



Those who need it the most get it the least: Age specific reciprocal effects between social support and mental strain

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ABSTRACT

Socioemotional selectivity theory and models of lifespan development of resources suggest that older workers may particularly benefit from social resources so as to maintain their well-being throughout their work-life span. However, the age-differential effects of social support at work have been rarely investigated. We hypothesised that age moderates the effects of colleagues' and supervisors' social support on mental strain, with strongest effects for older workers. A two-wave complete panel design (six months' time lag) was used. Self-reports from $N = 334$ nurses (age: 21–63 years) were gathered with established questionnaires: strain was measured by means of the irritation scale; social support from colleagues and supervisors by using a German adaptation of the social support scales. We proved factorial validity and measurement invariance across time points (CFA) and computed path models (SEM). As expected, age moderated the negative longitudinal effects of colleagues' social support on mental strain. Older nurses (≥ 45 years) benefited the most from colleagues' social support. However, mental strain in older nurses was associated with reduced social support from colleagues. Surprisingly with middle-aged nurses (35–44 years) an increase in colleagues' social support resulted in higher mental strain. No effects for supervisor support were observed. Results indicate that social support by colleagues is an important resource for older workers, but older workers are less likely to receive social support when mental strain is present. Moreover, the timing of social support across the work lifespan seems to be critical, as it might have detrimental effects in middle-aged workers.

1. Introduction

Due to the ageing of the workforce in many countries, organisations seek ways to promote productivity and well-being of their employees throughout the whole work-life span. [Yaldiz et al. \(2018\)](#) mention two implications of the ageing population: older people will be an active part of the workforce for a longer period of time than previously and work-places will grow more age-diverse.

Over the life-span the balance between psychological resource gains and losses becomes less positive, due to age-related losses in adaptive capacity ([Baltes & Baltes, 1990](#)). According to the *conservation of resources* (COR) model by [Hobfoll \(1989\)](#), which defines psychological stress as the reaction to threats of resource loss, actual loss of resources or a lack of resource gain following the investment of resources, age-related losses of resources come accompanied by stress. Overall the probability of having fewer personal resources available increases with age ([Hobfoll, 2002](#)), which might make external resources more relevant.

The present study seeks to investigate the effects of social support on mental strain in three different age groups, following a call for more attention to moderating factors on job characteristics in the job design literature ([Truxillo et al., 2012](#)). So far, while the body of research in age-appropriate job design is quite small, the one on social aspects of ageing at work is even more limited. Thus our study attempts to narrow this gap by contributing to the literature on social support and ageing at work. Following the *socioemotional selectivity* (SES) theory, according to which emotional motives become more important with increasing age ([Carstensen et al., 1999](#)), and models of lifespan development of resources ([Hobfoll, 2002](#)) we propose that older workers may particularly benefit from social support in order to maintain well-being across the work lifespan.

1.1. Social support and mental strain

One of the most important health promoting resources in the

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workplace is social support by colleagues and supervisors (Viswesvaran et al., 1999). There exist a myriad of conceptualisations of social support (for an overview see Langford et al., 1997; Williams et al., 2004). According to Cobb (1976, p. 300) “Social support is defined as information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations”.

Following the conceptualisation used by Frese (1999), social support is comprised of three functions: *affective support*, *confirmation* and *direct help*. Affective support refers to the extent a person feels loved, valued, respected; while confirmation is characterised by approval and reassurance of both factual and moral correctness of one’s actions and statements; direct help finally may include financial support, provision of information and active support in task completion. Of these three functions especially affective support may instill a sense of belonging, which according to the *self-determination theory* (SDT) is a basal psychological need, whose satisfaction promotes well-being (Deci & Ryan, 2000). Confirmation may include feedback, which according to the *job characteristics model* (JCM) fosters motivation and job satisfaction (Hackman & Oldham, 1976). And finally direct help, instrumental social support, may have an emotional meaning for the recipient (Semmer et al., 2008) and may directly contribute to decreasing the burdens of job demands.

The number of conceptualisations of social support corresponds to the amount of scientific literature published. Findings in the area of work psychology identify social support as salutogenic: a resource, which reduces the experience of strains, mitigates perceived stressors and moderates the stressor–strain relationship (Halbesleben, 2006; Viswesvaran et al., 1999). Accordingly, effects of social support were found for job satisfaction in a positive direction, for absenteeism as a negative relationship, while the positive effects of social support on performance were weak (Humphrey et al., 2007).

Social support can be provided by a multitude of sources (e.g., family, friends, colleagues and supervisors; Halbesleben, 2006). There are indications that the effects of social support might differ across sources: for example, workplace social support for hospice nurses had a significant negative effect on psychological distress, while personal social support (e.g., family and friends) showed no association (Barnett et al., 2019). Quality and scope of social support may differ among sources; while coworkers provide more emotional and informal support (e.g., showing personal interest, providing advice), support by supervisors is characterised by attention, recognition, as well as structured instrumental support offers (e.g., scheduling, provision of resources; Drössler et al., 2016). The health-promoting aspect of social support is especially effective when supervisors are their source (e.g., through the quality of leader–follower interaction; Montano et al., 2017). In the workplace colleagues and supervisors are the main sources of social support; overall organisational support appears to be the most important type of this resource (French et al., 2018).

Hypothesis 1a (H1a). Social support by colleagues reduces the experience of strains.

Hypothesis 1b (H1b). Social support by supervisors reduces the experience of strains.

1.2. Age specific effects of social support on mental strain

With the age-related decline of personal resources, external resources, such as social support, may have a positive compensatory effect (Baltes & Baltes, 1990; Hobfoll, 1989). Literature on age-specific effects of social support in the area of work psychology is quite sparse. In the work context, findings regarding the association between age and mental well-being are contradictory and conflicting; there are indications that instead of direct effects between age and mental well-being there might rather be interaction effects with socio-demographic and work-related characteristics (Rauschenbach et al., 2013). Truxillo et al. (2012) argue that according to the SES theory older employees

should particularly benefit from social support, as it satisfies their motive for emotional goals, which increases with age. They emphasize that social support should be positive for all age groups and older workers may favour being the source of social support, while they may also benefit particularly from being a target of social support to experience satisfaction of their emotional motives in terms of social integration and interdependence (Truxillo et al., 2012).

Looking at the strain side of the relationship, findings by Rauschenbach and Hertel (2011) suggest that contrary to the assumptions of the SES theory middle-aged employees might be particularly in need of social support. They found an inverted U-shaped relationship between age and stress experience: the highest levels of strain were encountered in middle-aged workers. Possibly not only age-dependent individual changes of resources but also changes in everyday demands across the lifespan may be at play regarding age related effects of social support on strain: a phenomenon coined *midlife in a ‘sandwich’ position* referring to the pressure felt by increased responsibilities at work (due to career progression) as well as off work (e.g., caring for children or relatives) in comparison to younger and older workers (Rauschenbach & Hertel, 2011; Scheibe & Zacher, 2013).

Effects of social support on stress were found for older workers: age moderated the negative association between leader-member-exchange and stress, indicating that social support is especially beneficial to older workers (Yaldiz et al., 2018). Additionally some studies report that the amount of reported stressors decreases in old age (Stawski et al., 2008), indicating that older employees might need less social support than younger and middle-aged employees in order to cope with stressors.

Hypothesis 2a (H2a). Age moderates the association between social support by colleagues and mental strain in such a way that the association is stronger for older employees.

Hypothesis 2b (H2b, alternative to H2a). Age moderates the association between social support by colleagues and mental strain in such a way that the association is stronger for middle-aged employees.

Hypothesis 3a (H3a). Age moderates the association between social support by supervisors and mental strain in such a way that the association is stronger for older employees.

Hypothesis 3b (H3b, alternative to H3a). Age moderates the association between social support by supervisors and mental strain in such a way that the association is stronger for middle-aged employees.

Fig. 1 shows our research model.

2. Method

2.1. Sample and procedure

Data were gathered in a two-wave design (6 months between waves),

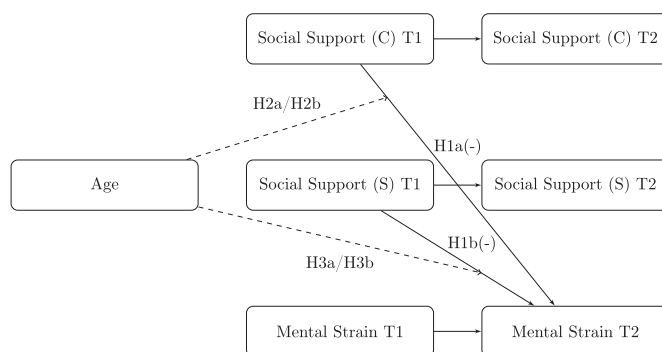


Fig. 1. Proposed model. Dashed lines indicate moderation. (C) and (S) denote colleagues and supervisors.

surveying nurses in a southern German university hospital. Responses from 438 of 953 nurses (participation rate 46.0 %) to the first questionnaire (T1) were gathered. Of these 346 (79.0 %) nurses participated in the second survey (T2). 12 (3.5 %) nurses didn't answer on all scales of this study and were excluded from subsequent analyses.

The remaining sample consisted of 334 nurses, aged 21–63 ($M = 38.96$, $SD = 11.38$). 278 (83.2 %) were female. Nurses had on average 18.38 years ($SD = 11.17$) of professional experience. At the time of data collection 184 (55.1 %) worked in intensive care units, 58 (17.4 %) in the operating room, 32 (9.6 %) nurses came from anesthesia units, and 7 (2.1 %) worked with patient transport. Participants were grouped into three age groups: young (<35 years), middle-aged (35–44 years), and older nurses (≥ 45 years). Descriptive statistics of these groups are shown in Table 1.

2.2. Measures

2.2.1. Strain

Assessment of mental strain was done using six items of the German version of the twelve-item irritation scale (Mohr et al., 2006). Three of this scale's items measure cognitive irritation (example item: "I have difficulty relaxing after work"), while the other three measure emotional irritation (example item: "When I come home tired after work, I feel rather irritable"). Responses were given on a Likert-type scale from 1 = strongly agree to 7 = strongly disagree. The instrument is well validated and has been repeatedly used in different countries (e.g., Berset et al., 2011; Hülshager et al., 2010; Widmer et al., 2012). Cronbach's α was 0.86 at T1 and 0.87 at T2.

2.2.2. Social support

Colleagues' social support was measured using three of five items from Frese's (1989) German adaptation of the social support scales. Cronbach's α for colleagues' social support was 0.78 at T1 and 0.80 at T2. Supervisors' support was measured using the same three items as above, while referring to the direct supervisor instead of colleagues (example item: "How much can you count on the following persons, when work gets difficult?"). A Likert-type scale was offered for each item from 1 = not much to 4 = very much. The instrument is well validated and has often been employed in research (e.g., Dormann & Zapf, 2004; Zapf, 1999). Cronbach's α for supervisor support was 0.87 at T1 and 0.89 at T2.

2.2.3. Age

Chronological age was recorded at T1 with a single item.

Table 1
Descriptive statistics of the three age groups.

Group	<i>M</i>	<i>SD</i>	<i>n</i>	%
<35 years			148	44.3
Female			127	85.8
Age	28.14	3.47		
Job tenure	9.17	3.73		
35–44 years			76	22.8
Female			60	78.9
Age	40.32	2.36		
Job tenure	18.12	6.04		
≥ 45 years			110	32.9
Female			91	82.7
Age	52.60	5.26		
Job tenure	30.96	7.91		
Total			334	100
Female			278	83.2
Age	38.96	11.38		
Job tenure	18.38	11.17		

Note: M = mean, SD = standard deviation. Age and job tenure in years. Gender related percentages were computed against their respective groups.

2.2.4. Covariates

We controlled for gender, time pressure and job autonomy. Gender was included due to gender specific differences in job strain and social support in the literature (e.g., Vermeulen & Mustard, 2000; Young & Kahana, 1989). Information on nurses' gender (male = 0, female = 1) was assessed with a single survey item. Since time pressure and job autonomy are important constructs which have an effect on strain in both the *job demands-control* model (Karasek, 1979) and the *job demands-resources* model (Demerouti et al., 2001), time pressure as a job demand and job autonomy as a job resource, we included both as control variables. Time pressure was measured with three items and job autonomy with nine items from the German work analysis instrument for the hospital (Büssing et al., 2001). An example item for time pressure is "At this job there is consistently too much to do at the same time", while the items for job autonomy included questions on how much the job "allows for making decisions on which tasks I have to perform". The items were scaled on a 5-point Likert-type scale (1 = not at all; 5 = to a very great extent). Both covariates were measured at T1 (baseline), their reliabilities were acceptable with Cronbach's $\alpha = 0.81$ for time pressure and 0.94 for job autonomy.

2.3. Statistical analyses

Analyses were performed using R (Version 3.5.1; R Core Team, 2018). For computation of *confirmatory factor analyses* (CFA) and our path models we used *lavaan* (Version 0.6-3; Rosseel, 2018). We used the *comparative fit index* (CFI), *Tucker-Lewis index* (TLI), *incremental fit index* (IFI) and *root mean square error of approximation* (RMSEA) to assess the goodness of model fit, as well as the χ^2 difference test to compare the fit of competing models. Values of TLI, CFI and IFI close to 0.95 (higher is better), as well as an RMSEA close to 0.05 (lower is better) are indicators of acceptable model fit (Hu & Bentler, 1999).

We chose a two-step approach, following the recommendations by Anderson and Gerbing (1988): first we ran multiple CFAs to estimate our measurement models (proving factorial validity of our measurements as well as their invariance over time) and second we estimated the explanatory regression models, where we used the scale means for each variable. Standardised values of predictors were approximated using sample means and sample deviations.

To control for baseline levels of variables, we included the lagged endogenous paths between our focal variables, as recommended by Zapf et al. (1996). All focal variables at T2 were regressed on by the covariates (gender, time pressure and autonomy) as well.

For testing of H2a–H3b, which assume a moderating non-linear effect of age on the relationship of social support and strain, interactions between age² and social support were added to the models. Reciprocal effects of variables from T1 to T2 were included to evaluate the causal relationship between constructs.

To pinpoint (post-hoc) location and direction of potential moderating effects, we finally computed a model comparing the three age groups individually.

3. Results

3.1. Scale analyses and measurement models

Results of our CFAs are shown in Table 2. At both time points our hypothesised five-factor models (T1: model 1a; T2: model 2a) showed acceptable fit. The five-factor models had a significantly better fit to the data than the common factor models (T1: 1b and T2: 2b). Compared to a model, which systematically combined items from two constructs under one factor, both five-factor models displayed superior fit again (T1: model 1c; T2: model 2c).

Next we confirmed measurement invariance across the two time points. The combined and constrained models are shown in Table 2 (models 3a and 3b). Since neither model resulted in a decrease in model

Table 2
Fitted models.

Model description	χ^2	df	CFI	TLI	IFI	RMSEA	[95 % CI]	$\Delta\chi^2$	Δdf
Measurement models									
1a: Five factors: cognitive and emotional irritation, their combined factor, social support (C), social support (S) (T1)	132.78	49	0.96	0.94	0.96	0.073	[0.058 0.088]	**	To model 1a
1b: Common factor (T1)	1547.00	90	0.39	0.29	0.40	0.225	[0.215 0.235]	***	1414.22*** 41
1c: Two factors: social support combined, irritation combined (T1)	1059.13	89	0.60	0.52	0.60	0.185	[0.175 0.195]	***	926.35*** 40
2a: Five factors: cognitive and emotional irritation, their combined factor, social support (C), social support (S) (T2)	102.42	49	0.98	0.97	0.98	0.058	[0.042 0.073]	ns	To model 2a
2b: Common factor (T2)	1799.84	90	0.36	0.25	0.36	0.241	[0.231 0.251]	***	1697.43*** 41
2c: Two factors: social support combined, irritation combined (T2)	1272.91	89	0.55	0.47	0.56	0.202	[0.192 0.212]	***	1170.49*** 40
3a: Ten factors: equal factor loadings, equal factor variances across time	620.05	252	0.92	0.92	0.93	0.068	[0.062 0.075]	***	To model 3a
3b: Ten factors: 3a & equal factor correlations across time	460.39	245	0.96	0.95	0.96	0.053	[0.046 0.060]	ns	159.66*** 7
Path models									
4: Stability model	58.84	39	0.96	0.96	0.96	0.039	[0.015 0.058]	ns	To model 4
5: (Hypothesised) Moderation model	17.48	12	0.99	0.96	0.99	0.037	[0.000 0.072]	ns	44.78* 27
6: Group stability model	75.80	54	0.96	0.95	0.96	0.060	[0.021 0.090]	ns	To model 6
7: (Post-hoc) Group differences model	4.68	6	1.00	1.03	1.00	0.000	[0.000 0.107]	ns	79.17** 48

Note: N = 334. (C) and (S) denote colleagues and supervisors.

*** $p < .001$

** $p < .01$

* $p < .05$

fit, measurement invariance across both time points can be assumed (Byrne & Watkins, 2003).

3.2. Descriptive statistics

Table 3 displays the descriptive statistics and correlations of our study variables. Correlations between irritation, social support by co-workers and supervisors were as expected for both time points: higher levels of social support were associated with lower levels of irritation. Direction and strength of our study variables appear to be stable across the two time points. Employees' age was not significantly related to any variable. The covariates time pressure and job autonomy appear correlated as expected as well: lack of social support was accompanied by higher levels of time pressure; high levels of job autonomy were associated with high levels of social support. Gender was weakly positively related to supervisors' social support.

3.3. Hypotheses testing

Table 2 shows the path models and their fit parameters. The hypothesised model 5 had significantly better fit than the stability model

Table 3
Descriptive statistics and correlations among study variables.

	M	SD	01.	02.	03.	04.	05.	06.	07.	08.	09.	10.
T1												
01. Social support (C)	3.11	0.54	0.78									
02. Social support (S)	3.08	0.67	0.29***	0.87								
03. Irritation	3.00	1.20	-0.21***	-0.16**	0.86							
04. Age	38.96	11.38	-0.10	-0.09	-0.01	-						
T2												
05. Social support (C)	3.15	0.48	0.61***	0.20***	-0.17**	-0.10	0.80					
06. Social support (S)	3.03	0.72	0.20***	0.67***	-0.11	0.02	0.25***	0.89				
07. Irritation	2.93	1.19	-0.20***	-0.15**	0.62***	0.01	-0.22***	-0.20***	0.87			
Covariates												
08. Gender	0.83	0.37	0.04	0.13*	-0.04	-0.04	0.07	0.12*	0.01	-		
09. Job autonomy	3.17	0.83	0.31***	0.27***	-0.22***	-0.04	0.24***	0.19***	-0.13*	0.15**	0.94	
10. Time pressure	3.07	0.84	-0.16**	-0.19***	0.24***	-0.05	-0.06	-0.11*	0.21***	-0.17**	-0.20***	0.81

Note: M = mean, SD = standard deviation; N = 334. (C) and (S) denote colleagues and supervisors. Cronbach's α along the diagonal (in boldface).

*** $p < .001$.

** $p < .01$.

* $p < .05$.

4. All lagged endogenous effects were significant and strong: the lagged relationship from irritation at Time 1 to irritation at Time 2 was $\beta = 0.597$, $p < .001$, for colleagues' social support over time $\beta = 0.576$, $p < .001$, and for supervisors' social support over time $\beta = 0.672$, $p < .001$. None of the included covariates (i.e., gender, time pressure and job autonomy) showed a significant effect on strain. The (post-hoc) age group differences model 7 had an improved model fit in comparison to its stability model 6 as well, with significant and strong lagged relationships of variables (see Table 4).

Hypothesis H1a. We found no significant main effect of social support by colleagues at Time 1 on strain at Time 2 ($\beta = 0.076$, $p = .279$).

Hypothesis H1b. We found no significant main effect of social support by supervisors at Time 1 on strain at Time 2 ($\beta = -0.102$, $p = .106$).

Hypotheses H2a and H2b. The hypothesised moderating effect of age² on the relationship of social support and strain at Time 2 could be confirmed for social support provided by colleagues ($\beta = -0.169$, $p = .017$).

Hypotheses H3a and H3b. Social support by supervisors showed no significant interactive effect with age² from Time 1 to Time 2 on strain ($\beta = 0.086$, $p = .198$).

Table 4
Cross-lagged regression effects.

Predictor variables T1	Dependent variables T2		
	Social support (C)	Social support (S)	Irritation
Moderation model (Model 5)			
Sample [N = 334]			
Social support (C)	0.576***	–	0.076
Social support (S)	–	0.672***	–0.102
Irritation	0.015	–0.033	0.597***
Age ²	0.024	0.020	–0.038
Social support (C) × age ²	–	–	–0.169*
Social support (S) × age ²	–	–	0.086
Group differences model (Model 7)			
<35 years [N = 148]			
Social support (C)	0.597***	–	–0.069
Social support (S)	–	0.600***	–0.011
Irritation	0.086	0.037	0.546***
35–44 years [N = 76]			
Social support (C)	0.329**	–	0.193*
Social support (S)	–	0.603***	–0.072
Irritation	–0.077	–0.138	0.603***
≥45 years [N = 110]			
Social support (C)	0.692***	–	–0.196**
Social support (S)	–	0.748***	–0.010
Irritation	–0.238***	0.036	0.681***

Note: All effects are controlled for gender, time pressure, job autonomy, as well as lagged endogenous effects of colleagues' and supervisors' social support, and irritation. (C) and (S) denote colleagues and supervisors.

*** $p < .001$.

** $p < .01$.

* $p < .05$.

For a better understanding of the moderation effect, we computed a group differences model for the three age groups (model 7 in Table 4). For younger nurses (<35 years) no significant effects of colleagues' social support on strain at Time 2 were found ($\beta = -0.069, p = .340$). For middle aged nurses (35–44 years) we found a significant effect of colleagues' social support on strain at Time 2, where provision of social support by colleagues resulted in an increase of reported strain in terms of irritation ($\beta = 0.193, p = .042$). Older nurses (≥ 45 years) reported a significant reduction of irritation at Time 2 through perceived colleagues' social support ($\beta = -0.196, p = .005$). Additionally we identified a negative relationship between irritation at Time 1 and colleagues' social support at Time 2 in this age group ($\beta = -0.238, p < .001$), i.e. higher levels of irritation led to a significantly lower perception of colleagues' social support in older nurses.

4. Discussion

While there exists a large body of research on the relationship of social support and strain at work, age-specific effects have rarely been investigated. This study set out to fill this gap by including age as the moderator of the relationship between social support and mental strain. Our study revealed that social support has contradictory age specific effects on mental strain, in terms of irritation. For younger nurses (<35 years) social support by colleagues had no significant effect on mental strain. Surprisingly colleagues' social support had a detrimental effect on mental strain for middle-aged nurses (35–44 years), meaning higher levels of social support by colleagues were associated with an increase of mental strain for this group. Only for older nurses (≥ 45 years), social support by colleagues had a mitigating effect on mental strain. Moreover, reciprocal effects were found for older nurses: high levels of mental strain led to a withdrawal of colleagues' social support. No effects for supervisors' social support were found for any of the age groups. Although we controlled for gender, we didn't find any differences regarding gender and strain; this is likely because of the small

percentage of male nurses in our sample. The low proportion of men in our sample is in line with the employment rate of male nurses in Germany in general (Aiken et al., 2013). According to Drössler et al. (2016), some gender differences emerged in their review regarding the association between social relationships and the outcomes they examined, but they did not report consistent patterns of these associations for men or women. Despite the fact that our main effects for social support were weak and not significant, they surprisingly point in opposite directions for colleagues and supervisors, such that social support from colleagues seems to be associated with increased levels of strain at T2; whereas that from supervisors seems to be associated, as expected, with a decrease. Previous research on social exchange theory indicates that burdened employees that receive support may feel a sense of obligation to provide themselves support for their peers, which adds additional strain on them; while supervisors' offer of support may come with less strings attached and makes them appear more understanding, thus alleviating strains (Bacharach et al., 2010; Buunk et al., 1993). In their review of social relations at work, Drössler et al. (2016) report that in longitudinal studies, the association of social support and mental well-being is not particularly strong and no significant associations were found in just over half of the studies examined. Against this background our study contributes to the literature on the relationship of social support and strain by considering previously neglected moderators.

Our results are in line with lifespan perspectives on job design (Truxillo et al., 2012) and the theoretical model of *socioemotional selectivity* (SES) by Carstensen et al. (1999), confirming that social support is a valuable resource especially for older workers. The results indicate that particularly older workers benefit from social support, because social-emotional motives have a higher relevance with increasing age (SES; Carstensen et al., 1999). Older people tend to evaluate social support as being more favourable (Schnitker, 2007), and thus seem to benefit most from the help of colleagues, by comparison with the other age groups. Additionally these results corroborate the assumption that external resources might become more relevant with ageing, alleviating age-related losses of personal resources (Hobfoll, 2002). Thus our findings confirm the results by Yaldiz et al. (2018), who studied age as a moderator between leader member exchange and stress, albeit for social support by colleagues.

The decrease of social support by colleagues following higher levels of mental strain, manifest as irritation, also points towards the high relevance of social support for older employees. Similar results have been reported by Marcelissen et al. (1988), where strains had an effect on social support, indicating that strains have a negative impact on coworker relationships. They interpret these findings threefold: 1) reluctance of possible supporters to approach people with problems as well as strained coworkers appearing less attractive due to anger and symptoms of depression; 2) embarrassment of the strained person resulting in less support-seeking activity; and finally 3) that "negative feelings may hinder the use of social skills required for the asking and obtaining of social support" (Marcelissen et al., 1988, p. 372). Furthermore, particularly older stressed workers seem to be less able to gain and use helpful social resources for themselves, and these resources being available to them to a lesser extent corresponds with the assumption of loss spirals of the *conservation of resources* (COR) model (Hobfoll, 1989). Loss spirals describe a decrease of resources leading to the loss of further resources, since the previous loss of resources affects those that would have been necessary to maintain the previously remaining resources (Hobfoll, 1989). This vicious circle might be represented by the decrease of the external resource social support among older stressed workers; it is plausible that age-related changes may lead to impairments at work, e. g., musculoskeletal limitations at moving patients; limitations of hearing and seeing (Fragar & Depczynski, 2011) and thus possibly being less trusted by colleagues, having difficulties in communication and consequently in mobilising social support. Moreover, age differences regarding the ability to exercise primary control could be at play pursuant to the assumptions of the *motivational theory of life-span*

development (Heckhausen et al., 2010). From this perspective, older strained workers might have fewer resources to exercise primary control directed at the environment, i.e. in order to gain social support.

The negative effects of social support by colleagues in middle aged nurses deserve our special attention, since these results might appear counterintuitive. Previous studies have shown that receiving social support in stressful situations may lead to negative affect, symptoms of depression and mental issues (Nurullah, 2012). Possible explanations for this effect are provided in the *threat-to-self-esteem* model by Nadler and Jeffrey (1986), according to which social support may endanger one's self-esteem and independence; or a mechanism coined *negative buffering*, where offered support helps us realise that things are as bad or worse than thought (LaRocco et al., 1980). Accordingly, especially for middle-aged nurses, social support might contrast with a positive self-image as experienced and capable employees. Middle-aged workers could therefore, cued by being offered social support, undertake a re-evaluation of the situation and of their own abilities (see e.g., secondary appraisal; Lazarus & Folkman, 1984), which may seem particularly self-esteem threatening, as they do not want to acknowledge that they are in need of help nor does their subjective age match the age of those who they deem helpless (Kooij et al., 2008). So, contrary to our assumption, it could be that in middle-aged workers, who are exposed to increased demands due to their unique 'sandwich' position (professional life: career advancement; private life: caring for relatives; see Rauschenbach & Hertel, 2011), an offer of support is more likely to be perceived as an additional demand to which they react with rejection and irritation.

That we do not see effects for support from supervisors could possibly be due to the specific job characteristics of the nursing profession, which greatly depends on teamwork and coordination among peers and thus social support from colleagues could be more relevant to alleviate mental strains than social support provided by supervisors (Yanchus et al., 2017).

It should be emphasized that our study only considered chronological age instead of alternative conceptualisations of age (Kooij et al., 2008): it is conceivable, for example, that higher *organisational age* is accompanied by a higher level of experience and thus a lower need for social support; On the other hand, increasing *functional age* (comprised of biological and psychological age; Kooij et al., 2008) is associated with poorer health, lower self-efficacy expectations, lower willingness to take on new and challenging tasks, and thus could increase the importance of external resources and explain part of the observed effect of the support-strain moderator.

From our findings we can conclude that timing of social support is a delicate matter, depending on the age of the receiver. Some (older strained nurses) need it more, but don't get it. Others (middle-aged nurses) might get it, but can be inconvenienced by it. From a practical perspective it seems important to sensitise workers about possible negative effects of social support, while at the same time empowering older, stressed workers to actively seek social support. Organisations should likewise create a work environment that facilitates social support (for an overview of social support interventions and their usefulness see Hogan et al., 2002). For nurses, providing adequate levels of social support could improve the quality of caregiving, and addressing age-specific needs could increase willingness to remain in the job with increasing age (van der Heijden et al., 2010).

4.1. Limitations and future research

The generalisability of our findings for other occupations cannot be assumed, since we only looked at nurses, whose work is characterised by demands that are particularly straining with increasing age (e.g., physically onerous tasks, like the manual handling of patients; shift work; Fragar & Depczynski, 2011). All data were collected from self-reports, so we can't rule out common-method bias (Podsakoff et al., 2003). Neither can we rule out the possibility that irritation only leads to a reduced perception of social support instead of true withdrawal by

colleagues, who distance themselves due to older nurses' grumpiness, and possibly negative age stereotypes and lower tolerance by younger nurses (Posthuma & Campion, 2009). We didn't consider different dimensions of social support.

More research into the mechanisms of age-dependent detrimental effects of social support at work is necessary. It is conceivable that a more fine-grained approach of studying its quality might provide a different picture (e.g., how is it provided? by whom? what kind of social support?), since there are indicators that the quality of social support may be especially relevant to older people (Horowitz et al., 2003). Social support interventions could be specifically tailored to the needs of older (more social support) and middle-aged workers (possibly a more nuanced approach of provision of social support) and their effectiveness studied. Future research should consider the relations of social support and other concepts of age besides chronological age (e.g., organisational age, psychological age; Kooij et al., 2008).

5. Conclusions

Our findings indicate that social support has contradictory age specific effects on mental strain of employees. Older nurses need social support to alleviate mental strains, but the more mentally strained they are, the less likely are they to receive it. Middle-aged nurses, on the other hand, respond irritably to perceived social support. Thus, the adequate timing of social support across the work-life span seems to be a sensitive matter. Different needs of different age groups should be considered: 'One size fits all' doesn't hold.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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