ORIGINAL PAPER

Predictors of burnout: results from a prospective community study

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Abstract The possible link between work strain and subsequent mental disorders has attracted public attention in many European countries. Burnout has become a favored concept within this context. Most burnout research has concentrated on various professional groups and less so on ordinary community samples. We analyzed the data collected from a 30-year community sample during seven measuring occasions, beginning in 1978. In the last assessment (2008), we included for the first time the Maslach Burnout Inventory (MBI). Making the diagnosis of a lifetime mental disorder a predictor for burnout required us to compile the cumulative prevalence rate over all seven occasions. We also evaluated various psychosocial predictors of burnout over the life cycle of our sample. Concurrent associations of the MBI with subscales from the SCL-90-R were also investigated. The relationship of burnout with several SCL-90-R subscales demonstrated that, in all dimensions, burnout is associated with significant psychopathology. Persons with a lifetime mood disorder, and especially those with a combination of mood and anxiety disorders, had a higher risk for subsequent burnout. Various partnership problems were another predictor for burnout. In conclusion, the role of mental disorder as an occupational illness remains controversial. Various forms of such disorders as well as some psychosocial predictors can predispose to burnout. By contrast, work-related predictors appear to be less important.

Keywords Epidemiology · Community sample · Burnout · Stress · Work strain · Predictor

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Introduction

While some form of employment has long served as a central element in psychiatric rehabilitation as a resource for recovery [1], work strain and subsequent mental disorders that have accompanied the industrial world's transformation to a service-based economy have dominated the public's attention. Mental disorders, notably depression, are a leading cause of employment disability. Approximately 20 % of the working-age population suffers from a mental disorder [2]. For example, public health statistics from Germany have shown that the number of persons on sick leave because of these disorders nearly doubled from 1994 to 2010. In that final survey year, such disorders accounted for 9.1 % of all sick-leave absences, averaging 23.4 days per person per annum [3]. The need for premature disability benefits because of mental illness has placed a great burden on pension funds in Europe. In

2001, approximately 33.3 % of all persons receiving such benefits in Switzerland had a psychiatric diagnosis; by 2010, this proportion had increased to 41.9 % [4].

The underlying reasons for this development are not clear. It is unlikely—or at least not supported by empirical evidence [2]—that the prevalence of mental disorders is increasing. Instead, awareness of such problems and their impact on the capacity to work has been heightened among patients themselves, their doctors and employers, and other relevant actors. Because employers incur substantial costs that arise from mental disorders through lost productivity or absence, the impact of these disorders on workers and organizations is of considerable interest. However, it remains controversial whether they should be classified as occupational illnesses.

A movement has grown toward integrating well-established concepts from occupational psychology into current ideas about mental disorders, e.g., the association between job strain and depression [5, 6]. Within the occupational context burnout has become a favored concept. In a Finnish study, burnout was significantly associated with job strain and was believed to be a mediator between stress and depression [7, 8]. Subsequently, depression is now considered a risk factor for job loss and unemployment.

In 1978, our research group initiated a community study in Zurich, Switzerland, that involved a representative sample of participants beginning at the age of 19/20. These persons were observed for 30 years, with follow-up assessments on seven separate occasions, through 2008. We previously reported on the potential relationship between results from a personality questionnaire issued at age 30 and the outcome of the Maslach Burnout Inventory General Survey (MBI-GS) [15] first administered at age 49/50. There, we found that certain personality traits made subjects more predisposed to burnout [9]. Here, we analyzed concurrent associations between MBI data and psychopathological syndromes by applying subscales from the SCL-90-R [10]. Further objectives were to identify various psycho-social predictors of burnout over the life cycle of our sample. In particular, we wished to determine any lifetime mood disorders, anxiety, or substance-use disorders that had developed prior to that assessment of burnout.

Methods

Sampling procedure

The first step of our sampling procedure for the Zurich Study involved an initial screening of 4,547 subjects (2,201 males, 19 years old; 2,346 females, 20 years old) who were considered representative of the canton of Zurich in Switzerland. In the second step, we selected a stratified subsample of those participants for comprehensive face-to-face interviews. Such

a two-step procedure is fairly common in epidemiological research [11] and is applied to enrich the interview sample with cases at risk for psychopathological syndromes. Stratification was based on a cut-off value of the SCL-90-R [10] global severity index (GSI). Two-thirds of the interview cohort comprised high scorers (defined by the 85th percentile or above on the GSI) while the remaining third were randomly selected from the rest of the initial sample (GSI scores below the 85th percentile). From this, 591 subjects (292 males and 299 females) were chosen. Interviews were conducted in 1979 ($N = 591$), 1981 ($N = 456$), 1986 ($N = 457$), 1988 ($N = 424$), 1993 ($N = 407$), 1999 ($N = 367$), and 2008 ($N = 335$). Over that period, 57 % of the original cohort continued to participate. Those who dropped out did not differ significantly in their demographics from subjects who remained. The initial allocation to the two groups, split through the cut-off of the 85th percentile of the GSI, had not changed over the time span, although dropouts were rather extremely high or low scorers on the GSI [12]. We repeated those dropout analyses for the last interview in 2008 and additionally found that those participants who dropped out did not differ significantly in their socio-economic status and education level at the onset of the study from subjects who remained for the whole study duration. Neither was there a difference in initial psychopathologic impairment according to the nine SCL-90-R subscales. However, we found a moderate bias with respect to sex: dropouts were more likely male (OR 1.82; 95 % CI 1.31–2.53; $p < 0.001$). A detailed account of the sampling procedure has been provided elsewhere [13, 14].

For the present analysis we excluded participants who were unemployed or exclusively engaged in child-rearing or household management. This reduced the sample size to 316 persons (140 men and 176 women).

Instruments and measures

Interviews were conducted according to the "Structured Psychopathological Interview and Rating of the Social Consequences of Psychological Disturbances for Epidemiology" (SPIKE) [13]. This semi-structured interview, developed for epidemiological surveys in psychiatric research, assesses data about socio-demography, psychopathology, substance use, medication, health services, impairment, and social activity. Its reliability and validity have been reported elsewhere [15].

Diagnosis of a lifetime disorder was manifested by its cumulative annual prevalence over all seven measurement occasions. Mood disorders required the presence of an episode of MDD or the diagnosis of a bipolar disorder according to the DSM-III-R. Anxiety disorders included DSM-III generalized anxiety disorder (GAD), DSM-III-R obsessive–compulsive disorder, repeated panic attacks over 12 months,

and DSM-III-R phobias. Substance use disorders (SUD) were defined according to DSM-IV criteria for abuse or dependence of alcohol or drugs. Psycho-social predictors, such as having children, employment, or income, were assessed within the socio-demographic section of the SPIKE by single items with standardized response options.

In addition to the SPIKE, we utilized the SCL-90-R [10], in which participants reported psychopathological symptoms according to a five-point Likert scale that ranged from "not at all" (1) to "extremely" (5). The SCL-90-R covered the most recent four-week period of psychopathology at each time of measurement. Its 90 items are grouped along nine subscales that represent (1) anxiety, (2) depression, (3) hostility, (4) interpersonal sensitivity, (5) obsessive–compulsive symptoms, (6) paranoid ideation, (7) phobic anxiety, (8) psychoticism, and (9) somatization. The SCL-90-R has historically shown good internal consistency and test–retest reliability [10, 16], although its validity in terms of factor structure of the dimensions has led to contradictory results [16, 17].

In the Zurich Study interview conducted during 2008, we included for the first time the General Survey of the Maslach Burnout Inventory (MBI-GS). The MBI was developed by Maslach and Jackson [18] and is one of the most well-established and applied measures of job burnout. It has shown satisfactory reliability and validity [19–21]. Although several forms exist, the MBI-GS is the most popular, presumably because of its multifunctional and versatile applicability. It consists of 16 items that cover the three main factors of exhaustion (five items), cynicism (five items), and professional inefficacy (six items) [22]. Participants respond according to a seven-point Likert scale ranging from 1 "never" to 7 "daily" with regard to how frequently they experience job-related emotions or cognitions.

Statistical analysis

For our inferential statistical analyses, we used z-transformations to standardize all continuous subscales of the MBI-GS and the SCL-90-R. Measures of burnout were always included as the dependent variables. Bivariate and multivariate associations were examined with a series of generalized linear models (GLMs), fitting each with a normal distribution and identity link-function. We applied a robust estimator to reduce the effects of outliers and influential observations. Results for continuous predictors were reported with standardized regression coefficients (β) and 95 % confidence intervals (CI), whereas the results for binary predictors were presented with their mean values and 95 % CI. Because of the high interrelation between the nine SCL-90-R subscales (i.e., multicollinearity) we examined those predictors only bivariately. All analyses were performed with SPSS version 20 for Macintosh.

Table 1 Bivariate analyses of burnout subscales from the MBI-GS in association with concurrent psycho-pathological syndromes from the SCL-90-R, assessed in the year 2008

	Exhaustion	Inefficacy	Cynicism
Syndrome	β (95 % CI)	β (95 % CI)	β (95 % CI)
Anxiety	0.393 (0.246; 0.541)**	0.135 (0.037; 0.233)**	0.281 (0.149; 0.413)**
Depression	0.501 (0.386; 0.615)**	0.227 (0.095; 0.359)**	0.364 (0.236; 0.493)**
Hostility	0.308 (0.194; 0.421)**	0.067 (–0.045; 0.179)	0.356 (0.224; 0.487)**
Interpers. sensitivity	0.401 (0.281; 0.521)**	0.269 (0.127; 0.410)**	0.417 (0.290; 0.544)**
Obs.-compulsivity	0.561 (0.429; 0.692)**	0.258 (0.128; 0.387)**	0.390 (0.246; 0.533)**
Paranoid ideation	0.372 (0.256; 0.488)**	0.167 (0.052; 0.282)**	0.351 (0.222; 0.480)**
Phobic anxiety	0.282 (0.122; 0.442)**	0.083 (–0.022; 0.188)	0.315 (0.162; 0.467)**
Psychoticism	0.453 (0.328; 0.579)**	0.268 (0.148; 0.387)**	0.389 (0.262; 0.516)**
Somatization	0.408 (0.271; 0.545)**	0.057 (–0.061; 0.175)	0.284 (0.158; 0.410)**

* $p < 0.05$; ** $p < 0.01$

Results

The bivariate associations between the three burnout subscales of the MBI-GS and the nine concurrent psychopathological syndromes of the SCL-90-R are shown in Table 1. Exhaustion was substantially related to all nine subscales. Except for phobic anxiety, the corresponding effect sizes were either medium ($0.300 < \beta > 0.500$) or large ($\beta > 0.500$). The strongest relationships with exhaustion were found for obsessive-compulsivity ($\beta = 0.561$) and depression ($\beta = 0.501$). Associations between the professional inefficacy subscale and the SCL-90-R syndromes were comparably modest. All statistically significant associations were within the range of small effect sizes ($0.100 < \beta > 0.300$). The strongest associations were found for interpersonal sensitivity ($\beta = 0.269$) and psychoticism ($\beta = 0.268$). Finally, associations between cynicism and SCL-90-R subscales were moderate, ranging from $\beta = 0.281$ for anxiety (small effect) to $\beta = 0.417$ for interpersonal sensitivity (medium-to-large effect).

The bivariate analyses of psycho-social predictors of the MBI-GS subscales are shown in Table 2. For the exhaustion subscale, we found small-to-medium effects for ever having been married (Cohen's $d = 0.41$), for having serious conflicts with one's partner ($d = 0.36$), and for lifetime mood disorders ($d = 0.45$). The same associations, albeit with varying effect sizes, existed with respect to the professional inefficacy subscale: ever married ($d = 0.43$;

Table 2 Bivariate analyses for psycho-social predictors of the MBI-GS subscales

Predictor	Exhaustion Mean (95 % CI)	Inefficacy Mean (95 % CI)	Cynicism Mean (95 % CI)
Gender			
Male (N = 132)	0.00 (−0.17; 0.17)	0.04 (−0.13; 0.22)	0.10 (−0.08; 0.28)
Female (N = 169)	0.00 (−0.15; 0.15)	−0.04 (−0.19; 0.12)	−0.08 (−0.22; 0.06)
Ever separated/divorced			
No (N = 221)	−0.01 (−0.14; 0.12)	0.00 (−0.13; 0.13)	0.00 (−0.13; 0.14)
Yes (N = 80)	0.03 (−0.20; 0.27)	−0.01 (−0.25; 0.23)	−0.01 (−0.24; 0.22)
Ever married			
No (N = 57)	**0.33 (0.10; 0.56)****	**0.35 (0.08; 0.62)****	**0.37 (0.10; 0.64)****
Yes (N = 244)	**−0.08 (−0.20; 0.05)****	**−0.08 (−0.20; 0.05)****	**−0.09 (−0.21; 0.04)****
Education level			
Low (N = 132)	−0.08 (−0.24; 0.09)	0.00 (−0.18; 0.18)	0.01 (−0.17; 0.18)
High (N = 165)	0.05 (−0.10; 0.20)	0.00 (−0.15; 0.15)	−0.03 (−0.17; 0.12)
Current salary			
<4,000 (N = 98)	−0.04 (−0.24; 0.15)	−0.06 (−0.25; 0.12)	**−0.19 (−0.35; −0.03)***
>4,000 (N = 186)	−0.01 (−0.15; 0.13)	0.02 (−0.13; 0.17)	**0.06 (−0.09; 0.21)***
Current employment			
Full time (N = 157)	−0.08 (−0.22; 0.07)	−0.05 (−0.21; 0.11)	−0.05 (−0.21; 0.11)
Part time (N = 138)	0.04 (−0.13; 0.21)	0.05 (−0.12; 0.22)	0.00 (−0.17; 0.16)
Children			
No (N = 76)	−0.01 (−0.21; 0.18)	0.00 (−0.22; 0.23)	0.08 (−0.15; 0.31)
Yes (N = 198)	−0.04 (−0.18; 0.10)	0.01 (−0.13; 0.16)	−0.08 (−0.22; 0.05)
Conflicts with partner			
No (N = 257)	**−0.05 (−0.17; 0.07)***	**−0.12 (−0.23; −0.01)****	**−0.06 (−0.18; 0.06)***
Yes (N = 44)	**0.31 (0.01; 0.60)***	**0.66 (0.27; 1.05)****	**0.34 (0.04; 0.64)***
Lifetime mood disorder			
No (N = 94)	**−0.31 (−0.47; −0.14)****	**−0.24 (−0.41; 0.07)****	**−0.26 (−0.43; −0.10)****
Yes (N = 207)	**0.14 (−0.00; 0.28)****	**0.11 (−0.03; 0.26)****	**0.13 (−0.02; 0.27)****
Lifetime anxiety disorder			
No (N = 115)	−0.10 (−0.28; 0.08)	−0.02 (−0.22; 0.17)	**−0.18 (−0.33; −0.03)****
Yes (N = 186)	0.06 (−0.08; 0.21)	0.02 (−0.13; 0.16)	**0.11 (−0.05; 0.27)****
Lifetime SUD			
No (N = 191)	−0.04 (−0.18; 0.10)	−0.02 (−0.17; 0.12)	−0.01 (−0.16; 0.14)
Yes (N = 110)	0.07 (−0.11; 0.25)	0.04 (−0.15; 0.23)	0.02 (−0.15; 0.19)

Associations with at least small-effect sizes are indicated in bold

* $p < 0.05$; ** $p < 0.01$

small-to-medium), conflicts with partner ($d = 0.78$; large), and lifetime mood disorder ($d = 0.35$; small). The cynicism subscale was substantially related to ever married ($d = 0.48$; small-to-medium), current salary ($d = 0.25$; small), conflicts with partner ($d = 0.40$; small-to-medium), lifetime mood disorder ($d = 0.49$; medium), and lifetime anxiety disorder ($d = 0.29$; small).

Post-hoc contrast analyses revealed a statistically significant polynomial linear progression, from no disorder to one disorder (mood or anxiety) to two disorders (mood and anxiety) for exhaustion (Wald $\chi^2 = 9.911$, $df = 1$, $p = 0.002$), inefficacy (Wald $\chi^2 = 4.124$, $df = 1$, $p = 0.042$), and cynicism (Wald $\chi^2 = 9.775$, $df = 1$, $p = 0.002$).

The multivariate analyses, where each significant predictor from Table 2 was adjusted for every other significant predictor, revealed that all three included predictors of exhaustion and efficacy remained statistically significant, each exhibiting a small-to-medium effects except for the association between inefficacy and conflicts with partner ($d = 0.79$; large effect). All multivariate predictor of exhaustion ranged between $d = 0.34$ and $d = 0.40$, representing medium-to-large effect sizes. As for cynicism, the multivariate model showed that four out of five predictors were statistically significant, having small-to-medium effects. Ever married ($d = 0.35$) and conflicts with partner ($d = 0.37$) were the most important predictors of cynicism (Table 3).

Discussion

Our major objective was to explore whether at age 49/50 the three MBI subscales of burnout could be associated with concurrent psychopathological syndromes as well as with lifetime diagnoses of mental disorders and psycho-social measures. The concurrent relationships found between burnout and various subscales of the SCL-90-R made clear that, in all dimensions, burnout is associated with some significant psychopathology. This is particularly true for "exhaustion", which becomes especially notice-able in the work context when the affected person, who is doing badly, is required to operate at full capacity. The medium-to-large effect sizes identified here emphasize the detrimental impact of psychopathological syndromes while also illustrating the possible roles that other parameters may play (Tables 2 and 3).

To the best of our knowledge, we are the first to report that, in particular, "professional inefficacy" is significantly related to the subscale "psychoticism" of the SCL-90-R. This subscale contains items such as, "other people are aware of your private thoughts", "never feeling close to other people", or "having thoughts that are not your own". These point to some forms of cognitive impairment as well as to severe deficits in communication [23]. Thus, it is not difficult to understand how this subscale especially relates to work problems and subsequent mental challenges. Possibly the association between psychotic symptoms and work impairment is mediated by schizotypal personality traits [24].

Beyond that, our calculation of the lifetime prevalence for mood disorders (according to DSM-3-R/-IV) prior to our assessment of burnout enabled us to clarify that various

forms of mental disorders can predispose or make certain persons more vulnerable to burnout. These associations become even stronger from no disorder to one to two (previous) disorders (e.g. anxiety and depression combined). This could also be rated as an indicator of an increasing severity of psychopathology. The more severe the psychopathology becomes, the more burnout resembles diagnostic categories like depression [7, 8]. We do not know if the previous affective disorders were related to work-stress. Stress in general can be a catalyst for depression; in the case of burnout it is only a specific stress trigger. However, this analysis was cross-sectional. As such, it did not allow for causal inferences. Therefore, we cannot say if burnout leads to a significant psychopathol-ogy or vice versa. And finally—as we could demonstrate in a previous analysis [9]—the susceptibility for affective disorders as well as for burnout might be embedded in a certain personality structure, e.g. in neuroticism.

Neuroticism is a personality concept originally delin-eated by HJ Eysenck and integrated in the Maudsley Per-sonality Inventory. According to Eysenck there are two main personality traits, i.e. extraversion/introversion and neuroticism (emotional stability/instability) [24, 25]. Per-sons with high scores on the neuroticism scale are—among other features—supposed to be depressive, anxious, and moody and have low self-esteem. The core feature of this trait is the tendency to respond to frustration with negative emotions. Neuroticism is also a robust predictor for comorbid mental and physical disorders and the subsequent use of health services [26]. In analogy to Eysenck's neu-roticism scale, the "Freiburger Persönlichkeitsinventar" (FPI) contains also a secondary scale "neuroticism", which we had used in our analyses. Both neuroticism scales seem

Table 3 Multivariate analysis for psycho-social predictors of the MBI-GS subscales

Predictor	Exhaustion Mean (95 % CI)	Inefficacy Mean (95 % CI)	Cynicism Mean (95 % CI)
Ever married			
No (N = 57)	**0.37 (0.10; 0.64)****	**0.62 (0.29; 0.95)****	**0.28 (−0.02; 0.58)***
Yes (N = 244)	**−0.03 (−0.19; 0.14)****	**0.14 (−0.06; 0.35)****	**−0.07 (−0.24; 0.10)***
Conflicts with partner			
No (N = 257)	**0.00 (−0.14; 0.14)***	**−0.01 (−0.17; 0.15)****	**−0.08 (−0.22; 0.07)***
Yes (N = 44)	**0.34 (0.04; 0.65)***	**0.78 (0.38; 1.17)****	**0.29 (−0.04; 0.62)***
Lifetime mood disorder			
No (N = 94)	**−0.02 (−0.25; 0.21)****	**0.26 (−0.01; 0.53)***	**−0.02 (−0.26; 0.22)***
Yes (N = 207)	**0.37 (0.18; 0.55)****	**0.50 (0.27; 0.74)***	**0.23 (0.02; 0.44)***
Lifetime anxiety disorder			
No (N = 115)	–	–	0.01 (−0.22; 0.24)
Yes (N = 186)			0.20 (−0.02; 0.42)
Current salary			
<4,000 (N = 98)	–	–	**−0.02 (−0.27; 0.22)***
>4,000 (N = 186)			**0.24 (0.03; 0.44)***

Associations with at least small-effect sizes are indicated in bold
* p < 0.05; ** p < 0.01

to measure the same construct, as the concurrent correlation between the two scales is 0.80 [27]. The concept of neuroticism demonstrates well that a personality trait like neuroticism can interact with the occupational environment in a quite negative way. We have recently provided evidence that pathological personality traits are substantially related to occupational functioning deficits and work impairment [28].

Significant psycho-social predictors, such as being married (protective factor) or problems in partnership (risk factor), also are in play. We noted that some variables had no significant influence, e.g., education (in the sense that more highly educated persons have a broader latitude for decision-making within their job, which makes them less susceptible to burnout. Decision latitude is an important construct in the prevention of burnout). Other factors of small effect sizes comprised part-time or full-time employment (work load is often identified as a risk factor for burnout) or salary (as a significant factor within the so-called effort-reward model).

Although research on burnout has expanded enormously in the last decades, many professionals in psychiatry are concerned about the vulgarization of mental disorders, in particular, depression, when applied to the concept of burnout. They worry that persons at-risk do not receive appropriate treatment because the condition has almost exclusively focused on the workplace environment and neglected an individual's personality and/or predisposing mental disorders. Indeed, abundant burnout research has concentrated on various professional categories and their respective risk for burnout, such as the susceptibility of mental health workers [29]. By contrast, less research has utilized community samples to assess vulnerability to burnout in connection with mental disorders. One of the few community studies on the relationship between burnout and depressive disorders has been performed in Finland [7, 8]. However, that Finnish Health 2000 Study was cross-sectional.

In conclusion we propose that the "contribution" of the individual (i.e., person-variables) to the onset of burnout has possibly been underestimated and the role of working conditions (i.e., environment-variables) overestimated. These results complement our previous analysis on the role of personality and the risk for burnout [9]. Nonetheless, we fully understand the public's increasing desire to label such a mental disorder as burnout instead, thereby reducing the social stigma associated with those disorders [30]. At the same time, we believe there is an increased risk for inappropriate treatment of well-defined mental disorders. Surprisingly, the concept of burnout is much more popular in German-speaking countries than in countries such as France or Italy. Because German-speaking countries are currently more successful, economically, when compared with Latin-European countries, the pressures of employment and productivity might also be much more prevalent in the former locations, leading to a focus on burnout [31].

Finally, we must also mention some limitations inherent to our study. These data were restricted to a relatively small, but representative, cohort interviewed seven times from age 20/21 to 49/50. Burnout was assessed via self-report questionnaires and was measured only once, at age 49/50. Thus, although some associations included longitudinal variables (e.g. lifetime diagnoses of mental disorders or never been married) we may not draw causal conclusions due to a missing adjustment for initial burnout (i.e., that occurred before 2008). Further we must address the problem of multicollinearity, i.e. that our predictor variables of burnout are correlated with each other. This applies in particular to the SCL-90-R subscales, which is why we analyzed those predictors only bivariately. However, this does not reduce the value of our prediction in general, but all interpretations of single predictor variables should be made carefully. Another problem to be mentioned is the possible conceptual overlap between burnout and other psychopathological measures. We cannot rule out that our psychopathological measures (i.e. the symptoms assessed with the SCL-90-R or the diagnoses according to the SPIKE interview) substantially overlap with the assessed burnout dimensions. But this is not a problem exclusively in this study but a general problem of psychopathology and psychiatric classification, as we deal not with natural illness entities [32]. But in spite of all limitations, we would like to emphasize that there is an urgent need for studies concerning burnout in representative samples and not only in specific professional groups. Here we see the advantage of our study.

Conflict of interest The authors declare that they have no conflicts of interest concerning this article.

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