



## Workplace bullying and depressive symptoms: A prospective study among junior physicians in Germany



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### ABSTRACT

**Objective:** The relationship between workplace bullying and depression may be bi-directional. Furthermore, it has been suggested that the depressogenic effect of bullying may only become evident after reasonable periods of follow-up (i.e., >1 year). As prospective evidence remains sparse and inconsistent, we used data from a three-wave prospective study to disentangle this potentially bi-directional relationship.

**Methods:** In 2004, 621 junior hospital physicians participated in a survey and were followed-up 1.2 years and 2.8 years later. Prospective analyses were restricted to participants with complete data at all assessments ( $n = 507$  or 82%). To measure workplace bullying, a description of bullying at work was provided followed by an item inquiring whether the respondent felt she/he had been exposed. Depressive symptoms were assessed by the state scale of the German Spielberger's State-Trait Depression Scales.

**Results:** Multivariate linear regression suggested that workplace bullying at baseline predicted increased depressive symptoms both after 1 year ( $b = 1.43, p = 0.01$ ) and after 3 years of follow-up ( $b = 1.58, p = 0.01$ ). Multivariate Poisson regression models revealed that the depressive symptom z-score at baseline was associated with an increased risk of bullying at the 3-year follow-up (relative risk [RR] = 1.49, 95% confidence interval [CI] = 1.13–1.97). This association was less pronounced after 1 year of follow-up (RR = 1.19, 95% CI = 0.90–1.59).

**Conclusions:** Our study suggests bi-directional associations between depressive symptoms and victimization from bullying at the workplace. Future prospective studies are needed to examine underlying biopsychosocial mechanisms.

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### Introduction

While a uniform definition of workplace bullying is lacking, there is consensus on some of its key features: Bullying in the workplace is considered present if an individual feels mistreated by superiors and/or colleagues [1]. Workplace bullying is assumed to evolve gradually, and to be encountered repeatedly and for extended periods of time while the victim feels to have limited or lacking resources to take a stand against the experienced negative acts [1,2]. Bullying behaviors may include verbal hostility, attempts to hamper the victim's work performance and social exclusion [3], and these behaviors are considered to exert their detrimental effects as they accumulate across time [4]. Bullying in the workplace represents a frequent phenomenon, especially among health care staff [5–7], and has been found to increase the risk of numerous adverse health outcomes, including psychological stress [8],

chronic pain [9], cardiovascular disease [3], and, as a corollary, increased absenteeism [10].

A potential health-related sequel of workplace bullying which has received increasing attention is depression. Research has suggested that the relationship between workplace bullying and depression might be bi-directional [3]. Disentanglement of such reciprocal associations is best achieved and documented by prospective cohort studies. To date, only few studies have however applied such designs to examine this bi-directionality [3–5,11]. Moreover, those investigations have yielded inconsistent results. Two of these prior studies found that depression is predictive of incident exposure to bullying at work [3,11]. Conversely, two prospective investigations identified exposure to workplace bullying as a risk factor for depression [3,5]. Other studies did not confirm that observation [11] or replicated it only among men, but not among women [4].

Notably, the authors of the study, that failed to show an association between workplace bullying and subsequent depressive symptoms—Reknes et al. [11]—hypothesized that their study's relatively short follow-up duration (i.e., 1 year) may partly explain their nil finding, because depression may only emerge as a delayed response to bullying.

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This hypothesis was based on insights from a qualitative study by Niedl, exploring, among others, coping strategies of bullying victims [12]. That investigation drew on the Exit-Voice-Loyalty-Neglect (EVLN) model [13], which conceptualizes how employees may respond to their job dissatisfaction. Responses may include quitting the job (exit), active problem solving by raising the issue (voice), staying at the job while hoping for the problem to be solved some day (loyalty), and reduction of efforts at work or focus of non-work interests (neglect). Niedl observed that coping responses evolved over time: most bullying victims initially engaged into active problem-solving (voice) and some responded with loyalty [12]. As these responses were probably ineffective in coping with victimization from bullying [11], most employees subsequently reduced their commitment to their work (neglect) or quit their job (exit). These specific coping dynamics have been confirmed by other studies [14] and have informed the hypothesis that depression occurs in responses to workplace bullying only with some delay (i.e., more than 1 year), that is, once initial coping strategies (voice and loyalty) have failed, and victims respond with depression and engage into more destructive coping strategies (i.e., neglect and exit) [11].

To improve our understanding of the bullying–depression relationship, it is of interest to provide prospective data to add to the currently limited and inconsistent evidence base. Ideally, such data should allow for the examination of bi-directional associations based on more than two measurement points [11]; in particular, based on the above-mentioned hypothesis, it would be of interest to conduct analyses for different periods of follow-up (i.e., 1 year versus longer periods of time). We therefore set out to determine the prospective associations between workplace bullying and depressive symptoms based on a design with three measurement points which allowed for analyses based on 1 year of follow-up as well as 3 years of follow-up.

## Methods

### Study population

Detailed information on the design of this study and its procedures has been presented elsewhere [15]. Briefly, in 2004, we mailed questionnaires to a random sample of 1,000 junior physicians working in hospitals in Southern Germany in their second or third year of medical residency. A total of 621 junior physicians participated in these baseline assessments and completed similar questionnaires 1.2 years after baseline (1-year follow-up; year 2005) and 2.8 years after baseline (3-year follow-up; year 2007). Each questionnaire covered, among others, respondents' evaluation of their current occupational conditions, education, health-related lifestyles, and mental health. To be able to compare our findings for different periods of follow-up, we decided to limit the current study to junior physicians who had participated in all three surveys ( $n = 507$  or 82% of the baseline sample). This study was approved by the Institutional Review Board of the Medical Faculty of the Ludwig-Maximilians-University Munich (No. 016/04).

### Questionnaire data

Exposure to bullying was operationalized by the following specification and question: "Workplace bullying refers to a situation where someone is subjected to social isolation or exclusion, his or her work and efforts are devalued, he or she is threatened, derogatory comments are made about him or her in his or her absence, or other negative behavior that is aimed to torment, wear down, or frustrate the victim occur. Have you been subjected to such bullying?" Responses were recorded as 1 = "yes," 0 = "no." This question has been used in previous studies [3,10]. Depressive symptoms were measured by the state scale of the German Spielberger's State-Trait Depression Scales [16,17]. The state scale assesses the current experience of characteristic

cognitive and affective symptoms of depression by 10 statements. Respondents are asked to endorse their level of agreement on a 4-point Likert scale ("not at all" to "very much so"). The resulting sum score has a potential range between 10 and 40 with higher scores indicating higher levels of depressive symptoms. The state subscale had a high internal consistency in our study as indicated by Cronbach's alphas of 0.9 at each measurement point.

### Statistical analyses

#### Workplace bullying as a predictor of depressive symptoms

The potential relationship between exposure to workplace bullying at baseline and subsequent depressive symptoms at the 1-year follow-up or the 3-year follow-up was examined by linear regression models. These models were first corrected for potentially confounding effects of age, sex, and the baseline depression score. In a next step, these models were additionally adjusted for total working hours per week, having a partner, heavy alcohol consumption, physical activity, overweight/obesity, and prevalent disease (any versus none). These potential confounders were identified based on their previously documented associations with depressive symptoms or workplace bullying [18–24].

#### Depressive symptoms as predictors of being bullied at work

Utilizing data from baseline participants reporting not to be bullied ( $n = 441$ ), we examined the potential association of depressive symptoms at baseline and incident workplace bullying by Poisson regression with a log-link function and the empirical (robust) variance [25]. Incident bullying by depressive symptoms was expressed as risk ratios (RRs) together with corresponding 95% confidence intervals (95% CIs). Again, we conducted separate analyses for different periods of follow-up. First, we examined baseline depressive symptoms as a predictor of incident bullying at the 1-year follow-up (i.e., bullying reported at the 1-year follow-up by those not bullied at baseline). Second, we ran corresponding models predicting incident bullying at the 3-year follow-up. To maximize the statistical power, we utilized the depressive symptom variable as a continuous z-score in our primary analytical approach. In additional analyses, we dichotomized the depressive symptom score based on tertiles of its distribution at baseline (i.e., a score within the top tertile versus the remaining tertiles) or quartiles (i.e., a score within the top quartile versus a score in the remaining quartiles). The confounder adjustment was consistent with our analyses of bullying as a predictor of subsequent depressive symptoms (see above). Analyses were carried out using SAS 9.2 (SAS Institute Inc., Cary, North Carolina, USA).

## Results

The mean age of the study population equaled 30.5 years at baseline showing little variation (standard deviation [SD]) = 2.6). The mean depressive symptoms baseline score was 18.4 (SD = 4.8). As much as 12.9% of the participants reported at baseline that they had been bullied at work. This prevalence increased to 14.9% 1 year after baseline and to 15.9% 3 years after baseline. As shown in Table 1, about half of the sample was female and worked 50 or more hours per week. Roughly three quarter had a partner and about every fifth participant was overweight or obese, while 71.2% were physically active, and 11.9% reported heavy alcohol consumption. The presence of any chronic disease was reported by 22.5%.

Victimization from workplace bullying was particularly common in study participants who worked 50 h or more per week, who did not have a partner, who were overweight/obese, who reported heavy alcohol consumption, and who had a chronic disease. Likewise, depressive symptoms were elevated in participants who reported long working hours, having no partner, being overweight/obesity, engaging into heavy alcohol consumption, and having a chronic disease. We conducted dropout analyses comparing those who had been excluded from the present analyses ( $n = 114$ ) with the analytical sample in terms of their depression scores, the prevalence of bullying, and the characteristics shown in Table 1. We did not observe significant differences between these two samples.

Exposure to bullying at baseline was associated with elevated depressive symptoms both after 1 year and after 3 years ( $b = 1.43$ ,  $p = 0.01$ , and  $b = 1.58$ ,  $p = 0.01$ , respectively, see Table 2). As shown in Table 3, the 1-year risk of incident bullying increased by 19% with every one SD increase of the depressive symptoms score at baseline. This relationship did not reach statistical significance however (RR = 1.19,

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