job resources are positively related to work-SOC.
- H3a: Job resources are positively related to AOC.
- H3b: Job resources are indirectly related to AOC through work-SOC.
- H4: Job demands are negatively related to work-SOC.
- H5a: Job demands are negatively related to AOC.
- H5b: Job demands are indirectly related to AOC through work-SOC.

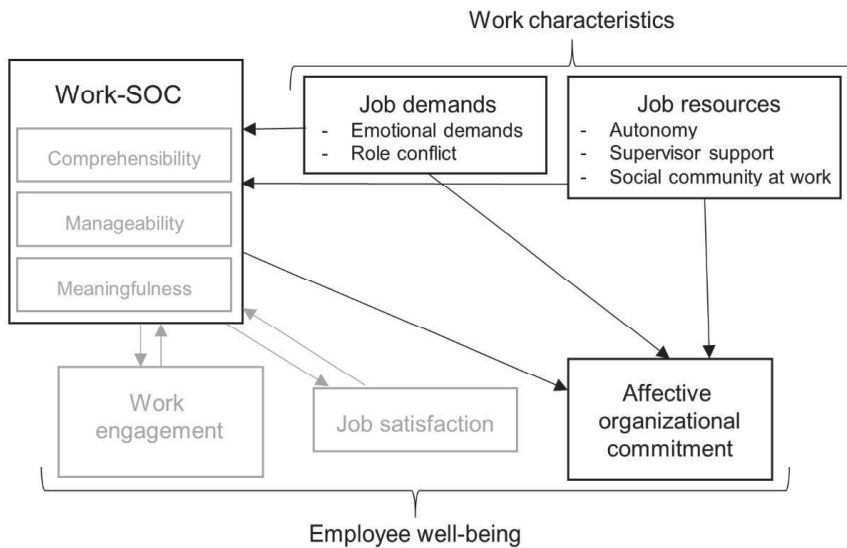


Figure 6. Research model of the study in Paper III in relation to the overall thesis.

Method

Design and Procedure

The present thesis was part of the project “Health Promotion – Worthwhile? Reorienting the community health care services”, funded by the Research Council of Norway (grant number 238331). The objective of the overall project was to reorient the community health care services in a health-promoting direction by providing knowledge and scientific bases for three areas representing different phases of the life-course: (1) school health care services, (2) healthy life centers, and (3) nursing homes. The third work package focused on both residents and employees in nursing homes. This thesis is a contribution to the latter.

Two municipalities participated in the third work package. At the beginning of the project, representatives from all nursing homes in these municipalities were invited to kick-off seminars. The purpose of these seminars was to connect to the collaborators, inform them about the upcoming project, and discuss ways to approach the data collection process. Following these seminars, we engaged one or two contact persons from each nursing home. These individuals were mainly nursing home leaders or professional leaders.

Longitudinal prospective survey data were collected for the three studies included in the present thesis. Participants were invited to take an online survey in two waves, with a one-year interval between 2015/2016 (first measurement point; T1) and 2016/2017 (second measurement point; T2). An interval of one year was chosen for practical reasons due to the project’s limited time span. Data collection was set to the same time period each year with regard to potential seasonal variations in the nursing homes with respect to work pressure or other variables that could potentially influence the research.

The same procedure was followed in both survey waves. The contact persons contributed to the data collection process by, via e-mail, forwarding project information

(Appendix A) and invitations to participate in the survey to employees in the respective nursing homes. The invitations included links to an online survey (Appendix B). In addition, the contact persons forwarded reminders and were asked to use suitable forums, such as meetings and bulletin boards, to encourage employees to participate. Respondents created their own personal codes that were used to link T1 and T2 data for the longitudinal analyses.

In addition to the data from the nursing homes, the study in Paper I used a second cross-sectional data material that was provided by the ARK (Arbeidsmiljø- og klimaundersøkelser [Work Environment and Climate Surveys]) Intervention Programme (Undebakke et al., 2015). The possibility of using a second data source in this study provided a basis for validating the findings with respect to nursing home employees, as well as provided opportunities for further research within the higher education sector, beyond the scope of this thesis. These data were collected among employees in higher education institutions in Norway between 2014 and 2015. Employees received e-mails with information and invitations to the online survey KIWEST (Innstrand, Christensen, Undebakke, & Svarva, 2015; Undebakke et al., 2015). Participation was voluntary and consent was given during the survey.

Participants

The present thesis studied three samples from two data sources. The first sample contained nursing home employees who answered the survey at T1 ($n = 558$). Two Norwegian municipalities with 43 nursing homes were represented. The majority were female (89.7%). The ages ranged from 17 to 72 years ($M = 42.1$, $SD = 13.1$). Professional groups included nurses (40.2%), assistant nurses (38%), other health- and social-related personnel (e.g., therapists, activity staff, physicians; 19.4%), and staff and support functions (2.4%). Employees had a mean of 29.4 ($SD = 9.6$) contracted work hours per week and

tenure of 7.7 years ($SD = 7.2$) at their current workplace. A total of 17.5% had leadership responsibilities.

The second sample was a subsample of the first sample and consisted of the nursing home employees who answered the survey at both T1 and T2 ($n = 166$). The majority were female (92%). The ages at T1 ranged from 20 to 66 years ($M = 44.9$, $SD = 12.1$). Professional groups included nurses (45%), assistant nurses (38%), other health- and social-related personnel (13%), and staff and support functions (4%). At T1, employees had a mean of 30.9 ($SD = 8.2$) contracted work hours per week and a tenure of 9 years ($SD = 7.3$) at their current workplace. A total of 19% had leadership responsibilities.

The third sample was included for purposes of the validation study on work-SOC (Paper I). This sample consisted of employees from higher education institutions in Norway. A total of 7859 employees from 15 institutions answered the survey. The response rate was 67%. Among these, 6951 answered the Norwegian-language version and were included in the study. This sample was relatively gender-balanced (53.5% female). The ages were distributed in the following groups: under 30 years (6.8%), 30–39 years (20.5%), 40–49 years (29.3%), 50–59 years (26.6%), and 60 years or older (16.8%). Academic employees, including doctoral research fellows, accounted for 57% of the sample, whereas 43% were technical or administrative personnel, including unit leaders. The majority had permanent contracts (80.2%), while 19.8% had temporary contracts. Full-time positions accounted for 85.8% of the sample.

Instruments

Work-Related Sense of Coherence. Work-SOC was measured using an instrument (Bauer et al., 2015; Vogt et al., 2013) that was translated into Norwegian during the development of the Knowledge Intensive Working Environment Survey Target (Undebakke et al., 2015). The overall question was “How do you personally find your current job and work situation in general?” Nine items of bipolar adjective pairs assessed

the dimensions of comprehensibility (three items; e.g., “Structured – Unstructured”), manageability (three items; e.g., “Easy to influence – Impossible to influence”), and meaningfulness (three items; e.g., “Meaningless – Meaningful”). The scores on the items representing comprehensibility and manageability were reversed so that high scores indicated high levels of work-SOC. In the analyses presented in Papers II and III, the instrument was treated with eight items according to recommendations from the validation presented in Paper I. In addition, a score on work-SOC change was described and used in Paper III.

Job Satisfaction. Job satisfaction was measured using an instrument from the second version of the Copenhagen Psychosocial Questionnaire (COPSOQ II; Pejtersen et al., 2010). The instrument included four items that asked about how pleased the participants were with their work prospects, physical working conditions, the way in which their abilities were used, and their jobs as a whole, with everything taken into consideration. Responses were given on a five-point scale from (1) *very dissatisfied* to (5) *very satisfied*.

Work Engagement. Work engagement was measured using the nine-item version of the Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006). Based on a Norwegian validation study, this version was recommended over the original version, which included 17 items (Nerstad, Richardsen, & Martinussen, 2010). The instrument included items representing the dimensions of vigor (three items; e.g., “At my work, I feel bursting with energy”), dedication (three items; e.g., “I am proud of the work that I do”), and absorption (three items; e.g., “I am immersed in my work”). Responses were given on a seven-point scale from (1) *never* to (7) *daily*.

Affective Organizational Commitment. AOC was measured using an instrument from COPSOQ II (Pejtersen et al., 2010). The instrument included one item (“How often do you consider looking for work elsewhere” rated on a five-point scale from (1) *always* to (5) *never/hardly ever*, and three items (e.g., “Do you enjoy telling others about your place

of work?") rated on a five-point scale from (1) *to a very large extent* to (5) *to a very small extent*. The scores on the three latter items were reversed prior to analysis so that high scores indicated high levels of AOC.

Job Demands. Two job demands – role conflict and emotional demands – were measured with instruments from COPSOQ II (Pejtersen et al., 2010). Role conflict was measured using four items (e.g., “Are contradictory demands placed on you at work?") rated on a five-point scale from (1) *to a very large extent* to (5) *to a very small extent*. The scores were reversed prior to analyses so that high scores indicated a high level of role conflict. Emotional demands were measured using two items (e.g., “Does your work put you in emotionally disturbing situations”) rated on a five-point scale from (1) *always* to (5) *never/hardly ever* and two items (e.g., “Is your work emotionally demanding”) rated on a five-point scale from (1) *to a very large extent* to (5) *to a very small extent*. Also, these scores were reversed prior to analyses, so that high scores indicated a high level of emotional demands.

Job Resources. Two job resources – social community at work and supervisor support – were measured using instruments from COPSOQ II (Pejtersen et al., 2010). Social community at work was measured using three items (e.g., “Is there a good atmosphere between you and your colleagues?") rated on a five-point scale from (1) *always* to (5) *never/hardly ever*. Supervisor support was measured using three items (e.g., “How often do you get help and support from your nearest superior?") rated on a five-point scale from (1) *always* to (5) *never/hardly ever*. The scores on those scales were reversed prior to analyses so that high scores indicated high levels of job resources. A third job resource – autonomy – was measured using an instrument developed by Sverke and Sjöberg (1994), based on two earlier instruments (Hackman & Oldham, 1975; Walsh, Taber, & Beehr, 1980). The instrument included four items (e.g., “There is scope for me to take own initiatives in my work”) rated on a five-point scale from (1) *strongly disagree* to (5) *strongly agree*.

Statistical Analyses

All statistical analyses in conjunction with the present thesis were carried out with the software Stata versions 14.2 (Papers I and II; StataCorp, 2015) and 15.1 (Paper III; StataCorp, 2017). Pearson's correlations were calculated in Paper II and Paper III, whereas descriptive analyses and internal consistencies were applied in all three papers. Missing values were deleted listwise in all analyses. A summary of the main analyses is presented below, while further details can be found in the respective papers.

In Paper I, confirmatory factor analysis (CFA) with cross-sectional data from samples of employees in nursing homes and higher education institutions was used to assess the factorial validity of the work-SOC scale by testing five competing measurement models: (1) a one-factor model, (2) a two-factor model obtained from exploratory factor analysis (EFA), (3) a three-factor model found valid in Swiss (Bauer et al., 2015) and South-African (van der Westhuizen & Ramasodi, 2016) studies, (4) the originally hypothesized three-factor model from the development of the scale (Bauer et al., 2015), and (5) a modified version of the original three-factor model (see Paper I). The same analyses were conducted for each of the two samples. Further, the samples were merged and the factorial invariance of the scale was tested across the occupational groups of academics, technical/administrative personnel, and health/social-related personnel by means of multi-group CFA.

In Paper II, structural equation modelling (SEM) was conducted with longitudinal data to investigate the relationships between work-SOC and the outcomes of job satisfaction and work engagement. The discriminant validity of the concepts was tested in connection with the measurement model. Further, four models were fitted to the data: (1) a stability model, (2) a causal model, (3) a reversed model, and (4) a reciprocal model. The models were compared based on goodness-of-fit and χ^2 difference tests.

In Paper III, SEM was conducted to test direct and indirect relationships between the study variables. The full model, including all hypothesized relationships, was tested with cross-sectional data. Further, the full model was split into separate models for each specific job resource and demand, with specified relationships with work-SOC and AOC, and was tested with longitudinal data.

Ethical Considerations

Prior to the data collection process, an application was sent to the Regional Committee for Medical and Health Research Ethics, which declared that approval of the current project was not required according to the Norwegian Health Research Act (reference: 2014/2001/REK Midt). The Norwegian Centre for Research Data, Data Protection Services, was notified about the project (project number: 44608).

Along with invitations to participate in the project, employees were given information about the background and aim of the research, as well as about the handling of data. Participation in the project was voluntary. Due to difficulties involved in obtaining an adequate response rate, the nursing homes in one of the municipalities were offered cake as a reward if they achieved a response rate of 50%. None of these nursing homes achieved this rate. No other incentives were given. The employees were free to withdraw from the study at any time, without stating the cause and with no implications for their work situation. Employees gave their informed consent by completing the survey. The survey data were treated confidentially. IP addresses were stored and responses were linked to the employees' affiliations but this information was not presented under any circumstances during the study. Personal codes, which the participants themselves created, were used to link T1 and T2 data. The data were anonymized at the end of the project.

Results

The following sections summarize the results of each of the three papers connected to this thesis. The specific papers present the results in greater detail, including tables and figures.

Results from Paper I

The analyses of the data from the nursing homes and higher education institutions yielded similar results. A one-factor model of work-SOC received no support according to goodness-of-fit indices. The originally hypothesized three-factor model, including three indicators of each factor, was found to represent the data better than did the two-factor model obtained from EFA and the three-factor model from previous validation studies. However, the item “Manageable – Unmanageable”, which was modelled as an indicator of the factor manageability, cross-loaded on the two other factors and was therefore omitted. The resulting model had satisfactory goodness-of-fit to both data sets. Further analyses supported the factorial invariance of this model across the occupational groups of academics, technical/administrative personnel, and health/social personnel. Acceptable internal consistencies and convergent validity among the factors were supported among both samples. However, there were problems with discriminant validity concerning the comprehensibility and manageability factors.

Results from Paper II

The results of the CFA supported discriminant validity between work-SOC, work engagement, and job satisfaction. Work-SOC had a significant positive association with T2 work engagement (H1a) but not with T2 job satisfaction (H1b) when outcomes at T1 were controlled for. Alternative study models indicating reversed (H2a and H2b) and reciprocal (H3a and H3b) relationships were rejected based on poorer goodness-of-fit with the data as compared to the causal model. In addition, these models proved non-significant paths from

T1 job satisfaction (H2a and H3a) and T1 work engagement (H2b and H3b) to T2 Work-SOC.

Results from Paper III

Analyses of cross-sectional and longitudinal data were consistent in finding significant positive relationships between work-SOC and AOC (H1) and job resources and work-SOC (H2). Role conflict and emotional demands were significantly negatively related to work-SOC in the longitudinal analyses, whereas, in the cross-sectional analysis, this pertained to only role conflict (H4). No job demands or job resources were associated with T2 AOC when T1 AOC and work-SOC change were controlled for (H3a and H5a). However, cross-sectional analyses showed that supervisor support and social community at work were positively related to AOC (H3a), while role conflict was negatively related to AOC (H5a). Indirect effects of autonomy and supervisor support on AOC through work-SOC were supported in the analyses of both longitudinal and cross-sectional data (H3b). Only cross-sectional data supported an indirect effect of social community at work on AOC through work-SOC (H3b). Emotional demands and role conflict had significant indirect effects on AOC through work-SOC in the longitudinal analyses but not in the cross-sectional analysis (H5b).

Discussion

The overall aim of this thesis was to investigate the concept of work-SOC and its relationships with well-being among nursing home employees in Norway. The importance of investigating this aim is emphasized by the current lack of research on work-SOC as well as issues affecting the eldercare sector, such as population ageing and nursing turnover. The overall aim was illuminated through three studies with specific objectives. The first study (Paper I) investigated the concept of work-SOC by analyzing the psychometric properties of the Norwegian work-SOC scale among nursing home

employees as well as an additional sample of employees from higher education institutions. The second study (Paper II) and third study (Paper III) investigated relationships between work-SOC and well-being among nursing home employees. The discussion section will highlight and discuss the main findings in relation to the overall aim. Further, methodological considerations and practical implications will be summarized before recommendations are provided for future research and the overall conclusion of the thesis is stated.

Discussion of Main Findings

The Concept of Work-Related Sense of Coherence. Paper I presented a study that investigated the psychometric properties of the Norwegian translation of the work-SOC instrument. The results presented in Paper I supported theory and earlier studies in that work-SOC is a three-dimensional concept (Bauer et al., 2015; van der Westhuizen & Ramasodi, 2016). However, regarding the measurement, there were issues with the item “Manageable – Unmanageable”, which had originally been assumed and found to fit into the manageability factor. This item had cross-loadings to both comprehensibility and meaningfulness and, therefore, was removed for purposes of reaching three distinct factors. However, the results still showed discriminant validity issues with the factors of comprehensibility and manageability, which has also been found in earlier studies on global SOC (Klepp, Mastekaasa, Sørensen, Sandanger, & Kleiner, 2007; Sakano & Yajima, 2005). For the studies in Paper II and Paper III, which were based on data from the same questionnaire, these results implied that investigation of overall work-SOC, rather than analyzing relationships with the specific dimensions of comprehensibility, manageability and meaningfulness, was appropriate.

The study in Paper I was, to my knowledge, the first to validate the instrument in a specific sample of nursing home employees, as well as the first to validate the Norwegian translation of the instrument. The study in Paper I was, therefore, a necessary basis for the

studies in Paper II and Paper III. The results of the analyses of the additional sample of academics were very similar to those of the nursing home sample. This fostered more confidence in the reliability of the results. In addition, the inclusion of an additional sample provided a basis for research on work-SOC in populations of academic employees, which is beyond the scope of this thesis.

Work-SOC was initially labelled as its own category, and not as, for example, a job resource or personal resource, in models suggesting the integration of salutogenic theory with the JD-R model (e.g., Jenny et al., 2017). However, it is relevant to discuss whether it could be more accurate to label work-SOC as a personal resource in this context. The reasoning is that personal resources are assumed to have the same effect as job resources in producing positive outcomes and buffering the negative effects of job demands (Bakker & Demerouti, 2017). Theoretically, global SOC fits into this description because it is an asset for dealing with stressors and utilizing resources (Antonovsky, 1979, 1987a). As shown in Paper II and Paper III, work-SOC did seem to produce favorable outcomes such as work engagement and AOC. The assumption that work-SOC was a personal resource was not further tested in the studies of this thesis, though none of the analyses rejected such an assumption. The results of Paper III showed that work-SOC was a strong predictor of AOC – even stronger than any of the single work characteristic variables. This is perhaps not surprising, as work-SOC, in addition to being an individual factor, is assumed to reflect the experience of having a favorable work environment. In any event, future studies could test competing models to illuminate the nature and mechanisms of work-SOC with frameworks such as the JD-R model.

Work-Related Sense of Coherence and Relationships with Well-Being. The results presented in Paper II showed that work-SOC is longitudinally related to work engagement but not job satisfaction, while Paper III demonstrated that work-SOC is longitudinally related to AOC. Although a longitudinal link between work-SOC and job satisfaction was rejected by the analyses in Paper II, the results showed a relatively strong

bivariate correlation. Thus, it seems that work-SOC has a strong link to employee well-being, although it does not seem to *lead* to all types of well-being. Earlier studies have consistently found positive associations between work-SOC and well-being (Bauer et al., 2015; van der Westhuizen, 2018; Vogt et al., 2013). If viewed through the lens of the circumplex model of affect (Russell, 1980) presented in Figure 1, both work engagement and AOC can be interpreted as active states of well-being. Work engagement entails motivation and energy, while AOC constitutes involvement and a force that binds the individual to the organization. Meanwhile, job satisfaction reflects a passive state in which needs are satisfied. Therefore, this term does not involve any force that drives the individual towards action in any direction. Accordingly, it seems that work-SOC has a link to active rather than passive states of well-being. This fits with the salutogenic theory and the description of global SOC, which contains a proactive attitude when one is facing challenges, as well as meeting demands with investment and engagement (Antonovsky, 1987b).

The study presented in Paper II included a test of the directions of the relationships between work-SOC and employee well-being. The results showed that work-SOC was related to future work engagement, though no evidence was found of reciprocal or reversed relationships between these variables. This was unexpected, as earlier studies have found support for gain spirals of work engagement and resources (Schaufeli, Bakker, & van Rhenen, 2009; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009a). One potential explanation for the lack of support of reversed or reciprocal relationships in the current thesis could be that the time span of one year was too short to detect changes in work-SOC, which is a concept that builds gradually, partly as a result of personality and experiences throughout one's whole work life (Vogt et al., 2013). Thus, it is possible that perceptions of job resources fluctuate more than work-SOC and that the changes in work-SOC are, therefore, more difficult to detect.

Paper III illuminated the role of job demands and job resources in the development of work-SOC and well-being. AOC was the outcome variable of interest in this study. Job resources were positively related to work-SOC, which supports earlier results (Vogt et al., 2013). Autonomy, supervisor support, and social community at work have a positive impact on the degree to which the individual experiences a comprehensible, manageable, and meaningful work situation. This is in line with the motivational process of the JD-R model and the salutogenic pathway described in the salutogenic theory (Antonovsky, 1987a; Bakker & Demerouti, 2017; Vogt, 2014). An explanation, according to these two perspectives, could be that job resources are likely in place and can be utilized appropriately and instigate a process that further leads to favorable outcomes for the individual's health and work situation. In total, the results showed that the role of job demands in explaining work-SOC seemed more unclear. As hypothesized, role conflict had a significant negative association with work-SOC, and this was particularly strong in the longitudinal analysis. Thus, it seems that nursing home employees' perception of having a comprehensible, manageable, and meaningful work environment is negatively influenced by experiences such as ambiguous signals from leaders or coworkers regarding how they should perform their work. However, the variable of emotional demands yielded unexpected results.

Emotional demands were unrelated to AOC in all analyses. The only exception was that the variable of emotional demands was found to have an indirect effect on AOC through work-SOC in the longitudinal analysis, in which none of the other study variables were controlled for. Further, emotional demands were significantly related to work-SOC only in the longitudinal analysis, in which the other work characteristics were not controlled for. While a study by Clausen and Borg (2010) also rejected a relationship between emotional demands and AOC, the finding is clearly in contrast to theory that assumes that job demands are negatively related to well-being. One explanation could be that committed workers are emotionally attached to their jobs, as described by the definition of AOC (Meyer & Allen, 1991). The finding is also very interesting because

nursing home employees probably deal with emotional demands in a different manner than do employees in other sectors, as emotional demands are a natural and expected part of nursing home employees' job. In hindsight, it would have been interesting to distinguish between sources of emotional demands and effects on work-SOC and well-being. For example, it could be that emotional demands relating to circumstances such as patient care, experiencing patients' deaths, contact with relatives, etc. are less harmful than emotional demands stemming from conflicts or issues in the psychosocial work environment. The latter can be labelled as hindering demands, while the intrinsic characteristics of the caring sector would more likely be evaluated as challenging demands. Likely, employees are educated to deal with the demands that are intrinsic to the profession (e.g., patient care, communication with relatives). In addition, awareness and routines for coping with these demands are more likely put in place by the organization, which lowers the risk of unfavorable outcomes in terms of the employees' well-being. Examples could be routines for debriefing following challenging situations and establishment of cultures in which employees and leaders offer and/or are available for support when needed.

The results of Paper III showed significant direct and indirect effects of work-SOC on AOC, indicating that work-SOC plays a role in explaining how a healthy work environment (e.g., high resource levels and low demand levels) gives rise to AOC, which is characterized by feelings of being attached to, able to identify with, and involved with the organization (Meyer & Allen, 1991). Last, it seems that work-SOC is a stronger predictor of AOC than are single job demands and resources, judging by the strength of the relationships between the variables. This was not surprising, as work-SOC can be considered an indicator of an employee's total experience of the work environment in addition to relying on individual characteristics.

Methodological Considerations

Longitudinal Design. Although the longitudinal design used in Paper II and Paper III offered advantages compared to a cross-sectional design, such as the possibility of analyzing reciprocal relationships, some limitations should be noted. First, causal relationships still cannot be concluded (Spector, 2019; Taris & Kompier, 2003). One major reason for this is that the studies did not control for all the variables that may have affected the relationships. A wide range of variables – such as individual variables relating to personality or health, organizational characteristics or variables relating to the physical or psychosocial work environment – might have been influential but were not accounted for. Second, more than two measurements could have presented a greater possibility of analyzing the processes explaining the hypothesized relationships. Third, there is no guarantee that the time interval of one year between the two measurements was optimal. Good information about the most appropriate time lag for detecting the effects of work conditions on employee health is lacking (De Lange, Taris, Kompier, Houtman, & Bongers, 2003; Taris & Kompier, 2003). In this project, the one-year interval between measurements was chosen due to practical reasons, such as the project's limited time span. Collecting the data during the same period each year was intended to avoid potential effects resulting from seasonal variations in variables such as work pressure. However, we were unable to control for potential changes that occurred in the nursing homes between the points of measurement. For example, different interventions might have been carried out in the nursing homes, and we did not have the ability to monitor this.

Fourth, testing effects might have occurred and affected the results. For example, some participants may have lost interest in answering the same questions the second time, while others might have become more aware of their working conditions and health as a result of the first questionnaire. Fifth, the analyses showed that dropouts (those who answered the questionnaire at T1 but not at T2) scored lower on work-SOC, autonomy, and social community at work as compared to participants' who answered at both time points.

The dropouts were also younger and had fewer contracted work hours. These variables might have influenced the participants propensity to answer the questionnaire for the second time, meaning that attrition bias could have affected the results. Though this situation likely affected the mean scores of the longitudinal sample on relevant variables, it remains uncertain whether the situation influenced the results concerning relationships between variables.

Sample and Response Rate. The response rate was low in this study, especially for the sample of respondents who answered the questionnaire at both time points. This is a common challenge in studies among health personnel (e.g., Fida, Laschinger, & Leiter, 2016; Mark & Smith, 2011; van der Heijden, Demerouti, Bakker, & Hasselhorn, 2008). In addition, the aim of the overall project included investigating differences between two municipalities and various nursing homes considering the “Joy-of-life” nursing home certification scheme. The intention was, therefore, to recruit as many of the nursing homes and employees as possible in these two municipalities. For purposes of the current thesis, it could be that an alternative strategy of concentrating resources on fewer nursing homes and working on their commitment to, and engagement with, the project would have been more appropriate and yielded a higher response rate.

The sample’s age and gender distributions were representative of the population of health and social services employees in Norway (Statistics Norway, 2019). However, other potential sources of problems may have affected the results. First, leaders and other contact persons in the nursing homes were our gateways to the data collection. The response rates in the nursing homes varied greatly, and some of the invited nursing homes did not participate at all. Possibly, the engagement and will of the contact persons affected the response rate in each nursing home. This may also be related to these persons’ well-being and to the work environment in these units. Second, beyond the attitudes and engagement of the leaders and contact persons, it is possible that individuals chose to participate because they were engaged themselves. They might have been healthy and, therefore, had a

greater capacity to use their energy on the survey. On the other hand, it could be that some dissatisfied employees chose to participate so that they would have an opportunity to express their feelings. Thus, there is a possibility that the sample did not contain representative scorers on the relevant variables in the research.

The sample size was relatively small, which places some limits on the research models. More comprehensive models – for example, taking a broader spectrum of work characteristics into consideration – could have been tested with a larger sample. However, a choice was made to simplify the models so as to achieve higher quality analyses of the tested hypotheses, for example, by using the method of SEM.

Questionnaire and Instruments. Each instrument included in the questionnaire was carefully selected based on its suitability for use in this thesis and the overall project, in addition to its quality as described in earlier studies. Descriptions of this can be seen in each paper. As work-SOC was a central variable in this thesis, and as no studies had been conducted using the Norwegian-language version of the instrument, the validation study presented in Paper I was a strength of this doctoral project. It was considered necessary as a basis for the analyses that were to be conducted later in the project (i.e., the studies in Paper II and Paper III). Furthermore, the inclusion of the additional sample with academic employees was a strength, as it served as a basis for studies within that specific sector while also serving the purpose of the current thesis. The analyses from both samples yielded similar results, which could be interpreted as a sign of reliability.

All data used in this thesis were self-reported. The method of using an online survey system and distributing links to the questionnaire via e-mail was considered effective due to the project's limited timespan and resources. One pitfall of relying exclusively on self-reports is the probability of common method bias affecting the results (P. M. Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, we had two points of measurement that could have diminished such effects (Doty & Glick, 1998). In addition to being a convenient

method for collecting data, self-report seemed appropriate for this project, given the topic of interest. Employees' own judgements and perceptions of their jobs and how they feel at work may be more important than objective parameters to explain effects on their health and well-being.

The questionnaire that was used in this thesis was designed for the part of the project known as "Health promotion – worthwhile? Reorienting the community health care services", which considered employees in nursing homes. This implies that the questionnaire included instruments that served purposes other than the aims of this thesis. Completing the questionnaire required about 15 minutes. Although this is not especially long, it is still possible that a shorter questionnaire could have contributed to a higher response rate. The length of the questionnaire is also relevant concerning validity, as a lengthy questionnaire may result in tired respondents and less accurate answers as the questionnaire progresses.

Practical Implications

This thesis provides evidence that work-SOC is a relevant factor to consider in the development of both work engagement and AOC. These are types of well-being that are highly relevant considering the societal issues of population ageing, nurse turnover, and difficulties with recruitment, all of which were mentioned in the introduction of this thesis. Consequently, staffing in nursing homes will be an essential area of focus. One solution for effectively utilizing staffing resources may lie in the promotion of active states of well-being, such as work engagement and AOC. Such factors will be essential to get the most out of the nursing staff, as earlier research has shown that these factors are related to good health, work ability, and job performance (e.g., Airila et al., 2014; Christian et al., 2011; Meyer & Maltin, 2010). In addition, such factors may reflect a desire to work in nursing homes, which is an important goal to work for in the years to come.

To work systematically with the promotion of employee well-being and a healthy work environment, the theoretical frameworks of salutogenesis and the JD-R model are relevant for policymakers, municipal administrations, and actors at the organization level. One contribution is the perspective of salutogenesis, which emphasizes the importance of focusing on promotion, parallel to prevention and cure. This is relevant to health itself, as well as to the healthiness of work environments. Comprehensibility, manageability, and meaningfulness may serve as important keywords in that regard. Some concrete strategies can be drawn from the JD-R model (Bakker & Demerouti, 2017). One example is giving employees the opportunity to craft their jobs – or, more specifically, to increase their resources and decrease their job demands. For nursing home employees, examples of job crafting can be to ask colleagues and leaders for feedback and help, initiate talks and debriefs with co-workers to master emotional demands, and acquire learning and developing skills. According to the JD-R model, this may increase employees' health, well-being, and motivation, potentially leading to favorable outcomes for the organization, such as decreased turnover and absenteeism.

Although the work-SOC instrument has some issues that need to be solved, this thesis has shown that the Norwegian version of the instrument has potential and can be used by nursing home leaders for practical purposes. The inclusion of the instrument in employee surveys can provide data that serve as a background for discussions with nursing home staff about what constitutes a comprehensible, manageable, and meaningful work environment. This information may further be used to plan interventions and actions to create a healthy, sustainable, and attractive work environment for the employees.

Recommendations for Future Research

A valid and reliable measure of work-SOC is a prerequisite for obtaining knowledge about work-SOC and the mechanisms through which work-SOC develops and relates to employee well-being. Although the study in Paper I showed that the current measure has

promising qualities, some issues remain unresolved. Future research should address these issues in order to advance the research. First, the wording on item 1 (Manageable – Unmanageable) in the Norwegian translation should be considered, to ensure that it fits the manageability dimension without cross-loadings to the other two dimensions. Second, the discriminant validity issues of the manageability and comprehensibility dimensions should be addressed. A first step could be to test the instrument with all items scaled in the same direction (i.e., reversing either none or all of the items) to avoid potential method effects causing these problems. Another point could be to address whether there is a need to differentiate between the three work-SOC dimensions when measuring work-SOC, as Antonovsky suggested that they should not be separated from each other and interpreted individually (Antonovsky, 1987b).

On the other hand, the ability to separate the dimensions will provide opportunities to test whether different types of work characteristics relate differently to comprehensibility, manageability, and meaningfulness. This could provide new insights into the mechanisms of work-SOC development. In line with the differentiation between passive and active states of well-being, it could be interesting to look at motivators and hygiene factors in the work environment and their relationship with work-SOC. Motivators induce growth and motivation, while hygiene factors reflect conditions that the employee expects to be fulfilled (Herzberg et al., 1959) – a distinction that has parallels to the difference between work engagement and job satisfaction. So far, job characteristics has been the focus of the investigation of the antecedents of work-SOC. Future studies could investigate the relative contribution of personal resources, personality, and other individual characteristics to work-SOC. Among these are also the global SOC. Further, it would be interesting to know more about the changeability of work-SOC relative to global SOC, as well as the relative effect that these two factors have on different outcomes, relating to both work and other aspects of life.

The current thesis focused most on the outcomes of work-SOC. The results are not necessarily generalizable to employees of other professions or sectors. Therefore, future studies could investigate similar research questions in other employee populations. Building on the empirical knowledge that exists about work-SOC, partly from this thesis, future studies could further investigate the mechanisms of how work-SOC contributes to active rather than passive states of well-being. Concepts such as flow (Csikszentmihalyi, 1997) and flourishing (Keyes, 2002) could be interesting to illuminate in that regard.

Lastly, researchers should collaborate with practitioners to develop and evaluate processes and effects of interventions aimed at strengthening work-SOC. To my knowledge, no such studies have yet been published and no such interventions have been developed. Based on the results of this thesis, it seems that a focus on enhancing employees' resources is relevant in this regard. However, work-SOC has been used in a study investigating the implementation of a strategy for symptom self-management among cancer patients (Bana et al., 2020). Low work-SOC was assumed to be a barrier to implementation, and the results showed that work-SOC was significantly associated with nurses' confidence in implementing the strategy. This demonstrates a way in which work-SOC can be used as an independent variable in similar studies in the future.

Conclusion

The research presented in this thesis contributes to new insights regarding work-SOC and employee well-being in nursing homes. First, it is an important step for the validation of the Norwegian version of a scale measuring work-SOC. Second, longitudinal analyses indicate that work-SOC is associated with AOC and work engagement. However, no significant relationship was found with respect to job satisfaction. This indicates that work-SOC is linked to states of well-being that are characterized by a high degree of activation, which will be interesting to investigate in future studies. The findings are relevant to different theoretical fields such as occupational health psychology, public

health, and nursing science. Specifically, this thesis reveals new connections between the perspectives of occupational health psychology and salutogenesis. The thesis also presents new knowledge about the measurement and relevance of work-SOC that can be utilized by practitioners, such as policy makers, municipal administrations, and nursing home leaders. However, the literature on the specific concept of work-SOC remains scarce. More research is therefore highly recommended, and several relevant areas of focus for these future studies are highlighted in the preceding text. Work-SOC is a relevant factor to consider but is not a complete solution for solving the issues of population ageing and nursing home staff shortages.

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Paper I

Grødal, K., Innstrand, S. T., Bauer, G. F., Haugan, G., Rannestad, T., & André, B. (2018).

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ORIGINAL ARTICLE

Validation of the Norwegian version of the work-related sense of coherence scale

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Abstract

Aim: The aim of this study was to investigate the psychometric properties of the Norwegian version of the work-related sense of coherence scale, which measures the perceived comprehensibility, manageability, and meaningfulness of an individual's current work situation. **Methods:** Factorial validity, convergent and discriminant validity of the factors, as well as scale reliability were tested with confirmatory factor analyses among two samples of employees in higher education institutions ($N = 6951$) and nursing homes ($N = 558$). Factorial invariance across occupational groups was also investigated. **Results:** A modified three-factor structure was shown to be valid and reliable in both samples and invariant across occupational groups. However, problems were detected regarding the discriminant validity between the factors comprehensibility and manageability. **Conclusions:** **The Norwegian version of the work-related sense of coherence scale seems to have good properties. Further development is needed to better distinguish between the comprehensibility and manageability dimensions.**

Key Words: *Work-related sense of coherence, sense of coherence, psychometrics, factorial validity, scale reliability, measurement invariance, nursing homes, higher education*

Sense of coherence (SOC) refers to a global orientation to view one's internal and external environments as comprehensible, manageable and meaningful. It was coined by Antonovsky [1, 2] as the core concept of a salutogenic model to explain the origins of health. A positive relation between SOC and perceived health has been confirmed by a number of studies [3], and the concept has been applied in several settings. Context-specific conceptualizations of SOC have been proposed for universities [4], families [5], and more recently for work [6]. The assumption is that a work environment perceived as comprehensible, manageable and meaningful is health promoting [6] and that measuring work-related SOC (work-SOC) will thereby be relevant for planning and evaluating

health-related interventions at work [7]. The workplace is acknowledged by the World Health Organization [8] as a priority setting for health promotion in the current century and many organizations are becoming increasingly aware of the advantages of having a healthy and motivated workforce.

Similar to the global SOC, work-SOC is defined as 'the perceived comprehensibility, manageability and meaningfulness of an individual's current work situation' (p. 2) [7]. The three dimensions are cognitive, instrumental and motivational components of the concept, respectively (p. 2). Comprehensibility is 'the extent to which a work situation is perceived as structured, consistent, and clear', manageability is

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'the extent to which an employee perceives that adequate resources are available to cope with demands in the workplace', and meaningfulness is 'the extent to which a situation at work is seen as worthy of commitment and involvement' (p. 2) [7]. Individual characteristics and previous experiences interact with the current work environment to influence the perception of the dimensions, and work-SOC is therefore assumed to vary according to the individual's experiences throughout the work life (p. 2) [6, 7].

Bauer, Vogt, Inauen et al. [9] developed a nine-item semantic differential scale to measure work-SOC. Initially, three bipolar adjective pairs were suggested to measure each dimension. The validity of a three-dimensional construct was confirmed among Swiss workers with various occupations [9]. However, the final model had an uneven distribution of items, in which one item (manageable – unmanageable) loaded on comprehensibility rather than manageability. This factor structure was concluded to be invariant across time, gender, age groups, education levels, and whether or not the employees had leadership positions [7]. The same model was found valid among South African motor retail workers [10]. The model includes only two items for the manageability factor, and this can be problematic if using the measure in e.g. structural equation modelling [11]. However, Bauer and colleagues [9] recommended applying a composite work-SOC scale in statistical analysis because the subscales did not differ in their relationships with different health outcomes.

The convergent validity of the work-SOC scale has been supported by positive correlations with job resources [7, 9], affective organizational commitment [9], work enthusiasm [9], work engagement [9, 10], and mental health [12]. Negative correlations have been found with job demands [7, 9] and variables such as sleep problems, psychosomatic complaints and exhaustion [9]. Vogt and colleagues [7] found that work-SOC partially mediated the relationships between job resources and work engagement as well as job demands and exhaustion. In addition, Zwebler [12] found that comprehensibility was a partial mediator for the relationship between the degree to which employees perceived that management and coworkers actively supported their well-being (organizational health climate) and mental health.

Thus, the work-SOC scale is a rather new measure and initial studies have shown that the measure is promising for research on what creates healthy workplaces and work environments. However, no studies on work-SOC from the Nordic countries have yet been published. Future cross-national studies require the validity and reliability of translated and adapted versions of the instrument to be evaluated in their

new target populations [13]. Therefore, the aim of this study is to investigate the psychometric properties of the Norwegian version of the work-SOC scale. More specifically, we investigated the factorial validity, convergent and discriminant validity among the factors, scale reliability, and factorial invariance across occupational groups.

Method

Participants and procedure

Cross-sectional survey data from two samples of employees in higher education and nursing homes were used in this study. These represent major parts of the public sector in Norway and cover different occupations such as academics, administrative personnel and health personnel. Both projects were approved by the Data Protection Official for Research, Norwegian Social Science Data Services.

Sample 1 initially consisted of 7859 employees from 15 higher education institutions in Norway. The respondents received emails with information and links to the online survey KIWEST (Knowledge-Intensive Work Environment Survey Target) as part of the ARK (Arbeidsmiljø- og klimaundersøkelser [Work Environment and Climate Surveys]) Intervention Programme [14] between 2014 and 2015. Participation was voluntary and consent was given during the survey. The response rate was 67%. Respondents who answered the English-language questionnaire ($n = 908$) were excluded from the final sample ($N = 6951$). The slight majority were female (53.5%). Age groups were distributed as follows: under 30 years (6.8%), 30–39 years (20.5%), 40–49 years (29.3%), 50–59 years (26.6%), and 60 years or older (16.8%). Academic employees including doctoral research fellows, accounted for 57% of the sample, whereas 43% were technical/administrative personnel including unit leaders. Temporary workers accounted for 19.8% of the sample, and 80.2% had permanent contracts. The majority were employed in full-time positions (85.8%).

Sample 2 consisted of employees from 43 nursing homes in two Norwegian municipalities ($N = 558$). The data were collected between November 2015 and January 2016. Information about the research project and invitations to participate in an online survey were distributed to the employees by email via contact persons in each nursing home. Participation was voluntary and consent was given by completing the survey. Based on a number of 2835 sent invitations, the response rate was estimated to be 20%. This is a minimum estimate because some contact persons reported that their mailing lists were not up to date, and some employees were likely employed in two or

Table I. Wording, means and standard deviations for work-SOC items.

Item	Wording	Norwegian translation	Sample 1			Sample 2		
			<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
1	Manageable – Unmanageable †	Håndterlig – Uhåndterlig †	6924	5.46	1.46	533	5.32	1.61
2	Meaningless – Meaningful	Meningsløs – Meningsfull	6907	5.72	1.37	529	5.80	1.60
3	Structured – Unstructured †	Strukturert – Ustrukturert †	6913	4.64	1.50	527	4.67	1.63
4	Easy to influence – Impossible to influence †	Let å påvirke – Umulig å påvirke †	6912	4.59	1.45	526	4.44	1.54
5	Insignificant – Significant	Betydningsløs – Betydningsfull	6911	5.63	1.31	529	5.71	1.60
6	Clear – Unclear †	Oversiktlig – Uoversiktlig †	6917	4.68	1.52	528	4.74	1.65
7	Controllable – Uncontrollable †	Kontrollerbar – Ukontrollerbar †	6896	4.65	1.44	522	4.70	1.49
8	Unrewarding – Rewarding	Ikke givende – Givende	6911	5.59	1.40	531	5.75	1.56
9	Predictable – Unpredictable †	Forutsigelig – Uforutsigelig †	6898	4.55	1.47	524	4.47	1.60

Note.† = reversed (high scores indicates high work-SOC).

Items developed to measure comprehensibility (3, 6, 9), manageability (1, 4, 7) and meaningfulness (2, 5, 8) [9].

more nursing homes and received multiple invitations. The majority of the sample were female (89.7%) and the ages ranged from 17 to 72 years ($M = 42.1$, $SD = 13.1$), which is consistent with population statistics on the health and social services in Norway [15]. The most common professions were nurses (40.2%) and assistant nurses (38%), while the balance was other health- and social-related personnel (e.g. therapists, activity staff, physicians: 19.4%), and staff and support functions (2.4%). The employees reported means of 29.4 contracted work hours per week ($SD = 9.6$), tenure of 7.7 years at their current workplace ($SD = 7.2$), and 17.5% had leadership responsibilities.

Measure

Work-SOC was assessed by the scale developed by Bauer and colleagues [9]. The scale was translated into Norwegian during the development of KIWEST [14] and then back-translated to ensure equivalence. A bilingual (German and Norwegian) researcher was consulted in this process. The three underlying dimensions of comprehensibility, manageability and meaningfulness were measured with nine bipolar adjective pairs scored on a seven-point scale. The overall question was 'How do you personally find your current job and work situation in general?' The wording of the items can be seen in Table I along with means and standard deviations for both samples. Cronbach's alpha values ranging from .72 to .89 for the dimension scales and .83 to .93 for total work-SOC have been reported in earlier studies [7, 9, 10].

Statistical analysis

Statistical analyses were performed using Stata version 14.2. Missing values were deleted listwise in all analyses. Factorial validity was investigated by

confirmatory factor analyses (CFAs) on five models. In Model 1 (M1), all nine items loaded on one overall work-SOC factor, which is in line with the recommendation of using a composite work-SOC scale [9]. Model 2 (M2) was a two-factor model obtained from exploratory factor analyses in this study (results not shown) and the Swiss validation study [9] with the six comprehensibility and manageability items loading on the same factor and three items loading on meaningfulness. Model 3 (M3) and Model 4 (M4) were three-factor models hypothesized by theory, differing with item 1 loading on either comprehensibility or manageability, respectively. M3 was shown to be valid in Swiss and South African studies [9, 10], while M4 represents the structure of the initially developed measure (see note in Table I) [9]. Model 4a (M4a) was modified based on M4 as described in the results. The asymptotic distribution-free estimation method was applied to circumvent issues with significant multivariate non-normally distributed data.

Evaluations of goodness-of-fit were based on the following indices: 1) χ^2 test, 2) SRMR (standardized root mean squared residual) < 0.08 , 3) RMSEA (root mean squared error of approximation) < 0.08 , 4) CFI (comparative fit index) > 0.90 , and 5) TLI (Tucker–Lewis index) > 0.90 [16]. The χ^2 is sensitive to sample size, and larger samples increase the probability of model rejection. Therefore, the best model was selected based on overall evaluations of model fit, parameter estimates, modification indices (MI) and standardized covariance residuals (SR). MIs above 3.84 suggest that model fit (χ^2) can be significantly improved by adding an extra parameter to the model, while SRs above 2.58 indicate significant discrepancies between the observed and the estimated model [16]. Because the models were not nested, χ^2 difference tests or other significance tests were not used to compare models. It was also not possible to

Table II. Goodness-of-fit statistics for the study models.

	<i>n</i>	χ^2 (<i>df</i>)	RMSEA	SRMR	CFI	TLI
Sample 1						
M1	6761	1526.821(27)***	0.091	0.133	0.672	0.562
M2	6761	761.925(26)***	0.065	0.054	0.839	0.777
M3	6761	685.976(24)***	0.064	0.053	0.855	0.783
M4	6761	644.758(24)***	0.062	0.047	0.864	0.796
M4a	6770	356.529(17)***	0.054	0.038	0.925	0.876
Sample 2						
M1	496	116.976(27)***	0.082	0.160	0.806	0.742
M2	496	69.064(26)***	0.058	0.084	0.907	0.872
M3	496	67.257(24)***	0.060	0.083	0.907	0.860
M4	496	63.026(24)***	0.057	0.078	0.916	0.874
M4a	499	33.836(17)**	0.045	0.048	0.963	0.939

Note. Item 1 omitted in M4a. RMSEA: root mean squared error of approximation; SRMR: standard root mean squared residual; CFI: comparative fit index; TLI: Tucker–Lewis index.

** $p < .01$. *** $p < .001$.

calculate Akaike’s information criterion in the context of the selected estimation method.

Convergent and discriminant validity were assessed by squared correlations (SC) between factors and average variances extracted (AVE). $AVE \geq SC$ indicates no problem with discriminant validity, whereas $AVE \geq 0.5$ indicates no problem with convergent validity [17]. Scale reliabilities were evaluated by measuring the subscales’ internal consistencies. Composite reliabilities (CRs) were evaluated by Raykov’s [18] formula. Values above 0.7 indicate reliable factor measurement [17]. Cronbach’s alpha (α) coefficients were also calculated to enable comparisons with other studies.

Factorial invariance was investigated across three groups of academics ($n = 3963$) and technical/administrative personnel ($n = 2988$) from Sample 1 and health-/social-related personnel ($n = 539$) from Sample 2. This was done by performing: 1) separate CFAs to ensure acceptable goodness-of-fit in each group, 2) multi-group CFA assuming equal forms (i.e. equal factor structures, no constraints on the model), 3) multi-group CFA assuming equal factor loadings, and 4) comparisons of goodness-of-fit of the two multi-group CFA models [19]. Non-significant differences in goodness-of-fit between the models indicated factorial invariance. This was evaluated by χ^2 difference tests and criteria of $\Delta RMSEA \geq .015$, $\Delta CFI \geq -.010$ and $\Delta SRMR \geq .010$ [20].

Results

The goodness-of-fit statistics from the CFAs investigating factorial validity are summarized in Table II. Similar results were found in both Sample 1 and Sample 2. M1 had poor fit to the data according to

all indices in both samples. M2 and M3 had acceptable fit according to RMSEA and SRMR within the cut-off values in Sample 1, and RMSEA and CFI in Sample 2, but this was not supported by the other indices. M4 fitted the data better than M2 and M3, but the values were lower than cut-offs for TLI in both samples and CFI in Sample 1. Inspection of MIs and SRs for M4 revealed multiple points of strain for Sample 1. The two largest MIs indicated cross-loadings of item 7 on meaningfulness (MI = 263.12) and comprehensibility (MI = 216.39). Omitting item 7 yielded a better fitting solution, but caused problems with convergent validity and scale reliability. The third largest MI indicated that item 1 cross-loaded on meaningfulness (MI = 170.27). In Sample 2, M4 seemed fairly good, but an evident point of strain was found with cross-loadings of item 1 on both meaningfulness (MI = 19.58) and comprehensibility (MI = 9.09). Item 1 was therefore omitted in a modified model, M4a. This yielded a substantial improvement of model fit in both samples. In Sample 1, the TLI was below, but approached an acceptable value, while RMSEA, TLI and CFI all indicated fairly good fit. In Sample 2, M4a fitted the data very well, indicated by RMSEA, SRMR, CFI and TLI values clearly within the acceptable limits. Figure 1 shows the standardized factor loadings and factor correlations of M4a.

M4a provided good results with relatively few weaknesses for Sample 2. However, significant SRs were detected between items 4 and 9 (SR = -3.115) and items 5 and 9 (SR = -2.735). The two largest MIs indicated that the model fit could be improved by correlating the error terms of items 3 and 7 (MI = 14.309) and items 2 and 5 (MI = 6.582). More notable points of strain were detected for Sample 1. The misfit was particularly related to items 4 and 7 that

constituted the manageability factor. Cross-loadings with similarly high MIs were apparent for items 4 and 7 on comprehensibility (MI = 133.63) and meaningfulness (MI = 133.63). The three largest SRs were between items 4 and 5 (SR = 37.85), items 2 and 7 (SR = -19.38), and items 4 and 6 (SR = -14.08). However, these MIs and SRs were not addressed by additional modifications to the model, and further analyses were based on M4a.

Table III shows that convergent validity was confirmed in both samples with all AVE values above 0.60. Problems with discriminant validity were indicated by SCs between manageability and comprehensibility of .826 in Sample 1 and .945 in Sample 2.

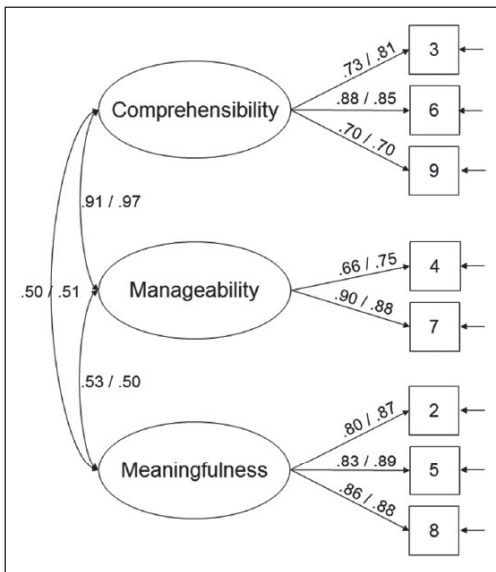


Figure 1. Standardized estimates of factor loadings and factor correlations of M4a for Sample 1/Sample 2. All estimates were statistically significant ($p < .001$).

These were clearly larger than the AVEs. The reliability of the subscales was satisfactory in both samples with CRs from .766 to .912 (Table III).

The results of the factorial invariance tests are presented in Table IV. The single group solutions of M4a had acceptable fit to the data. The unconstrained multi-group model fitted the data well, and the model assuming equal factor loadings did not differ significantly from the unconstrained model. The values of RMSEA and SRMR were actually better in the constrained model. This indicated that the structure of M4a was equal across academics, technical/administrative personnel and health/social personnel.

Discussion

The aim of this study was to investigate the psychometric properties of the Norwegian version of the work-SOC scale by testing the factorial validity, convergent and discriminant validity among the factors, scale reliability, and factorial invariance across occupational groups. In line with theory and previous studies [9, 10], the results favoured a three-factor solution over a one- or two-factor solution. However, it seems that the metrics are slightly different in the Norwegian version. Item 1 cross-loaded on all factors and seemed unreliable. Removing item 1 resulted in a model that fitted the data of both samples well (M4a). The model was invariant across occupational groups and all subscales were reliable according to measures of internal consistency.

Item 1 (manageable) was also an issue in the validation of the German version where it moved from the manageability factor – in which it was theoretically developed to belong – to the comprehensibility factor [9]. It could be that this item relates strongly to the individual’s workload and thus job demands. Perceiving one’s job situation as unmanageable because of excessive workload may impede both comprehensibility and meaningfulness. In comparison, items 4 and 7 (‘easy to influence’ and ‘controllable’)

Table III. Convergent and discriminant validity between factors and subscale reliabilities.

Factor	Sample 1 (n = 6770)			Sample 2 (n = 499)		
	1	2	3	1	2	3
1 Comprehensibility	-			-		
2 Manageability	.826	-		.945	-	
3 Meaningfulness	.248	.276	-	.257	.247	-
AVE	.600	.626	.693	.622	.671	.775
CR	.818	.766	.871	.832	.801	.912
α	.799	.709	.870	.796	.764	.902

Note. Squared correlations between factors (M4a). AVE = average variance extracted; CR = composite reliability; α = Cronbach’s alpha.

Table IV. Tests of factorial invariance of M4a across occupational groups (N = 7254).

	χ^2 (df)	RMSEA	SRMR	CFI	Δ RMSEA	Δ SRMR	Δ CFI	$\Delta\chi^2$ (df)
Single group solutions								
Academics ($n = 3874$)	194.904(17)***	0.052	0.032	0.933				
Technical/administrative personnel ($n = 2896$)	197.562(17)***	0.061	0.050	0.904				
Health/social personnel ($n = 484$)	35.330(17)**	0.047	0.048	0.959				
Measurement invariance								
Equal forms (unconstrained)	427.795(51)***	0.055	0.044	0.924				
Equal factor loadings	447.976(61)***	0.051	0.043	0.922	-0.004	-0.001	-0.002	20.181(10)*

Note. RMSEA: root mean squared error of approximation; SRMR: standard root mean squared residual; CFI: comparative fit index; TLI: Tucker-Lewis index.

* $p < .05$. ** $p < .01$. *** $p < .001$.

may relate more to job resources such as autonomy or decision latitude. Further research is needed to investigate these assumptions and, if they are true, whether the omission of item 1 leads to less predictive power of the work-SOC scale regarding negative health outcomes such as exhaustion.

The discriminant validity between the manageability and comprehensibility factors was poor in this study. This issue is also known from validation studies of global SOC measures. Some studies have shown that these dimensions correlate strongly [21] or cluster together in factor analysis [22]. A model with two factors would contradict the theory of a three-dimensional concept and has, earlier and in this study, been found to fit the data worse than a three-factor model [9]. On the other hand, high correlations can be expected based on Antonovsky's [2] theoretical assumption that manageability is highly dependent on comprehensibility. Of note, all items designed to measure these two dimensions are reverse worded, whereas all items constituting the meaningfulness dimension are not. Method effects may thus have influenced the results. Further studies can investigate if this is the case by reversing items differently when collecting the data, e.g. by putting all items in the same direction or by alternating between item reversals within each of the subscales.

The high correlation between manageability and comprehensibility indicates that using these subscales separately is not reasonable. In addition, Antonovsky [2] suggested that the dimensions are closely intertwined and should not be separated from each other. Using a composite work-SOC scale may thus be recommended, assuming that the multidimensionality of the concept does not influence the meaning of the total score. This was also recommended by Bauer and colleagues [9] for the German language work-SOC scale. However, researchers should be aware that applying a one-factor model in

structural equation modelling seems problematic because of the results of poor fit. Item parcelling with the dimensions functioning as indicators of a latent work-SOC variable might be a solution to this [23], but was not tested in this study. This would also solve the potential issues caused by having only two indicators for the manageability factor in a structural equation model.

A major strength of this study was the application of two large samples representing two different sectors with different occupations. However, some limitations must be noted. First, the low response rate of the nursing home sample may have affected the internal validity of the study and caused biased results. Those with high work-SOC are presumably more likely to participate than those with low work-SOC, but it is uncertain whether this affects the factor structure. The response rate was a minimum estimate and the percentage is thus probably higher in reality, but is still likely to be low. At least, according to age and gender distributions, the sample was representative for the population. Second, generalizability to other occupations and types of organizations is unknown. However, finding a similar pattern of results in the two samples and concluding with factorial invariance across the three different occupational groups strengthens the assumption of external validity of the study results and that the factor structure is universal and reliable across settings in Norway.

Overall, the Norwegian version of the work-SOC scale seems to have good properties and we argue that it could be useful for both research and practical purposes within the field of occupational health. However, further research is needed to address the dimensionality issues and identify solutions to better discriminate between the manageability and comprehensibility dimensions. We also recommend future longitudinal studies to investigate the stability and predictive validity of work-SOC.

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Conflict of interest

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Paper II

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ORIGINAL ARTICLE

Work-Related Sense of Coherence and Longitudinal Relationships with Work Engagement and Job Satisfaction

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The aim of this longitudinal study was to investigate the relationships between work-related sense of coherence (work-SOC) and the two well-being concepts of job satisfaction and work engagement. The study was conducted among nursing home employees, who answered a survey in two waves with a one-year interval. The results of structural equation modelling analyses showed that work-SOC was related to future work engagement but not job satisfaction, indicating that work-SOC contributes to active rather than passive states of well-being. Hypotheses of neither reversed nor reciprocal relationships were supported. The longitudinal relationship with work engagement suggests that work-SOC is an important factor to consider in workplace health promotion and management of employee health, and further research is therefore recommended to learn more about the nature and development of work-SOC.

Keywords: work-related sense of coherence; work engagement; job satisfaction; subjective well-being; workplace health promotion

Work-related sense of coherence (work-SOC) is “the perceived comprehensibility, manageability and meaningfulness of an individual’s current work situation” (Vogt, Jenny and Bauer, 2013: 2). Rooted in the salutogenic tradition, which has its focus on the origins of health rather than disease and risk factors (Mittelmark and Bauer, 2017), the concept was proposed approximately ten years ago as an indicator for the health-promoting quality of life at work (Bauer and Jenny, 2007). Similar to the global sense of coherence (SOC; Antonovsky, 1979, 1987), work-SOC is conceptualized with three dimensions. Comprehensibility is the cognitive component of the concept, describing the perception of the work situation as structured, consistent and clear (Vogt et al., 2013). Manageability is the instrumental component of the concept, describing the extent to which the individual perceives that adequate resources are available to cope with demands that are posed by the work environment. Meaningfulness is the motivational component reflecting whether the work situation is seen as worthy of commitment and involvement.

Research on work-SOC is still in its early stages. Initial studies have shown that work-SOC is correlated to job resources, affective organizational commitment, work enthusiasm and mental health (Bauer et al., 2015; Vogt et al., 2013; Zweber, 2014). In addition, work-SOC has been found to have a partial indirect effect on the

cross-sectional relationships between job resources and work engagement, and job demands and exhaustion (Vogt et al., 2013). Van der Westhuizen (2018) found that work-SOC, compared to global SOC, was a better predictor for work engagement.

Work-SOC has been suggested as particularly relevant for researchers and practitioners working with occupational health interventions (Vogt et al., 2013). Such interventions have gained increasingly more interest in recent years (Nielsen et al., 2010) and is a topic that continues to be relevant, since working life is characterized by continuous technological, political and globalization-related changes that influence the health of workers (Price, 2015). Good health and well-being are not only valuable for the individual but also of strategic value for organizations with regards to factors such as workability, absenteeism, productivity and job performance (e.g., Merrill et al., 2013; von Thiele Schwarz et al., 2015). At the societal level, ensuring healthy work environments will be a very important issue in the years to come, as retaining workers beyond today’s retirement age will be required to cope with challenges due to population ageing (Doyle et al., 2009).

Work-SOC seems to be a relevant concept pertaining to the above matters. However, the empirical knowledge about the causal mechanisms of work-SOC and its precursors and outcomes is still very limited. The present study focuses on employees in nursing homes, which is particularly relevant, in view of increasing pressure on long-term care services (World Health Organization, 2014) and issues such as high turnover and absence rates in this sector (Hayes et al., 2012; Statistics Norway, 2017). Work-SOC will be investigated in relation to job satisfaction

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and work engagement which reflect different kinds of work-related well-being. The rationale is that determining relationships with these established and widely researched concepts may provide a better understanding of work-SOC of relevance to its construct validity and application in further research and practice. The study will add to the literature by investigating work-SOC as both a precursor and outcome of well-being. The relevance of this will be explained through the job demands-resources (JD-R) model (Bakker and Demerouti, 2017; Demerouti et al., 2001) which is used as a framework to form the study hypotheses.

The Job Demands-Resources Model

Proposed in the JD-R model (Bakker and Demerouti, 2017; Demerouti et al., 2001), employees' well-being (e.g., job satisfaction and work engagement) can change as an outcome of health-impairing or motivational processes instigated by job demands or job resources, respectively. Job resources are physical, psychological, social or organizational aspects of the job that function to achieve work goals, reduce job demands and associated physiological and psychological costs, and/or stimulate personal growth, learning and development (Bakker and Demerouti, 2007). It is also assumed that personal resources, described as "the beliefs people hold regarding how much control they have over their environment" (Bakker and Demerouti, 2017: 27), can act like job resources in producing favourable outcomes. This definition seems similar to that of the manageability dimension of work-SOC, and studies have shown that work-SOC is related to job resources (Bauer et al., 2015; Vogt et al., 2013). However, the initiators of the work-SOC concept (Brauchli et al., 2015; Jenny et al., 2017) characterize work-SOC as neither a resource nor a well-being outcome in the JD-R model. Instead, they suggest expanding the JD-R model by including work-SOC as its own category and being more explicit in describing health and well-being as a result of pathogenic and salutogenic pathways, in line with the salutogenic theory of Antonovsky (1979, 1987).

These pathogenic and salutogenic pathways are described corresponding to the health-impairing and motivational processes mentioned above. It is suggested that the role of work-SOC in the pathogenic pathway is to buffer negative health effects from job demands (Jenny et al., 2017). Regarding the salutogenic pathway, the assumption is that job resources influence work-SOC, which in turn strengthens the global SOC and further leads to positive health effects. A part of such a salutogenic pathway was demonstrated in a study by Feldt, Kinnunen and Mauno (2000) who found that global SOC was related to later occupational well-being.

Work-related subjective well-being

Job satisfaction has traditionally been the most studied form of work-related subjective well-being (Bakker and Oerlemans, 2011; Spector, 1997). It can be described as the extent to which people like their job and is either a global feeling about the job or a constellation of attitudes towards different facets of the job (Spector, 1997). Locke

(1969) defined job satisfaction as a "pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values" (1969: 316). A review of studies conducted among long-term care workers identified autonomy, empowerment, facility resources and workload as important factors to increase job satisfaction, while factors such as age, gender, education level and salary were less important (Squires et al., 2015). Job satisfaction seems to be a predictor, beyond the effect of occupational commitment, of nurses' turnover intentions (van der Heijden, van Dam, and Hasselhorn, 2009).

Another well-being concept that has gained increasing interest in recent years is work engagement. It has most often been described as "a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication, and absorption" (Schaufeli et al., 2002: 74). Vigorous employees are willing to invest effort in the work and have high levels of energy and mental resilience; dedicated employees feel a sense of significance, pride, enthusiasm, inspiration, and challenge regarding their work; absorbed employees have difficulties with detaching from their work, with which they are fully engrossed and focused, and experience time as passing quickly (Schaufeli et al., 2002). Work engagement seems to be a predictor of nurses' performance and quality of care, and research has pointed to a broad range of individual and organizational antecedents such as a positive work climate and social support (García-Sierra, Fernández-Castro, and Martínez-Zaragoza, 2016). Exploring work engagement across eight different occupational groups, Innstrand (2016) found that the precursors differed across occupations. For the nurses, having a performance-based self-esteem was negatively related to vigour, whereas autonomy was positively related to dedication two years later. Although nurses did not differ from the reference group (church ministers) in the level of vigour, they felt significantly less dedicated.

Further from the specific definitions, the circumplex model of affect (Russell, 1980) can be used to highlight the differences between these two well-being concepts. This model assumes that all affective states can be mapped onto the dimensions of valence (displeasure—pleasure) and alertness (low activation—high activation). According to this, job satisfaction and work engagement both reflect pleasurable or positive states but differ in their degree of activation (Bakker and Oerlemans, 2011). While job satisfaction can be seen as a rather passive state, viewing the job as acceptable, work engagement additionally involves motivation, enthusiasm and energy, and thus a high level of activation. Warr and Inceoglu (2012) argued that the difference between the primary roles of these two concepts was that the motivation of engaged people means they have wants that are unsatisfied, while job satisfaction reflects that needs or wants have been or are expected to be fulfilled. Judge et al. (2017) argue that the difference between the concepts is that job satisfaction is an attitudinal concept, meaning that it is an evaluative judgement of the job, while work engagement is a motivational concept.

Gain spirals

The notion of gain spirals has become, similar to the theories of conservation of resources (Hobfoll, 1989) and broaden-and-build (Fredrickson, 1998), an essential assumption in the JD-R model. As mentioned, resources lead to motivation and positive well-being. Gain spirals become evident when this further leads to proactive job crafting behaviour, which will then lead to even higher levels of resources and subsequent motivation and well-being (Bakker and Demerouti, 2017). Previous longitudinal studies have yielded support for such gain spirals in finding reciprocal relationships between, for example, job resources and global SOC (Vogt et al., 2016), as well as between job and personal resources and work engagement (Xanthopoulou et al., 2009a).

On this basis, we argue that reciprocal relationships are relevant to address between work-SOC and well-being as well. Firstly, it can be assumed that a positive state of mind may affect employees' perceptions of the working environment (Bakker and Demerouti, 2014). Job satisfaction and work engagement may thus affect the degree to which employees perceive their work environment as comprehensible, manageable and meaningful. Secondly, well-being may affect employees' behaviour at work pertaining to the activation and creation of new job resources, and achievement of work goals (Bakker and Demerouti, 2014). The latter seems particularly relevant regarding work engagement, which includes activation and motivation. However, a study by Wong, Hui, and Law (1998) found that job satisfaction was related to the perception of work characteristics two years later, meaning that reciprocal relationships are relevant to investigate also in that case.

Aim and Hypotheses

As previously stated, the goal of this study is to contribute to a better understanding of work-SOC. More specifically, the aim is to investigate longitudinal relationships between work-SOC and the two concepts of job satisfaction and work engagement. Based on the theories and empirical evidence presented, we would like to test different hypotheses on the relationships between the study variables. First, we expect that work-SOC is positively related to future job satisfaction (*Hypothesis 1a*) and work engagement (*Hypothesis 1b*). Second, we hypothesize reversed relationships between these variables, in that job satisfaction (*Hypothesis 2a*) and work engagement (*Hypothesis 2b*) are positively related to future work-SOC. Third, we combine the two latter hypotheses and assume that work-SOC is reciprocally related to job satisfaction (*Hypothesis 3a*) and work engagement (*Hypothesis 3b*).

Method

Participants and Procedure

The current study used data from a larger research project about work characteristics, occupational well-being and an ongoing certification scheme in nursing homes in Norway. Prior to the data collection, The Regional Committee for Medical and Health Research Ethics declared that approval for the project was not required

according to the Norwegian Health Research Act. Further, a notification of the project was sent to The Norwegian Centre for Research Data, Data Protection Services.

Data were collected in two waves among employees in 43 nursing homes in two Norwegian municipalities. A one-year interval was chosen for practical reasons. Data were collected in the same period both years to control for possible seasonal variations regarding, for example, job demands in the nursing homes. The same procedure was followed at both time points. Invitations to participate in an online survey were distributed to the employees by e-mail via contact persons in each nursing home. Information about the research project was provided attached to the invitations. Participation was voluntary, and consent was given by completing the survey. Employees were invited to participate in the follow-up (time 2; T2) survey, regardless of whether they participated at baseline (time 1; T1), for purposes other than the current study. At T1, 558 employees answered the survey, while 515 answered the survey at T2. This study's sample consisted of 166 employees who answered the survey at both waves. The respondents created their own personal codes that were used to link the T1 and T2 responses.

The estimated response rates were 20% at T1 and 16% at T2, based on the number of sent invitations, 2,835 and 3,221 respectively. However, these percentages are probably higher in reality because some employees likely received multiple invitations due to overlapping employment in two or more nursing homes. In addition, contact persons reported that mailing lists were not up-to-date and that the nursing homes had different practices regarding e-mail communication. We therefore cannot be certain that all invitation e-mails were actually read.

Among this study's sample ($N = 166$), the majority were female (92%), and ages at T1 ranged from 20 to 66 years ($M = 44.9$, $SD = 12.1$). This is comparable to population statistics in the health and social services in Norway, which shows a female majority of 79% (Statistics Norway, 2019). Professional groups were distributed between nurses (45%), assistant nurses (38%), other health- and social-related personnel (13%) and staff and support functions (4%). At T1, the employees had a mean of 30.9 ($SD = 8.2$) contracted work hours per week, tenure of 9.0 years ($SD = 7.3$) at their current work place, and 19% had leadership responsibilities.

Measures

Work-SOC was measured using a seven-point scale with bipolar adjective pairs (Bauer et al., 2015; Vogt et al., 2013). The overall question was, "How do you personally find your current job and work situation in general?" The original version of the scale comprises nine items. In the current study, the scale was treated according to a validation of the Norwegian translation (Grodal et al., 2018) with a total of eight items representing the dimensions of comprehensibility (three items, e.g., "Structured–Unstructured"), manageability (two items, e.g., "Easy to influence–Impossible to influence"), and meaningfulness (three items, e.g., "Meaningless–Meaningful"). Scores were calculated as mean scores of the respective items.

Work engagement was measured using the nine-item version of the Utrecht Work Engagement Scale (UWES-9; Schaufeli, Bakker, and Salanova, 2006). This shortened version was recommended over the original 17-item version based on a Norwegian validation (Nerstad, Richardsen, and Martinussen, 2010). The scale consists of three subscales representing the dimensions of vigour (three items, e.g., “At my work, I feel bursting with energy”), dedication (three items, e.g., “I am proud of the work that I do”), and absorption (three items, e.g., “I am immersed in my work”). Items were rated on a seven-point scale from (1) “never” to (7) “daily”.

Job satisfaction was measured using a four-item scale from the second version of the Copenhagen Psychosocial Questionnaire (COPSOQ II; Pejtersen, et al., 2010). Regarding their work in general, participants were asked to indicate how pleased they were with their work prospects, the physical working conditions, the way their abilities were used, and their job as a whole, everything taken into consideration. Responses were given on a five-point scale from (1) “very dissatisfied” to (5) “very satisfied”.

Statistical Analysis

The software Stata version 14.2 (StataCorp, 2015) was used to analyse the data by means of structural equation modelling (SEM) and the maximum likelihood estimation method. SEM is a method that uses latent variables and accounts for measurement errors (Kline, 2011). Further, it provides opportunities for testing several dependent variables in one model and comparing the goodness of fit of different models, which was relevant in the current study. The amount of missing observations on the included variables ranged from 0 to 7 (4.22%). Missing values were deleted listwise in all analyses.

The measurement model consisted of six latent variables. T1 and T2 Work-SOC and work engagement were

indicated by their respective subscale scores, while T1 and T2 job satisfaction were indicated by their respective four item scores. The practice of parcelling, as by using subscale scores, has been disputed but was considered reasonable in the current study because of the benefits of reducing model complexity, given the small sample size, and since the dimensionality of the constructs were known from earlier studies (Little et al., 2002). Such parcelling has also been used in previous studies on work engagement and global SOC (e.g., Hakanen, Bakker, and Schaufeli, 2006; Vogt et al., 2016). The measurement errors of the same indicators measured at T1 and T2 were allowed to covary. The goodness of fit of the measurement model was tested by confirmatory factor analysis (CFA).

As a prerequisite for the analyses of the hypotheses, discriminant validity, meaning that the study concepts are distinct, was assessed by the criterion that the average variance extracted (AVE) of each latent variable should be greater than its squared correlation with any of the other latent variables in the model (Fornell and Larcker, 1981).

The study hypotheses were tested by fitting four competing models to the data with an approach that has been used and described in several previous longitudinal studies on reciprocal relationships between variables such as work characteristics, SOC and well-being (e.g., de Jonge et al., 2001; Feldt et al., 2004; Xanthopoulou et al., 2009a). The study models are illustrated in **Figure 1**. The first model ($M_{stability}$) was a stability model in which each latent variable at T1 was assumed to predict the same latent variable at T2. The second model ($M_{causality}$) included the stability paths and paths from work-SOC at T1 to job satisfaction (Hypothesis 1a) and work engagement (Hypothesis 1b) at T2, suggesting causal relationships. The third model ($M_{reversed}$) included the stability paths and paths from job satisfaction (Hypothesis 2a) and

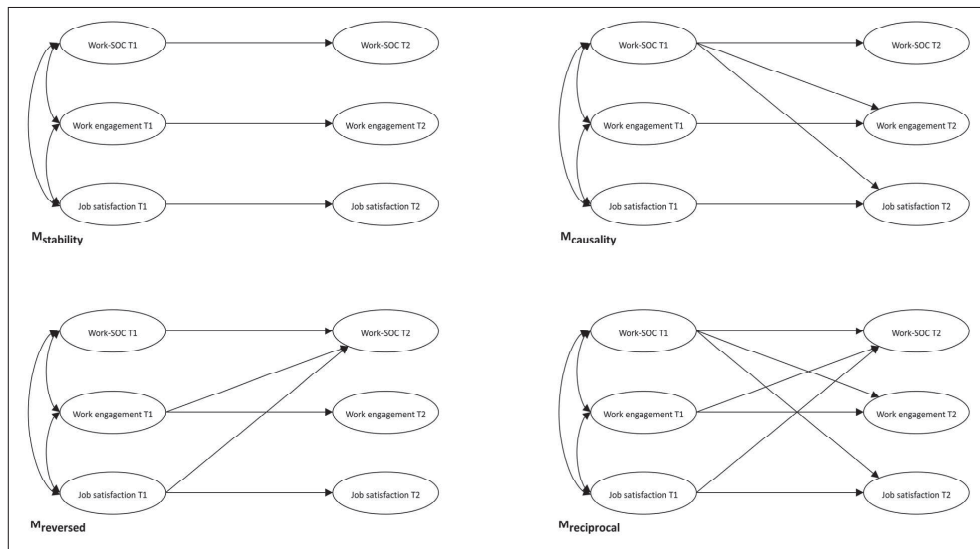


Figure 1: The competing study models.

work engagement (Hypothesis 2b) at T1 to work-SOC at T2, suggesting reversed causal relationships. The fourth model ($M_{\text{reciprocal}}$) included all of the previously described paths, suggesting that the study variables are reciprocally related over time (Hypotheses 3a and 3b). The inclusion of stability paths in all models were done to control for the baseline scores of each latent variable.

An overall evaluation of goodness of fit was evaluated based on chi-square (χ^2), standardized root mean squared residual (SRMR), root mean squared error of approximation (RMSEA), comparative fit index (CFI), and Tucker-Lewis index (TLI) tests. Conventional criteria for good model fit to the data are: close to 0.95 for CFI and TLI, 0.08 for SRMR, and 0.06 for RMSEA (Hu & Bentler, 1999). However, Hu and Bentler (1999) noted that these criteria may be overly strict under conditions of small samples and non-robust data (e.g., multivariate non-normality), and the values were therefore not treated as exact cut-offs. Model comparisons were based on χ^2 difference tests. Further, parameter estimates were inspected to determine the relationships between the variables.

Results

To check for potential attrition bias, the final study sample was compared to respondents who only answered the survey at T1. The results (Table 1) showed that dropouts scored significantly lower on work-SOC and work engagement. No difference was found on job satisfaction. Dropouts were significantly younger and had significantly fewer contracted work hours per week. However, the results were probably not influenced severely by these

differences since effect sizes (Cohen's *d*) were found to be small (Cohen, 1988).

Table 2 shows the means, standard deviations, internal consistencies (Cronbach's α) and correlations between the study variables. The internal consistencies were satisfactory at both T1 and T2 ($\alpha \geq 0.71$). All correlations were positive and significant ($p < 0.05$). T1 variables and corresponding T2 variables were moderately or strongly correlated ($r = 0.42-0.65$, $p < 0.001$), indicating that the participants had a relatively stable perception of the concepts under study. This finding was also supported by non-changing mean levels of work-SOC ($t(155) = -0.74$, $p = 0.46$), work engagement ($t(165) = -0.05$, $p = 0.96$), and job satisfaction ($t(164) = -0.55$, $p = 0.58$) from T1 to T2.

Confirmatory factor analysis indicated that the measurement model fitted the data well ($\chi^2(145) = 221.333$, $p < 0.001$; RMSEA = 0.059; SRMR = 0.076; CFI = 0.967; TLI = 0.957). Table 3 shows that the AVE values for each of the latent variables in the model are greater than their squared correlations with any of the other latent variables, supporting discriminant validity between work-SOC, job satisfaction and work engagement.

Table 4 displays the overall goodness of fit statistics of the alternative study models. Model comparisons showed that $M_{\text{causality}}$ fitted the data relatively well ($\chi^2(149) = 236.836$, $p < 0.001$; RMSEA = 0.063; SRMR = 0.083; CFI = 0.962; TLI = 0.952) and significantly better than $M_{\text{stability}}$ ($\Delta\chi^2(2) = 6.233$, $p < 0.05$). Compared to $M_{\text{stability}}$ neither M_{reversed} ($\Delta\chi^2(2) = 3.416$, $p = 0.181$) nor $M_{\text{reciprocal}}$ ($\Delta\chi^2(4) = 8.491$, $p = 0.08$) fitted the data better. Hence, $M_{\text{causality}}$ gave the best representation of the study data.

Table 1: Analyses of attrition bias.

Variable	Study sample		Dropouts		t-value	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Work-SOC	5.34	1.13	4.94	1.14	-3.70***	-0.35
Job satisfaction	3.74	0.83	3.62	0.81	-1.62	
Work engagement	5.66	1.23	5.38	1.32	-2.31*	-0.21
Age	44.94	12.05	40.84	13.41	-3.46***	-0.32
Contracted work hours	30.87	8.18	28.72	10.15	-2.55*	-0.22

Note: Variables measured at T1.

* $p < 0.05$. *** $p < 0.001$.

Table 2: Means, standard deviations, internal consistencies and correlations between the study variables.

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Work-SOC T1	5.34	1.13	(0.88)					
Work engagement T1	5.66	1.23	0.54***	(0.93)				
Job Satisfaction T1	3.74	0.83	0.68***	0.68***	(0.87)			
Work-SOC T2	5.41	1.10	0.59***	0.35***	0.52***	(0.87)		
Work engagement T2	5.66	1.25	0.47***	0.64***	0.61***	0.52***	(0.95)	
Job Satisfaction T2	3.78	0.81	0.44***	0.44***	0.65***	0.58***	0.66***	(0.87)

Note: Cronbach's alphas (α) in diagonals.

*** $p < 0.001$.

Figure 2 shows the standardized coefficients of $M_{\text{causality}}$. The model explained 30% of the variance in T2 work-SOC ($R^2 = 0.30$), 50% of T2 work engagement ($R^2 = 0.50$), and 46% of T2 job satisfaction ($R^2 = 0.46$). The stability paths of work-SOC ($\beta = 0.54, p < 0.001$), work engagement ($\beta = 0.57, p < 0.001$) and job satisfaction ($\beta = 0.53, p < 0.001$) were significant, suggesting that the T2 levels of these variables depend on T1 levels. The parameter estimates show that hypothesis 1a, suggesting that work-SOC is related to future job satisfaction, was not supported ($\beta = 0.18, p = 0.11$). Hypothesis 1b, suggesting that work-SOC is related to future work engagement, was supported ($\beta = 0.20, p < 0.05$). Hypotheses 2a and 2b suggesting reversed relationships, and hypotheses 3a and 3b suggesting reciprocal relationships, were rejected since M_{reversed} and $M_{\text{reciprocal}}$ were poorer fitting models and also failed to prove significant paths from T2 work engagement and T2 job satisfaction to T1 work-SOC.

Discussion

The aim of this longitudinal study was to investigate relationships between work-SOC and the two concepts of job satisfaction and work engagement. The analyses supported that work-SOC was related to future work engagement (Hypothesis 1a) but not to job satisfaction (Hypothesis 1b). The results did not support reversed (Hypotheses 2a and 2b) or reciprocal relationships (Hypotheses 3a and 3b).

Table 3: Discriminant validity of latent variables in measurement model.

	1	2	3	4	5	6
Work-SOC T1	0.60					
Work-SOC T2	0.27	0.61				
Work engagement T1	0.34	0.13	0.78			
Work engagement T2	0.25	0.25	0.48	0.81		
Job Satisfaction T1	0.56	0.28	0.58	0.51	0.63	
Job Satisfaction T2	0.30	0.38	0.28	0.59	0.53	0.63

Note: Off-diagonals: squared correlations. Diagonals/bold: AVE (average variance extracted).

The significant relationship between work-SOC and future work engagement is interesting when discussing the nature of work-SOC. Seen together with the result of a non-significant relationship between work-SOC and job satisfaction, an interpretation could be that the perception of a work situation as comprehensible, manageable and meaningful leads to a state of active, rather than passive, well-being, as distinguished by the circumplex model (Russell, 1980). Work-SOC includes the motivational component of meaningfulness, which arguably is a prerequisite of activation. Hence, it could be that the meaningfulness dimension makes work-SOC a driver towards motivated and energized states such as work engagement.

The present study's lack of support for reciprocal relationships was surprising since previous studies have supported gain spirals in which work engagement has been reciprocally related to job resources and personal resources (Schaufeli, Bakker, and van Rhenen, 2009; Xanthopoulou et al., 2009a). Even if the results showed that the stability of work-SOC was similar to job satisfaction and work engagement, it could be that the span of one year is too short to detect changes in work-SOC based on occupational well-being. Work-SOC is dependent upon personal characteristics and the employee's experiences throughout his or her entire work life, and it is reasonable to think that the perception of resources is relatively more fluctuating than work-SOC. It is also possible that signs of potential reversed effects may be delayed because of third variables, such as job resources, that may explain causal mechanisms in the relationship between the variables.

Work engagement, which includes drive, motivation and energy, has previously been shown to be related to employee performance and productivity (Bakker, Demerouti, and Verbeke, 2004; Hakanen and Koivumäki, 2014; Xanthopoulou et al., 2009b). In addition to keeping employees healthy and thriving, their performance and productivity are necessarily important factors for organizations to succeed and even to survive. Since the results indicate that work-SOC is a precursor of work engagement, it will be beneficial for organizations to promote a comprehensible, manageable and meaningful work situation for their employees. According to JD-R theory, this can be done through enhancing job resources (Bakker and Demerouti, 2017). In addition, they could facilitate job crafting so that individuals proactively

Table 4: Goodness of fit statistics for the alternative study models.

	χ^2 (df)	χ^2 /df	RMSEA	SRMR	CFI	TLI
$M_{\text{stability}}$	243.069(151)***	1.610	0.064	0.096	0.960	0.950
$M_{\text{causality}}$ (WS → WE/JS)	236.836(149)***	1.590	0.063	0.083	0.962	0.952
M_{reversed} (WE/JS → WS)	239.653(149)***	1.608	0.064	0.089	0.961	0.950
$M_{\text{reciprocal}}$ (WS ↔ WE/JS)	234.578(147)***	1.596	0.063	0.080	0.962	0.951

Note: χ^2 , chi squared; df, degrees of freedom; RMSEA, root mean squared error of approximation; SRMR, standard root mean squared residual; CFI, comparative fit index; TLI, Tucker-Lewis index; WS, work-SOC; WE, work engagement; JS, job satisfaction.

*** $p < 0.001$.

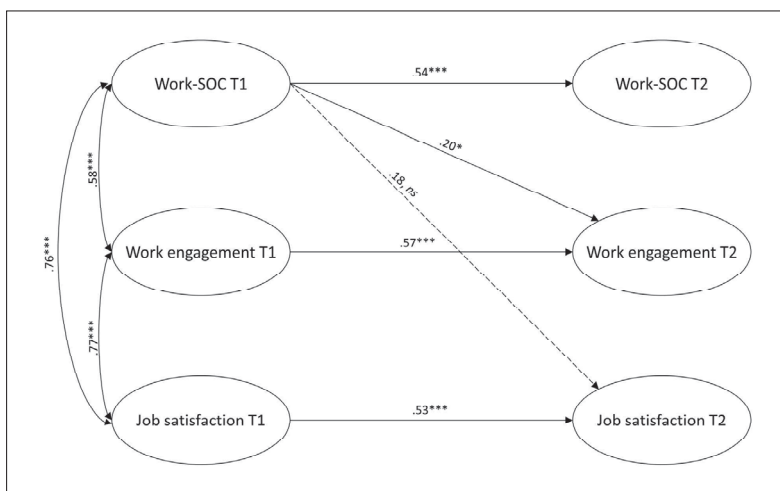


Figure 2: Standardized path coefficients of $M_{causality}$. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$. ns = not significant.

can shape their work tasks and relationships in a way that affects their work identity and how they perceive the meaning of work (Wrzesniewski and Dutton, 2001). However, the mechanisms leading to work-SOC should be studied further empirically.

Based on the results, it will be interesting for future studies to explore the mechanisms of the development of work-SOC, in terms of how it changes over time and which variables can make it change. Earlier studies have shown that work-SOC is related to job resources and job demands (Bauer et al., 2015; Vogt et al., 2013), but causal relationships have not been investigated. Since the results indicate that work-SOC leads to active, but not passive, well-being it would be interesting to investigate if work-SOC is stronger related to certain types of job resources than to others.

Regarding the development of work-SOC, it could also be interesting to illuminate whether different kinds of job demands affect work-SOC differently. The assumption that job demands are negatively related to work-SOC has been supported empirically (Bauer et al., 2015; Vogt et al., 2013). However, future studies could investigate whether job demands appraised as challenging rather than hindering (e.g., Webster, Beehr, and Love, 2011) have a positive impact on work-SOC, as long as adequate resources are in place. In addition, the salutogenic theory assumes that SOC is influential on the degree to which an individual perceives a situation as stressful (Antonovsky, 1979, 1987). Applied to the work-setting, this would mean that work-SOC influences the way the individual perceives job demands, and that that so-called loss- or gain-spirals could be relevant also here. The line of reasoning is that an individual who has a low work-SOC score, would be more inclined to perceive job demands as hindering, which could further affect work-SOC negatively, and so on. Last, recent studies within healthcare have shown that interactions between different job demands are relevant

to well-being outcomes (Jimmieson, Tucker, and Walsh, 2017; van Woerkom, Bakker, and Nishii, 2016), and it therefore seems important to consider the totality of the individual's work situation when studying these matters.

Strengths and limitations

Important strengths of this study were the use of longitudinal rather than cross-sectional data and the application of SEM to investigate directions of relationships. In addition, we applied previously validated instruments to measure the concepts under study. The measure for job satisfaction was carefully considered to avoid discriminant validity problems in relation to work engagement. Warr and Inceoglu (2012) argued that many measures of job satisfaction reflect aspects beyond the true meaning of the concept, such as energy and activation. In this study, it was important to avoid such measures, and the results supported that we succeeded with this intention.

There were also limitations to this study that must be noted. First, the sample size was small, which is a disadvantage in SEM (Kline, 2011). Particularly for complex models (i.e., many estimated parameters), small samples may lead to problems such as inaccurately estimated standard errors. We therefore strove to keep the model as simple as possible by not including more variables to the analyses and by using dimension scores instead of items as indicators of work-SOC and work engagement. However, there is still a chance that type-2 errors might have occurred in this study, and we recommend future studies to investigate the hypotheses with larger samples.

Second, the estimated response rates were very low, which casts doubt over the generalizability of the results. As high levels of sick leave and turnover are common problems in this sector (Hayes et al., 2012; Statistics Norway, 2017), and low response rates seem to be a common challenge in studies among health personnel

(e.g., Fida, Laschinger, and Leiter, 2016; Mark and Smith, 2012; van der Heijden et al., 2008), we were aware that obtaining a sufficiently large sample for longitudinal analyses could be difficult. To ensure that we were actually able to execute the study, we therefore made the choice to invite a great number of employees to thereby recruit as many as possible, potentially at the expense of obtaining a high response rate. We also included all professional groups since the nursing home as a workplace was the focus, and not the situation for certain professions. The analyses showed small effects of attrition bias that may partly be explained by a healthy worker effect since dropouts scored lower on work engagement and work-SOC. In addition, dropouts were younger and had fewer contracted work hours, which indicates that turnover is a likely explanation (Hayes et al., 2012). Together this might have affected the generalizability of the results to the whole spectrum of employees in nursing homes.

Third, there is a chance that common variance between the constructs could be attributed to the fact that all measures were based on self-reports (Podsakoff et al., 2003). However, this effect might have been reduced by the time lags between measurements (Doty and Glick, 1998). Last, since the study was conducted among a relatively homogenous sample of nursing home employees, we cannot conclude that the results are generalizable to other sectors and professions.

Conclusion

This study adds to the knowledge on work-SOC by showing a significant relationship to future work engagement but not job satisfaction, which may indicate that work-SOC contributes to active rather than passive states of well-being. Hypotheses of reversed and reciprocal relationships were not supported in this study. Overall, the findings suggest that work-SOC is important to consider for practitioners working with promotion and management of workers' health and well-being. The study sheds light on the importance of healthy work environments in nursing homes, which will be essential in the coming years with population ageing. However, work-SOC is still a relatively unexplored concept, and future research should aim to investigate its precursors (e.g., job crafting, job and personal resources) and outcomes (e.g., health, well-being and organizational outcomes).

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Competing Interests

The authors have no competing interests to declare.

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Paper III

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Affective organizational commitment among nursing home employees: A longitudinal study on the influence of a health-promoting work environment

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Abstract

Aim: To investigate whether affective organizational commitment (AOC) among nursing home employees is enhanced by a health-promoting work environment, conceptualized as high levels of job resources, work-related sense of coherence (work-SOC) and low levels of job demands.

Design: This study used a longitudinal design. Survey data were collected with a 1-year interval between 2015/2016–2016/2017 among nursing home employees in Norway.

Methods: Structural equation modelling was used to analyse the longitudinal data ($N = 166$) and cross-sectional data from the first time point ($N = 558$).

Results: The results supported that work-SOC was strongly and positively related to AOC. Job resources and job demands were positively and negatively related, respectively, to work-SOC but were not related to future AOC. The indirect effects of autonomy and supervisor support on AOC, via work-SOC, were significant. The indirect effects regarding social community at work, emotional demands and role conflict were unclear.

KEYWORDS

affective organizational commitment, eldercare, emotional demands, health care, job demands, job resources, nursing, nursing homes, work-related sense of coherence

1 | INTRODUCTION

Eldercare services are facing challenges due to a steadily ageing world population and increasing number of persons in need of long-term care (World Health Organization, 2014). In light of concerns regarding high nursing turnover (Hayes et al., 2012), the issue seems even more critical. Recruiting and retaining qualified and productive eldercare personnel will be crucial in the years to come. For nursing home leaders, one approach may be to promote employees' commitment to their organization. In general, commitment refers to: "a

force that binds an individual to a target and to a course of action of relevance to that target" (Meyer, Becker, & van Dick, 2006, p. 666). Research has shown that organizational commitment is related to outcomes such as lower turnover intention (Graf, Cignacco, Zimmermann, & Zúñiga, 2016; Karsh, Booske, & Sainfort, 2005; Mathieu & Zajac, 1990; Meyer, Stanley, Herscovitch, & Topolnysky, 2002), actual turnover (Mathieu & Zajac, 1990; Meyer et al., 2002) and absenteeism (Graf et al., 2016). Furthermore, higher job performance (Mathieu & Zajac, 1990) and quality of care among nursing home employees (Graf et al., 2016) have been reported.

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The present study focuses on affective organizational commitment (AOC), which reflects that employees are emotionally attached to, can identify with and are involved in a particular organization (Meyer & Allen, 1991). To be able to focus interventions on strengthening employees' AOC, it is essential to know how AOC develops. For this purpose, it is most relevant to address work-related precursors, which seem to have more influence on AOC than demographic and personal characteristics (Meyer et al., 2002). Perceived organizational support, organizational justice and transformational leadership are among the factors that have been shown to be strongly associated with AOC (Meyer et al., 2002).

Intervening on work characteristics is also relevant to influence workers' health (Bakker & Demerouti, 2014; Lesener, Gusy, & Wolter, 2019), suggesting that focusing on a healthy work environment might serve multiple purposes. The aim of the current longitudinal study was to investigate whether a health-promoting work environment enhances AOC among nursing home employees in Norway. The job demands-resources (JD-R) model will serve as a theoretical framework for this and specific job demands, and resources are therefore measured to indicate characteristics of the work environment that are related to health impairment and enhancement, respectively. In addition, this study extends the literature by investigating the role of the more recent concept of work-related sense of coherence (work-SOC) in this context. Work-SOC refers to the health-promoting quality of an individual's work situation, reflected through the dimensions of how one perceives the environment as comprehensible, manageable and meaningful (Vogt, Jenny, & Bauer, 2013). To our knowledge, this is the first study investigating work-SOC in relation to AOC.

1.1 | Background

According to the JD-R model (Bakker & Demerouti, 2007, 2017; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), all work characteristics can be labelled as either job demands or job resources. Those aspects of the job that require sustained physical or mental effort and are therefore associated with certain costs are categorized as job demands. Conversely, job resources contribute to achieving work goals, reducing job demands and their associated costs, or stimulating personal growth, learning and development. A central proposition of the JD-R model is that job demands and job resources elicit health-impairing and motivational processes, respectively. Through the motivational process, job resources contribute to work engagement and subsequent positive outcomes, whereas the health impairment process leads to negative outcomes via burnout. Meta-analyses have supported these assumptions (Crawford, LePine, & Rich, 2010; Lesener et al., 2019), and previous studies have indicated that AOC is influenced by both of the above processes. Different job demands and job resources have been found to be directly associated with AOC (Mathieu & Zajac, 1990). In addition, Llorens, Bakker, Schaufeli, and Salanova (2006) found that burnout and work engagement partially mediated the relationship between work characteristics and organizational commitment.

The job demands investigated in this study are role conflict and emotional demands. Role conflict comprises inconsistent or conflicting information concerning demands at work (Nixon, Mazzola, Bauer, Krueger, & Spector, 2011), while emotional demands have to do with emotionally charged interaction with, for example, patients, or requirements to comply with certain rules about how to express feelings at work (Heuven, Bakker, Schaufeli, & Huisman, 2006). Previous studies among healthcare workers have shown that role conflict and emotional demands are related to outcomes such as frequent short-term sick leave (Stapelfeldt et al., 2013) and burn-out (Borritz et al., 2005; Piko, 2006). This study also investigates three job resources, namely, autonomy, supervisor support and social community at work. Autonomy has been widely studied and recognized as an important variable for organizational well-being and performance (Nielsen et al., 2017). While supervisor support is about the degree to which the employee experiences instrumental or emotional support from his/her supervisor, social community has to do with a more "general perception of community spirit and reciprocity between colleagues sharing the same workplace" (Francioli et al., 2018, p. 891).

The theory of salutogenesis aims to explain the sources of health. The core of this theory is the concept of SOC, which refers to a global orientation to view one's internal and external environments as comprehensible, manageable and meaningful (Antonovsky, 1979, 1987). According to salutogenesis, SOC is essential for having the ability and capacity to understand and find meaning in one's situation to obtain better health. SOC enables people to identify and reflect on their internal and external resources and use them to cope with stressors and find solutions (Eriksson & Lindström, 2006). Studies have shown that SOC is related to work-related outcomes such as occupational well-being (Feldt, Kinnunen, & Mauno, 2000), work engagement (Vogt, Hakanen, Jenny, & Bauer, 2016), fewer stress symptoms (Albertsen, Nielsen, & Borg, 2001) and lower absence rates (Kivimäki et al., 1997). Strümpfer and Mlonzi (2001) reported a weak, although significant, correlation between SOC and organizational commitment.

More recently, a work-related SOC concept (work-SOC) was proposed, where the three dimensions were assumed to reflect aspects of an individual's current work situation (Vogt et al., 2013). Comprehensibility reflects a work situation perceived as structured, consistent and clear; manageability is the perception of having adequate resources available to cope with job demands; and meaningfulness involves seeing work as worthy of commitment and involvement (Vogt et al., 2013). In addition to the work environment, individual characteristics and previous experiences are thought to influence the perception of these dimensions, which means that work-SOC is theoretically more sensitive to change than the global SOC. In addition, work-SOC seems to be a better predictor for work engagement than the global SOC (van der Westhuizen, 2018) and it is assumed that this is the case for other work-related outcomes as well.

It has been argued that work-SOC and the associated salutogenic theory might contribute to the JD-R model with a more explicit focus

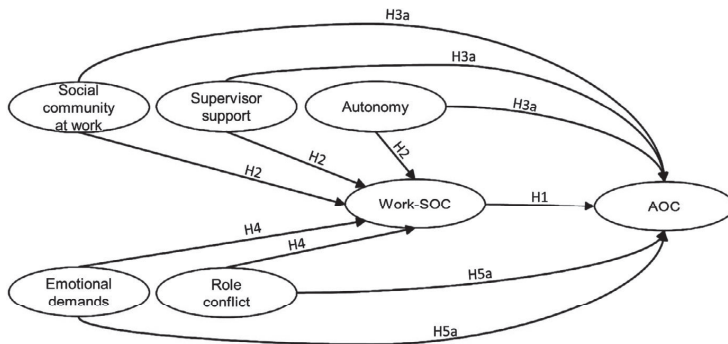


FIGURE 1 Hypothesized relationships between the study variables

on health; this focus would be not only on health impairment but also on the path from job resources to positive outcomes (Brauchli, Jenny, Füllemann, & Bauer, 2015; Jenny, Bauer, Vinje, Vogt, & Torp, 2017). It is assumed that job demands and job resources have negative and positive influences, respectively, on work-SOC, which subsequently affect health- and work-related outcomes. Vogt et al. (2013) found that work-SOC acted as a partial mediator of the cross-sectional relationships between job demands and exhaustion and between job resources and work engagement. Based on this, we assume that work-SOC will also have a positive influence on AOC and that work-SOC is a mediator between work characteristics (job demands and resources) and AOC.

The aim of the current study was to investigate whether a health-promoting work environment enhances AOC among nursing home employees in Norway. More specifically, we investigate how AOC is influenced by job demands (role conflict and emotional demands), job resources (autonomy, supervisor support and social community at work) and work-SOC.

Based on the background that has been presented, the relationships between the study variables are hypothesized as follows (see also Figure 1):

H1: Work-SOC is positively related to AOC.

H2: Job resources (autonomy, supervisor support and social community at work) are positively related to work-SOC.

H3: Job resources (autonomy, supervisor support and social community at work) are positively related to AOC (a) directly and (b) indirectly through work-SOC.

H4: Job demands (emotional demands and role conflict) are negatively related to work-SOC.

H5: Job demands (emotional demands and role conflict) are negatively related to AOC (a) directly and (b) indirectly through work-SOC.

2 | METHODS

2.1 | Design

A longitudinal design was applied in the current study.

2.2 | Data collection procedure

The data for the present study were collected in two waves, with a 1-year interval, among employees from 43 nursing homes in two Norwegian municipalities. In regard to potential seasonal variations in the nursing homes, data collection was set to the same period each year. The same data collection procedure was followed at both time points. Contact persons in each nursing home distributed e-mails with information about the study and invitations to participate in an online survey. The survey was completed by 558 employees at the first time point (T1) and 515 at the second time point (T2). Responses at T1 and T2 were linked by personal codes created by the respondents, leaving a sample of 166 employees who completed the survey at both time points.

Based on the numbers of invitations sent (2,835 and 3,221 at T1 and T2, respectively), the response rates were estimated to be 20% and 16%, respectively. However, the response rates were probably higher in reality. Some contact persons noted that past employees might have received invitations because their mailing lists were not recently updated and that some employees might have received multiple invitations because of multiple employments. In addition, the nursing homes seemed to have different practices regarding e-mail communication, meaning that we could not be certain that all invitations were read.

2.3 | Participants

In the current study, the cross-sectional sample with answers from T1 ($N = 558$) was applied, in addition to the longitudinal sample ($N = 166$). In the following, characteristics are presented for the two samples (cross-sectional/longitudinal). A total of 90%/92% were women, and the age ranges were 17–72/20–66 years (mean = 42.1,

SD: 13.1/mean = 44.9, SD: 12.1). A large female majority is representative of the population according to the statistics on health and social services in Norway (Statistics Norway, 2019). Professional groups were distributed between nurses (40%/45%), assistant nurses (38%/38%), other health- and social-related personnel (19%/13%) and staff and support functions (2%/4%). Employees had a mean of 29.4/30.9 (SD: 9.6/8.2) work hours per week and tenure of 7.6/9.0 years (SD: 7.2/7.3) at their current workplace and 17%/19% of employees had leadership responsibilities.

2.4 | Instruments

Job demands were measured by two five-point scales from the Copenhagen Psychosocial Questionnaire (COPSOQ; Pejtersen, Kristensen, Borg, & Bjorner, 2010), which have shown good properties for application within the JD-R framework (Berthelsen, Hakanen, & Westerland, 2018). *Emotional demands* were measured by four items (e.g., "Does your work put you in emotionally disturbing situations?"). *Role conflict* was measured by four items (e.g., "Are contradictory demands placed on you at work?").

Job resources were measured by three five-point scales. Two were from the COPSOQ (Pejtersen et al., 2010). *Social community at work* was measured by three items (e.g., "Is there a good atmosphere between you and your colleagues?"). *Supervisor support* was measured by three items (e.g., "How often do you get help and support from your nearest superior?"). The third job resource, *autonomy*, was measured by a five-point scale with four items (e.g., "There is scope for me to take own initiatives in my work") by Sverke and Sjöberg (1994), based on Hackman and Oldham (1975) and Walsh, Taber, and Beehr (1980).

Work-SOC was measured using a scale where employees were asked to rate how they perceived their current job and work situation in general on a seven-point scale between bipolar adjective pairs (Bauer, Vogt, Ihauen, & Jenny, 2015; Vogt et al., 2013). The scale was treated according to a previous validation of the Norwegian translation of the scale (Grødal et al., 2018) with three items representing comprehensibility (e.g., "Structured - Unstructured"), two items representing manageability (e.g., "Easy to influence - Impossible to influence") and three items representing meaningfulness (e.g., "Meaningless - Meaningful").

AOC was measured by a scale from the COPSOQ (Pejtersen et al., 2010). Four items (e.g., "Do you enjoy telling others about your place of work?") were rated on a five-point scale (from "To a very large extent" to "To a very small extent").

2.5 | Analysis

All statistical analyses in the current study were conducted using Stata version 15.1 (StataCorp, 2017). Hypotheses 1–5 were tested by means of a structural equation modelling (SEM) approach with maximum likelihood estimation. Missing values were deleted listwise in all analyses. In addition to chi-square (χ^2), the following criteria were used to evaluate goodness of fit: root mean squared error of

approximation (RMSEA) $<.06$, standardized root mean squared residual (SRMR) $<.08$ and comparative fit index (CFI) and Tucker–Lewis index (TLI) close to $.95$. These values were not regarded as exact cut-off values because these criteria may be overly strict under conditions of non-robust data and small samples (Hu & Bentler, 1999), as was apparent, especially, in the longitudinal sample in the current study. The direct, indirect and total effects were estimated for six models: one cross-sectional model and five separate longitudinal models for each job demand and job resource. The rationale behind this approach was that the longitudinal sample size was too small to test the full model and model complexity (i.e., number of estimated parameters) therefore had to be minimized to obtain adequate power. The full model was tested with cross-sectional data to investigate the hypotheses taking all job resources and job demands into account.

Prior to investigating the hypotheses, the measurement models were specified and tested according to our data. The cross-sectional model (M1), using data from T1, included AOC and the specific job demands and job resources indicated by their respective scale items, as well as work-SOC indicated by the mean scores of the subscales of comprehensibility, manageability and meaningfulness as suggested by Grødal et al. (2018). Each longitudinal model (M2–M6) included one of the specific job demands/resources indicated by its respective scale items at T1, AOC measured at both T1 and T2 with respective scale items as indicators and work-SOC change indicated by the standardized residual scores of comprehensibility, manageability and meaningfulness. The standardized residuals were obtained by regressing the mean scores at T2 on their corresponding scores at T1. The residual scores indicate whether employees' work-SOC has changed more (positive values) or less (negative values) than expected based on their score at T1 (Cronbach & Furby, 1970). This approach has been used in previous studies with similar variables and designs (Schaufeli, Bakker, & van Rhenen, 2009; Tims, Bakker, & Derks, 2013).

Some modifications were made to ensure the quality of the measurement models. Due to convergent validity problems with the latent constructs of role conflict (average variance extracted, AVE = 0.492) and emotional demands (AVE = 0.496), the models were adjusted by removing two items: the role conflict item, "Do you do things at work, which are accepted by some people but not by others" and the emotional demands item, "Do you have to relate to other people's personal problems as part of your work?" These were the indicators with the poorest factor loadings on their respective latent variables, and modification indices suggested cross-loadings on some of the other variables in the model. Theoretically, the removed role conflict item was interpreted to differ from the other three because it says something about how other people judge employees' actions at work, while the other items ask more directly about how the employee himself or herself perceives the conflicting demands that are placed on them. Regarding the removed emotional demands item, this item seemed to differ in that it asked about specific situations, while the remaining items concerned whether work was emotionally demanding in a more general sense. Lastly, the measurement errors of comprehensibility and manageability were allowed to covary based on strong suggestions from

TABLE 1 Means (*M*), standard deviations (*SD*), internal consistencies and correlations between the study variables in the cross-sectional sample (*N* = 558)

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. AOC T1	3.73	0.88	(.83)						
2. Work-SOC T1	5.06	1.14	.58***	(.87)					
3. Autonomy T1	3.45	0.75	.50***	.47***	(.83)				
4. Supervisor support T1	3.40	0.95	.56***	.40***	.42***	(.85)			
5. Social community at work T1	4.23	0.66	.52***	.43***	.34***	.43***	(.80)		
6. Emotional demands T1	3.31	0.68	-.22***	-.17***	-.20***	-.12**	-.09*	(.76)	
7. Role conflict T1	2.56	0.79	-.44***	-.33***	-.30***	-.34***	-.31***	.45***	(.78)

Note: Internal consistencies are Cronbach's alphas (α) in diagonals. Correlations are Pearson's *r*.

Abbreviations: AOC, affective organizational commitment; work-SOC, work-related sense of coherence.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

modification indices in all models, also supported by the results from a previous validation indicating poor discriminant validity between these dimensions of work-SOC (Grødal et al., 2018).

2.6 | Ethics

The Norwegian Centre for Research Data, Data Protection Services, was notified of the project. Prior to this, an application was sent to the Regional Committee for Medical and Health Research Ethics, who declared that approval for the current project was not required

according to the Norwegian Health Research Act. Participation in the study was voluntary, and the employees gave their consent by completing the survey. Data were kept confidential and will be anonymized at the end of the project.

3 | RESULTS

To check for potential attrition bias, dropouts (considered those who answered the survey at T1 but not T2) and those who

TABLE 2 Means (*M*), standard deviations (*SD*), internal consistencies and correlations between the study variables in the longitudinal sample (*N* = 166)

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. AOC T1	3.84	0.88	(.86)									
2. Work-SOC T1	5.34	1.13	.70***	(.87)								
3. Autonomy T1	3.57	0.71	.51***	.41***	(.82)							
4. Supervisor support T1	3.51	0.94	.68***	.49***	.52***	(.85)						
5. Social community at work T1	4.33	0.57	.58***	.47***	.40***	.50***	(.78)					
6. Emotional demands T1	3.31	0.72	-.27***	-.29**	-.24**	-.15	-.23**	(.81)				
7. Role conflict T1	2.46	0.73	-.54***	-.37***	-.33***	-.36***	-.37***	.51***	(.76)			
8. AOC T2	3.82	0.89	.79***	.60***	.52***	.56***	.53***	-.23**	-.49***	(.86)		
9. Work-SOC T2	5.41	1.10	.56***	.59***	.41***	.42***	.33***	-.28***	-.42***	.68***	(.87)	
10. Work-SOC change	0.00	1.00	.20**	-.00	.18*	.17*	.06	-.19*	-.23**	.41***	.81***	(.81)

Note: Internal consistencies are Cronbach's alphas (α) in diagonals. Correlations are Pearson's *r*. Work-SOC change represents standardized residual scores obtained by regressing work-SOC T2 on work-SOC T1.

Abbreviations: AOC, affective organizational commitment; work-SOC, work-related sense of coherence.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

answered the survey at both time points were compared based on the relevant variables. Dropouts were significantly younger ($t(525) = -3.46, p < .001; d = -0.32$) and had fewer contracted work hours per week ($t(510) = -2.35, p < .05; d = -0.22$). Dropouts also scored lower on work-SOC ($t(525) = -3.70, p < .001; d = -0.35$), autonomy ($t(549) = -2.62, p < .01; d = -0.24$) and social community at work ($t(553) = -2.51, p < .01; d = -0.18$). No significant differences were found regarding AOC, supervisor support, emotional demands and role conflict.

Tables 1 and 2 show the means, standard deviations, internal consistencies and bivariate correlations (Pearson's r) among the study variables for both samples. All bivariate correlations relevant to the study hypotheses were significant and in the expected directions. The goodness of fit of the study models is presented in Table 3. Overall, the models did not show optimal, though acceptable, fit to the data because there were some deviations from the aforementioned cut-offs.

Table 4 displays the standardized estimates of the direct and indirect effects obtained from the cross-sectional and longitudinal analyses. The cross-sectional and longitudinal analyses were consistent in finding positive relationships between work-SOC and AOC (H1) and between job resources and work-SOC (H2), whereas the other hypotheses received partial support. None of the job demands or job resources were directly associated with T2 AOC when T1 AOC and work-SOC change were controlled for (H3a and H5a). However, the cross-sectional analysis showed that supervisor support and social community at work were significantly positively related to AOC, while role conflict was negatively related to AOC (H3a and H5a). Emotional demands and role conflict were significantly negatively related to work-SOC in the longitudinal analyses, while this finding only pertained to role conflict in the cross-sectional analysis where the other work characteristics were controlled for (H4). The cross-sectional analyses showed that all

three job resources, but none of the job demands, had indirect effects on AOC through work-SOC (H3b and H5b). The longitudinal analyses supported the indirect effects of autonomy, supervisor support, emotional demands and role conflict but not social community at work (H3a and H3b).

4 | DISCUSSION

The aim of the current study was to investigate whether AOC among nursing home employees in Norway is enhanced by a health-promoting work environment, conceptualized by high levels of job resources and work-SOC and low levels of job demands. The main finding was that work-SOC was consistently found to be strongly positively related to AOC. Additionally, the results fully supported that job resources were positively related to work-SOC and that role conflict was negatively related to work-SOC. However, none of the job demands or job resources were significantly related to AOC at T2 when AOC at T1 and work-SOC change were controlled for. Only cross-sectional relationships regarding supervisor support, social community at work and role conflict were detected, while autonomy and emotional demands were not directly related to AOC at all. The indirect effects of work-SOC on AOC were consistent regarding autonomy and supervisor support but more unclear regarding the other variables. The main focus of the discussion will be on the strong support for work-SOC as a predictor and precursor of AOC, in addition to the case of emotional demands, which yielded some unexpected results.

4.1 | Main findings and theoretical implications

The results of the present study consistently and strongly suggest that work-SOC is a better predictor for both current and future AOC than

TABLE 3 Goodness of fit of structural equation models

	N	χ^2 (df)	χ^2/df	RMSEA	SRMR	CFI	TLI
M1 cross-sectional	483	482.513 (208)***	2.320	.052	.054	.949	.938
M2 longitudinal, autonomy	151	159.540 (80)***	1.994	.081	.068	.943	.925
M3 longitudinal, supervisor support	150	113.752 (67)***	1.728	.068	.053	.966	.954
M4 longitudinal, social community at work	148	115.266 (67)***	1.720	.070	.070	.962	.948
M5 longitudinal, emotional demands	152	128.493 (67)***	1.918	.078	.105	.952	.935
M6 longitudinal, role conflict	151	113.763 (67)***	1.698	.068	.057	.964	.951

Abbreviations: CFI, comparative fit index; df , degrees of freedom; RMSEA, root mean squared error of approximation; SRMR, standard root mean squared residual; TLI, Tucker-Lewis index; χ^2 , chi-squared.

*** $p < .001$.

TABLE 4 Standardized estimates of direct and indirect effects

Path		Model					
Endogenous variable	Exogenous variable	1	2	3	4	5	6
Direct effects							
Work-SOC ←	Autonomy	.441***	.476**				
	Supervisor support	.158*		.436**			
	Social community at work	.258***			.420*		
	Emotional demands	-.005				-.345*	
	Role conflict	-.172*					-.503**
AOC ←	AOC		.701***	.828***	.717***	.811***	.754***
	Work-SOC	.585***	.532*	.559*	.516*	.550**	.581*
	Autonomy	.013	-.049				
	Supervisor support	.152*		-.237			
	Social community at work	.151*			-.049		
	Emotional demands	.060				.150	
	Role conflict	-.143*					.159
Indirect effects							
AOC ←	Autonomy	.258*	.253*				
	Supervisor support	.099*		.244*			
	Social community at work	.151*			.217		
	Emotional demands	-.003				-.190*	
	Role conflict	-.101					-.292*

Note: Model 1 analysed with cross-sectional data from T1. Models 2–6 analysed with longitudinal data with job demands and job resources from T1, work-SOC change from T1–T2 and AOC from T1–T2. Indirect effects via work-SOC.

Abbreviations: AOC, affective organizational change; work-SOC, work-related sense of coherence.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

single job resources and job demands. The longitudinal analyses showed that work-SOC was actually the only significant predictor of AOC when AOC at T1 was controlled for. This result indicates that work-SOC is important in the development of AOC and is a relevant indicator to consider for nursing home leaders. However, all hypotheses in the study model were not entirely confirmed, which means that the theoretical explanations for the relationship between work-SOC and AOC need to be discussed.

Based on the JD-R model and salutogenic theory, it was hypothesized that work characteristics would be related to work-SOC, which further affected AOC. A positive influence was assumed through a motivational or salutogenic pathway where job resources affected AOC directly and indirectly through work-SOC. A corresponding negative influence was assumed, with job demands as the starting point. To a certain degree, these propositions were confirmed. However, none of the investigated work characteristics seemed to be directly related to AOC at a later stage. One explanation can be that the variance of the single work characteristics that are relevant to AOC is shared by the more comprehensive factor of work-SOC, and thereby, such characteristics lose their predictive power.

Additionally, work-SOC, in the framework of the JD-R model, could more accurately be labelled as a personal resource than as its own category, as was first assumed (Jenny et al., 2017). Personal resources have been defined as the degree to which people believe to have control over their environment and are thought to have reciprocal positive effects on job resources (Bakker & Demerouti, 2017). In addition, personal resources are thought to work in the same manner as job resources in creating positive effects and buffering the negative effects of job demands. These propositions were not tested in this study but seem plausible and cannot be ruled out. The results of a previous study found that the relationship between emotional demands and work engagement was weak or not significant among employees with a high degree of personal resources (Xanthopoulou, Bakker, & Fischbach, 2013), and the sample in the current study indeed had a high mean score on work-SOC.

These considerations also start the discussion regarding emotional demands, which, contrary to the hypotheses, did not seem to have any effect on either work-SOC or AOC. The exception was a significant negative relationship with work-SOC in the longitudinal analysis, which did not account for the other job demands or job

resources. The lack of relationship between emotional demands and AOC replicates a previous finding by Clausen and Borg (2010), who also conducted their study among employees in eldercare. They suggested that emotionally demanding work may also be characterized by factors contributing positively to AOC, such as meaning in work or intrinsic job rewards (Clausen & Borg, 2010), which might be a plausible explanation considering our results, which indicated that work-SOC (incorporating meaningfulness) had a weaker negative relationship with emotional demands than role conflict. In fact, the cross-sectional SEM did not show any relationship between emotional demands and work-SOC, which could imply that different effects had balanced each other out.

There are several plausible explanations for the lack of relationships between emotional demands and AOC. First, one explanation might be that employees in the healthcare sector expect to meet emotional demands and that the negative effects are less apparent than they would be if the demands were unexpected. Second, since emotional demands are inherent in healthcare work, one explanation might be that resources to counteract their negative effects are more likely to be in place. For example, our results show that employees score particularly high on social community at work. We also see that the bivariate correlations between emotional demands and supervisor support are not significant among the longitudinal sample, while the JD-R model suggests that the relationships between job demands and job resources should be negative (Bakker & Demerouti, 2007). Third, another explanation might be that nursing home employees perceive emotional demands not only as hindrances but also as challenges (Zapf, 2002). Challenging demands do not only induce strain but also provide opportunities for performance and accomplishment (Webster, Beehr, & Love, 2011), which in turn might be positively related to AOC. The differentiation between hindrance and challenging job demands is yet to be incorporated into the JD-R model because of a lack of knowledge (Bakker & Demerouti, 2017), and the current study highlights that these mechanisms should be investigated more in future research.

4.2 | Limitations

The use of longitudinal data, validated instruments and advanced statistics was among the strengths of this study. However, there were also limitations that must be taken into account. First, SEM is a method that requires relatively large samples (Kline, 2011). Optimally, the full model should have been tested with longitudinal data, but relatively few respondents answered the survey at both time points. We therefore chose to test the full model with cross-sectional data, while longitudinal data were used by testing separate models for each job demand and job resource. A limitation of this approach is that the other job demands and job resources were not controlled for in the longitudinal analyses. The sample size and corresponding small group sizes of the 43 nursing homes were also a reason for disregarding a multilevel analysis approach, which was relevant given the nested data structure.

Second, the response rate was low, which is a common challenge in studies among health personnel (Fida, Laschinger, & Leiter, 2018; van der Heijden, Demerouti, Bakker, & Hasselhorn, 2008; Mark & Smith, 2012), possibly affecting the generalizability of the findings. Attrition bias might have affected the results to a certain degree. Dropouts scored lower than respondents who participated at both time points, concerning the variables of work-SOC, autonomy and social community at work, potentially due to a healthy worker effect. Additionally, dropouts were younger and had fewer contracted work hours, meaning that turnover could be a likely explanation (Hayes et al., 2012). However, we had no data to test this assumption. Third, all data were based on self-reports, meaning that common method bias might be present (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). On the other hand, time lags might have reduced this effect (Doty & Glick, 1998). Fourth, even the longitudinal design does not guarantee that causal inferences can be made from this study (Spector, 2019). However, the combined cross-sectional and longitudinal approaches contribute to extend the understanding of potential mechanisms explaining the relationships between the study variables.

5 | CONCLUSION

Taken together, the results of this study provide support for the assumption that work-SOC enhances AOC among nursing home employees. However, the influence of specific job demands and resources in this context seems more unclear. Suggestions for future research are to clarify the role of emotional demands and how they might potentially contribute to both positive and negative outcomes for employees and to look more closely at the mechanisms surrounding the development of work-SOC and what explains its association with AOC.

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CONFLICT OF INTEREST

We have no conflict of interest to declare.

AUTHOR CONTRIBUTIONS

KG, STI, BA and GH: Substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; drafting the manuscript or revising it critically for important intellectual content; approval of the version to be published; and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.

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Appendix A

Information letter sent to respondents at first measurement point (T1)



Senter for
helsefremmende forskning



Forespørsel om deltakelse i forskningsprosjekt Spørreundersøkelse om arbeidsmiljø i sykehjem

Bakgrunn og hensikt

I denne studien ønsker vi å se på mekanismer i det psykososiale arbeidsmiljøet ved sykehjem/helsehus/velferdssenter i Trondheim og Bergen, og hvordan sertifisering som Livsgledesykehjem har betydning for de ansatte. Formålet er å bidra til kunnskap om hva som bidrar til gode og helsefremmende arbeidsmiljøer på slike arbeidsplasser. Alle ansatte i sykehjem/helsehus/velferdssentre i disse kommunene blir forespurt om å delta.

Institutt for sykepleievitenskap ved Høgskolen i Sør-Trøndelag har ansvar for dette prosjektet som finansieres med støtte fra Norges forskningsråd. Senter for helsefremmende forskning, Norges teknisk-naturvitenskapelige universitet, Trondheim kommune og Bergen kommune er samarbeidspartnere i prosjektet. Studien er i hovedsak en del av et doktorgradsprosjekt.

Hva innebærer deltakelse i studien?

I denne delen av studien innebærer deltakelse besvarelse av en spørreundersøkelse. Det er også planlagt en oppfølgingsundersøkelse høsten 2016, og da vil det komme forespørsel på samme måte som for denne runden. Noen av de ansatte vil i tillegg bli forespurt om å delta i intervju, uten at dette kobles mot besvarelsene fra spørreundersøkelsen. De som deltar i intervju vil få ytterligere informasjon om dette.

Hva skjer med informasjonen om deg?

Alle opplysninger som samles inn ved bruk av spørreskjemaet vil behandles konfidensielt. IP-adresser vil bli registrert. Deltagernes besvarelser vil også kobles mot hvilket sykehjem/helsehus/velferdssenter den enkelte er ansatt ved, men disse enhetene vil ikke bli navngitt ved publisering av resultater fra studien. Det blir spurt om opplysninger som fødselsår, kjønn, yrkestittel etc., men det vil ikke være mulig å gjenkjenne hver enkelt deltager når resultatene fra forskningen publiseres.

Etter planen vil prosjektet avsluttes innen 31.08.2019. Datamaterialet vil da anonymiseres.

Frivillig deltakelse

Det er frivillig å delta i denne studien, og du kan når som helst trekke deg uten å oppgi årsak. Dette vil ikke få betydning for din arbeidssituasjon. Du bekrefter at du har fått informasjon om studien og samtykker til å delta ved å fylle ut og sende inn spørreskjemaet.

Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.

Dersom du har spørsmål, ta gjerne kontakt med Karoline Grødal på e-post (karoline.grodal@hist.no) eller telefon (73412449/99227489).

Med vennlig hilsen,

Karoline Grødal, stipendiat

og Beate André, førsteamanuensis

Appendix B

Questionnaire used at first measurement point (T1)



Senter for helsefremmende forskning



Spørreundersøkelse om arbeidsmiljø i sykehjem

Velkommen

Dette er informasjon om og en forespørsel om å delta i en spørreundersøkelse i forbindelse med vår studie. Vi ønsker å se på forhold i det psykososiale arbeidsmiljøet ved sykehjem/helsehus/velferdssentre i Trondheim og Bergen, og hvordan sertifisering som Livsgledesykehjem har betydning for de ansatte. Målet er å oppnå kunnskap om hva som bidrar til gode og helsefremmende arbeidsmiljøer. Alle som er ansatt ved slike enheter i Trondheim kommune og Bergen kommune har blitt forespurt om å delta.

Det er frivillig å delta i undersøkelsen, og alle svar vil bli behandlet konfidensielt. Det vil bli spurt om opplysninger som fødselsår, kjønn, stillingstittel etc. Data vil bli anonymisert ved prosjektslutt i 2019. Studien er meldt til Personvernombundet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.

Det tar ca. 15 minutter å fylle ut skjemaet. Vennligst besvar spørsmålene i én økt, da svarene ikke blir lagret dersom du avbryter underveis. Ved å sende inn dine svar på slutten av spørreskjemaet bekrefter du at du har fått informasjon om undersøkelsen og samtykker til å delta.

Se også informasjonsskrivet som var vedlagt i e-posten sammen med lenken til denne spørreundersøkelsen. Der finner du vår kontaktinformasjon som du kan benytte dersom du lurer på noe.

Med vennlig hilsen,
Karoline Grødal og Beate André

Høgskolen i Sør-Trøndelag
Norges teknisk-naturvitenskapelige universitet
Senter for helsefremmende forskning



Senter for helsefremmende forskning



Spørreundersøkelse om arbeidsmiljø i sykehjem

Bakgrunnsinformasjon

1. Kjønn
 - Kvinne
 - Mann
2. Fødselsår (fire siffer)
3. Hva er din høyeste fullførte utdanning?
 - Grunnskole
 - Videregående skole (yrkesfaglig)
 - Videregående skole (allmennfaglig)
 - Universitet/høgskole (1-3 år)
 - Universitet/høgskole (4 år eller mer)
 - Annet, vennligst spesifiser

4. Er norsk ditt morsmål?

- Ja
 Nei



Senter for helsefremmende forskning



Spørundersøkelse om arbeidsmiljø i sykehjem

Din arbeidssituasjon

5. Vennligst skriv inn navnet på sykehjemmet der du jobber:

6. Hva er din stillingstittel?

- Sykepleier
 Helsefagarbeider/Hjelpepleier/Omsorgsarbeider
 Vernepleier
 Fysioterapeut
 Ergoterapeut
 Assistent
 Annet, vennligst spesifiser

7. Har du lederstilling? (Eks: enhetsleder, fagleder, styrer, avdelingsleder)

- Ja
 Nei

8. Jobber du i et sertifisert Livsgledesykehjem, eller er et som har vært/er i ferd med å bli sertifisert som Livsgledesykehjem?

- Ja
 Nei

9. Hvor mange år har du jobbet på din nåværende arbeidsplass?

10. Hva er din avtalte arbeidstid i gjennomsnitt per uke?

Oppgi svar i antall timer

11. Hva er din faktiske arbeidstid i gjennomsnitt per uke?

Oppgi svar i antall timer



Senter for helsefremmende forskning



Livsgledesykehjem

12. Utsagnene nedenfor handler om ulike sider ved prosessen med å bli sertifisert som Livsgledesykehjem. Tenk på sertifiseringsprosessen på *din arbeidsplass*. Dersom sykehjemmet ikke har blitt sertifisert enda, tenk på hvordan du har opplevd prosessen fram til nå. Hvor enig eller uenig du er i de følgende påstandene?

	Svært uenig	Uenig	Verken eller	Enig	Svært enig
Jeg så fram til endringene som skulle skje med livsgledesertifiseringen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg var klar til å akseptere endringene som skulle komme i sammenheng med livsgledesertifiseringen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg følte meg sikker på at jeg kunne bruke sertifiseringsprosessen til å forbedre mine arbeidsforhold	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg hadde høye forventninger til at sertifiseringsprosessen skulle bidra til å forbedre mine arbeidsforhold	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Min nærmeste leder har gjort mye for å involvere medarbeiderne gjennom sertifiseringsprosessen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Min nærmeste leder har kommunisert tydelig hva som var fordelene med å bli sertifisert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Min nærmeste leder har delt alt han/hun vet om sertifiseringsordningen med medarbeiderne	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Min nærmeste leder har tatt ansvar for prosessen med å bli et Livsgledesykehjem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Min nærmeste leder har prioritert å arbeide for å bli sertifisert som Livsgledesykehjem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Min nærmeste leder har vært positiv til sertifiseringen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg har hatt muligheten til å snakke med min nærmeste leder om hvilke konsekvenser endringene vil ha for meg	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informasjon om sertifiseringsprosessen har vært lett tilgjengelig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gjennom sertifiseringsprosessen fikk vi mulighet til å rette opp i noen dårlige arbeidsmetoder/prosedyrer vi hadde tilegnet oss	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Etter sertifiseringsprosessen har jeg endret min holdning til hvordan vi skal arbeide med å fremme livsglede for beboerne	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg har endret rutiner og prosedyrer etter at vi ble sertifisert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gjennom sertifiseringsprosessen har vi hatt en åpen diskusjon om hvilke gjøremåter vi ønsker å endre på og hvilke vi ønsker å fortsette med	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg var involvert i hvordan vi skulle implementere de ni livsgledekriteriene på min avdeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg hadde muligheten til å ytre min mening om livsgledesertifiseringen før den ble igangsatt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg var med på å påvirke hvordan livsgledeprosessen skulle være i min organisasjon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ledelsen har gjort en stor innsats når det gjelder å involvere de ansatte i sertifiseringsprosessen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ledelsen har tatt hensyn til at folk reagerer forskjellig på endringene	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ledelsen har kommunisert på en måte som åpner for dialog om endringene	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forskjellige ansvarsområder og oppgaver har raskt blitt avklart	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I de fleste tilfeller har vi visst hvem som har ansvaret for forskjellige oppgaver	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg har fått nødvendig opplæring når det gjelder nye roller og oppgaver	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- 13.

Veldig utilfreds Utilfreds Verken eller Tilfreds Veldig tilfreds

Alt i alt, hvor tilfreds er du med prosessen mot å bli sertifisert som Livsglede sykehjem?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alt i alt, hvor tilfreds er du med å jobbe i et sertifisert Livsglede sykehjem?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Senter for helsefremmende forskning



Spørreundersøkelse om arbeidsmiljø i sykehjem

Ditt forhold til jobben

14. Hvordan opplever du, generelt, din nåværende jobb og arbeidsplass?

	1	2	3	4	5	6	7	
Håndterlig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Uhåndterlig
Meningsløs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Meningsfull
Strukturert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Ustrukturert
Lett å påvirke	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Umulig å påvirke
Betydningsløs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Betydningsfull
Oversiktlig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Uoversiktlig
Kontrollerbar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Ukontrollerbar
Ikke givende	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Givende
Forsutsigelig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Uforutsigelig

15. I det følgende presenteres ni utsagn om følelser du kan ha i forhold til jobben din. For hvert utsagn skal du ta stilling til hvor ofte du føler det på denne måten. Velg det svaralternativet som best beskriver dine følelser.

	Aldri det siste året	Noen ganger det siste året	Månedlig	Noen ganger i måneden	Ukentlig	Noen ganger i uken	Daglig
Jeg er full av energi i arbeidet mitt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg føler meg sterk og energisk på jobben	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg er entusiastisk i jobben min	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg blir inspirert av jobben min	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Når jeg står opp om morgenen, ser jeg frem til å gå på jobben	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg føler meg glad når jeg er fordypet i arbeidet mitt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg er stolt av det arbeidet jeg gjør	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg er oppslukt av arbeidet mitt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg blir fullstendig revet med av arbeidet mitt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Når du tenker på jobben din generelt, hvor tilfreds er du med..

	Svært utilfreds	Utilfreds	Verken eller	Tilfreds	Svært tilfreds
Dine fremtidsutsikter i jobben?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dine fysiske arbeidsforhold?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Måten du utnytter dine evner på?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jobben din som helhet, alt tatt i betraktning?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Det psykososiale arbeidsmiljøet

17. Følgende spørsmål handler om hvordan du opplever det psykososiale arbeidsmiljøet. Kryss av for det svaret som passer best for deg og ditt arbeid.

	Alltid	Ofte	Noen ganger	Sjelden	Aldri/nesten aldri
Setter arbeidet ditt deg i følelsesmessig belastende situasjoner?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Må du forholde deg til andre menneskers personlige problemer i arbeidet ditt?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er det god stemning mellom deg og dine kolleger?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Er samarbeidet bra mellom kollegene på din arbeidsplass?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Føler du deg som en del av et fellesskap på din arbeidsplass?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hvor ofte er din nærmeste overordnede villig til å lytte til dine arbeidsrelaterte problemer?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hvor ofte får du hjelp og støtte fra din nærmeste overordnede?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hvor ofte snakker din nærmeste overordnede med deg om hvor bra du utfører arbeidet ditt?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hvor ofte får du hjelp og støtte fra dine kolleger?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hvor ofte er dine kolleger villige til å lytte til dine arbeidsrelaterte problemer?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hvor ofte snakker dine kolleger med deg om hvor bra du utfører arbeidet ditt?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hvor ofte vurderer du å søke jobb et annet sted?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Følgende spørsmål handler om hvordan du opplever det psykososiale arbeidsmiljøet. Kryss av for det svaret som passer best for deg og ditt arbeid.

	I svært stor grad	I stor grad	I noen grad	I liten grad	I svært liten grad
Er arbeidet ditt følelsesmessig krevende?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blir du følelsesmessig berørt av arbeidet ditt?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gjør du noe i arbeidet ditt som aksepteres av noen personer, men ikke av andre?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blir det stilt motstridende krav til deg i arbeidet ditt?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Må du noen ganger gjøre noe som egentlig burde blitt gjort annerledes?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Må du noen ganger gjøre ting i arbeidet ditt som virker unødvendige?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Har arbeidet ditt tydelige målsettinger?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vet du nøyaktig hva som er dine ansvarsområder?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vet du akkurat hva som forventes av deg i ditt arbeid?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liker du å fortelle andre om din arbeidsplass?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Synes du at din arbeidsplass har stor betydning for deg?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ville du ha anbefalt en god venn å søke på en stilling på din arbeidsplass?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Hvor enig eller uenig er du i de følgende utsagnene om jobben din?

	Svært uenig	Uenig	Verken eller	Enig	Svært enig
--	-------------	-------	--------------	------	------------

Jeg har tilstrekkelig med tid til å gjøre det som forventes av meg i jobben min	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Det skjer ganske ofte at jeg må jobbe under sterkt tidspress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg har ofte for mye å gjøre på jobb	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg har tilstrekkelig innflytelse i mitt arbeid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg kan selv bestemme hvordan jeg skal organisere arbeidet mitt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Det finnes rom for at jeg kan ta egne initiativ i jobben min	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg styrer selv min arbeidssituasjon i den retningen jeg ønsker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hos oss har vi alltid jobbet for å skape livsglede for beboerne	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Min nærmeste leder mener at vi alltid har jobbet for å fremme livsglede for beboerne	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Senter for helsefremmende forskning



Spørreundersøkelse om arbeidsmiljø i sykehjem

Helse og sykefravær

20. Helse

	Dårlig	Mindre god	God	Svært god	Utmerket
Alt i alt, hvordan vil du beskrive din helse?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Hvor mange dager har du vært borte fra jobb grunnet egen sykdom i løpet av de siste 6 månedene?
(Skriv 0 hvis du ikke har hatt slikt fravær i denne perioden)

22. I hvilken grad vil du si at dette fraværet skyldtes følgende årsaker?

(Dersom du ikke har hatt fravær grunnet egen sykdom i denne perioden, vennligst la dette spørsmålet stå ubesvart)

	Ikke i det hele tatt	I liten grad	I noen grad	I stor grad	I svært stor grad
Fysisk arbeidspress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psykisk arbeidspress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Hvor mange dager har du vært på jobb med sykdom og/eller helseplager i løpet av de siste 6 månedene?

(Skriv 0 hvis du ikke har vært på jobb med sykdom og/eller helseplager i denne perioden)

24. I hvilken grad vil du si at følgende faktorer bidro til at du valgte å gå på jobb med sykdom og/eller helseplager?

(Dersom du ikke har vært på jobb med sykdom og/eller helseplager i denne perioden, vennligst la dette spørsmålet stå ubesvart)

	Ikke i det hele tatt	I liten grad	I noen grad	I stor grad	I svært stor grad
Sykdommen/helseplagene gjorde ikke at arbeidsevnen min ble svekket	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg ønsket det selv	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg følte at jeg måtte	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg fikk tilrettelagt arbeidet mitt med hensyn til helsestilstanden min	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Det var nødvendig å gå på jobb med sykdom og/eller helseplager	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Det var vanskelig å orne med vikar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg var redd for at ledelsen eller kolleger skulle beskyide meg for å skulke	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Senter for helsefremmende forskning



Spørreundersøkelse om arbeidsmiljø i sykehjem

Samarbeid

25. Nedenfor finner du 24 påstander som beskriver ulike sett av verdier som kan komme til uttrykk i samarbeidssituasjoner. For hver av disse påstander ber vi om at du tar stilling til om verdisetet uttrykkes i ditt arbeidsmiljø slik det er i dag.

Vennligst ta stilling til alle 24 leddene i skjemaet nedenfor. Se alle adjektivene på hver enkelt linje som en helhet, selv om du synes dette i enkelte tilfeller kan være vanskelig. Ikke dvel for lenge ved hver beskrivelse. Det er ditt umiddelbare inntrykk vi er interessert i.

	Sjelden	Noen ganger	Ofte
1. Engasjert, målrettet, konstruktiv i samarbeid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Prinsippfast, detaljorientert, påståelig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Uforpliktende, innfallsrik, krever oppmerksomhet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Omgjengelig, medfølelse, smidig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Motløs, oppgitt, giddeløs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Flittig, lydig, lojal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Omsorgsfull, støttende, oppmuntrende	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Effektiv, selvsikker, tør ta styringen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Lukket, selvdrevet, er seg selv nok	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Engstelig, anspent, betviler egne evner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Selvoppofrende, selvmedlidende, klagende	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Uformell, hensynsfull, ser alle som likeverdige	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Samarbeidsvillig, støttende, bifallende	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Direkte, kontrollerende, stiller store krav	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Selvsentrert, provoserende, umedgjørlig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Omtenksom, tillitsfull, tror godt om andre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Tilbaketrukket, egenrådig, likegyldig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Varsom, pålitelig, aksepterer oppgaver	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Utadvendt, åpen, anerkjennende	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Analytisk, saklig, rasjonell	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Påtrengende, tøff, konkurranseinnstilt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Følelsesstyrt, uforutsigbar, utradisjonell	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Innesluttet, avvisende, tilbakeholden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Trofast, vennlig, viser alle respekt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. Nedenfor finner du de samme 24 påstandene som i forrige spørsmål, som beskriver ulike sett av verdier som kan komme til uttrykk i samarbeidssituasjoner. Denne gangen ber vi om at du tar stilling til om verdisetet uttrykkes i det du tenker deg er ditt ideelle arbeidsmiljø.

Vennligst ta stilling til alle 24 leddene i skjemaet nedenfor. Se alle adjektivene på hver enkelt linje som en helhet, selv om du synes dette i enkelte tilfeller kan være vanskelig. Ikke dvel for lenge ved hver beskrivelse. Det er ditt umiddelbare inntrykk vi er interessert i.

	Sjelden	Noen ganger	Ofte
1. Engasjert, målrettet, konstruktiv i samarbeid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Prinsippfast, detaljorientert, påståelig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Uforpliktende, innfallsrik, krever oppmerksomhet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Omgjengelig, medfølelse, smidig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Motløs, oppgitt, giddeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Flittig, lydig, lojal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Omsorgsfull, støttende, oppmuntrende	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Effektiv, selvsikker, tør ta styringen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Lukket, selvdrevet, er seg selv nok	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Engstelig, anspent, betviler egne evner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Selvopprettende, selvmedlidende, klagende	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Uformell, hensynsfull, ser alle som likeverdige	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Samarbeidsvillig, støttende, bifallende	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Direkte, kontrollerende, stiller store krav	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Selvsentert, provoserende, umedgyrlig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Omtenksom, tillitsfull, tror godt om andre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Tilbaketrukket, egenrådig, likegyldig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Varsom, pålitelig, aksepterer oppgaver	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Utadvendt, åpen, anerkjennende	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Analytisk, saklig, rasjonell	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Påtrengende, tøff, konkurranseinnstilt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Følelsesstyrt, uforutsigbar, utradisjonell	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Innesluttet, avvisende, tilbakeholden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Trofast, vennlig, viser alle respekt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Senter for helsefremmende forskning



Spørundersøkelse om arbeidsmiljø i sykehjem

27. Vi ønsker å gjennomføre denne spørundersøkelsen i to omganger, med ett års mellomrom. For å ha mulighet til å sammenligne resultatene over tid uten å identifisere enkeltpersoner, trenger vi en personlig kode. Denne danner du selv ved å fylle inn følgende informasjon:

Hva er første bokstav i din mors første fornavn (A-Å)?

På hvilken dag i måneden er du født (01-31)?

Hva er de tre siste sifrene i telefonnummeret ditt (000-999)?

For å sende inn svarene dine og samtykke til deltagelse i spørundersøkelsen, vennligst klikk på «Ferdig».

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