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ORIGINAL ARTICLE

Emotional dissonance and sickness absence: a prospective study of employees working with clients

Anne-Marthe Rustad Indregard[1] · Stein Knardahl[1] · Morten Birkeland Nielsen[1]

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Abstract
Purpose (1) Determine the relationship between emotional dissonance and medically certified sickness absence among employees working with clients and (2) compare the impact of emotional dissonance on medically certified sickness absence with the impact of other psychological and social work factors.
Methods A sample of 7758 employees was recruited from 96 Norwegian organizations in the period 2004 to 2014, all working with clients. The study design was prospective with emotional dissonance measured at baseline and then linked to official registry data of medically certified sickness absence for the year following the survey assessment. Quantitative demands, decision demands, role clarity, role conflict, control over work intensity, and decision control were included as additional work exposures. The impact of the study variables on the presence and duration of medically certified sickness absence was investigated with a negative binomial hurdle model.
Results In the fully adjusted model, emotional dissonance and role conflict significantly predicted the presence of medically certified sickness absence. Control over work intensity and decision control were negatively related to presence of sickness absence. Only role conflict was a risk factor for the duration of sickness absence when all factors were analysed simultaneously.
Conclusion Emotional dissonance is a risk factor for the presence of medically certified sickness absence in client-driven work environments. Theoretical models of sickness absence, as well as interventions aiming to prevent sickness absence in such environments, should be aware of the effect emotional dissonance may have on employees.

Keywords Absenteeism · Employee health · Emotional labour · Psychosocial work factor

Introduction

Sickness absence is a complex phenomenon influenced by numerous factors (Duijts et al. 2007; Whitaker 2001). An increasing amount of research has linked sickness absence to psychological and social work factors (Allebeck and Mastekaasa 2004; Duijts et al. 2007; Niedhammer et al. 2013). Many of these studies are based on the demands-control model (Karasek 1979). However, there is a paucity of studies of demands pertaining to client-specific work. Since the 1970s there has been a shift in the European workforce from manufacturing to service sector employment (Dolphin 2015), with more than 60% of the European workforce working in the service sector today (Eurofound 2012). A unique feature of service jobs is the social interactions with customers or clients, and managing emotions is a job requirement for many employees in these jobs (Dormann and Zapf 2004; Zapf and Holz 2006). The last European Working Condition Survey found that over one quarter of all workers—28% of men and 35% of women—reported suppressing their feelings at work most or all of the time (Eurofound 2015). In research on employees working in the service sector, the demand-control model alone may therefore give an oversimplified picture (Soderfeldt et al. 1996; Vegchel et al. 2004). To capture the complexity of social interactions with clients, it is important to also measure aspects of emotion work in addition to general job demands (de Jonge et al. 2000; Soderfeldt

✉ Anne-Marthe Rustad Indregard
anne.m.indregard@stami.no

[1] National Institute of Occupational Health, Oslo, Norway

et al. 1996; Vegchel et al. 2004; Zapf et al. 2001). The overarching aim of this study was to determine the prospective relationship between emotional dissonance and medically certified sickness absence among employees working with clients.

The emotional aspects of client-driven work, originally described by Hochschild (1983) as emotional labour (emotion work), refers to psychological processes necessary to express emotions that are desired by the organization during interacting with clients (Zapf 2002). The emotional expression is a part of the work role and the service itself (Morris and Feldman 1996). So far studies have demonstrated that emotion work is a multidimensional construct (Zapf and Holz 2006) with both positive consequences, such as job satisfaction (Côté and Morgan 2002; Hsieh et al. 2012; Pandey and Singh 2016; Wharton 1993), and negative consequences, such as emotional exhaustion (Bakker and Heuven 2006; Dormann and Zapf 2004; Lewig and Dollard 2003; Zapf and Holz 2006; Zapf et al. 2001). According to an extensive literature review (Zapf 2002), emotional dissonance, i.e. discrepancy between felt and expressed emotions, is reported as the most distressing aspect of emotion work. Emotional dissonance occurs when an employee is required to express emotions which are not genuinely felt in the particular situation (Zapf et al. 1999).

Hochschild (1983) reported in her early work that aspects of emotion work could be linked to sickness absence. Grandey's theoretical model of emotion regulation (Grandey 2000) argue that experiencing emotional dissonance can be detrimental to the employee. Regulating emotions may act as a signal to the employee that the environment is not a good match for the individual and absenteeism may be a coping strategy to prevent being subjected to aversive situations at work (Edwards 1991; Grandey 2000). Even though there has been increased attention to how emotional aspects of client-work can affect employee health (Dormann and Zapf 2004; Zapf and Holz 2006), there is limited empirical evidence of an association between emotion work and sickness absence (Diestel and Schmidt 2010; Nguyen et al. 2013). Whereas some studies have reported that job demands arising from interactions with customers and clients are strong predictors of sickness absence (Clausen et al. 2012; Rugulies et al. 2007, 2010), others have not found this association (Aagestad et al. 2014b; Roelen et al. 2009). To our knowledge, few studies have investigated the association between emotional dissonance and sickness absence. Diestel and Schmidt (2010) investigated the interactive effects of emotional dissonance and self-control demands (impulse control, resisting distractions, and overcoming inner resistance) on sickness absence in a sample of employees working in financial services. They found no direct effect of emotional dissonance on sickness absence, only interactive effects with other self-control processes. In a recent study of hospital nurses, Nguyen et al. (2013) found *surface acting* to be directly related to increased sickness absence. Surface acting is a strategy used when the employee does not attempt to modify feelings to match the required displays. Instead, the employee conforms to the display rules by "painting on" affective displays, or faking (Grandey 2003). Surface acting as a strategy to display the appropriate emotional behaviour entails the experience of emotional dissonance (Hochschild 1983). There could be a conceptual difference in the underlying processes of emotional dissonance and surface acting that explains their divergent effects on sickness absence (Hulsheger and Schewe 2011), but it is also reasonable to assume that differences in the occupational context between nurses and office employees can explain some of the inconsistencies. The level of effort required to display appropriate emotions is likely to be different across groups of service workers (Morris and Feldman 1996).

In summary, while both theoretical models and empirical findings point to a relationship between emotional dissonance and sickness absence, there is a shortage of studies on the association, and their findings are inconclusive. To add to the understanding of the impact of emotional dissonance on sickness absence among employees working with clients, we investigated the relation between emotional dissonance and medically certified sickness absence using both the presence, (i.e. having at least one day with medically certified sickness absence within the year following the survey measurement) and duration (i.e. the number of days absent among those having at least one day absent). To compare the impact of emotional dissonance on sickness absence with the impact of other psychological and social work factors, the study also included quantitative demands, decision demands, role clarity, role conflict, control over work intensity, and decision control. These factors were included based on past research reporting associations to sickness absence (Allebeck and Mastekaasa 2004; Duijts et al. 2007; Rugulies et al. 2007).

Methods

Design and study sample

The current study was an extension of the research project: "The new work place: Work, health, and participation in the new work life", a longitudinal web-based survey carried out by the National Institute of Occupational Health (see Christensen and Knardahl 2010; Emberland and Knardahl 2015; Finne et al. 2014). The study design for the present study was prospective, with all psychological and social work factors measured at baseline, and then linked

to official registry data on sickness absence for the year following the survey assessment. For a more detailed description of the research project, see study protocol published elsewhere (Nielsen et al. 2016).

Organizations were contacted by the National Institute of Occupational Health and offered to participate in the study. Recruitment and data collection took place from November 2004 to December 2014. After information about the general study aims was given at the organizational level, each employee, excluding those on sick leave, received a letter containing information about the survey, the strict confidentiality guidelines, as well as information about the licence for data collection granted by the Norwegian Data Inspectorate. Each employee received a unique access code to the web-based questionnaire. A paper version of the questionnaire was sent out if requested in advance. The organizations, which employees were recruited from, represented a wide range of occupational sectors including healthcare, education, government and public administration, engineering, business and industry. A detailed description of the recruitment has been published elsewhere (Christensen and Knardahl 2010).

A total of 30,945 adult employees in a full time or part time position, from 96 organizations, were invited to participate in the survey. Altogether 15,302 persons responded (response rate: 49.4%). In the present study, only employees who reported working with clients and who answered the items measuring emotional dissonance were included (n = 10,781). Of these, 7758 (71.6%) respondents permitted linking survey data to registry data on sickness absence. About 85% of the sample responded to the survey using the electronic survey form.

Characteristics of the study sample are presented in Table 1. The study sample consisted of more women (59.7%) than men (40.3%), and the mean age was 42.7 [standard deviation (SD) 10.59]. About 52% had minimum 13 years of education, 82.4% were permanently employed, and the majority did not have management responsibilities (82.6%). About 84.2% had direct contact (face-to-face) with clients, while 15.8% had mostly indirect contact (phone, e-mail). Occupations were classified according to the standard classification of occupations developed by Statistics Norway (STYRK; http://www.ssb.no); based on the International Standard Classification of Occupations (ISCO-88). The three largest occupational groups among all employees were *service workers and shop and market sales workers* (28.5%), *technicians and associate professionals* (27.3%), and *professionals* (24.8%). Of all employees, 39.9% had at least one day with medically certified sickness absence within the year following the survey measurement. Significant differences in demographical characteristics were observed between employees with no medically certified sickness absence and employees having at least one day of medically certified sickness absence (Table 1).

Sickness absence

Information on medically certified sickness absence was accessed through the Norwegian Labour and Welfare Administration (NAV). The registry provides complete registrations of all medically certified sickness absence from the first day absent, including the length and medical diagnosis. The registry should be accurate since correct registration is required for the transfer of payments by the social insurance scheme. We aggregated data on sickness absence over a 12-month follow-up post-survey, which is consistent with previous research (Diestel and Schmidt 2010; Nguyen et al. 2013). Registry information of sickness absence was linked to the survey data by the unique 11-digit national individual identity number. The time period the employees were eligible for sickness absence was considered the same for all respondents within each company, starting from the day the electronic forms were closed. The registry was checked for inconsistencies. Overlapping or duplicate spells of sickness absence were merged.

Emotional dissonance

Emotional dissonance was measured by five items (α = 0.89) from the Frankfurt Emotion Work Scales (Zapf et al. 1999), example item: "How often in your job do you have to suppress emotions in order to appear neutral on the outside?" Responses were provided on a five-point scale with the following alternatives "1 = seldom or never", "2 = once per week", "3 = once per day", "4 = several times per day", and "5 = several times an hour". Evidence for criterion-related validation of the scale has been showed by Zapf et al. (1999). To validate the Norwegian translation of the scale, an independent back-translation to German was performed. The back-translation showed good conceptual equivalence with the original version. As the Norwegian version of the scale has not been validated previously, the psychometric properties were tested with a confirmatory factor analysis. The results from this analysis showed an acceptable fit of the model (Chi-square = <0.001, the Root Mean Square of Error Approximation (RMSEA) = 0.089, the Comparative fit index (CFI) = 0.953, the Tucker–Lewis index (TLI) = 0.938, Standardized root mean squared residual (SRMR) = 0.037).

Psychological and social work factor

In addition to emotional dissonance, we included other relevant psychological and social work factors. The following six work factors, all assessed by the General

Table 1 Characteristics of the study sample[a]

Variables	Total ($n = 7758$)		No medically certified sickness absence ($n = 4664$)		Medically certified sickness absence ($n = 3094$)		*P* value[c]
	N	(%)	*N*	(%)	*N*	(%)	
Age (*years*)							NS
<30	919	(11.8)	549	(11.8)	370	(12.0)	
30–39	2264	(29.1)	1310	(28.1)	951	(30.7)	
40–49	2378	(30.7)	1476	(31.6)	902	(29.2)	
50–59	1750	(22.6)	1048	(22.5)	702	(22.7)	
>59	450	(5.8)	281	(6.0)	169	(5.5)	
Missing data							
Sex							***
Female	4630	(59.7)	2581	(55.3)	2049	(66.2)	
Male	3128	(40.3)	2083	(44.7)	1045	(33.8)	
Classification of occupations							***
Legislators, senior officials and managers	582	(7.5)	405	(8.8)	177	(5.8)	
Professionals	1923	(24.8)	1214	(26.5)	709	(23.4)	
Technicians and associate professionals	2116	(27.3)	1297	(28.3)	819	(27.0)	
Clerks	361	(4.7)	207	(4.5)	154	(5.1)	
Service workers and shop and market sales workers	2214	(28.5)	1215	(26.5)	999	(32.9)	
Skilled agricultural and fishery workers	1	(0.0)	1	(0.0)	0	(0.0)	
Craft and related trade workers	278	(3.6)	161	(3.5)	117	(3.9)	
Plant and machine operators and assemblers	12	(0.2)	9	(0.2)	3	(0.1)	
Elementary occupations	50	(0.6)	21	(0.5)	29	(1.0)	
Armed forces and unspecified	85	(1.1)	58	(1.3)	27	(0.9)	
Missing data	136	(1.8)	76	(1.6)	60	(1.9)	
Skill level[b]							***
Equivalent of >15 years of education	1923	(24.8)	1214	(26.0)	709	(22.9)	
Equivalent of 13–15 years of education	2116	(27.3)	1297	(27.8)	819	(26.5)	
Equivalent of 10–12 years of education	2866	(23.9)	1593	(34.2)	1273	(29.0)	
Equivalent of <10 years of education	50	(0.6)	21	(0.5)	29	(0.9)	
Unspecified	667	(8.6)	463	(9.9)	204	(6.6)	
Missing data	136	(1.8)	76	(1.6)	60	(1.9)	
Work status							NS
Permanent employment	6395	(82.4)	3813	(81.8)	2582	(83.5)	
Temporary contract	357	(4.6)	223	(4.8)	134	(4.3)	
Substitute/extra	211	(2.7)	137	(2.9)	74	(2.4)	
Other	41	(0.5)	25	(0.5)	16	(0.5)	
Missing data	754	(9.7)	466	(10.0)	288	(9.3)	
Supervisory position							***
Top manager	120	(1.5)	91	(2.0)	29	(0.9)	
Middle manager	1135	(14.6)	714	(15.3)	421	(13.6)	
Do not have management	5152	(82.6)	3048	(65.4)	2104	(68.0)	
Missing data	1351	(17.4)	811	(17.4)	540	(17.5)	
Working with clients							***
Mostly indirect contact (phone, e-mail)	1225	(15.8)	779	(16.7)	446	(14.4)	
Mostly direct contact (face-to-face)	3669	(47.3)	2168	(46.5)	1501	(48.5)	
Both indirect and direct contact	2864	(36.9)	1717	(36.8)	1147	(37.1)	

NS not significant

*** $P < 0.01$

[a] Subjects in the study sample were defined as those having completed FEWS and approved linking survey data to registry data

[b] Skill level is expressed as the level of education or the equivalent level of informal training and experience usually required in an occupation

[c] Pearson Chi-square test

Nordic Questionnaire for Psychological and Social Factors at Work, QPS_{Nordic} (Dallner et al. 2000), were included: *quantitative demands* (i.e. time pressure and amount of work), *decision demands* (i.e. demands for decision-making and attention), *role clarity* (i.e. clarity of goals and objectives at work), *role conflict* (i.e. conflicts between demands and resources and conflicting requests), *control over work intensity* (i.e. influence on time, pace, and breaks), and *decision control* (i.e. influence on decisions regarding work tasks, choice of co-workers, and contact with clients). The scales varied from three to five items. Response alternatives were: "1 = very seldom or never", "2 = somewhat seldom", "3 = sometimes", "4 = somewhat often", and "5 = agree totally". QPS_{Nordic} has been thoroughly tested for validity and reliability and has shown good psychometric properties (Dallner et al. 2000; Wannstrom et al. 2009). The Cronbach's αs were 0.76, 0.61, 0.82, 0.72, 0.82 and 0.73, respectively, for quantitative demands, decision demands, role clarity, role conflict, control over work intensity, and decision control.

Covariates

Covariates included in the multivariable models were selected on the basis of past research (Allebeck and Mastekaasa 2004; Duijts et al. 2007). The variables included were gender, age (measured continuously in years), and occupational skill level divided into five categories according to International Standard Classification of Occupations.

Statistical analyses

Pearson correlation coefficients were calculated among the measures of psychological and social work factors. Differences between employees with no medically certified sickness absence and employees with medically certified sickness absence of one day or more were tested with *t* test for continuous variables and Chi-square tests for categorical variables. Effect sizes of the mean difference in exposure to psychological and social work factors were assessed by Cohens's *d*. According to Cohen (1988), effect sizes in the area of 0.2 are small while those in the area of 0.5 are medium and those in the area of 0.8 and above are large.

The number of sickness absence days represents a form of count data, and Poisson regression is commonly used to analyse this outcome (Kivimaki et al. 2001; Marmot et al. 1995; Melchior et al. 2003; North et al. 1993, 1996; Rugulies et al. 2007) However, Poisson regression requires that the variance is equal to the mean, whereas for sickness absence data the variance is frequently substantially larger than the mean, a condition known as overdispersion (Cameron and Trivedi 1998). Second, the number of events should follow the Poisson distribution, but the distribution of sickness absence often include more values of zeros (i.e., no sickness absence) than expected from the Poisson distribution. Ignoring overdispersion and excess of zero-values may lead to a model with poor fit to the data and tests of statistical significance will be unreliable (Christensen et al. 2007). In this study we have used a modified model for count data, the Negative binomial hurdle (NBH) model, which is capable of capturing both overdispersion and excess of zero-values (Mullahy 1986). The NBH model suggests a two-part process, and Mullahy (1986) states that "the idea underlying the hurdle formulation is that a binomial probability model governs the binary outcome of whether a count variable has a zero or a positive realization. If the realization is positive, the "hurdle" is crossed, and the conditional distribution of the positives is governed by a truncated-at-zero count data model". In the present study, we divided the analyses into the following two parts: (1) A log-binomial regression analysis which estimated the risk ratio of having at least one day of medically certified sickness absence, and (2) a zero-truncated negative binomial analysis, which produced incidence rate ratios for the number of days absent among the sub-sample having at least one day absent. Finally, all included work factors were studied as independent variables simultaneously and adjusted for covariates. Additionally, we examined a model were previous sickness absence (12 months before survey measurement) were included as control variable for the relationship between work factors and sickness absence in order to adjust for the stability in the outcome measure. Mean scores of psychological and social work factors were included as continuous independent variables in both parts of the hurdle model. Statistical analyses were performed using IBM SPSS Statistics 23.0 (Corp 2015) and STATA 14.1 (StataCorp 2015).

Results

The means, standard deviations (SD), and intercorrelations for all psychological and social work factors are listed in Table 2. Emotional dissonance showed moderate positive relationship with role conflict ($r = 0.31$; $P < 0.01$), moderate negative relationship with control over work intensity ($r = -0.45$; $P < 0.01$), weak positive relationship with decision demands ($r = 0.22$; $P < 0.01$) and role clarity ($r = 0.04$; $P < 0.01$), and weak negative relationship with decision control ($r = -0.25$; $P < 0.01$). Significant differences were observed for mean scores of psychological and social work factors between employees with no medically certified sickness absence and employees having at least one day of medically certified sickness absence (Table 3).

After adjustment for age, gender, and skill level, a significant relationship between emotional dissonance and

Table 2 Means, standard deviations (SD), and intercorrelations for all psychological and social work factors

Variables		Descriptive			Correlations					
		Range	Mean	SD	1	2	3	4	5	6
1	Emotional dissonance	1–5	2.66	1.03						
2	Quantitative demands	1–5	2.91	0.76	0.02					
3	Decision demands	1–5	3.52	0.69	0.22[a]	0.39[a]				
4	Role clarity	1–5	4.22	0.74	0.04[a]	−0.13[a]	0.08[a]			
5	Role conflict	1–5	2.59	0.80	0.31[a]	0.30[a]	0.26[a]	−0.30[a]		
6	Control over work intensity	1–5	3.15	1.07	−0.45[a]	0.03[b]	−0.18[a]	−0.10[a]	−0.19[a]	
7	Decision control	1–5	3.07	0.76	−0.25[a]	0.01	−0.02	0.08[a]	−0.19[a]	0.51[a]

[a] Correlation is significant at the 0.01 level

[b] Correlation is significant at the 0.05 level

Table 3 Psychological and social work factors; presenting mean score for employees with no medically certified sickness absence and employees with medically certified sickness absence

	No medically certified sickness absence		Medically certified sickness absence		Cohen's *d*
	Mean	(SD)	Mean	(SD)	
Emotional dissonance	2.58	(1.01)	2.79	(1.03)[a]	0.29
Quantitative demands	2.91	(0.76)	2.91	(0.78)	0.0
Decision demands	3.50	(0.68)	3.56	(0.69)[a]	0.09
Role clarity	4.21	(0.73)	4.24	(0.75)	0.04
Role conflict	2.54	(0.79)	2.65	(0.81)[a]	0.14
Control over work intensity	3.24	(1.05)	3.00	(1.08)[a]	0.23
Decision control	3.13	(0.76)	2.98	(0.75)[a]	0.20

[a] *t* test for the comparison between employees with no medically certified sickness absence and employees with medically certified sickness absence. Significant at 5%

medically certified sickness absence was found [risk ratio (RR) 1.10, 95% confidence interval (CI) 1.07–1.14] (Table 4). Results for the remaining psychological and social work factors indicated that higher levels of quantitative demands, decision demands, and role conflict also increased the risks of having medically certified sickness absence, while higher levels of control over work intensity and decision control decreased the risks of having medically certified sickness absence. Results for the other covariates (not presented in tables) indicated that women had a higher risk (RR 1.31, 95% CI 1.23–1.39, $P < 0.01$) of having medically certified sickness absence compared to men. Employees in lower skill jobs (equivalent of <10 years and 10–12 years of education) had higher risks of having medically certified sickness absence compared to employees in jobs with a skill level equivalent of 13–15 years of education; skill level equivalent of <10 years of education (RR 1.52, 95% CI 1.20–1.94); a skill level equivalent of 10–12 years of education (RR 1.22, 95% CI 1.14–1.32).

The unadjusted analysis (not presented in a table) showed that an increase of one point on the emotional dissonance scale was associated with a significant 5% increase in the number of days absent [incidence rate ratio (IRR) = 1.05 (95% CI 1.00–1.10)]. This relationship, however, was not significant when adjusting for the effects of the covariates (Table 4). Only higher levels of role conflict showed a significant relationship with the duration of sickness absence, with an 11% increase in number of days absent (IRR = 1.11, 95% CI 1.04–1.19) after adjusting for the effects of the covariates.

When all psychological and social work factors were analysed simultaneously with adjustment for covariates (Table 5), higher levels of emotional dissonance and role conflict were risk factors for having at least one day with medically certified sickness absence, while higher levels of control over work intensity and decision control were protective factors for sickness absence. Only role conflict was a risk factor for the duration of sickness absence when all factors were studied simultaneously (IRR = 1.10, 95% CI 1.02–1.19). To adjust for stability in sickness absence, the above analyses were replicated with previous sickness absence (12 months before the survey measurement) as control variable. The associations between study variables remained unchanged after this adjustment.

Finally, different occupational groups were tested as potential moderators for the association between emotional dissonance and sickness absence. Such an interaction effect was not found.

Discussion

This prospective study aimed to determine the relationship between emotional dissonance and medically certified sickness absence among employees working with clients.

Table 4 Results from NBH model (RR, IRR and 95% CI)

	Log-binomial regression		Negative binomial regression	
	RR	(95% CI)	IRR	(95% CI)
Emotional dissonance	1.10	(1.07–1.14)[a]	1.06	(1.00–1.12)
Quantitative demands	1.05	(1.01–1.09)[a]	1.07	(1.00–1.14)
Decision demands	1.11	(1.06–1.15)[a]	1.02	(0.94–1.10)
Role clarity	0.98	(0.95–1.02)	0.96	(0.90–1.03)
Role conflict	1.13	(1.09–1.16)[a]	1.11	(1.04–1.19)[a]
Control over work intensity	0.91	(0.88–0.93)[a]	1.00	(0.95–1.06)
Decision control	0.89	(0.85–0.92)[a]	0.99	(0.93–1.06)

Medically certified sickness absence according to psychological and social work factors; all predictors analysed separately

Adjusted for sex, age and skill level

CI confidence interval, *RR* risk ratio, *IRR* incidence rate ratio

[a] Significant at 5%

Table 5 Results from NBH model (RR, IRR and 95% CI)

	Log-binomial regression		Negative binomial regression	
	RR	(95% CI)	IRR	(95% CI)
Emotional dissonance	1.05	(1.01–1.08)[a]	1.04	(0.97–1.11)
Quantitative demands	0.98	(0.94–1.02)	1.03	(0.95–1.11)
Decision demands	1.02	(0.98–1.07)	0.97	(0.89–1.06)
Role clarity	1.02	(0.98–1.06)	1.01	(0.93–1.08)
Role conflict	1.09	(1.04–1.13)[a]	1.10	(1.02–1.19)[a]
Control over work intensity	0.94	(0.91–0.97)[a]	1.00	(0.95–1.07)
Decision control	0.93	(0.89–0.97)[a]	1.01	(0.93–1.09)

Medically certified sickness absence according to psychological and social work factors; all predictors analysed simultaneously

Adjusted for sex, age and skill level

CI confidence interval, *RR* risk ratio, *IRR* incidence rate ratio

[a] Significant at 5%

With a modified count model, the NBH model, we investigated both the presence (i.e. having at least one day with medically certified sickness absence) and duration (i.e. the number of days absent among those having at least one day absent) of medically certified sickness absence. The main finding of the study was that emotional dissonance significantly predicted the presence of medically certified sickness absence. Emotional dissonance remained a significant risk factor for medically certified sickness absence after adjusting for other psychological and social work factors, as well as gender, age, and skill level. We did not find an effect of experiencing emotional dissonance at work on the duration of medically sickness absence. Taken together, the findings of this study show that employees reporting that they frequently experience emotional dissonance at work are at higher risk of having medically certified sickness absence, but it seems that when they are away from the workplace, the experience of emotional dissonance has little or no impact on the duration of sickness absence.

There are few studies of the relationship between emotional dissonance and sickness absence and the results are so far inconclusive. To our knowledge, this is the first study analysing the impact of emotional dissonance on the presence and duration of sickness absence separately. The finding of the direct relationship between emotional dissonance and sickness absence is consistent with previous research on human service employees (Rugulies et al. 2007), nurses in the elder-care service (Clausen et al. 2012), and findings showing that nurses who reported engaging in more surface acting (i.e. regulation of observable expressions) had higher levels of sickness absence (Nguyen et al. 2013). On the other hand, Diestel and Schmidt (2010) did not find this direct effect of emotional dissonance on sickness absence among office employees. The level of effort required to display appropriate emotions is likely to be different across groups of service workers (Morris and Feldman 1996) and may explain the different results. In the present study, we found an association between emotional dissonance and sickness absence in a sample including several different occupations in the service sector, and it is reasonable to assume that the associations are stronger for some occupations than for others.

The finding of a direct relationship between emotional dissonance and sickness absence is consistent with the theoretical association between emotion regulation and absenteeism proposed by Grandey (2000). Frequently being required to express emotions which are not genuinely felt in the particular situation may result in dissonance and physiological arousal, and absenteeism is one way the employee can withdraw from the distressing situation. As experiencing emotional dissonance is associated with emotional exhaustion (Zapf 2002) and psychosomatic complaints and burnout are identified predictors of sickness absence (Duijts et al. 2007), the direct link between emotional dissonance and absenteeism may be explained by such health complaints.

The magnitude of the detected association between experiencing emotional dissonance at work and sickness absence is fairly week, indicating that, for the majority of employees included in this study, emotional dissonance was not the main cause of sickness absence. The causes of sickness absence are multifactorial; therefore, one cannot expect one factor to explain a large proportion of the variance in sickness absence (Zapf et al. 1996). Although only a small part of the variance in sickness absence is explained by emotional dissonance, the impact of having to regulate ones emotions at work may still be substantial and have important practical relevance (Cortina and Landis 2009).

In line with previous research (Aagestad et al. 2014a; Allebeck and Mastekaasa 2004; Lund et al. 2005; Rugulies et al. 2007; Slany et al. 2014), we found that role conflict was a risk factor for sickness absence, whereas control over work intensity and decision control were found as protective factors. Exposure to quantitative demands was not a risk factor for sickness absence when controlling for other psychological and social work factors. A review by Allebeck and Mastekaasa (2004) and a recent Norwegian review by Knardahl et al. (2016) both concluded that the association between general job demands and sickness absence was inconclusive.

Methodological considerations

The main strength of the present study was the prospective study design with the use of registry data of sickness absence. Using a combination of questionnaire survey and objective registry data, the present study obtained measures of the predictor and criterion variables from different sources and precludes the risk of observing spurious associations that could be attributed to common method bias (Podsakoff et al. 2003). Nonetheless, as all included survey questionnaire instruments are self-report measures, the study suffers from the potential problems of self-report instruments such as response-set tendencies. Still, the QPS_{Nordic} instrument used in the current study to assess job demands, job control, and role expectations should be fairly insensitive to respondents' emotions or personality dispositions. QPS_{Nordic} items do not address issues that are inherently positive or negative, and respondents were asked how often a situation occurs instead of degrees of satisfaction or agreement (Dallner et al. 2000). The present study measured emotional dissonance with a scale adopted from the Frankfurt Emotion Work Scales (Zapf et al. 1999). To our knowledge, this is the first time a Norwegian translation of the scale has been used in research. The Norwegian translation of the scale showed acceptable psychometric properties and good conceptual equivalence with the original version.

All employees in the organizations were invited to participate in the survey, but possibly not all employees were properly informed and motivated to answer a comprehensive questionnaire. The response rate was 49.2% in line with the estimated average for organizational surveys (Baruch and Holtom 2008). A low response rate may threaten the internal validity through self-selection mechanisms if participating is a common effect of exposure and outcome (Hernan et al. 2004). Adverse working conditions and sickness absence were not a specific focus for motivating participation and there is little reason to suspect self-selection based on exposure and sickness absence. As the participating organizations were recruited through availability sampling method, the results cannot be generalized to the general working population or a specific type of work (Mazzocchi 2008).

It has been discussed whether or not one should include previous sickness absence in analyses of future sickness absence (Rugulies et al. 2007). There is already an association between work factors and sickness absence at baseline and a substantial increase in sickness absence during follow-up is not realistic when the level is already high for some employees and the level cannot increase indefinitely. When adjusting for sickness absence history, the focus of the analyses will be *changes* in sickness absence. A potential consequence of adjustment for previous sickness absence is underestimation of the true effect of work factors. In the present study, we have examined the association between emotional dissonance and subsequent sickness absence both with and without adjusting for previous absence. The findings showed that emotional dissonance was related to sickness absence in both models, thus suggesting that emotional dissonance is related to an increased risk of sickness absence even when sickness absence history is taken into account. Several factors influence the level of sickness absence. Seasonal variations attributed to virus infections (e.g. flu) and changes of sickness benefit rules are examples of external exposures that may affect the level of sickness absence in the country (Whitaker 2001). As this study has collected data over several years, the effect of external exposures should be minimized.

Concluding remarks and implications

The present study showed that experiencing emotional dissonance at work is a risk factor for medically certified sickness absence. In addition, role conflict was found to be a risk factor and control over work intensity and decision control were found to be protective factors for medically certified sickness absence. With regard to theory, the relationship between emotional dissonance and sickness absence supports the theoretical association between having to regulate feelings at work and absenteeism (Grandey 2000). Emotion work should be included in models explaining the association between work environment and sickness absence. With regard to practice, the results indicate the importance of considering emotional aspects in client-driven work environments and interventions aiming to prevent sickness absence in such environments should be aware of the effect emotional dissonance may have on employees. Methodologically, this study contributes to establish the NBH model as an appropriate method for analysing count data, such as sickness absence. Using this method, we were able to investigate the impact of work factors on the presence and duration of sickness absence separately. Our results demonstrated that psychological work factors may be important predictors of the

presence of medically certified sickness absence, but these work factors may have little or no impact on the duration, for which other factors such as health complaints may have a stronger effect. Only role conflict was found to be a predictor of the duration of sickness absence, and interventions aiming to get employees who are on sick leave back to work should be aware of the potential effect of role conflicts.

Working with clients implies multiple challenges which interact with other psychological and organizational work factors (e.g. time pressure and support from leader and colleagues) and multiple stressors may produce joint effects which exceed the individual's resilience (Zapf et al. 2001). In order to develop interventions, further studies are necessary to get a more nuanced picture of mechanisms which can explain how and when emotional dissonance is related to sickness absence.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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