Inevitable - or not? Organizational starting points for counteracting mental illness and the accompanying sick leave

Dissertation

„kumulativ“

zur Erlangung des Doktorgrades der Naturwissenschaften

(Dr. rer. nat.)

des

Fachbereichs Psychologie der Philipps-Universität Marburg

Vorgelegt von

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aus Darmstadt

Marburg an der Lahn, 2022

Vom Fachbereich Psychologie der Philipps-Universität Marburg
(Hochschulkennziffer 1180) als Dissertation angenommen am 02.09.2022.

Erstgutachterin: Prof. Dr. Kathleen Otto

Zweitgutachterin: Dr. Maria Undine Kottwitz

Tag der Disputation: 21.09.2022

Indifference and neglect

often do much more damage

than outright dislike

Albus Percival Wulfric Brian Dumbledore

(Fictious character created by Joanne K. Rowling)

Quote taken from “Harry Potter and the Order of the Phoenix” (Rowling, 2003, p. 735)

Danksagung

Die Danksagung ist nicht Teil der Veröffentlichung.

Contents

Deutsche Zusammenfassung

Psychische Erkrankungen sind in der Weltbevölkerung weit verbreitet und gehen mit schwerwiegenden Konsequenzen für die Betroffenen, aber auch ihr Umfeld, einher (Fekadu et al., 2019; James et al., 2018; Qin & Nordentoft, 2005). Im beruflichen Kontext bedrohen psychische Erkrankungen und damit einhergehende Krankheitsausfälle wichtige Aspekte des Arbeitslebens der Erwerbstätigen ebenso wie das Wohlergehen der Organisation, für die sie arbeiten (Amiri & Behnezhad, 2021; Greenberg et al., 2015; Hendriks et al., 2015; Sieurin et al., 2009; Stewart et al., 2003). Die vorliegende Dissertation untersuchte daher arbeitsbezogene Ansatzpunkte, die darauf abzielen, psychischen Erkrankungen und damit zusammenhängenden Krankheitsausfällen entgegenzuwirken: Aufbauend auf dem „Job Demands-Resources“ (JD-R) Modell (Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017; Demerouti et al., 2001) untersuchte ich, inwiefern Führungskräfte in der Lage sind, den schädlichen Einfluss der Arbeitsbelastung der Erwerbstätigen auf das Ausmaß der psychischen Erkrankung und darauffolgende Krankheitsausfälle zu beeinflussen (Forschungsfrage 1). Mit Hilfe der Verknüpfung von Annahmen des JD-R Modells (Bakker & Demerouti, 2017; Demerouti et al., 2001) und des „Stereotype Content Model“ (SCM; Cuddy et al., 2007, 2008; Fiske et al., 2002) betrachtete ich zudem, ob die soziale Ausgrenzung, die Erwerbstätige in Abhängigkeit des Ausmaßes ihrer psychischen Erkrankung am Arbeitsplatz erfahren, als ein Mechanismus zwischen ihrer Erkrankung und den Krankheitsausfällen wirkt (Forschungsfrage 2).

Die beiden Manuskripte, auf die vorliegende Dissertation aufbaut, adressieren diese Forschungsfragen. Das erste Manuskript fokussierte die erste Frage und untersuchte eine mögliche Moderation der gesundheitsbeeinträchtigenden Effekte der Arbeitsbelastung (z.B. Virtanen et al., 2010) durch die Führungskraft der Beschäftigten: Auf Basis bisheriger Forschungsergebnisse (z.B. Corbière et al., 2016) und dem JD-R Model (Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017; Demerouti et al., 2001) untersuchten wir,

inwiefern die Ressourcen, die die Führungskraft den Mitarbeitenden zur Verfügung stellt, den indirekten Einfluss der Arbeitsbelastung auf die Krankheitsausfälle (vermittelt durch das Depressionsniveau) abmildern kann. Längsschnittliche Mehrebenen-Pfadanalysen mit 276 Mitarbeitenden und 90 Führungskräften deuteten darauf hin, dass Führungskräfte, die ein hohes Ausmaß an Ressourcen für ihre Mitarbeitenden bereitstellen, den schädlichen Einfluss der Arbeitsbelastung der Mitarbeitenden auf deren Depressionsniveau sowie die gesamte Mediation verhindern können.

Das zweite Manuskript widmete sich der zweiten Forschungsfrage, in dem es die soziale Ausgrenzung von Personen, die psychisch erkrankt sind, im Arbeitskontext untersuchte: Basierend auf dem SCM (Cuddy et al., 2007, 2008; Fiske et al., 2002) und dem „allostatic load model“ (McEwen & Stellar, 1993) nahmen wir an, dass die psychische Erkrankung der Erwerbstätigen ihre soziale Ausgrenzung am Arbeitsplatz hervorruft, was letztlich im Krankheitsausfall mündet. Pfadanalysen mit 86 Teilnehmenden, die mit einer psychischen Erkrankung diagnostiziert wurden, deuten auf die Bedeutsamkeit der sozialen Ausgrenzung als relevanter Mechanismus hin: Ein höherer Schweregrad der psychischen Erkrankung geht mit einer höheren symptomatischen Belastung einher, was das Ausmaß an Ausgrenzung erhöht, das die Erwerbstätigen am Arbeitsplatz erfahren. Dies steigert wiederum die Krankheitsausfälle der Erwerbstätigen und ergibt somit eine serielle Mediation.

Zusammengenommen gelingt es der vorliegenden Dissertation, etablierte Ansatzpunkte für Organisationen im Vorgehen gegen psychische Erkrankungen und einhergehende Krankheitsausfälle zu bestätigen und neue zu identifizieren: Organisationen können die Arbeitsbelastung ihrer Mitarbeitenden auf ein vernünftiges Maß regulieren, um schädliche Effekte auf deren mentalen Zustand und damit Krankheitsausfälle zu vermeiden. Der Einfluss der Arbeitsbelastung kann zudem auch eingegrenzt werden, indem man Führungskräfte befähigt, den Mitarbeitenden ausreichend Ressourcen zur Verfügung zu stellen. Zuletzt ist die Integration einer/-s jeden Mitarbeitenden in die Belegschaft notwendig,

unabhängig von ihrer/seiner Gesundheit, um Krankheitsausfällen entgegenzuwirken. Organisationen sollten von diesen Möglichkeiten zum Gegensteuern Gebrauch machen – gleichgültig zu sein und den mentalen Zustand der Belegschaft zu vernachlässigen, könnte wesentlich größeren Schaden anrichten, sowohl für die Mitarbeitenden, als auch ihre Organisation.

English summary

Mental illnesses are widespread among mankind, with detrimental consequences for the affected, but also their surroundings (Fekadu et al., 2019; James et al., 2018; Qin & Nordentoft, 2005). In the work domain, mental illnesses and accompanying sick leave threaten important aspects of employees' working life just as the wellbeing of their organization (Amiri & Behnezhad, 2021; Greenberg et al., 2015; Hendriks et al., 2015; Noordik et al., 2011; Sieurin et al., 2009; Stewart et al., 2003). The present dissertation therefore examined work-related starting points for counteracting mental illness and associated sick leave: Building on the job demands-resources (JD-R) model (Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017; Demerouti et al., 2001), I investigated, in how far supervisors are able to modulate the deleterious influence of employees' workload on their level of mental illness and subsequent sick leave (first research question). Integrating the assumptions of the JD-R model (Bakker & Demerouti, 2017; Demerouti et al., 2001) and the stereotype content model (SCM; Cuddy et al., 2007, 2008; Fiske et al., 2002), I further examined the importance of the social exclusion, that employees experience at their workplace depending on their level of mental illness, as a mechanism between their illness and sick leave (second research question).

The two manuscripts this dissertation is built on address those research questions. More specifically, manuscript 1 focused on the first question, by investigating a possible moderation of workload's health-impairing effect (e.g., Virtanen et al., 2010) through employees' leader: Building on previous literature (e.g., Corbière et al., 2016) and the JD-R model (Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017; Demerouti et al., 2001) we investigated whether the resources, provided by employees' leader, may attenuate workload's indirect effect on sick leave via the level of depression. Longitudinal multilevel path-analyses (276 employees and 90 leaders) indicated, that leaders, who provide a high

level of resources to their employees, may cease workload's detrimental influence on employees' level of depression just as the whole mediation.

Manuscript 2 addressed the second research question, by examining the social exclusion of people suffering from a mental illness within the workplace: Basing on the SCM (Cuddy et al., 2007, 2008; Fiske et al., 2002) and the allostatic load model (McEwen & Stellar, 1993), we supposed that employees' mental illness evokes their social exclusion at the job, finally resulting in sick leave. Path analyses with 86 participants, who have been diagnosed with a mental disorder, point to the importance of social exclusion as a relevant mechanism: A higher severity of employees' mental disorder goes along with a higher symptomatic burden, raising the level of exclusion employees experience at their job. This, in turn, increases the level of sick leave of the employees, yielding a serial mediation.

Taken together, the present dissertation verifies old and identifies new starting points for organizations, to work against mental illness and accompanying sick leave: Organizations can regulate employees' workload to a sound level, in order to prevent detrimental effects on their mental state and therefore sick leave. Workloads' influence may as well be damped by empowering supervisors to provide sufficient resources to their employees. Lastly, the inclusion of every employee within the workforce is necessary, irrespective of their health status, in order to thwart sick leave. Organizations should take advantage of these possibilities to counteract – being indifferent and neglecting the staff's mental state could cause far more harm to both, the employees and their organization.

Introduction

Of the numerous illnesses and diseases that afflict humanity, mental illnesses such as depressive or anxiety disorders are among the leading causes of global health loss (c.f. James et al., 2018). According to the World Health Organization (1992) a *mental illness* can be defined as "a clinically recognizable set of symptoms or behaviour associated in most cases with distress and with interference with personal functions" (p. 5). In 2017, nearly one billion humans suffered under according symptoms or behavior worldwide (James et al., 2018), going along with severe consequences, up to death, for those affected (e.g. Qin & Nordentoft, 2005; Schaefer et al., 2013). Besides the individual impairments, mental illnesses also tend to affect the environment of the sufferer, as his/hers family members (for a review see Fekadu et al., 2019), health care systems (e.g., Oliva-Moreno et al., 2009; Rice et al., 1992) or the organization they are working in (e.g., Greenberg et al., 2015).

Employers for instance have to stem the economic burden caused by a reduction in productivity or an increase in sick leave (Greenberg et al., 2015; Stewart et al., 2003). Sickness absence or *sick leave* is understood by scholars to mean absence from work because of an illness (e.g. Hultin et al., 2012; Whitaker, 2001). Previous research clearly indicates that mental illnesses increase the risk for sick leave (e.g., Amiri & Behnezhad, 2021; Bültmann et al., 2006; Hendriks et al., 2015), with the mentioned economic costs for organizations. However, employees too report negative effects of being on sick leave, for instance on their career possibilities or the development of their salary (Sieurin et al., 2009). Once sick-listed employees, who suffered from a mental illness, return to work, new problems arise: Their working capacity is lowered in comparison to times before their illness started (Noordik et al., 2011), which bears the risk of being overburdened. However, they have problems to protect themselves from transcending their lowered capacity (Noordik et al., 2011). Thus, organizations need to support their employees in their return-to-work process and for instance arrange work accommodations (Dewa et al., 2016; Noordik et al., 2011).

Taken together, it seems to be clear, that protecting the already distressed mental state from employees from further worsening, in order to prevent the necessity of a sick leave – or even better: preventing employees from becoming ill in the first place – would be beneficial for both, the employee and the employer. Therefore, I investigated possible work-related influencing factors on and in the link between mental illness and sick leave in my dissertation, to identify possible starting points to reduce mental illness of employees and to lower resulting sick leave.

Theory, empiricism and open research questions

Job demands & resources as health-affecting factors: The job demands-resources model

As illustrated, mental illnesses have several implications for the work domain – however, the workplace too can influence the health of the employee, according to the job demands-resources (JD-R) model (Demerouti et al., 2001): The model assumes that all job characteristics divide into either job demands or job resources (Bakker & Demerouti, 2017; Demerouti et al., 2001). *Job demands* can be defined as "those physical, social, or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs" (Demerouti et al., 2001, p.501), as for instance a high work pressure (c.f. Bakker & Demerouti, 2017). *Job resources* on the other hand "refer to those physical, psychological, social, or organizational aspects of the job that may do any of the following: (a) be functional in achieving work goals, (b) reduce job demands at the associated physiological and psychological costs, (c) stimulate personal growth and development" (Demerouti et al., 2001, p.501). Examples for job resources are for instance the possibility to participate in decision taking or support provided by the supervisor (c.f. Demerouti et al., 2001).

Besides the division of work characteristics into job demands and job resources, the JD-R model further proposes that both entail different processes: While job resources originate a motivational process, able to increase for instance work engagement, job demands start a health-impairment process, which may result in e.g. health complaints (Bakker & Demerouti, 2017; Demerouti et al., 2001). The health-impairing process of job demands, however, may be attenuated by job resources, according to the model (c.f. Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017).

Workload as a trigger of a health-impairing process

Previous research delivers broad evidence for the health-impairing effect of job demands on the mental state of employees: In a recent meta-review, Harvey et al. (2017)

screened reviews examining the association of work characteristics and employees' mental state and found support for different job demands as according risk factors. A job demand often investigated in this context is employees' workload, which has been associated with anxiety and depression (e.g., Bowling et al., 2015; Ferguson et al., 2012; Spector & Jex, 1998). In a qualitative study with employees, who had to sick leave due to a work-related depressive disorder, more than half of the participants reported their workload to be one of the reasons for the development of their depression (Corbière et al., 2016). Thus, workload seems to unfold an indirect effect on sick leave, via worsening the mental state of employees. Quantitative analyses deliver further support for this assumption, showing that an elevated workload is associated with an increased risk to sick leave due to a depressive disorder (e.g. Endo et al., 2015; Virtanen et al., 2010). Investigations looking on mental illness in general, instead of focusing on depression, also indicate workload's contribution to sick leave via increasing the level of mental illness (Bergin et al., 2021; Kivimäki et al., 2010). Hence, taken together, the existing literature points to a health-impairing effect of workload on the mental state of employees, which increases the risk to sick leave (c.f. Figure 1).

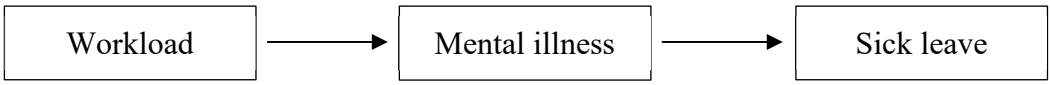

Figure 1. Previous research points to an indirect effect of workload on sick leave via mental illness.

Leaders' potential influence as resource-providers

According to the JD-R model, employees' job resources should be able to attenuate the described detrimental process: More specifically, if an employee can fall back on job resources, the influence of workload on the mental illness (and thus sick leave, in the long run) should be extenuated (c.f. Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017). For employees and their organizations, it is therefore important to ensure, that the staff can resort to sufficient job resources, especially in times of an increased workload.

An important stakeholder in this context is employees' leader. Due to their role as a superior, leaders can exert influence on the work characteristics of their employees, affecting their access to job resources (Fernet et al., 2015; Nielsen et al., 2008). Thus, leaders are important resource-providers and have therefore, according to the JD-R-model (c.f. Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017), the ability to enable employees to cope with their job demands in healthier ways.

Previous research investigated the association between leadership and employees' health outcomes and found evidence for beneficial, health-promoting effects of different leadership styles (e.g. Franke et al., 2014; Munir et al., 2010). A recent study of Krick et al. (2022) for instance indicates, that leaders can buffer the effect of job demands on health outcomes. Thus, employees' leader could be a potential modulator of the whole process described in Figure 1. However, although existing literature points in this direction, so far only Bergin et al. (2021) investigated a possible moderating influence of the leader on this process: Their results indicate, that the influence of workload on sick leave via mental illness can be attenuated, when employees' leader provides praise and recognition to the employees, that is, when (s)he provides job resources (c.f. Bergin et al., 2021). Yet, Bergin et al. (2021) applied a cross-sectional design, in which they only assessed the intention to sick leave, instead of measuring the actual behavior. Furthermore, they found leader's influence to be relevant only in one out of two samples. Lastly, the leader might also have other possibilities to influence the described process, besides providing praise and recognition.

Taken together, although literature suggests that employees' leader could be an important leverage for organizations to attenuate the detrimental consequences of an increased workload described in Figure 1, more research is needed in this context, which leads to research question 1 of this dissertation:

Research question 1: Can employees' leader modulate the effect of employees' workload on sick leave via mental illness?

Shortcoming of the JD-R model: How do colleagues react to the mental illness?

The propositions made in the JD-R model have been continually expanded by the authors in the last years (c.f. Bakker & Demerouti, 2017): For instance, they not only propose that job demands start a health-impairing process, resulting in exhaustion, health complaints etc., but also that those outcomes may in turn increase the level of job demands, yielding a vicious cycle (Bakker & Demerouti, 2017; Demerouti et al., 2001). The mechanisms responsible for this backlash lie, according to the JD-R model, in the employee herself/himself: If employees already suffer from the negative consequences caused by high job demands, they tend to show more inflexible coping strategies and more self-undermining behavior, which further increase their job demands, as the model proposes (Bakker & de Vries, 2021; Bakker & Demerouti, 2017).

However, besides the relevance of the employee for the repercussion on job demands, the reactions of the employee's social environment to her/his health status might also be important for the retroaction on the demands, according to the Stereotype Content Model (SCM; Fiske et al., 2002) and its appendage, the behaviors from intergroup affect and stereotypes (BIAS) map (Cuddy et al., 2007): The models suggests, that people evaluate in how far groups have either positive or negative intentions towards oneself (defined as *warmth* of the group) and whether the group is capable or not of pursuing those intentions (defined as *competence*; Cuddy et al., 2007, 2008; Fiske et al., 2002). The different possible combinations of those classifications go along with different emotional reactions and behavioral tendencies towards the categorized group: Groups evaluated as being warm (i.e., having good intentions) and competent (i.e., able to realize them), as for instance the middle class, are admired and thus experience facilitation (Cuddy et al., 2007, 2008; Fiske et al., 2002). Groups evaluated as being cold and incompetent (e.g., poor people), however, induce contempt and therefore elicit active and passive harm towards them (Cuddy et al., 2007, 2008; Fiske et al., 2002).

In the past, researchers investigated the classification of various groups on the dimensions of the SCM, for instance groups with different health statuses as being deaf, blind or having a mental disorder (e.g., Canton et al., 2022; Sadler et al., 2012). If people with a mental illness, for instance, are rated together with other groups (e.g., rich people, Christians, students, Muslims) they are perceived as being cold and incompetent (Sadler et al., 2012). Thus, it is not surprising, that society reacts with active and passive harm towards them (e.g., Parcesepe & Cabassa, 2013; Peterson et al., 2007). Albeit literature on employees with a mental illness still is fragmentary (for a review see Follmer & Jones, 2018), literature indicates similar behavior at the workplace (Muschalla et al., 2016; Peterson et al., 2007; Reavley et al., 2017).

An example for a widespread reaction towards people with a mental illness is social distancing (e.g., Parcesepe & Cabassa, 2013), which is defined as "the degree to which […] a person or group wants to remain separate from members of different social groups" (American Psychological Association, 2022, para. 1). Participants for instance are less willing to spend an evening, make friends, live next door or start working closely with a person suffering from drug dependence, depression or schizophrenia, than with a person described as having only 'normal', subclinical troubles in life (c.f. Link et al., 1999). Thus, it is not surprising that people suffering from a mental illness report rejection and avoidance, e.g. by their family and friends (c.f. Peterson et al., 2007), or in other words experience social exclusion.

Reports of social exclusion however not only exist in private life, but also in the work context, as investigations with employees suffering from a mental illness indicate (c.f. Peterson et al., 2007; Reavley et al., 2017). In the light of the JD-R model, this exclusion can be seen as a job demand, with potentially health-impairing effects (c.f. Bakker & Demerouti, 2017; Demerouti et al., 2001). Social exclusion at the workplace has for instance been

associated with an increase in depression and sick leave (Josephson et al., 2008; Scott et al., 2015).

Integrating the propositions made by the SCM (Fiske et al., 2002) and the JD-R model (Demerouti et al., 2001) it is therefore possible, that not only the employee her-/himself is responsible for the repercussion of the health-impairment on job demands, as proposed in the JD-R model (c.f. Bakker & de Vries, 2021; Bakker & Demerouti, 2017), but also, that the colleagues' reaction (e.g., social distancing) to the impaired health of an employee (e.g., having a mental illness) plays a significant role in creating new job demands (e.g., social exclusion), which in turn may entail another health-impairing process, yielding a vicious cycle.

Taken together, employees suffering from a mental illness could experience social exclusion at the workplace, which – as a health-impairing job demand – in turn could increase their risk to sick leave. This process has, to best of my knowledge, not been investigated before, leading to research question 2 of this dissertation:

Research question 2: Is there an indirect effect of the mental illness on sick leave via social exclusion?

Overall, the present dissertation tries to replicate and extend the process depicted in Figure 1, by further investigating the influence of employees' leader on the process, as well as by examining the inclusion into the work team as a relevant mechanism (see Figure 2), in order to verify old and identify new starting points for organizations to counteract mental illness in the workplace and associated sick leave.

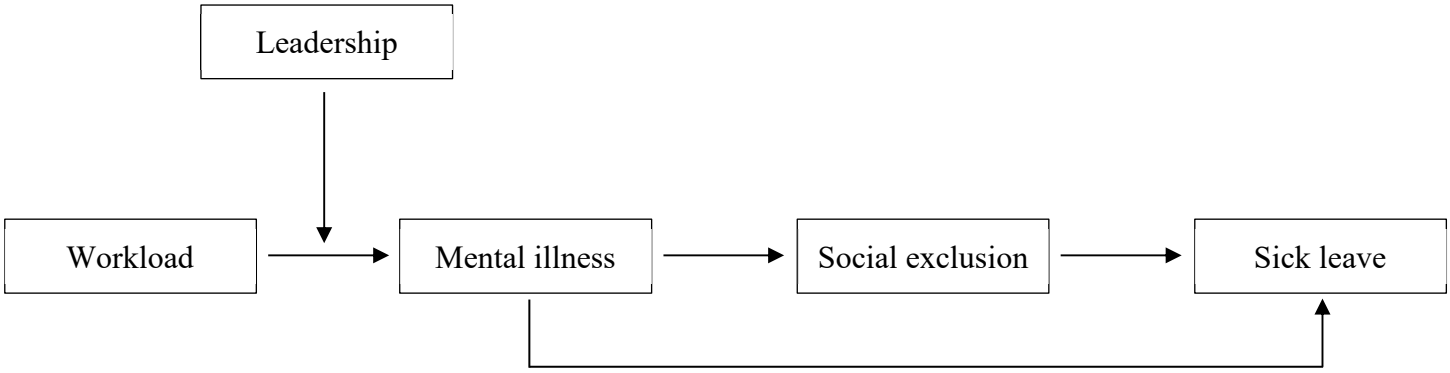

Figure 2. Research model of the present dissertation.

Summary of the manuscripts

In the following, I provide a short summary of the manuscripts of this dissertation and present their relation to the research questions. Figure 3 depicts which associations of the research model are investigated in which manuscript.

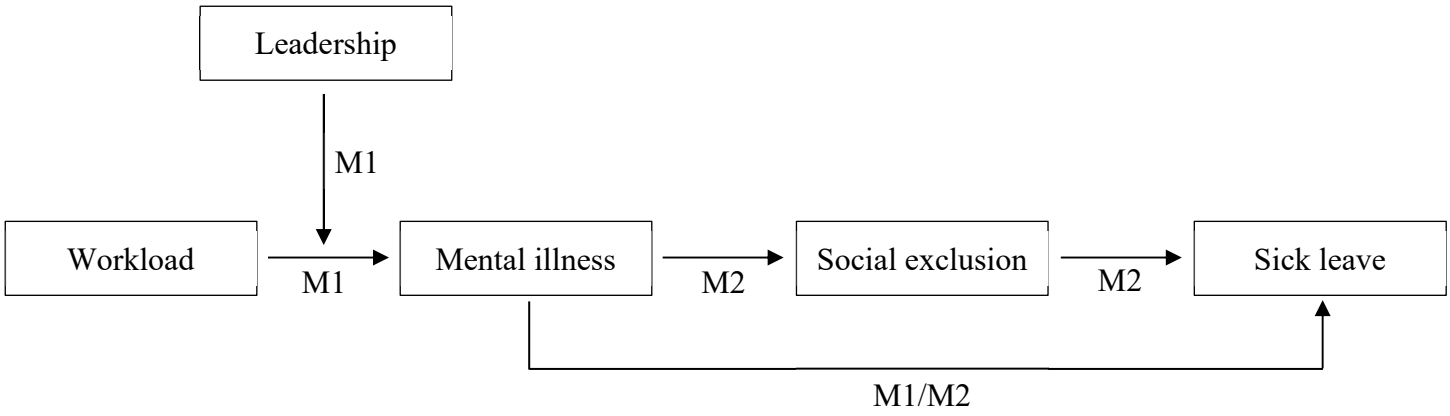

Figure 3. Research model of the present dissertation with explanation of which associations are tested in which manuscript (M1 refers to manuscript 1; M2 refers to manuscript 2).

Manuscript 1

The protecting effect of resource-providing supervisors on the relationship between workload, depression and sick leave: A multi-level moderated mediation analysis

Background

Manuscript 1 investigated whether employees' leader can attenuate one of the detrimental impacts of employees' work environment on their health. Previous research indicates that depressive symptoms go along with an increase of sick leave (Amiri & Behnezhad, 2021). The workplace, however, also contributes to the development of depressive disorders, e.g. by assigning a high workload, which can increase the risk for absenteeism due to depression (Corbière et al., 2016; Virtanen et al., 2010). Thus, literature points to a serial process of workload affecting employees' sick leave via depression, however no study so far has equalized it longitudinally. Furthermore, the JD-R model suggests that resources could help the employees in the face of an increased workload by buffering its influence on depression (c.f. Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017). One of the potential providers of resources for the employees is their leader, who can shape their work environment and increase their access of resources (Fernet et al., 2015; Nielsen et al., 2008). While only Rodwell and Martin (2013) investigated whether the association between workload and depression is modulated by employees' leader, finding no significant results, the modulation of the process as a whole has not been investigated so far. Thus, manuscript 1 examined whether the impact of employees' workload on depression and following sick leave is attenuated by the resources provided by the leader and hence contributes to answering research question 1.

Methods

We used existing three-wave data from 276 employees and 90 corresponding leaders for hypotheses-testing (data were taken from Rigotti et al., 2014). The leader rated the level of provided resources at T1, workload (T1), depression (T2) and sick leave (T3) were self-rated

by the employees. We applied multilevel-analyses because of the hierarchical data structure (employees nested in teams): First, we investigated a possible indirect effect of employees' workload on sick leave via depression. Second, we tested whether the level of resources provided by the leader moderated the association between employees' workload and their level of depression. Third, we investigated whether the mentioned indirect effect was dependent on the level of resources provided by the leader. We added the initial level of sick leave of the employees (T1) as a control variable.

Results

Consistent with our hypotheses, employees' workload had a positive indirect effect on sick leave mediated by increasing levels of depression. Furthermore, the association between workload and depression was moderated by the leader's level of resource providing: While workload was positively related to depression under conditions of low (1 SD below the mean) or average (the mean) resource-providing behavior, the association was non-significant under a high (1 SD above the mean) level of provided resources. The same was true for the moderation of the indirect effect: Employees' workload had a positive indirect effect on their sick leave via depression when employees' leader provided low or average resources, however, when the level of provided resources was high, the indirect effect vanished.

Discussion

Our results replicate existing literature on workload's positive association with depression and subsequent sick leave (e.g., Corbière et al., 2016; Kivimäki et al., 2010), which was longitudinally equalized for the first time, providing further evidence for the existence of this detrimental process. However, organizations have the possibility to intervene, by ensuring that leaders have the capability of providing sufficient resources to the employees. Thus, manuscript 1 points to the importance of employees' leader, in modulating the association of workload, mental illness and sick leave.

Manuscript 2

Leave me alone with your symptoms! Social exclusion at the workplace mediates the relationship of employee's mental illness and sick leave

Background

Discrimination of people suffering from a mental illness is widespread and also occurs in the workplace (e.g., Baldwin & Marcus, 2006; Parcesepe & Cabassa, 2013). Employees with a mental illness (EMI) for instance report to get socially excluded by their colleagues (c.f. Reavley et al., 2017). Social exclusion, as a social stressor, is in turn associated with an increase in sick leave (Josephson et al., 2008). Connecting the stereotype content model (Fiske et al., 2002) and the allostatic load model (McEwen & Stellar, 1993) we therefore proposed that the severity of the mental illness affects sick leave via the experience of social exclusion at the workplace, contributing to answer research question 2. Although not relevant for the research questions, we further suggested, that the colleagues of an EMI first need to notice certain striking behavior (i.e., symptoms of a mental illness) that mark the EMI as mentally ill, before they decide to exclude the EMI. Thus, we assumed the symptomatic burden to be a relevant mechanism between the severity of the mental illness and social exclusion, yielding a serial process from the severity of the mental illness on sick leave via the symptomatic burden and social exclusion.

Methods

Data from 86 persons looking for psychotherapeutic care were analyzed. All of the participants were diagnosed with a mental disorder. The severity of the mental illness was rated within a structured diagnostic interview executed by trained personnel. The symptomatic burden, social exclusion and sick leave were self-assessed with online-questionnaires. Path analyses were conducted for hypotheses testing.

Results

Participants with a more severe mental disorder showed a stronger symptomatic burden, which in turn was associated with an increase of social exclusion at the workplace. Social exclusion further predicted higher levels of sick leave, yielding a serial mediation of the severity of the mental disorder on sick leave via the symptomatic burden and social exclusion, supporting our hypotheses. However, the severity of the mental illness had no direct associations with social exclusion or sick leave; the same was true for the symptomatic burden and sick leave. In additional analyses we further controlled for possible influences of the Covid-19 pandemic on the results and obtained similar results. In the light of possible differences in the perception of and reaction towards differing mental illnesses (c.f. Cuddy et al., 2007, 2008; Fiske et al., 2002; Follmer & Jones, 2017), we also checked whether the disorder-type (anxiety vs. depression) moderates the association between the symptomatic burden and social exclusion, without significant results.

Discussion

Our study contributes to the fragmentary literature regarding the population of employees with a mental illness (c.f. Follmer & Jones, 2018). Previous research indicated, that EMI experience social exclusion at the workplace (Follmer & Jones, 2017; Reavley et al., 2017), which is known to increase the risk for sick leave (Josephson et al., 2008). We connected those research lines, showing that the mental illness has an indirect effect on sick leave, mediated by social exclusion at the workplace. Manuscript 1 thus provides evidence for the importance of integrating everyone within the workforce, irrespective of the mental state, in order to counteract the association between mental illness and sick leave.

Discussion

Mental illnesses have severe implications for the affected individuum (e.g., Qin & Nordentoft, 2005; Schaefer et al., 2013) and go along with limitations in various life domains, including work (e.g., Woodhead et al., 2020). They are associated with a higher risk for sick leave (e.g., Amiri & Behnezhad, 2021; Bültmann et al., 2006; Hendriks et al., 2015), which in turn may have negative effects on the salary and career of the person concerned (Sieurin et al., 2009). The employer on the other hand is affected as well, as (s)he is confronted with the economic burden evoked by a higher rate of sick leave (Greenberg et al., 2015; Stewart et al., 2003). Since mental illnesses have been the second leading cause for sick days in Germany in 2020 – according to data of the insured persons of the largest health insurance company in Germany (c.f. M. Meyer et al., 2021) – it is hence in the individuals' and the organizations' interest to tackle mental disorders and the associated absenteeism, in order to prevent the negative consequences for both of them. The present dissertation therefore investigated potential influencing factors regarding the relationship between mental illness and sick leave, with the aim of verifying old and identifying new starting points to counteract mental illness at the workplace and subsequent sick leave.

Discussion of research question 1

Research question 1 asked, whether the effect of employees' workload on sick leave via their level mental illness is modulated by employees' leader. Manuscript 1 addressed this research question by investigating whether the resources provided by employees' leader can attenuate the effect of employees' workload on sick leave via their level of depression. Analyses confirmed the hypotheses: Workload's positive indirect effect on sick leave via an increase in depression maintained under conditions of a low or average resource-providing behavior of the leader, but disappeared, when the leader provided a high level of resources. The results align with the propositions made by the job demands-resources (JD-R) model (Demerouti et al., 2001), demonstrating that the job demand workload indeed unfolds a

health-impairing process which, however, can be buffered, if employees can fall back on sufficient job resources (c.f. Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017; Demerouti et al., 2001). Manuscript 1 furthermore confirms and expands the results of Bergin et al. (2021): First, by demonstrating that employees' leader can not only decrease the indirect effect of employees' workload on their intention to sick leave, but also is able to buffer the effect on the actual behavior. Second, by examining the effects longitudinally, controlling for the initial level of sick leave. Third and last, by showing that also a different set of resources (namely: task control, participation and conflict management) than praise and recognition provided by the leader are important for employees in the investigated process.

Taken together, we were able to show that employees' leader indeed is in the position to buffer the detrimental influence of employees' workload on their mental state and subsequent sick leave. In the face of a high workload, employees are in need of job resources, to be able to deal with the increased job demands. Therefore, leaders need to ensure that the level of available resources for their employees is high enough, in order to stop the process outlined.

Discussion of research question 2

Research question 2 dealt with the existence of an indirect effect of the mental illness on sick leave via social exclusion. Manuscript 2 investigated this question by assessing the symptomatic burden, social exclusion at the workplace and sick leave of employees diagnosed with a mental disorder in online-questionnaires and by rating the severity of their disorder by trained study personnel. As expected, the severity of the mental illness had a positive indirect effect on sick leave, sequentially, via an increased symptomatic burden and higher levels of social exclusion in the workplace. Thus, the results support the postulation of the stereotype content model (SCM; Fiske et al., 2002) and its extension (Cuddy et al., 2007), that people react towards other groups, whom they perceive as being cold and incompetent (as people with a mental illness, c.f. Sadler et al., 2012) with passive harm (Cuddy et al., 2007,

2008; Fiske et al., 2002). Furthermore, the health-impairment process of job demands postulated by the JD-R model also comes into play in manuscript 2 (c.f. Bakker & Demerouti, 2017; Demerouti et al., 2001).

Previous literature already indicated that colleagues tend to avoid and exclude employees with a mental illness (Peterson et al., 2007; Reavley et al., 2017). Although investigations also pointed to the detrimental effects of isolation in general on health (c.f. Friedmann et al., 2006; Kiecolt-Glaser et al., 1984; Luo et al., 2012), as well as to the effect of social exclusion in the workplace on sick leave (Josephson et al., 2008), manuscript 2 was the first to show that the mental illness indeed has an indirect effect on sick leave via social exclusion. Reducing the discrimination that employees with a mental illness experience in their workplace is therefore essential – for the health of the affected, but also for the well-being of the organizations (c.f. Greenberg et al., 2015; Stewart et al., 2003).

General discussion

In its aim of verifying old and identifying new starting points to counteract mental illness at the workplace and associated sick leave, the present dissertation investigated three influencing factors regarding the relationship between the two. Previous literature indicated that an increased workload is detrimental for employees' mental state and therefore can contribute to sick leave (e.g., Bergin et al., 2021; Bowling et al., 2015; Corbière et al., 2016; Endo et al., 2015; Virtanen et al., 2010). We replicated workload's indirect effect on sick leave via the level of mental illness longitudinally and under control of the initial effect of sick leave, delivering further evidence for this detrimental process. Based on the JD-R model (Demerouti et al., 2001), we further confirmed and expanded evidence of Bergin et al. (2021), who indicated that employees' leader is able to buffer the mentioned mechanism by providing job resources to the employees. Lastly, referring to the SCM (Fiske et al., 2002) and the JD-R model (Demerouti et al., 2001), we showed that the social exclusion of employees with a mental illness at the workplace is a relevant mechanism in the relationship between the mental

illness and sick leave, highlighting the importance of an inclusive workforce. Taken together, the present dissertation verifies the process depicted in Figure 1 and provides further evidence for its extension: More specifically, leaders seem to play an important role in buffering the influence of employees' workload on sick leave via their mental illness. Furthermore, social exclusion can be integrated as a mediator in the effect of the mental illness on sick leave, yielding to the process presented in Figure 4.

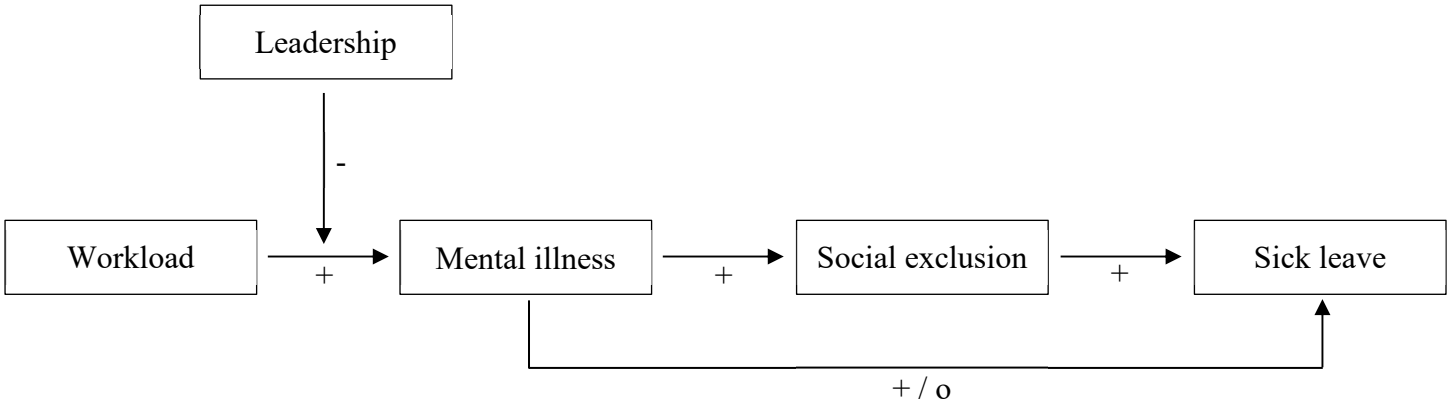

Figure 4. Results of the present dissertation.

The replication of workload's influence on the level of mental illness and subsequent sick leave underlines its potential harmfulness: The evidence suggesting that an increased amount of work has detrimental effects on employees' mental state is overwhelming (e.g., Bergin et al., 2021; Bowling et al., 2015; Corbière et al., 2016; Endo et al., 2015; Kivimäki et al., 2010; Virtanen et al., 2010). However, a heightened workload could also entail several other negative implications for employees and their organizations: Meta-analytical results for instance indicate, that workload is associated with higher levels of fatigue, as well as a decrease in global health, personal accomplishment and affective commitment towards the organization (Bowling et al., 2015). Organizations should therefore try to prevent, that their employees become overburdened, in order to maintain their staff's health and well-being as well as their own functioning (c.f. J. P. Meyer et al., 2002).

Previous literature already pointed to the importance of the supervisor for employees' health: Different leadership styles – as transformational leadership or health-oriented leadership – have positive influences on health outcomes, e.g., a reduction in the level of depression (Munir et al., 2010; Vonderlin et al., 2020). Besides direct effects on employees' health, supervisors can also help employees in coping with their job demands, attenuating the health-impairing effects of the latter (c.f. Krick et al., 2022). The present dissertation demonstrated that the deleterious effect of the job demand workload on employees' sick leave via their level of mental illness can as well be mitigated by the supervisor, if (s)he provides sufficient task control, participation and conflict management to the employees. This confirms cross-sectional evidence for the influence of leadership on this mediation of Bergin et al. (2021), which pointed to the importance of praise and recognition provided by the leader on the indirect effect.

Interestingly, the starting point of leaders' influence on the process varied between Bergin et al. (2021) and the present dissertation: Based on the JD-R model (Demerouti et al., 2001), we proposed that the resources provided by the leader should attenuate workloads' effect on employees' level of mental illness, which – indirectly – leads to lower levels of sick leave. Bergin et al. (2021), however, found that supervisors' praise and recognition damped the association between the level of mental illness and the intentions to sick leave. Since a first-stage moderation of the association between workload and mental illness also has theoretical plausibility, Bergin et al. (2021) further tested a moderated mediation model with the leader modulating the association between workload and the mental illness, without significant results. Therefore, the question arises as to why leaders exert their influence on the process elsewhere in the two studies. The reason could lie in the diversity of the resources provided: It might be, that in the light of an overwhelming workload, it is not sufficient to receive praise and recognition for one's effort – that is to receive emotional support (c.f. Langford et al., 1997). Instead, employees might need specific support, helping them to

handle their work, as for instance the possibility to decide when and how they execute which task (i.e., task control) or the chance to participate in decisions regarding their job, that is, they might need instrumental support (c.f. Langford et al., 1997). Himle et al. (1991), for instance, too found evidence for an attenuation of workloads' health-impairing effect by instrumental support, but not by emotional support, promoting this explanation.

Although previous investigations pointed to the exclusion of employees with a mental illness at the workplace (Peterson et al., 2007; Reavley et al., 2017) and albeit literature indicated social exclusion's potential effect on sick leave (Josephson et al., 2008), this dissertation is the first to combine those findings, demonstrating that the social exclusion mediates the influence of the mental illness on sick leave. It therefore accentuates the harmfulness of discrimination towards people with a mental illness in the workplace and underlines the necessity to counteract.

More specifically, the severity of the disorder increased the symptomatic burden of the employees, which evoked social exclusion (and therefore sick leave). Interestingly however, the severity of the disorder had no direct association with social exclusion, pointing to the relevance of the symptomatic burden as a predictor of social exclusion. The importance of the symptoms for the level of exclusion makes sense, when viewing at the propositions made by the SCM and its extension: The model claims that groups who are perceived to be cold and incompetent – like people with a mental illness (Sadler et al., 2012) – induce passive harm, as for instance exclusion (Cuddy et al., 2007, 2008; Fiske et al., 2002). Thus, the "colder" and the more incompetent (or the more mentally ill) someone is perceived, the more exclusion (s)he elicits. If a mental illness is not disclosed, however, colleagues have no reason to exclude an employee with a mental illness – unless they notice certain striking behavior (i.e., symptoms), which makes them assume, that the specific employee might have a mental illness. Thus, the more symptoms an employee with a mental illness is suffering from, the higher the attributed mental problems by the colleagues and the evoked exclusion will be.

The evidence indicating that mental illnesses go along with an increased risk for sick leave is considerable (e.g., Amiri & Behnezhad, 2021; Bültmann et al., 2006; Hendriks et al., 2015; Torvik et al., 2016). The results of manuscript 1, showing that the level of depression predicts future sick leave thus align with previous research. In contrast to this, the mental illness had neither direct nor total effects on sick leave in manuscript 2, which is surprising in the light of previous literature. The null-effect might be explained by the exclusion criteria applied in the manuscript: In our questionnaire, participants had to answer different questions regarding their work situation. Since the evaluation of job demands and resources might become inaccurate when employees have not been working for a longer time, we decided to exclude participants who were sick leaving for more than six weeks before we analyzed the data. However, as the risk for a long-term sickness absence raises in dependence of the symptom severity (c.f. Hendriks et al., 2015), this procedure might have cut off some variance in the association between the mental illness and sick leave in the analyses, explaining the absence of a direct or total effect.

Taken together, the present dissertation contributes to the existing literature by verifying old and identifying new starting points to counteract mental illness and associated sick leave at the workplace: Organizations can reduce employees' workload in order to prevent detrimental influences on their mental state and sick leave. Furthermore, the same results can be obtained by ensuring that supervisors provide sufficient resources to their employees. Lastly, organizations need to take action towards a more inclusive workforce, integrating every employee into the team, irrespective of their health status, to impede that those employees, who suffer from a mental illness, sick leave due to social exclusion. In the following I present recommendations on how these results can be implemented in organizational practice.

Practical implications

There are different approaches for organizations in order to ensure that employees' workload stays within reasonable limits: First of all, they could safeguard an even distribution of the tasks among the team members, to prevent that only a part of the employees has to handle most of the work. In the hospital context for instance, physicians' workload varies among team members, depending on the time their shift started (Levin et al., 2007). However, even when the workload is evenly distributed within the team, organizations can try to reduce it, for instance by providing employees with the needed infrastructure (e.g., Selwood & Pilkington, 2005). If employees' workload still is too high, external help might be necessary: Especially if the volume of work is only temporarily increased, organizations can try to externalize some of the tasks to specialized companies. However, if the volume of work is increased in the long-term, it might be less cost-intensive for organizations to increase their staffing levels instead, in order to maintain the workload within acceptable limits.

Despite organization's efforts in regulating employees' workload, it will not be possible to prevent certain periods with an increased volume, for instance during the flu season or while ongoing recruitment processes. In these phases, it is important that employees can fall back on resources, to prevent the detrimental influences of the heightened workload. To facilitate employees' access to resources, organizations should ensure that supervisors are capable of providing them to the employees, for instance by the implementation of leadership trainings, promoting health-oriented leadership (Franke & Felfe, 2011). Leaders enacting this leadership style seek, among other things, to establish a healthy job design for their employees, as well as a good work climate, and encourage them in practicing healthy working habits as avoiding overtime work (c.f. Franke et al., 2014; Franke & Felfe, 2011). In other words, health-oriented leaders help to create a workplace rich on job resources for employees, which could help them in the face of a high workload. A particular focus of these trainings should lie in teaching the leaders to offer task control and participation, to provide praise and

recognition, and to practice conflict management, since our results and those of Bergin et al. (2021) point to the relevance of these job resources in preventing mental illness and associated sick leave.

Although supervisors may provide various types of resources by themselves (e.g., conflict management, praise and recognition), the availability of other resources, as the possibility to participate in decision taking, also depends on the organization's willingness to create a certain culture of participation and communication within the company (c.f. for instance Zamanou & Glaser, 1994). In the view of the importance of different stakeholders within the organization, Bakker and Demerouti (2018) integrated the consideration of various organizational levels (organization, leader, team, individual) into the JD-R model. Concerning the organizational level, they suggest, that the company itself can exert influence on employees' job resources, by enrolling human resources practices (Bakker & Demerouti, 2018). Thus, organizations can work towards a job environment rich on resources for their employees by themselves – for instance by signaling employees, that the organization cares about their health and by acting accordingly, as results of Dollard and Bakker (2010) suggest.

Lastly, the employee her-/himself plays an important role for the availability of resources as well, according to the JD-R model: On the one hand, the model proposes that personal resources, as self-esteem or optimism, are also able to attenuate job demands' health-impairing effects (Bakker & Demerouti, 2017). Since meta-analytical results suggest, that self-esteem and optimism are changeable by interventions (c.f. Kolubinski et al., 2018; Malouff & Schutte, 2017), it might thus be fruitful to implement according training- or counseling possibilities in the organization for interested employees, especially when strategies to increase job resources and decrease the workload are exhausted. On the other hand, the JD-R model further proposes that employees can increase their level of job resources themselves, by engaging in job crafting behaviors (c.f. Bakker & Demerouti, 2017; Tims et al., 2012; Tims & Bakker, 2010). Job crafting, originally introduced by Wrzesniewski

and Dutton (2001), is in the context of the JD-R model framed as the behavior of employees aiming to "change their levels of job demands and job resources in order to align them with their own abilities and preferences" (Tims & Bakker, 2010, p. 4). Examples of job crafting behaviors are asking colleagues for help or trying to learn something new at work (c.f. Tims et al., 2012). By performing job crafting, employees should thus increase their job resources, mitigating the health-impairing influence of job demands, according to the JD-R-model (c.f. Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017; Tims et al., 2012; Tims & Bakker, 2010).

According to the stereotype content model (SCM, Fiske et al., 2002) and its extension (Cuddy et al., 2007), the evaluation of the warmth (i.e., does the counterpart have positive or negative intentions) and competence (i.e., is (s)he able to execute them) is central for the behavioral tendency towards the counterpart or group and thus for the exclusion of employees with a mental illness (c.f. Cuddy et al., 2007, 2008; Fiske et al., 2002; Sadler et al., 2012). Since the public often considers people with a mental illness to be dangerous and incompetent (see Parcesepe and Cabassa (2013) for a review on public stigma of mental illness), it is not surprising, that the desire for social distance towards this group is high in society (Parcesepe & Cabassa, 2013), as predicted by the SCM (c.f. Cuddy et al., 2007, 2008; Fiske et al., 2002). Therefore, if organizations want to prevent social exclusion at the workplace, they should address those negative assumptions about people with a mental illness in their staff. Various interventions aiming at reducing stigma towards mental illness exist, focusing on e.g., education, contact or even the simulation of hallucination symptoms (c.f. Morgan et al., 2018). A recent meta-analysis found, that interventions focusing on education or contact are able to reduce stigmatizing attitudes as well as the desire for social distance toward people with a severe mental disorder (c.f. Morgan et al., 2018). Especially education interventions could be promising, since their effects on social distance persist up to six months (Morgan et al., 2018). However, reductions in stigmatizing attitudes do not persist for both intervention

types (Morgan et al., 2018), therefore organizations are probably best served by establishing measures over the long term, rather than implementing a single intervention.

Theoretical implications and future research

The assumptions made in the JD-R model have been expanded in the last years, integrating new concepts and mechanism relevant for employee's motivation and health (c.f. Bakker & Demerouti, 2017). Bakker and Demerouti (2017) for instance added the proposition, that the negative outcomes of employees' job demand's (as an impaired health) evoke the tendency for self-undermining behavior, which in turn generates new job demands, yielding a vicious cycle. The identification of such potential loss spirals is important in order to prevent employees' health from continually worsening. The propositions made in the JD-R model, however, so far only focus on the behavior of the person as a relevant mechanism for the backlash on the job demands (see also Bakker & de Vries, 2021) and ignore the potential relevance of the colleagues' reaction to the health status for this repercussion.

Previous research as well as the present dissertation demonstrate, that people with a mental illness are discriminated against by others, including in the workplace (e.g., Baldwin & Marcus, 2006; Clark, 2018; Parcesepe & Cabassa, 2013). A widespread reaction towards people with a mental illness among society is the desire to socially distance oneself (Parcesepe & Cabassa, 2013). Hence, it is not surprising that employees with a mental illness report to be socially excluded at work (c.f. Peterson et al., 2007; Reavley et al., 2017). This exclusion in turn represents a new job demand for the employee, which may entail a health-impairing process (c.f. Bakker & Demerouti, 2017; Demerouti et al., 2001). Evidence thus suggests, that the reactions of colleagues (e.g., desire for social distance) to the health status of an employee (e.g., having a mental illness) are an important mechanism, which can mediate retroactive effects of the impaired health (e.g., having a mental illness) on the level of job demands (e.g., social exclusion), potentially starting a vicious cycle. Since an according

proposition has not been established into the JD-R model so far, an integration of this process in the model is necessary.

In the present dissertation I focused on the job demand social exclusion as a possible result of the colleagues' reaction towards the mental illness. However, the outcomes for the employee could go beyond being excluded: In the qualitative study of Peterson et al. (2007), people with a mental illness for instance report, that colleagues not only treated them as not being a part of the team and tried to avoid any contact (social exclusion), but also were judgmental and generally behaved different. One participant indicated, that the boss intentionally made the job and the work climate more difficult for the employee (Peterson et al., 2007). Those reports conform with the statements of people with a mental illness in the study of Reavley et al. (2017), suggesting that some colleagues react dismissive, judge the employee as being incompetent and treat her/him differently. Thus, literature indicates, that the reaction of employees' colleagues to the mental illness can not only result in the job demand social exclusion, but also could elicit other demands as harassment and, in addition, diminish job resources as for instance social support. The integration of the colleagues' reaction to the health status of an employee in the JD-R model should therefore not only include possible intensifying effects on the level of job demands in general, but also potential lowering effects on the level of job resources of the employee.

Employees who experience exclusion at the workplace might blame themselves as being the reason for the behavior of the colleagues, they might blame the colleagues or do both (c.f. Liu, 2019). Interestingly, the decision who to blame seems to be important for the outcomes of social exclusion: Results from Liu (2019) indicate, that an internal attribution (i.e., blaming oneself) has stronger positive associations with absences from work and the symptomatic burden and stronger negative associations with the self-esteem than an external attribution (i.e., blaming the other). Since feelings of guilt are associated with mental disorders as a depression (c.f. World Health Organization, 1992) or a obsessive-compulsive

disorder (c.f. Shapiro & Stewart, 2011), employees with a mental illness might tend to blame themselves for being excluded at the workplace and therefore could be at special risk for the negative effects of social exclusion. Future studies should therefore investigate in how far the blaming tendency (internal/external) acts as a moderator in the indirect effect of the mental illness on sick leave via social exclusion.

In the present dissertation I found that employees with a mental illness experience social exclusion at the workplace, which in turn influences sick leave. This is not surprising, since society perceives the group of "people with a mental illness" to be cold and incompetent (c.f. Sadler et al., 2012), evoking the tendency for e.g. exclusion and neglect, according to the SCM (Cuddy et al., 2007, 2008; Fiske et al., 2002). However, when participants are asked to rate different types of mental illnesses instead of the group as a whole, results indicate, that some disorders (e.g., depression or bipolar) are perceived to be colder and more incompetent than others (e.g., anxiety; Follmer & Jones, 2017). Thus, people should also react differently to different types of disorders, according to the SCM (c.f. Cuddy et al., 2007, 2008; Fiske et al., 2002). Results from Manning and White (1995) for instance point in that direction, indicating, that the tendency to quit an employee developing a schizophrenia is higher than the tendency to quit an employee developing a depression. Hence, applying the evidence of Follmer and Jones (2017) combined with the propositions of the SCM (c.f. Cuddy et al., 2007, 2008; Fiske et al., 2002) to the results of the present dissertation, colleagues might tend to exclude some employees more than others, depending on the type of disorder. This means, that the influence of the mental illness on social exclusion (and thus on sick leave in the long term) might differ in dependence of the disorder of the employee. In additional analyses we therefore tested this moderation in manuscript 2, without significant results. However, the sample size was fairly small. Future studies should therefore investigate in how far the indirect effect of the mental illness on sick leave via social exclusion differs across different

types of mental illnesses, in order to identify potential subgroups of employees with a mental illness who are at increased risk for exclusion and associated sick leave.

One might argue, that the influence of the mental illness on social exclusion could be artificial: People suffering from a more severe mental illness could have a more negative view of life in general and might therefore be more likely to perceive, that they are socially excluded, compared to people suffering from a less severe mental illness, leading to an artificial association between the mental illness and social exclusion. Barnes et al. (2012) for instance report a negative association between the symptom severity and the global satisfaction with life when investigating people with a mental illness. Future investigations should therefore try to replicate the impact of the mental illness on sick leave via social exclusion, aiming at operationalizing the mediator in a different way. Alternatives might include having the supervisor rate the level of social exclusion for every employee, or asking the employee about the specific number and length of interactions with colleagues and comparing the result with the average of her/his team.

The results of Bergin et al. (2021) and the present dissertation indicate, that the supervisor is able to attenuate the detrimental influence of employees' workload on their level of mental illness and subsequent sick leave by providing praise and recognition (Bergin et al., 2021) or by providing task control, participation and conflict management (manuscript 1). Since both investigations, however, captured the leader's resource-providing behavior as a mixture of different resources in one single scale, the specific contribution of each resource-provisioning on its own remains unclear. Future investigations should therefore investigate, which resource-provisioning by the leader is particularly important to mitigate the investigated process. In this context, it would also be fruitful to examine other resource-providing behaviors of the leader, which could help the employees in coping with an increased workload and therefore attenuate its depicted effects, as for instance providing

possibilities for professional development or providing performance feedback (c.f. Xanthopoulou et al., 2007)

As mentioned in the practical implications-section, it is also important to take the influence of the organization on the work environment of employees into account: Bakker and Demerouti (2018) integrated the consideration of different organizational levels into the JD-R model, suggesting that the organization itself may exert influence directly on the individual (e.g., on their job demands) but also on the leader. Results from Zamanou and Glaser (1994) for instance indicate, that supervisors provide more opportunities for participation in decision taking to their employees if this policy is actively supported by their organization and if they are trained accordingly. Hence, the role of the organization and the leader for the effect of workload on mental illness and accompanying sick leave should be investigated jointly in future investigations.

Strengths and limitations

In the interpretation of the presented results different strengths but also some limitations of this dissertation need to be considered. Starting with strengths, we were able to use remarkable samples in both manuscripts: In manuscript 1, we analyzed data originating from 276 employees and 90 corresponding leaders, assessed at three different points in time over a period of approximately 15 months. Thus, we were able to disentangle effects longitudinally and under control of the initial level of the criterion, making a causal interpretation of the results a little more confident (c.f. for instance Eid et al., 2011; Steyer, 1992; Westermann, 2000). Furthermore, assessing the variables at different points of time should reduce the risk of various common method biases (c.f. Podsakoff et al., 2003). Lastly, we considered the hierarchical nature of the data (employees nested in teams) in our analyses, avoiding a potential interference of the clustering on hypotheses testing (c.f. Cohen et al., 2003). In manuscript 2, we acquired a sample of employees who have been diagnosed with a mental disorder. Investigations on employees with a mental illness are needed in research,

since literature on this population is fragmentary (c.f. Follmer & Jones, 2018). In addition, many of the existing quantitative literature is only of descriptive nature, preventing any explanatory interpretation (Follmer & Jones, 2018). Thus, by conducting inferential analyses, we contribute to existing literature on an understudied population. At last, it was possible to assess one variable from a different source than the employee her/-himself in both manuscripts. In manuscript 2 we furthermore used different methods in the assessment (interview and questionnaires). Both – the appliance of different sources and methods - reduces the potential for biases arising from common method variance (c.f. Podsakoff et al., 2003).

As mentioned, the results must however also be qualified by some limitations. While it was possible analyze hypotheses longitudinally in manuscript 1, we were only able to refer to one point of measurement in manuscript 2, making causal interpretations impossible, due to unclear temporal precedence (c.f. Eid et al., 2011; Steyer, 1992; Westermann, 2000). A longitudinal replication of the results of manuscript 2 is therefore necessary, to make the interpretations drawn more reliable.

Furthermore, future investigations are needed to ensure the generalizability of the presented results. The sample of manuscript 1 reported rather low levels of sick leave and depression, questioning the transferability of the evidence on a more pathologic population. More specifically, the influence of workload on sick leave due to a depression has already been found in a sample of employees, who returned to work after being absent because of a depressive disorder (c.f. Endo et al., 2015), delivering evidence for the generalizability of the indirect effect of workload on sick leave via the level of mental illness. However, the extenuating influence of employees' leader on this process needs replication in a more pathologic sample, to verify its transferability. Researchers might collaborate with doctors' offices, therapists in private practice and (university) outpatient clinics, in order to obtain a corresponding population.

In addition, manuscript 1 focused on depression as a mediator in the effect of workload on sick leave, instead of assessing mental illness more generally. Thus, the interpretability of the leader's mitigating influence found in manuscript 1 is limited to this disorder. Albeit the results of Bergin et al. (2021) indicate, that supervisors might as well attenuate the detrimental effects of workload when mental illness is operationalized as a broader construct, they only applied a cross-sectional study, measuring the intention to sick leave, instead of the actual behavior and found leader's influence to be relevant solely in one out of two samples (c.f. Bergin et al., 2021). Thus, future investigations should further examine the extenuating effect of employees' leader on the process described in Figure 1, but operationalize mental illness more generally, for instance with the Brief Symptom Inventory (Derogatis, 2017).

In manuscript 2, on the other hand, only employees with a diagnosed disorder participated. Thus, it remains unclear whether the results could be replicated in a sample of participants with only subclinical levels of mental illness. Online investigations without any clinical cut-off for participation might be fruitful in this regard. Furthermore, the majority of the attending employees in our study were diagnosed with affective disorders, followed by anxiety disorders. A representative investigation however indicates, that anxiety disorders are the most common mental disorders in the German population, with affective disorders following (Jacobi et al., 2014, 2016). Viewing at the workplace, similar results arise from representative investigations outside Germany on mental illnesses within the workforce (c.f. Sanderson & Andrews, 2006). Consequently, the representativity of the sample acquired in manuscript 2 for the population of employees with a mental illness is not ideal.

Lastly, although the present dissertation found evidence for the research model depicted in Figure 2, only individual parts of the model have been investigated separately, instead of studying the model as whole. Thus, first, it is unclear whether the associations between the variables of the research model remain significant under consideration of every

other variable in the model. Second, it is uncertain, whether the two investigated mechanisms really combine to an overall process – more specifically, it is unclear, whether workload indeed influences sick leave sequentially via the level of mental illness and social exclusion, and to what extent employees' leader is able to attenuate this process.

Conclusion

Mental disorders are widespread among mankind, with severe consequences – in the first place for those suffering from the illness, but also for their surroundings (Fekadu et al., 2019; Greenberg et al., 2015; James et al., 2018; Qin & Nordentoft, 2005; Schaefer et al., 2013). Organizations for instance are affected by the negative outcomes of employees' mental illness, such as an increase in sick leave (c.f. Greenberg et al., 2015). However, problematic working conditions may also contribute to the development of mental disorders and associated absenteeism (c.f. Amiri & Behnezhad, 2021; Bergin et al., 2021; Corbière et al., 2016; Harvey et al., 2017; Virtanen et al., 2010). In this context, the present dissertation tried to contribute to the maintenance of employees' and organization's health, by investigating three starting points to tackle mental illness and associated sick leave with their detrimental consequences (Greenberg et al., 2015; Schaefer et al., 2013; Sieurin et al., 2009; Stewart et al., 2003). The findings suggest, that organizations may not ignore their possibility to take influence, but instead need to ensure a sound level of workload, access to job resources and an inclusion of every employee within the workforce, in order to prevent mental illnesses and subsequent sick leave of employees. Or, as Joanne K. Rowling's fictious character Albus Percival Wulfric Brian Dumbledore said: "Indifference and neglect often do much more damage than outright dislike" (Rowling, 2003, p. 735).

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Appendix A: Manuscript 1

The protecting effect of resource-providing supervisors on the relationship between workload, depression and sick leave: A multi-level moderated mediation analysis

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Status: Submitted to *Journal of Mental Health*

The protecting effect of resource-providing supervisors on the relationship between workload, depression and sick leave: A multi-level moderated mediation analysis

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Abstract

Background: Depression is one of the most common mental disorders at the workplace. The illness and the often-following sick leave have several negative implications for both employees and their organizations. Organizations, however, may also contribute to the development of depressive disorders and subsequent sick leave, for instance by imposing a high workload on their employees. Aims: To examine the supportive role of supervisors for employees within this context: We investigate whether resources provided by supervisors can buffer the impact of employees' workload on their level of depression and the subsequent sick leave. Methods: Using existing three-wave questionnaire data, answers of 276 employees and their 90 supervisors were analyzed, applying multi-level analyses. Results: Employees' workload had an indirect effect on sick leave via an increase in their level of depression, replicating existing evidence. However, if supervisors provided sufficient resources, the negative effect of employees' workload on their level of depression, as well as the indirect effect as a whole, vanished. Conclusions: Although organizations contribute to the depressive symptomatology and subsequent sick leave of their employees when imposing a high workload, they can protect their employees from this detrimental process by assuring that their leading staff provides sufficient resources to their employees.

Keywords: depression; sick leave; workload; supervisor; resources; multi-level analysis; job demands-resources model

The protecting effect of resource-providing supervisors on the relationship between workload, depression and sick leave: A multi-level moderated mediation analysis

Background

Depression is a major cause of health-related impairment for humans around the world – about 1.8% of the global disability adjusted life years caused by diseases or injuries can be traced back to depressive disorders (GBD 2019 Diseases and Injuries Collaborators, 2020). The sickness affects several life domains including the workplace, where depression is the second most common mental illness (Sanderson & Andrews, 2006; Woodhead et al., 2020): Higher rates of depression are for instance associated with worse work characteristics (Woodhead et al., 2020) and employees suffering from depression (as employees with a mental illness in general) are in risk of being discriminated in the workplace (Baldwin & Marcus, 2006, 2007; Follmer & Jones, 2017; Reavley et al., 2017). Not surprisingly, depression seems to entail increased days of sick leave as various investigations indicate (for a current review and meta-analysis see Amiri & Behnezhad, 2021). This goes along with detrimental effects for all involved: While employers are confronted with the economic costs of absenteeism (Abdin et al., 2021; Greenberg et al., 2015; Stewart et al., 2003), employees on long-term sick leave report negative consequences for their salary, their career and a reduction in their joy for work (Sieurin et al., 2009). However, even short-term sick leave spells can already be seen as warning signal (Hultin et al., 2012). Thus, the need to reduce depression and subsequent sick leave is evident. Since the domain of work is not only affected by the consequences of depression (Greenberg et al., 2015) but also represents one of the reasons for its development, for instance by imposing a high workload (Corbière et al., 2016), it is only logical to examine in how far the workplace can play its part in improving employees' mental health.

In the present paper, we contribute to the previous literature in two ways: First, we replicate existing evidence regarding workload's detrimental impact on employees' level of depression and subsequent sick leave. In addition to previous investigations, we equalize and disentangle the assessments of every variable longitudinally, under consideration of a hierarchical data structure, making conclusions about this process more confident. Second, we address an important starting point for interventions to improve workplace mental health by investigating whether supervisors can attenuate this detrimental mechanism in order to prevent employees and their organizations from possible harmful consequences.

Among the potential work-related risk factors for the mental health, workload has proven to be significant: Previous research points to the relevance of an elevated workload for the development of depressive symptoms (for a meta-analysis see Bowling et al., 2015). As a result, a high workload can finally contribute to employees' absenteeism: In their qualitative study, Corbière et al. (2016) interviewed employees who had been sick leaving due to a diagnosis of a depressive disorder and who stated that their depression was at least partially related to work. More than half of the participants answered that their heavy workload contributed to their sickness (Corbière et al., 2016). Various studies have investigated this effect of workload on sickness absence due to depression quantitatively and found according evidence (Endo et al., 2015; Kivimäki et al., 2010; Virtanen et al., 2010). Thus, there is considerable support for a detrimental impact of workload on the level of depression which can contribute to subsequent sick leave. We aim at replicating this process longitudinally and propose the following hypotheses:

Hypothesis 1: Employees' workload (T1) leads to an increase in employees' sick leave (T3) via an increase in employees' level of depression (T2).

In the light of the aforementioned impairment of employees' mental health the question arises as to how the organization can help to mitigate these effects it has contributed to. A possible approach might be to focus on employees' supervisor: One key aspect identified in qualitative interviews on the development of depression in the work context relates to the supervisor's behavior (Corbière et al., 2016). Furthermore, when asking people suffering from a common mental disorder (CMD) which factors they attributed their illness to, I. B. Olsen et al. (2015) also found that a part of the participants believed, that workplace leadership played a role in the emergence of their CMD. Thus, the way supervisors lead their employees is important for employees' mental health (see also Stuber et al., 2021; Vonderlin et al., 2021).

According to the job the demands-resources (JD-R) model (Demerouti et al., 2001), job resources constitute a decisive approach to promote employees' mental health (Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017). The model proposes that work characteristics can be categorized into job resources and job demands, which entail different processes: While job resources have a motivational effect on the employee, job demands as for instance a high workload, have a health-impairing effect, resulting in exhaustion, health complaints etc. (Bakker & Demerouti, 2017; Demerouti et al., 2001). However, according to the JD-R model, the health-impairing effect of job demands can be buffered by job resources (Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017). This attenuating effect on employee well-being has been confirmed for various job resources (Bakker et al., 2005; Hino et al., 2015; Xanthopoulou et al., 2007).

Thus, if employees have sufficient resources (e.g., the autonomy in deciding how to work or the possibility to participate in processes and decisions), the detrimental impact of their workload on their mental health could be diminished. However, the existence of resources in the work environment lies not solely in the hand of the employee – also their supervisor plays a significant role: Research points to the importance of the supervisor in

shaping employees' work environment and for the availability of employees' resources (Fernet et al., 2015; Nielsen et al., 2008). In other words, supervisors can affect the amount of resources employees can fall back on in the face of a high workload. According to the JD-R model (Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017; Demerouti et al., 2001) the provision of resources by the supervisor should consequently buffer the impact of employees' workload on their level of depression and the subsequent sick leave (see Figure 1). While only Rodwell and Martin (2013) investigated the modulatory role of the supervisor (in terms of social support) in the relationship between workload and depression– without any significant results – a possible modulation of the whole process by supervisors has not been studied so far:

> Hypothesis 2: The effect of workload (T1) on depression (T2) is moderated by the resources provided by the supervisor (T1): If the level of provided resources is high, the effect of employees' workload on their level of depression vanishes.

> Hypothesis 3: The indirect effect of employees' workload (T1) on their sick leave (T3) via their level of depression (T2) is moderated by the resources provided by the supervisor (T1): If the level of provided resources is high, the indirect effect vanishes.

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Insert Figure 1 about here

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Materials and methods

Design and procedure

The data used in the present study originate from the German part of a large research project investigating the relationship between leadership and the (psychological) wellbeing of employees (see Rigotti et al., 2014). Acquisition of participants took place via contacting the organization itself (e.g., the organizations human resources department) and involving representatives of the employees in the process.

Participants (supervisors and their employees) answered to the questionnaires three times, with time lags of approximately 15 months between T1 and T2 and 8 months between T2 and T3 (Rigotti et al., 2014). Supervisors were matched with their employees after participation with the help of an individualized code. A supervisor and the corresponding employees formed a team.

A confidential treatment of all information was assured and participants gave consent that their data may be used for research purposes. The study followed the principles of the Declaration of Helsinki. Ethical concerns were not touched and voluntariness of participation was ensured. An ethical approval was therefore not necessary.

Sample

The research project from which the data originate included an intervention between T1 and T2, aiming at sustaining employees' psychological health through leadership (Rigotti et al., 2014). Since this intervention might interfere with the hypothesized relations of the present study, we excluded participants of the intervention group. To ensure that possible impacts of the supervisor on the employees remained reasonably stable over the investigated time, we also excluded any employee stating that her/his supervisor changed during the investigation.

This procedure resulted in 366 participants (276 employees and 90 supervisors). 81.2% of the employees and 61.1% of the supervisors were female. Employees were on

average 40.87 (*SD* = 9.54; supervisors 44.48, *SD* = 8.07) years old at T1. Half of the employees had a general qualification for university entrance (52.3% of the supervisors) and 95.2% held a permanent contract (100% of the supervisors).

Instruments

To ensure temporal precedence in our mediation analysis, we used the following measurement time points of the respective variables: workload and the resources provided by the supervisor at T1, the level of depression at T2 and sick leave at T3. Workload, sick leave and level of depression were assessed as self-ratings by employees and the level of provided resources was rated by the supervisor.

Workload

Workload was measured with the Quantitative Workload Inventory (Spector & Jex, 1998). It contains five items as "How often does your job leave you with little time to get things done?" (Cronbach's α = .85). Answers were given on a Likert scale ranging from 1 (very seldom or never) to 5 (very often or always).

Level of depression

We assessed the level of depression with the Major Depression Inventory (Bech, 1997; Bech & Wermuth, 1998) in the 12 item version (Bech et al., 2001). Investigations on the scale indicate its validity and reliability (Bech et al., 2001; L. R. Olsen et al., 2003). The questionnaire asks for instance "How much of the time have you felt subdued?" over the last two weeks (Cronbach's α = .92). Study participants could answer on a Likert scale from 0 (at no time) to 5 (all the time).

Sick leave

We measured sick leave with the following question by Guest et al. (2010) with regard to the past six months: "How many days have you been absent from work due to your state of health?".

Resources provided by the supervisor

We assessed the resources provided by the supervisor with 10 items taken from the health- and development-promoting leadership behavior questionnaire (Vincent, 2012; Vincent-Höper & Stein, 2019) which has successfully been used before to measure resources provided by the supervisor (Richter et al., 2021). Since the original formulation of the items aimed at assessing employees' perception of the supervisor, we had to reformulate them to assess the self-perception of the supervisor instead (e.g., "My immediate superior makes it possible for me to influence which tasks I handle." was reformulated to "I make it possible for the workers to influence which tasks they handle."; Cronbach's $\alpha = .80$). Supervisors could answer on a Likert scale ranging from 1 (does not apply at all) to 5 (completely applies).

Controls

We included employees' sick leave at T1 as a control variable at the individual level in all analyses to assure that the effects remain relevant even under consideration of the initial levels of sick leave.

Statistics

We conducted multilevel-analyses with Mplus version 7.3 (Muthén & Muthén, 2012) for hypotheses testing, due to the hierarchical structure of the data (employees nested in teams). For inferential tests of the indirect effects, we used the Monte Carlo method for assessing mediation (Mackinnon et al., 2004) instead of the Sobel-test (Sobel, 1982) which involves several statistical problems (Hayes, 2018). The Monte Carlo method is a feasible option for testing multi-level mediations (Preacher & Selig, 2012) and hence is frequently used in this context (Mo & Shi, 2017; Shen et al., 2019). We applied it with the help of an online-tool provided by Selig and Preacher (2008) and analyzed the generated code with the program R, version 3.6.3 (R Core Team, 2020), by using Rweb (Banfield, 1999). Our analytical strategy followed prior research with a similar design and research context

(hierarchical data with employees nested in teams; Mo & Shi, 2017; Shen et al., 2019; but see also Edwards & Lambert, 2007).

Results

Preliminary analyses

Means, standard deviations and correlations between the investigated variables are presented in Table 1.

We conducted a confirmatory factor analysis prior to hypotheses testing to assure the discriminant validity of our measurements. Taken together, discriminant validity can be assumed (c.f. online supplementary material and Hu & Bentler, 1999).

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Insert Table 1 about here

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The intraclass correlation (ICC) analysis revealed an ICC = 0.08 for depression at T2 and an ICC = 0.16 with respect to sick leave at T3. Since an intraclass correlation of 0.05 is sufficient to drastically increase the risk for a type I error if clustering is ignored (Cohen et al., 2003), the use of multi-level analyses was justified.

Test of hypotheses

Hypothesis one stated that employees' workload has an indirect effect on their sick leave mediated through employees' level of depression. The results of the multilevel path analysis and the Monte Carlo method for assessing mediation (Mackinnon et al., 2004; Selig & Preacher, 2008) can be seen in Table 2: Employees with an elevated workload reported a higher rate of depression ($\gamma = 0.231$, $p = 0.005$), which in turn was associated with an increase in sick leave ($\gamma = 1.950$, $p < 0.001$), yielding an indirect effect of workload on sick leave via

the level of depression (γ = 0.416, 95% Monte Carlo CI [0.101, 0.841]). Hence, hypothesis one was supported.

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Insert Table 2 about here

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The second hypothesis proposed that the effect of employees' workload on their level of depression is attenuated by the level of resources provided by employees' supervisor. Again, employees' workload was associated with an increased individual level of depression (γ = 1.457, p = 0.004; see Table 3). Resource-providing behavior of the supervisor had no effect on the team-level of depression (γ = -0.062, p = 0.519), however it moderated the effect of employees' workload on their level of depression (γ = -0.322, p = 0.015): When the level of resources provided by the supervisor was low (one *SD* below the mean) or average (the mean), employees' workload significantly predicted higher levels of individual depression (γ = 0.306, p < 0.001, 95% CI [0.158, 0.454] and γ = 0.180, p = 0.016, 95% CI [0.033, 0.328], respectively). This effect vanished when the level of provided resources was high, i.e., one standard deviation above the mean, (γ = 0.055, p = 0.599, 95% CI [-0.150, 0.260]), supporting hypothesis two.

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Insert Table 3 about here

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The third hypothesis stated that the indirect effect of employees' workload on their sick leave via their level of depression is damped by the level of resources provided by the supervisor. As shown in Table 4, the difference of the indirect effect under conditions of a low vs. a high level of provided resources was statistically significant ($\Delta\gamma$ = -.493, p = 0.045), indicating that the mediation model was moderated by the level of resources provided by the supervisor. Furthermore, the results of the Monte Carlo method for assessing mediation (Mackinnon et al., 2004; Selig & Preacher, 2008) demonstrated that the proposed mediation maintained only under conditions of a low (γ = .603, 95% Monte Carlo CI [0.229, 1.083]) or an average (γ = .356, 95% Monte Carlo CI [0.058, 0.748]) but not under the condition of a high (γ = .110, 95% Monte Carlo CI [-0.315, 0.548]) level of provided resources (c.f. Table 4). Thus, taken together, hypothesis three was supported.

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Insert Table 4 about here

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Discussion

Considering the detrimental impact that the workplace can have on employees' mental health (Corbière et al., 2016), in the present study we have identified a possible starting point through which organizations can counteract such negative effects. Specifically, we investigated whether the health-impairing effect of workload on employees' sick leave via their level of depression is moderated by the behavior of supervisors. Analysis supported our assumptions, showing that workload leads to an increase in depression and subsequent sick leave. The resources provided by the supervisor moderate this influence on depression as well as the indirect effect.

Previous research points to the importance of the work environment for the development of mental disorders (Corbière et al., 2016; Harvey et al., 2017; Kerman et al., 2022; I. B. Olsen et al., 2015). An increased workload for instance has been identified as a risk factor for the development of depressive symptoms and the concomitant sick leave before (Corbière et al., 2016; Endo et al., 2015; Kivimäki et al., 2010; Nitta et al., 2019). In the present study we were able to replicate this effect completely longitudinally and under consideration of a hierarchical data structure, adding further evidence for this process to the existing literature.

Besides the effects on the employees, the investigated process is deleterious for employers as well, since they are confronted with the economic costs of absenteeism (Abdin et al., 2021; Greenberg et al., 2015; Stewart et al., 2003). However, the organization also has the possibility to contain the process it has contributed to: Building on the job demands-resources model (Bakker et al., 2003; Bakker et al., 2005; Bakker & Demerouti, 2017; Demerouti et al., 2001), we hypothesized that the resources provided by supervisors can attenuate the effect of workload on the level of depression and subsequent sick leave. Multilevel analyses supported our hypothesis, showing that under a high level of resources provided by the supervisor, the detrimental consequences of employees' workload for their level of depression, as well as the whole mediation, vanishes. Thus, our results indicate that supervisors who are able to provide sufficient resources for their employees can stop the contribution of workload to the development of a depression and subsequent sick leave. The importance of the supervisor for the investigated process is in line with leadership literature, which demonstrates the significance of supervisor's behavior as a moderator of the job demands – (mental) wellbeing relationship (Arnold & Walsh, 2015; Dooley et al., 2020; Syrek et al., 2013; Terry et al., 1993).

Interestingly, Rodwell and Martin (2013) were not able to find a buffering effect of supervisor's behavior on the relationship between employees' workload on their level of

depression. A possible reason might lie in the composition of their sample: All of the investigated participants worked for the same organization (Rodwell & Martin, 2013), making a nested data structure and the necessity of a different analytical approach possible (Eid et al., 2011). Future replication studies could clarify whether the reason for the differing results is only of methodical nature. In addition, for high-load samples, such as nurses as investigated in the study of Rodwell and Martin (2013), at a certain point the magnitude of the workload might impede the use of provided job resources. Future research should therefore also consider the conditions needed to benefit from resource-providing behaviors of the supervisor.

Related to this, one could argue, that – instead of focusing on the supervisor – organizations should simply reduce the workload of their employees to a sound level, for instance by stocking up their staff. Since an increased workload does not only affect the level of depression of the employee but also is associated with other potential consequences as a reduction in job satisfaction or global health (Bowling et al., 2015), we agree that reducing the workload should be the first approach for organizations to stop the investigated process. However, it won't be possible to prevent certain peaks in the amount of work, for instance if deadlines are approaching, colleagues are sick or vacancies have not yet been refilled. To counteract negative effects on employees' mental health during those times it could be helpful to have personnel in leading positions which is capable of providing sufficient resources to their employees.

Implications

Considering the high costs of sickness and absenteeism for employees and organizations, our study clearly indicates that organizations benefit from keeping employees' workloads at a reasonable level. Since this is not always completely feasible, it is also important to counteract potential negative consequences through providing access to job resources, for instance through the supervisor.

A possible way to work towards a resource-providing leading staff might be the implementation of leadership trainings: Supervisors enacting health-oriented leadership (Franke & Felfe, 2011) for instance try to create a good work climate for their employees and work towards a healthier workplace design (Franke et al., 2014; Franke & Felfe, 2011) – behaviors, which could increase the availability of resources for the employees and therefore should be trained and implemented among the leading staff.

Another leverage organizations might use to increase the resources of their employees is to promote their level of job crafting, describing the changes employees enact regarding their work, for instance, in their relations to colleagues (Wrzesniewski & Dutton, 2001). According to the JD-R model, job crafting behaviors, as for instance actively asking for help, can increase the amount of available resources at work (Bakker & Demerouti, 2017; Tims et al., 2012; Tims & Bakker, 2010). Thus, if employees are encouraged to craft their jobs, e.g., by an intervention, their pool of resources can grow (van Wingerden et al., 2017), which might help them in handling their workload.

Limitations

Despite the new insights our study offers, it has some limitations. First, we collected our data through self-report, which means that some of our results might be influenced by common method variance (Podsakoff et al., 2003). We attempted to address this concern concerns by temporally separating the analysis of workload, depression, and sick leave (Podsakoff et al., 2003). For workload and provided resources, however, temporal separation was not feasible, therefore we used different sources of information, i.e., workload reported by the employee and resource allocation reported by the supervisor (Podsakoff et al., 2003).

Second, although the presented results show the supposed pattern, the average level of depression and sick leave in our sample is rather low. It might be, that the complex design of the study (three assessments across 23 months) appeared demanding, especially for

employees with a more severe symptomatology, preventing them from participating[1]. Thus, generalization of the presented results on a population of employees with a stronger pathology is in question.

When it comes to the association between workload, depression and sick leave, however, previous research indicates generalization: Endo et al. (2015) observed employees returning to work after being on sick leave due to depression (a population in which a stronger pathology can be assumed) and found that those employees which worked in departments with a high workload also had a higher risk for a recurrent absence because of a depression than their colleagues working in departments with a low workload.

The attenuating impact of supervisors on this process, however, needs further investigations, to assure its generalizability on a population of employees with a stronger pathology. Besides the focus on employees returning to work, collaborations with university outpatient clinics could be fruitful for the acquisition of the corresponding sample.

Third, our study focused on workload and neglected that other job demands may also have an impact on depression and sick leave. Future research might extend our approach and examine the attenuating influence of employees' supervisor on the investigated process when workload is under investigation in conjunction with other job demands, such as social stressors.

Conclusion

Facing the detrimental costs of depressive disorders and the often-following sick leave for employees and organizations, on the one hand, and the contribution of the workplace to the development of depressive symptoms, on the other, it is necessary that organizations do their part to improve employees' mental health. Reducing the workload among the staff and

[1]It is possible, that people suffering from a higher depression dropped out of the present study after their first assessment because further participation seemed too demanding. Therefore, we checked whether the level of depression at T1 differed between participants taking part in all three assessments and participants taking part in the first assessment only, yielding no significant results.

sensitizing supervisors for the importance of resource-provision during workload-peaks could be promising starting points.

Data availability

The data that support the findings of this study are available from the corresponding author, BPF, upon reasonable request.

Funding

This study was supported by Grant F 2199 in the context of NEW OSH ERA (New and Emerging Risks in Occupational Safety and Health) within the European Commission Sixth Framework Programme (ERA-NET scheme).

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Tables

Table 1. *Means, standard deviations and correlations between investigated constructs*.

Variable	*M*	*SD*	1	2	3	4
Individual level						
1 Workload T1	3.55	0.70	–			
2 Sick leave T1	6.29	13.19	.07	–		
3 Depression T2	0.99	0.83	.19**	.12*	–	
4 Sick leave T3	6.03	8.64	.16**	.19**	.23***	–
Group level						
RPS	3.97	0.39	–	–	–	–

Note. Two-sided testing of significance. *N* (individual level) = 276. *N* (group level) = 90. RPS = resources provided by the supervisor.
* $p <. 05$, ** $p <. 01$, *** $p < .001$.

Table 2. *Results of the multilevel path analysis and the Monte Carlo method for assessing mediation for the effect of workload on sick leave via the level of depression*.

WL→ DP	DP→SL	WL→SL	Indirect effect[a] (WL→DP→SL)	95% CI of indirect effect[b]
0.213** (.075)	1.950*** (.524)	1.347+ (.771)	0.416* (.185)	[0.101, 0.841]

Note. → refers to the path from variable A to variable B. Numbers represent estimated fixed effects and according standard errors in parentheses. Controlled for the initial level of sick leave. Workload, depression and the initial level of sick leave have been grand-mean centered prior to analysis. Two-sided testing of significance. *N* (individual level) = 276. *N* (group level) = 90. WL = workload; DP = depression; SL = sick leave; CI = confidence interval.
[a] Indirect effect was calculated by the product of the comprising paths. [b] The Monte Carlo method (Mackinnon et al., 2004) was applied to estimate the confidence interval of the indirect effect by using the online tool provided by Selig and Preacher (2008) with 20.000 repetitions and a confidence level of 95%.
+p<0.10, *p<0.05, **p<0.01, *** p<0.001.

Table 3. *Results of the multi-level analysis for the moderating effect of provided resources on the relation between workload and the level of depression.*

Predictor	γ	SE_γ	95% CI
Individual level			
Initial level of sick leave	.006^{+}	.004	[.000, .013]
Workload	1.457**	.504	[.469, 2.446]
Group level			
Resources provided by supervisor	-.062	.097	[-.251, .127]
Cross-level-interaction			
Workload x resources provided by supervisor	-.322*	.132	[-.581, -.062]

Note. Workload and the initial level of sick leave have been grand-mean centered prior to analysis. Two-sided testing of significance. *N* (individual level) = 276. *N* (group level) = 90. SE = standard error of the fixed effect; CI = confidence interval.
$^{+}p<0.10$, $^{*}p<0.05$, $^{**}p<0.01$.

Table 4. *Conditional indirect effects, according Monte-Carlo confidence intervals and difference test for the indirect effect*.

Level of provided resources	WL→ DP	DP→SL	WL→SL	Indirect effect[a] (WL→DP→SL)	95% CI of indirect effect[b]
Low	.309*** (.075)	1.952*** (.521)	1.351^{+} (.770)	.603** (.215)	[0.229, 1.083]
Average	.183* (.076)	1.952*** (.521)	1.351^{+} (.770)	.356* (.172)	[0.058, 0.748]
High	.056 (.106)	1.952*** (.521)	1.351^{+} (.770)	.110 (.207)	[-0.315, 0.548]
Low vs. high	-.252* (.103)	–	–	-.493* (.245)	–

Note. → refers to the path from variable A to variable B. Levels of provided resources were low (one standard deviation below the mean), average (the mean) and high (one standard deviation above the mean). Low vs. high refers to the difference between the estimates of the corresponding effect under conditions of high and low provided resources. Numbers represent estimated fixed effects and according standard errors in parentheses. Controlled for the initial level of sick leave. Workload, depression and the initial level of sick leave have been grand-mean centered prior to analysis. Two-sided testing of significance. *N* (individual level) = 276. *N* (group level) = 90. WL = workload; DP = depression; SL = sick leave; CI = confidence interval.

[a] Indirect effect was calculated by the product of the comprising paths. [b] The Monte Carlo method (Mackinnon et al., 2004) was applied to estimate the confidence intervals of the indirect effects by using the online tool provided by Selig and Preacher (2008) with 20.000 repetitions and a confidence level of 95%.

$^{+}p<0.10$, $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$.

Figures

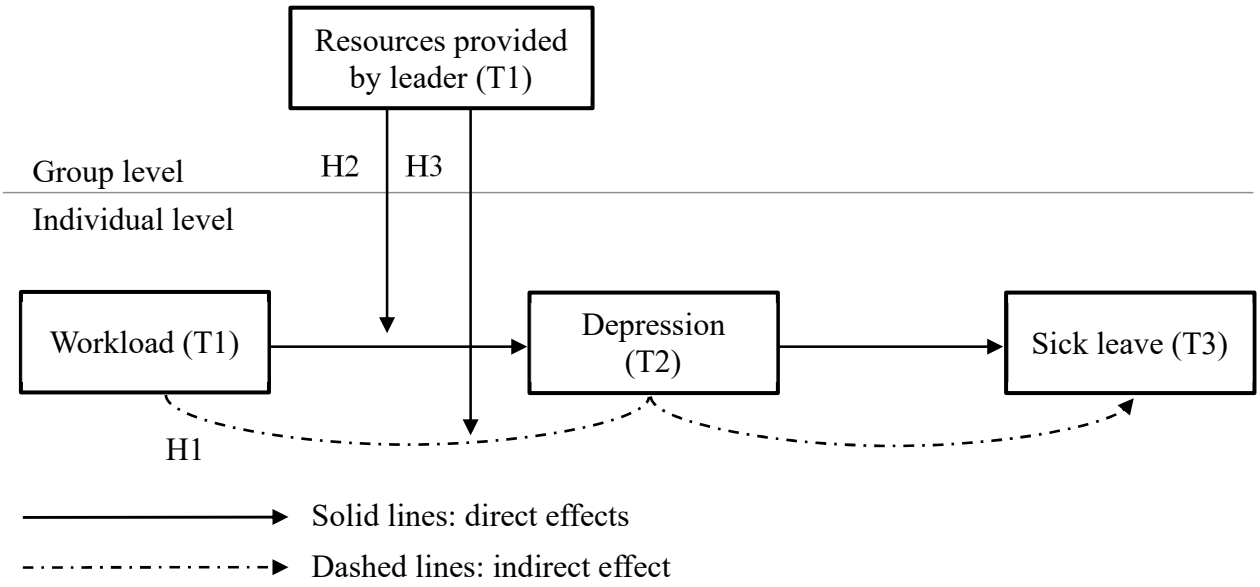

Figure 1. Research model.

Supplementary material

Table S1. *Comparison of different measurement models*.

Model	RMSEA	SRMR	TLI	CFI	X^2	*df*	Model comparison	
							ΔX^2	Δdf
Three factors (WL; RPS; DP)	0.042	0.051	0.953	0.962	417.310	280		
Two factors (RPS; WL with DP)	0.075	0.084	0.850	0.880	719.742	282	302.432***	2
Two factors (DP; WL with RPS)	0.077	0.097	0.843	0.874	742.139	282	324.829***	2
Two factors (WL; DP with RPS)	0.106	0.184	0.700	0.759	1157.578	282	740.268***	2
One factor (WL with DP and RPS)	0.123	0.197	0.595	0.673	1471.370	283	1054.060***	3

Note. ΔX^2 and Δdf refer to the comparison of the corresponding model to the three-factor model. Two-sided testing of significance. $N = 276$ (leader-employee dyads). RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; TLI = Tucker-Lewis index; CFI = comparative fit index; *df* = degrees of freedom; WL = workload; RPS = resources provided by the supervisor; DP = depression.
*** $p < .001$.

Appendix B: Manuscript 2

Leave me alone with your symptoms! Social exclusion at the workplace mediates the relationship of employee's mental illness and sick leave

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Status: Submitted to *Frontiers in Public Health*

Leave me alone with your symptoms! Social exclusion at the workplace mediates the relationship of employee's mental illness and sick leave

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Abstract

Although a substantial part of employees suffers from a mental illness, the work situation of this population still is understudied. Previous research suggests that people with a mental illness experience discrimination in the workplace, which is known to have detrimental effects on health. Building on the stereotype content model and allostatic load theory, the present study investigated whether employees with a mental illness become socially excluded at the workplace and therefore show more days of sick leave. Overall, 86 employees diagnosed with a mental disorder were interviewed and completed online-surveys. Path analyses supported the hypotheses, yielding a serial mediation: The interview-rated severity of the mental disorder had an indirect effect on the days of sick leave, mediated by the symptomatic burden and the social exclusion at the workplace. In the light of the costs associated with absenteeism the present paper highlights the harmfulness of discrimination. Organizations and especially supervisors need to be attentive for signs of exclusion within their teams and try to counteract as early as possible.

Keywords: workplace, mental illness, social exclusion, sick leave, discrimination, stereotype content model.

Leave me alone with your symptoms! Social exclusion at the workplace mediates the relationship of employee's mental illness and sick leave

Introduction

Mental illnesses are one of the main causes of disability worldwide (1,2). Estimates indicate that more than one in six people across the European countries (17.3%) experienced mental health problems in 2016 (3). Besides severe cognitive, emotional, and behavioral impairments for the affected individuals (4–6), mental health problems pose a substantial economic burden on health care systems (7,8). Since a substantial part of the working population suffers from mental disorders (9,10), mental illnesses furthermore interfere with the functioning of employees and organizations as well: Several studies provide evidence for a significant relationship between employees' mental health status and their performance (11–13). Thus, mental disorders contribute to a substantial amount of indirect costs organizations spend, arising from reduced productivity or increased absenteeism of their employees with a mental illness (14,15).

Despite these consequences of mental disorders on the well-being of employees and organizations, the work situation of employees with a mental illness (EMI) still is understudied (16). Investigations suggest that EMI are faced with various barriers at their jobs (17,18), which in turn could worsen their health status (19). Stigmatization and discrimination of people with a mental illness for instance are not only common in the general public (20,21), but also appear in organizations, for instance in form of the exclusion from work-related events or the denial of conversation in general (22–24). Discriminative actions as this social exclusion are known to be detrimental for health (25–29) and thus social exclusion might result in increased absenteeism (30). However, to the best of our knowledge, the influence of the mental illness on social exclusion and absenteeism has not been investigated jointly yet. This study is intended to close this research gap and thereby to contribute to a

better understanding of the negative effects mental disorders and social exclusion have on employees and organizations, hoping to provide starting points for their mitigation.

In a recent review, Follmer et al. (16) not only highlight the existence of negative stereotypes about EMI among supervisors and employees, but also the discrimination they experience in the workplace. An explanation why and how such negative stereotypes about people with a mental disorder end up in discriminative behavior provides the stereotype content model (SCM) (31) and its extension, the behaviors from intergroup affect and stereotypes (BIAS) map (32). The SCM proposes that two dimensions are central for the emergence of different group stereotypes: *warmth*, defined as the perception whether the intent of a certain group towards one self or one's ingroup is either beneficial or malevolent and *competence*, defined as the perceived capability of the group to pursue and enact those intentions (31,33). Groups are classified on both dimensions, yielding either thoroughly positive stereotypes (i.e. classified as warm and competent) as e.g. the middle class, thoroughly negative stereotypes (i.e. cold and incompetent) as e.g. poor people, or ambivalent stereotypes (i.e. warm and incompetent or cold and competent) as e.g. elderly or rich people (32,33). Each of those stereotype-combinations elicits specific emotional reactions towards the classified group (31,33): Warm and competent groups are admired, cold and incompetent groups elicit contempt, warm but incompetent groups induce pity, and cold but competent groups envy. Those emotional reactions finally end up in specific behavioral tendencies towards the classified group, mediating the effect of the stereotype on the behavior as the BIAS map proposes (32,33): While admired groups induce active and passive facilitation, the opposite is true for resented groups (i.e. incompetent and cold) which provoke active and passive harm. Envied or pitied groups evoke mixed behavioral patterns (passive facilitation and active harm or active facilitation and passive harm, respectively). A multiplicity of studies investigated the SCM and the BIAS map and found support for their assumptions, also across various nations, including Germany (e.g. 31,32,34–36).

Hence, according to the SCM, emotional reactions and behavioral tendencies towards people with a mental illness depend on the perception whether a) they want to help or harm oneself and whether b) they are able to do so. In a systematic literature review, Parcesepe et al. (21) sum up that people with a mental illness are often perceived as being e.g. incompetent, dangerous and criminal, indicating a rather low evaluation on the two dimensions warmth and competence. In a more proximal study on the SCM, Sadler et al. (37) asked participants to rate the warmth and competence of people with a mental disorder as seen by Americans in general: Results confirmed the indirect evidence, showing that people with a mental illness are perceived as equally incompetent and cold as poor people. Accordingly, people tend to react with active harm, e.g. segregation (38,39), or passive harm, e.g. social distance (20,21,38), towards them, as predicted by the SCM.

Although research on employees with a mental illness in general still is scarce (see Follmer et al. (16) for a recent review), the existing literature indicates that likewise discriminatory behaviors towards people with a mental illness also exist in the workplace (e.g. 17,18,22,24,40,41). Follmer et al. (23) for instance found that lower ratings of warmth and competence of EMI predict a higher desire to socially distance oneself from a fictious coworker with a mental illness. This confirms investigations on the experiences of EMI, reporting that people at work avoid them due to their mental health problems (24). Thus, people with a mental illness do not only experience discriminatory behavior as social exclusion in the general public, but also in their workplaces.

The evaluation that a specific colleague has a mental health problem and the subsequent exclusion of this colleague by the coworkers however, do not appear out of the blue: First, the coworkers have to notice corresponding peculiar behavior (or in other words: symptoms) that marks the colleague accordingly. Only if the colleague acts strangely (i.e. displays symptoms), an appraisal as being (more or less) mentally ill on the part of the coworkers is possible – followed by the above mentioned perception that the colleague is cold

and incompetent (c.f. 37) and the corresponding behavioral reactions (e.g. social exclusion) towards her/him (c.f. 33). Thus, EMI with a higher symptomatic burden (i.e. more and/or stronger symptoms) should be perceived as being more mentally ill – and thus experience more social exclusion at the workplace.

The symptomatic burden on the other hand is inevitably linked to the severity of the mental illness itself: The level of disability and distress patients experience in various life domains, including occupation, increases as the mental health status gets more severe (42,43). More depressed people for instance spend less time in groups, use more negative emotion words, and feel lonely more often than their less depressed counterparts (44,45). Thus, an increasing severity of the mental illness should go along with a higher symptomatic burden. This in turn will be noticed by the coworkers, leading to social exclusion of the EMI.

Based on this line of thought we therefore test the following hypotheses:

Hypothesis 1: The severity of the mental disorder leads to a higher symptomatic burden.

Hypothesis 2: The severity of the mental disorder leads to an increase of experienced social exclusion at the workplace via a higher symptomatic burden.

Social stressors as social exclusion are not only uncomfortable to endure but unfortunately also could have detrimental effects on human body and thus health according to the allostatic load model (46–49). The allostatic load model assumes that physiological reactions mediate the effect of (job) stressors on health outcomes (48,50). According to the model, different physiological systems in the human body initiate an adaptive response if exposed to a stressor, that is the physiological markers increase (48,49). This response persists until the stressor vanishes (49). Now the physiological response is stopped and the markers

decrease – thus recovery takes place (48,49). This process of adjustment in order to cope with a stressor fulfilled by different physiological systems is defined as *allostasis* (50,51).

The described switching on and off of the physiological response is an adaptive and beneficial mechanism – however it can become overstrained with potential detrimental effects on the human body in the long run, a status called *allostatic load* (46–49). The allostatic system for instance may have difficulties to habituate to the same stressor (i.e. the physiological response to the stressor is always equally high) or problems to end the response adequately (i.e. it continues even after the stressor disappears) – both resulting in a hyperactivation of the system (48,49). McEwen (49) calls these subtypes of allostatic load "lack of adaption" and "prolonged response" and further postulates that the effects of a chronic hyperarousal add up over time and finally result in diseases (47–49).

Unfortunately, social stressors are designated to cause those subtypes of allostatic load: Various psychophysiological studies indicate that even when people are exposed to the same social stressor for several times, the sympathetic response does not significantly change, suggesting poor habituation of the associated system to the stressor (e.g. 52–55) - or (in the sense of allostatic load theory) a "lack of adaption". Furthermore, employees tend to ruminate in their leisure time when they are confronted with social stressors at work (56–58). Such pondering about a stressor can lead to an extended physiological reaction, as experimental laboratory studies suggest (59) – or in other words can cause a "prolonged response" in the sense of allostatic load theory. Thus, if people are exposed to the same social stressor over and over again – as it can be the case for employees confronted with social exclusion at the workplace – both mentioned subtypes of allostatic load might occur and finally end up in sickness.

The proposed impact of social exclusion on human health is supported by research from various fields, indicating that isolation in general affects the functioning of the immune system and even mortality rates (27–29). But there also is according evidence in the work

environment since socially excluded employees have a higher risk for a long-term sick leave spell (30), just as victims of workplace bullying do (for a recent review and meta-analysis see 60). Thus, it is possible that the influence of the mental illness goes beyond the symptoms a patient suffers from and the social exclusion (s)he experiences thereof at the workplace: The isolation could furthermore lead to an increase of days EMI are sick leaving, yielding a serial mediation of the severity of the mental illness on sick leave via the symptomatic burden and social exclusion at the workplace. While the debarment of EMI as well as the impact of social exclusion on absenteeism has already been under examination (23,24,30), no study has ever combined those research lines and investigated the influence of the mental illness on sick leave via social exclusion.

Based on this line of thought we therefore test the following hypothesis:

Hypothesis 3: The severity of the mental disorder leads to an increase of sick leave, sequentially via a higher symptomatic burden and more social exclusion at the workplace.

Materials and methods

Design and Procedure

The data of the present study originate from the COMPARE-consortium (61) standing for “children of mentally ill parents at risk evaluation”. The consortium investigates why children of parents with a mental illness are at higher risk of developing mental illnesses themselves and whether a preventive intervention may interrupt this malicious transmission of the parental mental state to the child (61). It consists of a clinical study “COMPARE family” (see 62) as well as four subprojects named “COMPARE emotion”, “COMPARE interaction”, “COMPARE work” and “COMPARE school” (see 61). In the following we only report the aspects of the COMPARE-consortium which are relevant for the paper at hand. For more

details on the consortium and the subprojects we refer to Christiansen et al. (61) and for more information on the clinical study to Stracke et al. (62)[2].

The recruitment for the used partial data set took place from January 2018 to May 2020 in different university outpatient clinics throughout Germany. The clinical study was advertised with e.g. flyers, newspaper articles and information meetings for professionals (e.g. physicians). Persons contacting the clinics asking for psychotherapeutic help were screened for eligibility and interest in participating in the clinical study (c.f. 62). After deciding to participate, they signed the informed consent and fulfilled the first assessment, from which the data used in this paper originate.

Every assessment was split in multiple occasions: First, structured interviews were conducted in two sessions on site by trained study personal. After the second interview session, patients received a sheet with a link to the online questionnaire assessed by "COMPARE family" and were asked to answer it at home (c.f. 62). If participants also agreed to take part in "COMPARE work" (or one of the other subprojects) they furthermore received links to the corresponding online questionnaires.

Sample

Different criteria had to be met for patients to participate in the clinical study: (1) they had to search for outpatient psychotherapeutic care, (2) they had to fulfill the diagnostic criteria for a DSM-5 disorder (63) and (3) they had to care for at least one child aged between 1.5 and 16 years (c.f. 62). Patients were not included in the clinical study if (1) the patient already had been in psychotherapeutic treatment at the present time, (2) the patient needed an acute inpatient treatment, (3) all children fulfilled the criteria for a severe mental illness and furthermore were in need of an immediate treatment, (4) the patient used benzodiazepines

[2] In the present paper we used data from the clinical study "COMPARE family" (see 62) and the subproject "COMPARE work" (see 61). Since the acquisition of participants in the clinical study is still ongoing, two partial data sets were provided in May 2020 and in February 2021 with the aim to facilitate in advance analysis. The partial data sets contain final, not changeable and completely refined data. In this present paper we used data from the first partial data set provided in May 2020.

regularly (an intermittent use less than once every two weeks was allowed) or (5) the family had insufficient German language skills (c.f. 62). For the present paper we furthermore excluded patients without a current (self-)employment as well as patients being on a sick leave for longer than six weeks since any item with regard to the current work situation could presumably not have been reasonably answered.

Overall, $N = 86$ patients (77.9% female) met those inclusion criteria and answered the questionnaires from "COMPARE work" and "COMPARE family". The average age was 39.42 years ($SD = 6.90$). According to the German version of the ICD-10 (64) most of the patients suffered from affective disorders (F30-F39; n = 40) or from neurotic, stress-related and somatoform disorders (F40-F48; n = 40). About 63.1% had additional comorbid diagnoses. The majority of the sample had a diploma allowing to visit a regular university or a university of applied science (61.9%) and 31.0% had a secondary school certificate. An average participant worked 29.77 hours per week ($SD = 11.15$), held hers or his job for 7.45 years ($SD = 7.31$) and had a permanent contract (84.5%).

Measures

All data used in this paper have been collected and managed with REDCap (65), standing for "research electronic data capture". As already mentioned, the data – although belonging to one assessment – were partly measured at different events. Thus, in addition to describing the variables used in the present paper we also mention the occasion they were collected in.

Variables assessed in interview sessions.

Severity of mental illness. The Diagnostic Interview for Mental Disorders (DIPS) (66,67) was conducted with the patients in the first interview session. Trained study personnel executed the DIPS (c.f. 62) taking between 60 and 120 minutes (c.f. 66). The structured interviews of the DIPS-family are a reliable and valid method for diagnosing mental disorders across the lifespan (66). At the end of the interview, the assessor rates the severity of the main

diagnosis on a scale from 0 to 8 with digits between 0 and 3 standing for a subclinical diagnosis and digits between 4 and 8 for a clinical diagnosis (c.f. 66,67). This rating was used as an indicator for the severity of the patients' mental illness in the present study. Since subclinical diagnoses were not sufficient for being enrolled into the clinical study, the rating only varied between 4 and 8 in the present paper.

Variables assessed in the questionnaire of "COMPARE family".

Symptomatic burden. The Brief Symptom Inventory (68) was used to assess the symptomatic burden of the patient. The inventory is a short form of the Symptom Check-List-90-R (69) and measures the subjective impairment caused by the symptoms of the patient (68). Various studies indicate the reliability and validity of the inventory, especially if the psychopathology is under study (68,70). The 53 items ask the participant how much (s)he suffered from different symptoms within the last seven days as, for example, the symptom of "feeling no interest in things" (Cronbach's $\alpha = .96$). Answers ranged from 0 (*not at all*) to 4 (*very much*) on a Likert-scale with labelled intermediate steps.

Variables assessed in the questionnaire of "COMPARE work".

Social exclusion. We measured social exclusion with the corresponding scale from Zapf et al. (71) which is an adaption and further development of Frese's et al. (72) scale and has proven to be reliable and valid (72,73). It consists of four items as "you are being ignored and excluded" (Cronbach's $\alpha = .82$). Answers ranged from 1 (*does not apply at all*) to 6 (*completely applies*) on a Likert scale with labelled intermediate steps.

Sick leave. Patients indicated the number of days they were on sick leave by answering the following question: "On how many days have you been absent from work for health reasons in the last 4 weeks (without taking into account the days on which you were missing due to an illness of your child / children)?".

Statistics

To test hypothesis one and two – which stated that patients with a more severe mental illness suffer from more and/or stronger symptoms (H1), and as a result become socially excluded at work more often, yielding an indirect effect (H2) – we conducted a path analysis using the PROCESS macro version 3.4.1 (74) in IBM SPSS Statistics 26 executing Model 4 (simple mediation): First, we regressed the symptomatic burden on the severity of mental illness. Second, we regressed social exclusion on the severity of mental illness and the symptomatic burden simultaneously. Third, we calculated the indirect effect of the severity of the mental illness on social exclusion via the symptomatic burden. Lastly, we regressed social exclusion solely on the severity of mental illness to test for the total effect of the predictor.

To test whether the social exclusion of the patients at work finally results in an increase of absenteeism – yielding a serial mediation with two mediators (H3) – we further conducted a path analysis using Model 6 (serial mediation, two mediators) of the Process macro (74): After rehearsing the first two steps just described we further regressed sick leave on the severity of mental illness, the symptomatic burden and social exclusion simultaneously. Then, we calculated the indirect effect of the severity of mental illness on sick leave via the symptomatic burden and social exclusion. Finally, we regressed sick leave on the severity of mental illness alone to again obtain the total effect model. The significance level (α) was 0.05 for every hypothesis.

As recommended by Hayes (74) the confidence intervals of any indirect effect presented in this paper are percentile bootstrap confidence intervals calculated on the basis of 10,000 bootstrap-samples. We do not report p-values of indirect effects since the normal theory approach used for their calculation has different statistical drawbacks and therefore cannot be recommended (e.g., 74).

Results

Preliminary analysis

Means, standard deviations and correlations between the investigated variables are presented in Table 1. As expected, the severity of mental illness had a positive relation with the symptomatic burden of the patient, which in turn correlated positively with social exclusion. Furthermore, sick leave was positively correlated with social exclusion. Thus, the bivariate relations showed the expected pattern.

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Insert table 1 about here

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Test of hypotheses

The results of our first path analysis which tested the simple mediation model are presented in Figure 1: Patients with a more severe mental illness suffered from more and/or stronger symptoms (b = .186, p = .003, 95% CI [.064, .307]) supporting hypothesis 1. Furthermore, employees with a stronger symptomatic burden reported more experienced social exclusion (b = .628, p < .001, 95% CI [.321, .935]). There was no direct effect of the severity of the mental illness on social exclusion – neither with (b = -.117, p = .191, 95% CI [-.294, .060]) nor without (b = -.001, p = .995, 95% CI [-.184, .182]) controlling for the symptomatic burden. However, there was an indirect effect: Patients with a more severe mental disorder suffered from a stronger symptomatic burden and in turn reported more experienced social exclusion at work (b = .117, 95% CI [.028, .251]), supporting hypothesis 2.

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Insert figure 1 about here

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Figure 2 presents the results of the second path analysis which tested the serial mediation model. In addition to Figure 1, it shows that patients who reported more experienced social exclusion were absent from work more often (b = 2.652, p = .006, 95% CI [.800, 4.504]). Neither the symptomatic burden (b = -1.034, p = .464, 95% CI [-3.829, 1.761]) nor the degree of the mental illness (no matter whether directly (b = .048, p = .948, 95% CI [-1.431, 1.528]) or in total (b = -.145, p = .842, 95% CI [-1.584, 1.294])) were associated with the amount of days a patient was sick leaving at work. Instead, as can be seen in Table 2, the severity of the mental illness had an indirect effect on sick leave: Patients with a more severe mental disorder suffered from a stronger symptomatic burden and reported in turn more experienced social exclusion at work which went along with an increase of days a patient was sick leaving (b = .309, 95% CI [.022, .777]), supporting hypothesis 3. The indirect effects of the severity of the mental illness on absenteeism via the symptomatic burden or social exclusion reclusively were both statistically negligible (see Table 2).

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Insert figure 2 about here

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Insert table 2 about here

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Additional analysis

Since the acquisition of patients for the present paper lasted until May 2020, a part of the participants undertook their assessment during the beginning of the COVID-19 pandemic in Germany. To rule out the possibility that the far-reaching influences of the pandemic on the society did affect the presented results we excluded any patient having participated in the year 2020 and reran the analyses, yielding similar results (c.f. supplementary material 1).

Furthermore, some patients completed the questionnaire of "COMPARE work" (i.e. the questions regarding social exclusion and sick leave) before answering the questionnaire of "COMPARE family" (i.e. the questions regarding the symptomatic burden) resulting in a mixed temporal precedence. Thus, we excluded every participant who answered to "COMPARE work" one or more days before answering to "COMPARE family", which resulted in patients completing the questionnaire of "COMPARE work" 12 days after the questionnaire of "COMPARE family", on average. Afterwards we reran the analyses and obtained similar results (c.f. supplementary material 2).

Discussion

The goal of the present study was to contribute to the scarce literature on employees with a mental illness (EMI) by investigating the impact of the mental illness on sick leave. More specifically, we hypothesized and tested whether the severity of the mental illness has an indirect effect on the days of sick leave sequentially via the symptomatic burden and social exclusion at the workplace. Regression and path analysis supported our hypothesis, indicating that patients with a more severe mental disorder suffer from a stronger symptomatic burden. This in turn increases their experienced exclusion at the workplace, yielding an indirect effect of the severity of the mental illness on social exclusion. Finally, the isolation EMI experience at the workplace leads to an increase of absenteeism, resulting in the hypothesized serial mediation.

Although stigmatization and discrimination of people with a mental illness in general has been the scope of several investigations (for reviews on the topic see e.g. 21,75,76), the work situation of EMI still is understudied (16). Previous investigations indicate that social distancing from people with a mental illness exists – not only in the general public but also in the work context (e.g. 21,24). The resulting isolation is known to have detrimental effects on health (e.g. 27–29) and thus, social exclusion can contribute to sick leave (30). The present study is the first that connects those findings, demonstrating that EMI show higher rates of

absenteeism due to the social exclusion they experience at the workplace. It therefore adds to a better understanding of the experiences people with a mental illness make at the workplace and the consequences evoked thereof.

Deeper insights on the work situation of EMI are necessary since many of the published investigations on this population are descriptive in nature, limiting the possible conclusions drawn from those findings (c.f. 16). Thus, the current paper contributes to the scarce literature by applying inferential statistics, allowing more reliable conclusions about the specific work environment of EMI.

The study's findings underline the harmfulness of discrimination in general and social exclusion in particular. Various studies indicate the deleterious effects isolation can have on human health (27–29) – thus it is not surprising that socially excluded employees have a higher risk for a long-term sick leave spell (30). The present study replicates those findings in the population of employees with a mental illness, indicating that the social exclusion of EMI increases the days they are sick leaving. Besides the detrimental effects on the health of the discriminated individual, those results also imply negative consequences for organizations and the society as a whole given the amount of costs employers and states across the European Union spend in relation to absenteeism (77).

Although discriminative actions as social distancing towards EMI have been the scope of investigations before (e.g. 23), this study is the first to portend that the symptomatic burden caused by the mental illness is crucial for the degree of exclusion EMI experience at their workplaces. Seen through the lens of the stereotype content model (SCM) (31) this finding makes sense: The model and its extension, the BIAS Map (32), propose that groups who are evaluated as being cold and incompetent as e.g., people with a mental illness (37), elicit active and passive harm (e.g., exclusion) (31–33). Thus, employees who are perceived as having more mental health problems should experience more social exclusion. However, to evaluate that a certain coworker has a mental health problem, the colleagues first have to notice

corresponding peculiar behavior, that is, symptoms of a mental disorder. The more symptoms the colleagues notice (or the stronger they are), the higher the attributed mental health problems of the coworker and hence the elicited behavioral reaction will be. Thus, EMI suffering from a high symptomatic burden will be perceived as being more mentally ill by their coworkers in comparison to EMI with a low symptomatic burden, and thus experience more social exclusion. Experimental evidence supports the suggested importance of the symptomatic burden: Muschalla et al. (78) were able to show that the announced willingness of a fictious coworker with a mental illness to work on her mental health problems led to a lower desire for social distance towards that fictious coworker. Thus, even the anticipation of lower symptoms seems to mitigate the desire to socially distance oneself from the EMI.

Limitations

The present paper has several limitations. First of all, cross-sectional data assessed at one point of time cannot be interpreted causally, since the temporal precedence remains unclear (c.f. 79). In the present study however, this concern can partly be thwarted: Although the variables belong to the same assessment, they have not all been measured at the same time. The predictor (severity of the mental disorder) has been rated by trained study personnel in the first interview session which always took part before the online-questionnaires were dispensed (c.f. 62). Furthermore, we found similar results when we reanalyzed the data without participants who answered to the questionnaire of “COMPARE work” one or more days before answering the questionnaire of “COMPARE family”, yielding an average of 12 days between the assessment of the first mediator (the symptomatic burden) and the second mediator/the outcome (social exclusion and sick leave). Thus, temporal precedence could at least partly be established. However, future replications applying a cross-lagged panel design are still recommended to gain more certainty about the direction of the presented effects (c.f. for instance 80).

As in other clinical trials (81–83) recruitment of patients was difficult, yielding a small sample size in the present paper which bears the risk of a non-representative sample (c.f. for instance 80). In the German population, the most prevalent groups of mental disorders are anxiety disorders followed by affective disorders (84,85). Similar results are found in non-German representative studies on mental illnesses in the working population, showing that simple phobia is the most prevalent mental disorder among the workforce followed by depression (c.f. 10). Although the present sample also mostly consists of patients with affective or anxiety disorders, the former are clearly dominating (40 diagnoses of affective disorders vs. 20 diagnoses of anxiety disorders). Thus, our sample is not an optimal representation of the population of employees with a mental illness. Future investigations applying a net online-questionnaire, including online screening instruments instead of on-site clinical interviews, could be able to establish a better representation of EMI by lowering the effort for participation.

Multiple sources of common method biases can operate in any given study and limit the trustworthiness of the results (c.f. 86). In the present paper we tried to confine this problem by several ways: First of all, we were able to draw on different assessment-methods (interviews and questionnaires), which might delimitate the risk of a common method bias to some degree (c.f. 86). Furthermore, the problem could partly be mitigated by the different contexts some of the variables were assessed in (more specifically, the different questionnaires of “COMPARE family” and “COMPARE work”) (c.f. 86). At last, the response format used to assess sick leave has been different from the response formats of its predictors which might reduce the risk of common method bias as well (86).

Practical implications and future research

The results of the present study indicate that the social exclusion of EMI can increase the days they are sick leaving. Thus, not only active forms of discrimination, which are (according to the extension of the SCM (31,32)) executed with the blatant aim to affect the

target group (e.g. bullying), have detrimental effects on the individual (e.g. 60,87), but also more passive forms that are marked by less directed effort as e.g. neglecting, ignoring or excluding (c.f. 32), can affect individuals health and therefore also the organization they work in, e.g. due to indirect costs associated with absenteeism (15). While active forms of discrimination might at first view seem to be more threatening for the organizational health and probably – due to their more directed effort (32) – attract more attention in organizations, it is hence also necessary that supervisors pay attention whether the more passive forms of discrimination take place in their teams and, if so, try to counteract them.

One possibility to mitigate the social exclusion of EMI could be the appliance of workplace interventions. The Mental Health First Aid training (88,89) for instance can increase the intentions to provide help to a person with mental health problems in general and might also reduce the desire for social distance, as a recent meta-analysis across several settings indicates (90). Although not specifically developed for the workplace (89), a recent randomized controlled trial shows that the training may also increase the willingness to help a fictious coworker with a mental illness among public servants (91). Future randomized controlled trials might investigate whether the training is able to prevent the detrimental process described in this paper, e.g., by reducing the social exclusion EMI experience in the workplace.

While the group “people with a mental illness” as a whole is perceived as being cold and incompetent in the sense of the SCM, research indicates that the perception on the two SCM-dimensions warmth and competence varies across different psychological disorders (23,37). Follmer et al. (23) for instance let participants rate how warm and competent different disorders are perceived in the workplace by society and found that individuals suffering from an anxiety disorder are perceived as being warmer and more competent than people with a depression or a bipolar disorder. As a result, the evoked behavioral response towards people with a mental illness might differ, depending on the disorder (c.f. 32):

Employers for instance would rather dismiss an employee developing a schizophrenia than an employee developing a depression (17). Thus, it would be interesting to explore whether the presented results vary across different mental illnesses, more specifically, whether the type of disorder (for instance depression vs. anxiety disorder) moderates the effect of the symptomatic burden on social exclusion in the demonstrated process. Yet, when we checked our data, we were not able to find a significant interaction (c.f. supplementary material 3), which might be caused by the small sample size. However, a better understanding of which subgroups of people with a mental illness are at special risk for social exclusion and the subsequent absenteeism at the workplace would help, e.g., for constructing more precise interventions, which is why we encourage further investigations in this regard.

Conclusion

In 2016, about every sixth person in the European Union suffered from mental health problems. Besides the detrimental effects that go along with the disorder itself, people with a mental illness also face various hindrances imposed by society, that are known to worsen the overall health status. The present paper demonstrated that those effects also take place within the workforce. Employers therefore need to implement an integrative climate where employees with a mental illness can feel as safe and valued as every other employee – for the sake of their staff's but also their organization's wellbeing.

Funding

The projects "COMPARE work" (grant number: 01GL1748A) and "COMPARE family" (grant number: 01GL1748B), from which the data used in this study originate, are entirely funded by the Federal Ministry of Education and Research (BMBF).

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Tables

Table 1. *Means, standard deviations and correlations between investigated constructs.*

Variable	*M*	*SD*	1	2	3	4
1 Severity of mental illness	5.98	0.97	–			
2 Symptomatic burden	0.83	0.55	.32** [.11, .50]	–		
3 Social exclusion	1.43	0.77	-.02 [-.23, .20]	.39*** [.19, .56]	–	
4 Sick leave	2.49	6.05	-.02 [-.23, .19]	.04 [-.18, 26]	.29** [.09, .48]	–

Note. Pearson correlation coefficient with 95%-confidence interval in square brackets. Two-sided testing of significance. n = 82-86.
** p <. 01, *** p < .001.

Table 2. *Indirect effects of the severity of the mental illness on sick leave.*

Effects	*b*	SE_b	95% CI
SMI → SB → SL	-.192	.268	[-.735, .361]
SMI → SX → SL	-.311	.268	[-.967, .064]
SMI → SB → SX → SL	.309	.199	[.022, .777]

Note. Confidence intervals and standard errors are based on 10,000 bootstrap-samples (percentile bootstrap confidence intervals). n = 82. SMI = severity of the mental illness; SB = symptomatic burden; SX = social exclusion; SL = sick leave; SE_b = standard error of the regression coefficient of the indirect effect; CI = confidence interval. Unstandardized regression coefficients.

Figures

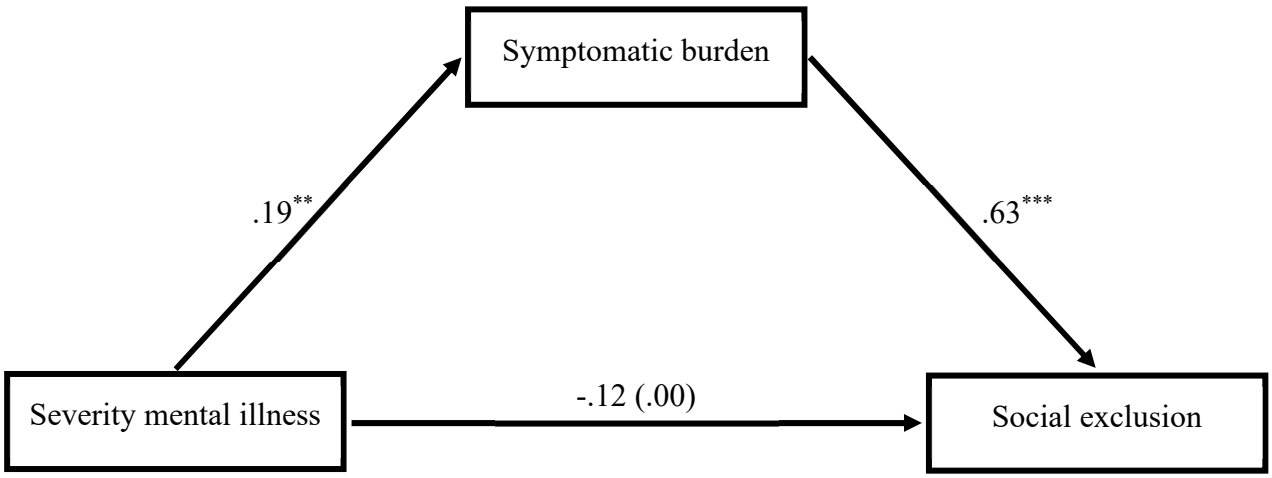

Figure 1. Mediation model showing the impact of the severity of the mental illness on social exclusion via the symptomatic burden (n = 82). The total effect of the severity of the mental illness on social exclusion without controlling for the symptomatic burden is shown in parentheses. Unstandardized regression coefficients. Two-sided testing of significance.
** p <. 01, *** p < .001.

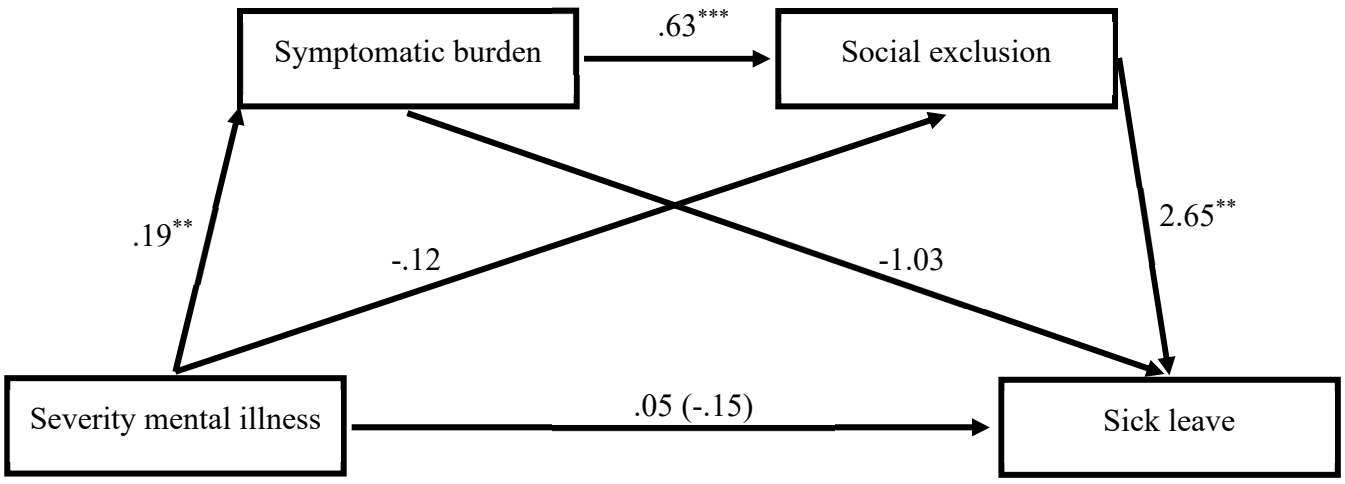

Figure 2. Mediation model showing the impact of the severity of the mental illness on sick leave via the symptomatic burden and social exclusion (n = 82). The total effect of the severity of the mental illness on sick leave without controlling for the symptomatic burden and social exclusion is shown in parentheses. Unstandardized regression coefficients. Two-sided testing of significance.
** p <. 01, *** p < .001.

Supplementary material

Supplementary material 1

Results for hypotheses one and two without any patient having participated in the year 2020 to rule out the possibility of an influence of the COVID-19 pandemic on the results

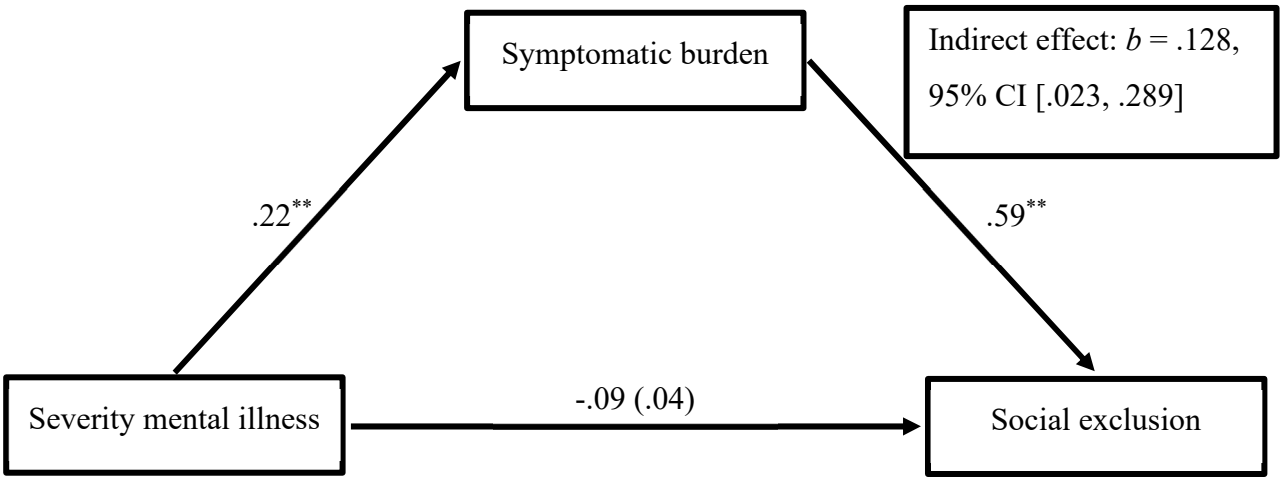

Figure S1. Mediation model showing the impact of the severity of the mental illness on social exclusion via the symptomatic burden (n = 70). The total effect of the severity of the mental illness on social exclusion without controlling for the symptomatic burden is shown in parentheses. Unstandardized regression coefficients. Two-sided testing of significance.
** p <. 01.

Results for hypotheses three without any patient having participated in the year 2020 to rule out the possibility of an influence of the COVID-19 pandemic on the results

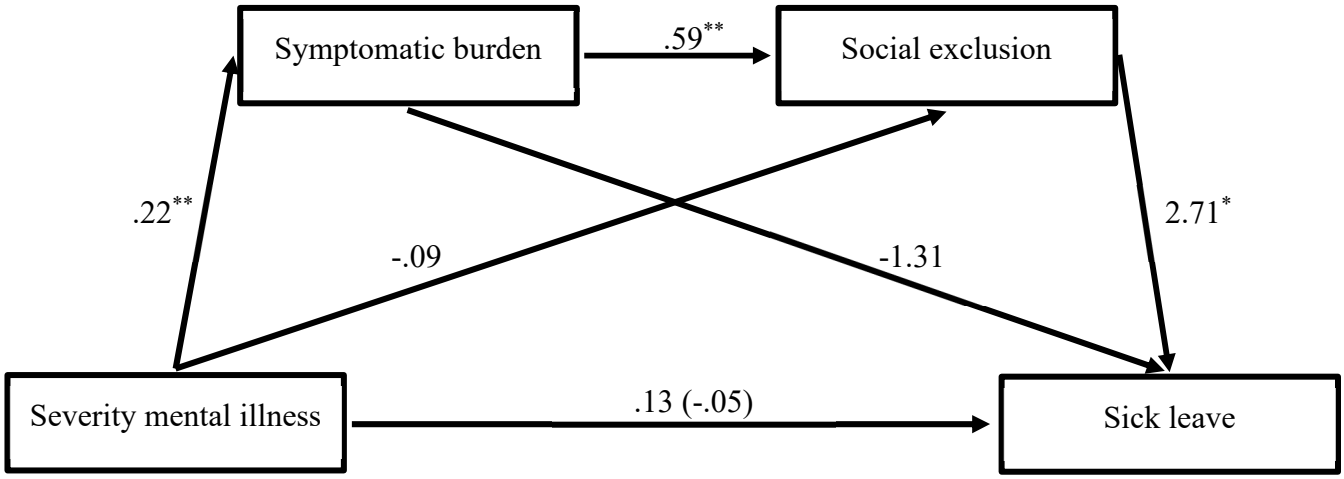

Figure S2. Mediation model showing the impact of the severity of the mental illness on sick leave via the symptomatic burden and social exclusion (n = 70). The total effect of the severity of the mental illness on sick leave without controlling for the symptomatic burden and social exclusion is shown in parentheses. Unstandardized regression coefficients. Two-sided testing of significance.
* $p < .05$, ** $p <. 01$.

Table S3. *Indirect effects of the severity of the mental illness on sick leave.*

Effects	*b*	SE_b	95% CI
SMI → SB → SL	-.283	.359	[-.988, .471]
SMI → SX → SL	-.237	.284	[-.938, .193]
SMI → SB → SX → SL	.345	.232	[.006, .893]

Note. Confidence intervals and standard errors are based on 10,000 bootstrap-samples (percentile bootstrap confidence intervals). n = 70. SMI = severity of the mental illness; SB = symptomatic burden; SX = social exclusion; SL = sick leave; SE_b = standard error of the regression coefficient of the indirect effect; CI = confidence interval. Unstandardized regression coefficients.

Supplementary material 2

Results for hypotheses one and two without any participant who answered to the questionnaire of compare work one or more days before answering to the questionnaire of compare family

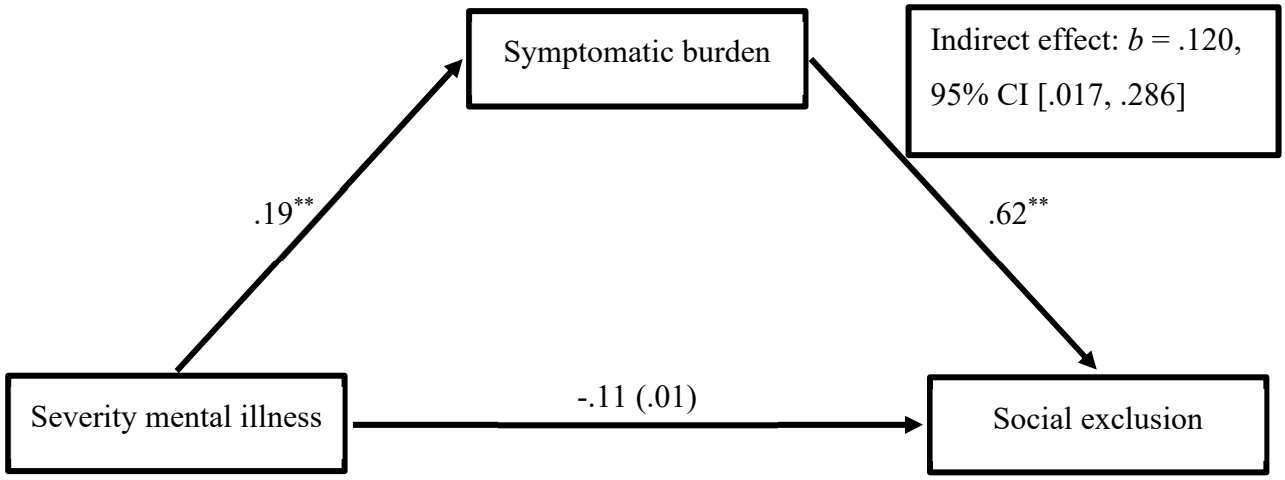

Figure S4. Mediation model showing the impact of the severity of the mental illness on social exclusion via the symptomatic burden (n = 66). The total effect of the severity of the mental illness on social exclusion without controlling for the symptomatic burden is shown in parentheses. Unstandardized regression coefficients. Two-sided testing of significance.
** $p <$ .01.

Results for hypotheses three without any participant who answered to the questionnaire of compare work one or more days before answering to the questionnaire of compare family

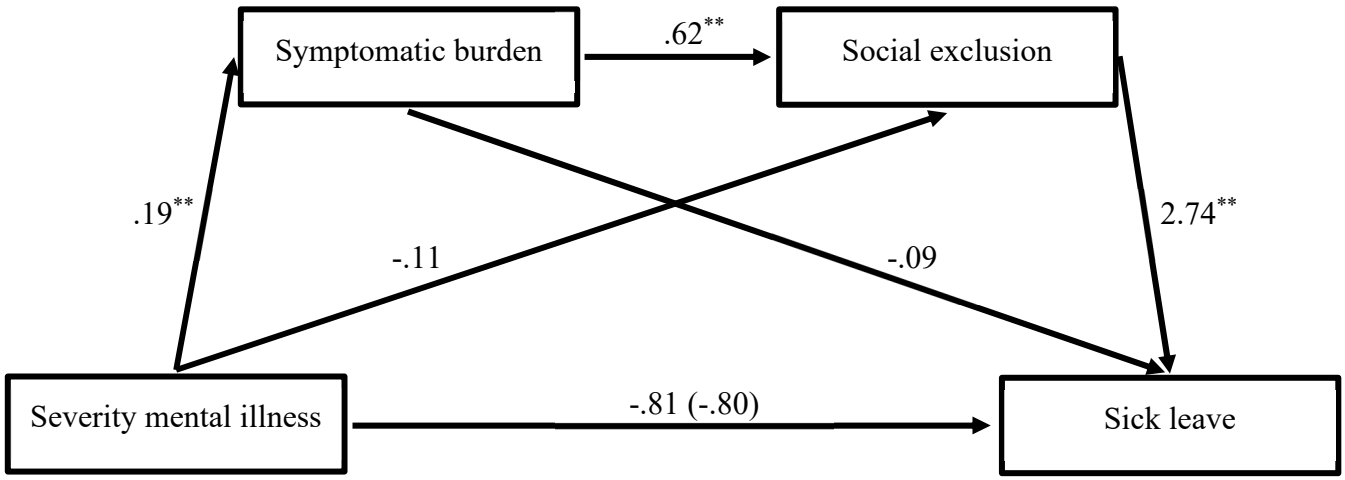

Figure S5. Mediation model showing the impact of the severity of the mental illness on sick leave via the symptomatic burden and social exclusion (n = 66). The total effect of the severity of the mental illness on sick leave without controlling for the symptomatic burden and social exclusion is shown in parentheses. Unstandardized regression coefficients. Two-sided testing of significance.
** p <. 01.

Table S6. *Indirect effects of the severity of the mental illness on sick leave.*

Effects	*b*	SE_b	95% CI
SMI → SB → SL	-.018	.254	[-.476, .542]
SMI → SX → SL	-.296	.327	[-1.083, .210]
SMI → SB → SX → SL	.329	.233	[.013, .900]

Note. Confidence intervals and standard errors are based on 10,000 bootstrap-samples (percentile bootstrap confidence intervals). n = 66. SMI = severity of the mental illness; SB = symptomatic burden; SX = social exclusion; SL = sick leave; SE_b = standard error of the regression coefficient of the indirect effect; CI = confidence interval. Unstandardized regression coefficients.

Supplementary material 3

Results for a possible moderation of the relationship between the symptomatic burden and social exclusion by the type of disorder (depression vs. anxiety disorder)

Table S7. *Regression of social exclusion on symptomatic burden, disorder-type and their interaction.*

Predictors	*b*	SE_b	95% CI
Symptomatic burden	.558**	.196	[.164, .951]
Type of disorder [a]	.162	.227	[-.295, .619]
Symptomatic burden x Type of disorder	.367	.419	[-.475, 1.210]

Note. Symptomatic burden and type of disorder were mean centered prior to analysis. $n = 52$. SE_b = standard error of the regression coefficient; CI = confidence interval. Unstandardized regression coefficients. Two-sided testing of significance.
[a] 1= anxiety, 2 = depression.
** $p <. 01$.

Appendix C: Lebenslauf inkl. Publikationen und Konferenzbeiträge

Der Lebenslauf ist nicht Teil der Veröffentlichung.

Appendix D: Eidesstaatliche Erklärung des Verfassers

Ich versichere hiermit, dass ich meine Dissertation „Inevitable - or not? Organizational starting points for counteracting mental illness and the accompanying sick leave“ selbstständig, ohne unerlaubte Hilfe angefertigt, und mich keiner anderen als der von mir ausdrücklich bezeichneten Quellen und Hilfsmittel bedient habe. Alle vollständig oder sinngemäß übernommenen Zitate sind als solche gekennzeichnet.
Die Dissertation wurde in der jetzigen oder ähnlichen Form noch bei keiner anderen Hochschule eingereicht und hat noch keinen sonstigen Prüfungszwecken gedient.

_____ _____

Ort, Datum Benjamin Frank