Teacher's sleep quality: linked to social job characteristics?

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Abstract: Besides dealing with high workload, being a teacher is challenging with respect to the social context. There is increasing evidence that adverse social job characteristics challenge sleep quality. The current study tests whether restraint sleep quality (defined as worse sleep quality before than during vacation) is related to time-related job stressors, job resources, and social job characteristics. Forty-eight elementary school teachers (42% women) participated both during the last week before and the first week after vacation. Before vacation, teachers were asked for demographics and working conditions with reference to the last 30 d, and sleep quality with reference to the last 7 d. After vacation sleep quality during vacation was assessed and used as reference for working time sleep quality. Results showed mean levels of sleep quality increased during vacation. In teachers with restrained working time sleep quality (38%), experiences of failure at work, social exclusion, and emotional dissonance were more frequent than in teachers with unrestrained working time sleep quality ($Ps < 0.05$). Groups did not differ in time-related stressors, time control and social support from supervisors. Emotion work, social exclusion and individual experience of failure seem to challenge sleep quality in teachers.

Key words: Sleep quality, Vacation, Experienced failure, Emotional dissonance, Social stressors

Introduction

Employment has important positive psychosocial functions, many of which are tied to its social meaning. Work facilitates social contacts, social recognition and appreciation, and it is often an important part of our identity. Despite this, social job characteristics can be an important source of stress[1]. Beside dealing with high workload, being a teacher is challenging with respect to the social context including caregiving, emotion management and a lack of supervisor support[2–4]. Adverse work conditions are called *work stressors* since they increase the likelihood that employees will experience stress and, thus, carrying the risk to impair health and well-being[1]. Especially social stressors, are among the most detrimental work stressors, inducing stress that is experienced during and after work – e.g., leading to impaired sleep[5, 6]. In contrast, recovery, as a process of psychophysiological unwinding after stress exposure, is an important mechanism for staying healthy[5, 7]. Being (mentally) away from work enables people to replenish their resources. Especially after facing adverse working conditions there is a need for recovery in that resources are reduced and has to be restored. Vacation, as a longer period of rest, is known to be positively related to employees' health and well-being because it provides release from job demands and engagement in self-chosen

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and pleasant activities[7]. We investigated teachers' need for recovery by measuring sleep quality prior to and during vacation with adverse social job characteristics as its antecedents.

The experience of stress can be described as a subjectively unpleasant state of strain arising from the fear of being unable to cope with an aversive situation[1]. The experience of stress is linked to bio-physiological reactions including the activation of the sympathetic nervous system and the hypothalamic-pituitary-adrenal (HPA) axis activity (ACTH or cortisol responses)[8]. Public speaking in the classroom is an essential skill determines *success or failure* for most teachers, from the perspectives of both students and teachers[9]. It could be seen as a motivated performance situation. People are motivated to remain in the situation, to perform well and to adapt as far as possible[10]. However, public speaking bears the danger to lose face in front of the class. Because social stressors (i.e., adverse social job characteristics) including social evaluative performance situations such as public speaking are highly stressful for most individuals, many standardised stress tests contain such tasks; for instance, the Trier Social Stress Test (TSST) includes a speaking task and mental arithmetic in front of an expert audience[8]. Habituation to repeated public speaking situation, adaptation during the situation and recovery after public speaking is incomplete in many individuals and, on the other hand, facilitated by self-esteem and self-confidence[10, 11]. Thus, public speaking in teaching includes ego-involvement, defined as "situations when important ego factors, for example social prestige, self-esteem, fear of academic standing, are closely bound up in the task and where, because of this, performance is of more vital consequence to the subjects" (p 249)[12].

Besides public speaking, teachers' work involves a considerable amount of emotion work[13]. This includes the need to display emotions as an important feedback to reach educational goals and to establish or maintain a positive climate in the class, as well as the need not to display other emotions that do not fit with learning goals and maintenance of the class climate[14, 15]. Teachers, therefore, often have to show emotions that do not fit their felt emotions, and this results in *emotional dissonance*[16]. Having to suppress most negative emotions often allows them to persist, increases regulatory effort and may promote a feeling of lack of authenticity[17]. Among other aspects of emotion work, such as the requirement to be sensitive to clients' emotions, Zapf and Holz identified emotional dissonance as the most stressful among call centre agents, hotel and bank employees, and kindergarten teachers[16]. Thus,

teaching involves frequent interactions with students, colleagues, administrators, and parents. These interactions were shown to include a great deal of emotion work and to be related to teacher burnout[18].

Lack of interaction as part of social rejection, however, is also detrimental. *Social exclusion* at work might manifest as giving someone the 'silent treatment', ignoring him or her, or outright rejection[19]. Drawing on previous work on social rejection and sleep quality, we define workplace social exclusion as an individual's perception of being excluded, rejected, or ignored at the workplace that hinders her or his ability to establish or maintain positive interpersonal relationships[20]. Social exclusion threatens individuals who, according to the need-to-belong theory, have a pervasive drive to form and maintain positive and significant interpersonal relationships[21]. Individuals are also strongly motivated by the desire for positive self-evaluation and positive evaluation by others, and this is negatively impacted by social exclusion[22]. Accordingly, threats to social esteem play a major role in the experience of stress (e.g., in the concept of 'Stress as Offense to Self')[2]. By thwarting belonging and self-esteem goals, workplace social exclusion promotes a variety of negative emotions (e.g., anxiety) as well as several psychological and somatic health complaints[21]. Ferris *et al.* showed that workplace social exclusion is related to impaired psychological well-being (e.g., anxiety and depression)[23].

In sum, adverse social job characteristics (i.e., social evaluative conditions) such as failure, emotional dissonance and social exclusion seem to be not uncommon for teachers increasing the likelihood to experience stress. The neurotransmitters and hormones involved in the stress response are also involved in sleep regulation, and "the interaction between stress and sleep is implicated in a variety of disease processes and psychiatric disorders" (p381)[24]. Sleep regulation seems to be impaired by stressors. The type of dysregulation—such as awakenings and change of sleep phases—seems to depend on stressor characteristics: Unpredictable and uncontrollable stressors seem to cause the most severe dysregulation[20, 24]. It is plausible that time-related working conditions, such as working overtime or time pressure, reducing controllability and time to recover are related to impaired sleep[5]. The opposite is true for working conditions in sense of resources helping to gain predictability and control, such as time control and social support from supervisor helping to structure and get the work done[5, 20]. Yet, at the same time, unpredictability and uncontrollability are among the strongest cortisol-eliciting stressors and are key character-

istics of adverse social job characteristics[25]. One recent large-scale study supported a mediation model in which strain and restricted sleep quality mediated the association between unfairness at work and health complaints[26]. Another recent longitudinal large-scale study on older adults confirmed that strain mediates the link between weight discrimination experiences and impaired sleep[27].

With respect to the experience of failure, Palmer *et al.* found a lacking sense of achievement to be associated to an increased risk of disturbed sleep[28]. Pereira *et al.* investigated the short-term effects of daily social exclusion at work on various actigraphy-based indicators of sleep quality[20]. Multilevel regression analyses revealed that both daily workplace social exclusion and daily worries were positively related to fragmented sleep during the following night, and that worries were negatively related to sleep efficiency (time sleeping/time in bed). Workplace bullying, which often includes acts of social exclusion, has also been associated with disturbed sleep quality although temporal proximity might be important[5]. The psychophysiological activation that occurs as a response to social exclusion, however, should be incommensurate with the deactivation that is a main characteristic of sleep. A meta-analysis on work conditions and sleep reported a significant association between sleep quality and workplace bullying (Rho $= -0.23$, k $= 3$), and between sleep quality and workplace violence (Rho $= -0.20$, k $= 2$)[29]. A recent systematic review on adverse social job characteristics and sleep found 14 studies, ten of which reported correlations[20]. The weighted mean correlation of these ten studies was Rho $= 0.21$ (CI95 $= 0.12 - 0.31$)[20].

Taken together, sleep is a special form of recovery that restores stress-drained resources and is at the same time impaired by stress. Sleep quality is known to be improved during vacation[7]. We expected not only time-related working conditions like overtime and time pressure and resources like time control and social support, but also experienced failure at work, emotional dissonance and social exclusion (evaluative social job characteristics) to be negatively related with sleep quality in teachers.

Subjects and Methods

Participants and design

Study participants comprised 121 Swiss teachers. They were employed at six different schools (one primary school, one college and four vocational schools) in four different cantons of Switzerland. The participation rate was 59% (121 out of 204 invited teachers). The partici-

pating teachers completed a first questionnaire during the last week before their school holidays (time 1). Seventeen participants who filled out the first questionnaire had to be excluded because there were too many missing values. Of the remaining 104 participants, 48 (28 men, 20 women) filled out a second questionnaire during the first week of school after the respective school holidays (time 2; 47% follow-up). School holidays ranged from one to five weeks whereas almost 50% of the teachers reported 14 d of vacation. The weekday on which the questionnaires were completed should if possible be equal to or otherwise distributed over the potential workdays during the corresponding week. One week prior to the completion date for each of the two questionnaires, participants received an email with the corresponding web link. This led them to the online questionnaire, which utilised the Unipark survey software. The questionnaire included scales assessing demographics, recovery experiences, health, and additional information about the vacation. In the first part of the questionnaire, participants were asked for demographics, working conditions, and sleep quality with reference to the last week. Questions in the second questionnaire addressed sleep quality during vacation. As the study was conducted in the German-speaking part of Switzerland, all questions were in German.

Ethics. The study was performed in consensus with all requirements defined by the Swiss Society of Psychology, including participants information about their rights and guarantee of anonymity. Informed consent of participants (and supervisors in the case of observation at work) was obtained.

Measures

To measure *overtime* at time 1, participants were asked how often they worked overtime over the last 30 d before the school holidays on a 5-point Likert scale from 1 (*very rarely/never*) to 5 (*very often/constantly*).

Time pressure was measured with four items of a shortened version of the Instrument for Stress-Oriented Task Analysis (ISTA), Version 5.1; e.g., "How often does it happen that you cannot take your break, or that you cannot take your break on time, because of too much work?"[30]. The response format of the items ranged from 1 (*very rarely/never*) to 5 (*very often/constantly*). Cronbach's alpha was 0.72.

Time control (e.g., influence on work, pace and schedule) was assessed with 3 items from ISTA; e.g., "Can you decide yourself how much time you spend on a task?"[30]. The response format of the items ranged from 1 (*very

rarely/never) to 5 (*very often/constantly*). Cronbach's alpha was 0.69.

Social support from supervisor was assessed with five items using the scale by Caplan and colleagues (1975; German translation by Frese)[31]. Questions ask how much supervisors can be relied on when things get tough at work, are helpful for getting one's job done, are willing to listen to work-related problems, and are willing to listen to personal problems. Response options ranged from 1 (*not at all*) to 5 (*always*). Cronbach's alpha was 0.96.

Success at work and failure at work were assessed with two items on success and two items on failure asking for the frequency of those experiences[32]. Items asked "How often do you experience in your current work...., less success, ...greater success, ...less failure, ...greater failure?" Response options ranged from 1 (*never*) to 7 (*always*).

Emotional dissonance at work was assessed with the subscale of the Frankfurt Emotion Work Scales (FEWS); Version 3.0[33]. The subscale "Emotional dissonance" contains four items and addressed the necessity to display emotions that are not genuinely felt (e.g., "How often do you have to suppress your feelings in your job in order to appear neutral"). Response options ranged from 1 (*very rarely/never*) to 5 (*very often/constantly*). Cronbach's alpha was 0.84

Social exclusion at work was measured using five items based on Leary and colleagues on a 5-point scale ranging from 1 (*does not apply*) to 5 (*fully applies*). Sample items include "I sometimes get the feeling others avoid me" and "At work, I often feel like an outsider"[24]. Cronbach's alpha was 0.67.

Two single items assessed *sleep quality* before vacation and during vacation (adapted from Jenkins *et al.*): "How would you rate your sleep quality in the last working week?", and "How would you rate your sleep quality in the last vacation week?" Four response options ranged from 1 (*very bad*) to 4 (*very good*)[34]. When sleep quality before vacation was worse than during vacation, teachers were coded as "1" in variable "worse sleep quality before than during vacation". When sleep quality during vacation was the same or even worse than sleep quality before vacation, teachers were coded as "0" in variable restraint sleep quality ("worse sleep quality before than during vacation"). There were only two teachers who showed worse sleep quality during vacation than sleep quality before vacation. Both teachers reported "very good" sleep quality before vacation and "good" sleep quality during vacation.

Statistical analysis

In all analyses, gender and age were included as control variables. One-tailed tests were used because of the direction hypothesis and the alpha level was set to $p<0.05$, marking the significance criterion. ANCOVA were performed to test whether the variable restraint sleep quality ("worse sleep quality before than during vacation") was related to frequency of overtime, time pressure, time control, social support from supervisors, experienced success at work, experienced failure at work, emotional dissonance, and social exclusion. All analyses were conducted using SPSS 22.0.

Response bias

Regarding the smaller number of follow-up respondents after vacation with respect to baseline respondents, there might be potential response bias. We therefore compared data of follow-up responders ($n=48$) and non-responders ($n=73$). A student *t*-Test for independent samples was run for all study variables. Responders were older than non-responders ($p=0.002$) and reported to have more time control ($p=0.041$). Responders reported more emotional dissonance ($p=0.039$) and lower levels of social exclusion ($p=0.011$) than non-responders. No differences between responders and non-responders were found in gender distribution, frequency of overtime, time pressure, social support from supervisors, experienced success at work, experienced failure at work, and sleep quality before vacation.

Results

Means, SD, estimates of reliability, and zero-order correlations among all study variables are shown in Table 1. No participant had a baseline sleep quality value of 1 ("very bad"), 18.8% rated their baseline sleep quality to be "bad", 60.4% "good" sleep quality, and 20.8% described baseline sleep quality to be "very good". In 18 teachers, sleep before vacation was worse than during vacation, while in 30 teachers sleep before vacation was the same or better than during vacation. More precisely, two out of 30 teachers in this group showed the slight deterioration of sleep quality during vacation (from "very good" to "good"). Sleep quality before and during vacation, as well as the indicator of restraint sleep (i.e., worse sleep quality before than during vacation) were not related to age and gender. Moreover, there was no significant association between the three indices of sleep quality and overtime, time pressure, time control, social support from supervisors, and experienced success at work. Restraint sleep was

Table 1. Descriptive statistics and correlations among the study variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender[a]														
2. Age	47.54	11.50	−0.28											
3. Frequency of overtime	3.35	1.06	0.24	−0.05										
4. Time pressure	3.13	0.71	0.28	−0.23	0.70***									
5. Time control	3.64	0.87	−0.09	0.05	0.01	0.06								
6. Social support from supervisors	3.84	0.97	0.01	−0.07	0.23	0.24	0.16							
7. Experienced success at work	4.65	0.84	−0.10	−0.01	0.08	0.05	0.05	−0.03						
8. Experienced failure at work	3.06	0.87	0.04	−0.34*	−0.07	0.05	−0.20	−0.14	−0.09					
9. Emotional dissonance	2.64	0.76	0.21	−0.26	−0.04	−0.08	−0.18	−0.17	−0.19	0.64***				
10. Social exclusion	1.28	0.36	0.14	0.16	0.14	0.15	−0.33*	−0.29*	0.03	0.07	0.20			
11. Sleep quality before vacation	3.02	0.64	−0.10	0.09	−0.01	−0.12	0.09	−0.06	−0.03	−0.21	−0.06	−0.29*		
12. Sleep quality during vacation	3.38	0.49	0.04	0.02	−0.10	−0.11	0.04	0.10	−0.01	0.12	0.31*	−0.10	0.45**	
13. Restraint sleep quality (same=0, during vacation better than before=1)			0.13	0.04	−0.02	0.12	−0.04	0.22	−0.06	0.29*	0.26*	0.24*	−0.64***	0.29*

$N=48$. [a] 1: men (n=28), 2: women (n=20). *$p<0.05$. **$p<0.01$. ***$p<0.001$, one-tailed.

significantly related to more frequent experienced failure at work, more frequent emotional dissonance, and more frequent social exclusion.

Analyses of variance

The ANCOVA with control of age and gender showed no differences in overtime, time pressure, time control, social support from supervisors, and experienced success at work between groups of teachers (Fig. 1). Those teachers with worse sleep before than during vacation, however, reported significantly more frequent experienced failure at work ($F(1,44)=5.63$, $p=0.011$, $\eta^2=0.11$), more frequent emotional dissonance ($F(1,44)=3.12$, $p=0.042$, $\eta^2=0.07$), and more frequent social exclusion ($F(1,44)=3.25$, $p=0.039$, $\eta^2=0.07$) (Fig. 2).

Discussion

The current study explored the relationship of restraint sleep quality (defined as worse sleep quality before than during vacation) to time-related job stressors, job resources, and evaluative social job characteristics of teachers. In line with other studies, adverse social job characteristics in terms of exclusion and emotional dissonance and failure at work were found to be related to sleep quality[20, 26, 28]. But against expectation social support from supervisor – although social in nature – was not related to sleep quality[6]. However, there might be an effect of the source of support. In example, Chung found social support – measured as caring and understanding exhibited by a network containing friends, family and spouse – to be significant with respect to self-reported sleep quality[6]. Palmer

et al. reported effects on disturbed sleep by a lack of support from colleagues[28]. Whereas the supervisor might be specifically important during teacher training, support by the supervisor might be less important for fully trained teachers[2]. Future studies should account for social support by colleagues as effects might be different. In contrast to social job characteristics, no effect on restraint sleep with respect to time-related working conditions of teachers occurred.

In teachers with restraint working time sleep quality, experiences of failure at work, social exclusion, and emotional dissonance were more frequent than in teachers with unrestraint working time sleep quality. The mean level of social exclusion confirmed exclusion as a rare work experience for most teachers. Nevertheless, differences in those small levels were still related to differences in sleep quality, which shows the potentially harmful impact of social exclusion that compromises self-esteem[17]. To avert strain triggered by social exclusion at work, school governance should strive for a positive organisational climate and improve social relationships at work. For instance, school principals should be trained to recognize social conflicts early. In a recent longitudinal cohort study of 4,988 Finnish teachers, Gluschkoff and colleagues found workplace violence (as a direct adverse social job characteristic) to disturb sleep – especially, if teachers perceived the managerial practices to be less fair[35]. Schoolmaster training in resource-oriented leadership should add to a work climate in which people feel free to mention problems and to seek support[2]. Longitudinal research recently showed full mediation of the stressor-strain link by perseverative thoughts and a bidirectional stressor-strain relation, i.e., impaired
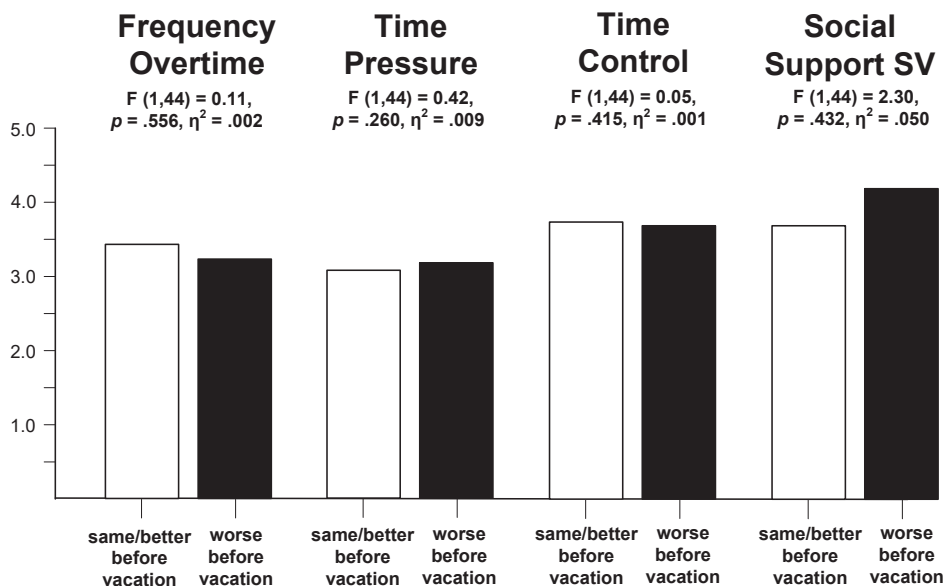
Fig. 1. Overtime, time pressure, time control, and social support from supervisor in teachers who reported the same or better sleep quality before vacation ($n=30$) and those teachers who reported worse sleep quality before vacation than during vacation ($n=18$). Mean values are estimated marginal means from ANCOVA with gender and age controlled, *p*-values one-sided for directional hypotheses.
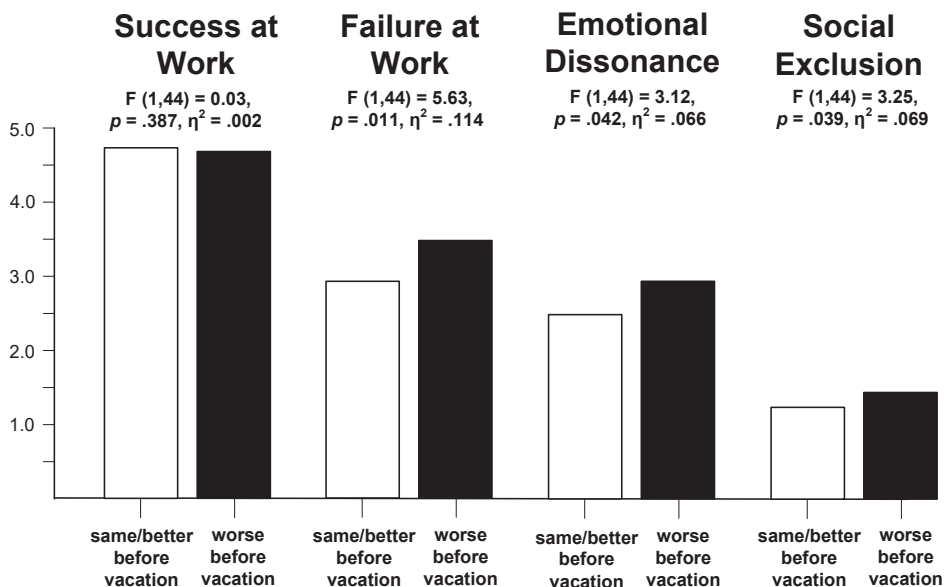

Fig. 2. Success at work, failure at work, emotional dissonance, and social exclusion in teachers who reported the same or better sleep quality before vacation ($n=30$) and those teachers who reported worse sleep quality before vacation than during vacation ($n=18$). Mean values are estimated marginal means from ANCOVA with gender and age controlled, *p*-values one-sided for directional hypotheses.

sleep quality predicts increase in work stressors[36]. A recent cross-sectional study of 76 Finnish primary school teachers found an imbalance between effort and reward (referring to fairness and thus to social evaluation too) to be negatively related to leisure time relaxation and positively

to sleep problems and burnout[37] as well as depressive symptoms[38]. Thus, a vicious cycle of work-related adverse social job characteristics and impaired sleep quality has to be prevented or broken.

Teachers should be trained in how to cope with nega-

tive emotions when they experience failure at work (e.g., anger, frustration, anxiety) and thoughts related to social exclusion (e.g., worrying, rumination) using cognitive-behavioral stress-management to improve sleep quality[39]. The key intervention process is to mediate worrying thoughts[20, 40]. Cognitive-behavioural online sleep training intervention in teachers (including mindfulness training) was proven to be effective in increasing sleep quality after work[41]. During education of teaching students, threats to the self associated with teaching tasks should be explicitly addressed[2]. Emotional labour in teaching (mainly comprising the emotional dissonance that results from showing positive emotions while hiding felt negative ones) is another key intervention focus that seems to be uniquely related to senior teachers' self-reports of their ability to work until retirement[3]. Emotional dissonance can be reduced when teachers learn how to improve their deep acting capability when faced with emotional demands, i.e., teachers learn to change the felt emotion by re-appraising the situation[16, 17]. A recent approach involving intervention sessions that included gentle yoga and mindfulness practices offered four days per week for 16 weeks was shown to increase social-emotional competencies, stress management, and wellbeing in teachers[4].

Study limitations

The current study is limited with respect to the processes behind the link between experienced failure, emotional dissonance, and social exclusion. Previous diary research including actigraphy, however, suggests that work-stress-related activation, sustained after work by perseverative thoughts (worrying) and a lack of detachment from work, is likely to cause the decrease in sleep quality[20]. In addition, as tenure is highly correlated with age and remaining teachers in the sample are older than those who dropped out, there might be a variance restriction in social support from supervisors. Older and advanced teachers (referring to the tenure) might need (or seek) less social support than younger teachers[2]. Moreover, the study does not cover important sources of ego-threatening social job characteristics in teachers. In many countries, for instance, teaching is affected by frequent educational reforms that do not fit with the deeply-held beliefs about good education that are part of teachers' self-understanding and self-esteem[42]. Reform agendas that impose different normative beliefs may trigger intense negative emotion and strain[42]. Future studies should examine appraisal and emotion regulation in response to reform agendas and also test for emotional contagion when teachers are in frequent communication

with each other about such agendas[43]. Emotional contagion in teachers was described as a potential precursor of burnout contagion[43].

Our study being restricted to teachers in the German-speaking part of Switzerland. Although our assumptions are not bound to the school system or the type of school, the transferability to teaching in other countries needs to be examined. We investigated one primary school, one college, and four vocational schools – not capturing the entire spectrum of types of schools. The sample representativeness for Swiss teachers is restricted.

A strength of the current research is that the assessment of sleep quality during vacation made a meaningful non-work-related reference level to individual sleep quality during work times. Yet, due to complex design sample, the size is rather small. In addition, sleep quality is complex phenomena that comprise several components. This study used only a single item sleep quality measure that does not allow differentiating between sleep characteristics (sleep onset, sleep awakenings, sleep duration). Nevertheless assessing a global evaluation of a persons' sleep quality is useful when the overall sleep quality is of interest[44]. Rosenzveig and colleagues[45] reviewed a single item measure of sleep to be appropriate. Another limitation is the reliance on self-reports only and the absence of control of other potentially influencing factors. These include health behaviour during vacation and personality factors. The reliance on self-reports might inflate correlations, as response biases (such as acquiescence) influence the assessment of job stressors, recovery experiences, and health alike. The use of sleep actigraphy, for instance, would help to prevent common-method variance[20]. Moreover, we have no information about the conditions during vacation that might affect sleep quality[7].

Implications for policy and practice

With respect to the concept of recovery, if short-term recovery fails or stressors remain, the organism is vulnerable to stress-related dysregulation. Besides day-to-day recovery after work or on a weekly basis, vacation is valuable for teachers. Those teachers who benefit the most from vacation in relation to their sleep quality reported more experienced failure, emotional dissonance and social exclusion than other teachers. Attention should also be paid, however, to job design and training for teachers. Teacher education should be adapted to focus on social aspects of teaching that threaten self-esteem in teachers' work[2].

Conclusion

Experienced failure at work, emotional dissonance and social exclusion were found to be linked to impaired sleep quality during teachers' working times.

Acknowledgement

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