

2015

Burnout-depression overlap: A review


Renzo Bianchi
Université de Neuchâtel

Irvin Sam Schonfeld
CUNY Graduate Center

Eric Laurent
Université de Franche-Comté

How does access to this work benefit you? Let us know!

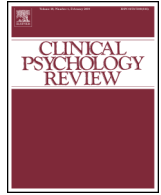
Follow this and additional works at: http://academicworks.cuny.edu/cc_pubs

 Part of the [Clinical Psychology Commons](#), [Community Psychology Commons](#), [Health Psychology Commons](#), [Industrial and Organizational Psychology Commons](#), [Psychiatry and Psychology Commons](#), and the [Public Health Commons](#)

Recommended Citation

Bianchi, R., Schonfeld, I.S., & Laurent, E. (2015). Burnout-depression overlap: A review. *Clinical Psychology Review*, 36, 28–41.
doi:10.1016/j.cpr.2015.01.004

This Article is brought to you for free and open access by the City College of New York at CUNY Academic Works. It has been accepted for inclusion in Publications and Research by an authorized administrator of CUNY Academic Works. For more information, please contact AcademicWorks@cuny.edu.



Burnout–depression overlap: A review



Renzo Bianchi ^{a,*}, Irvin Sam Schonfeld ^b, Eric Laurent ^a

^a University of Franche-Comté, Besançon, France

^b The City College of the City University of New York, New York, NY, USA

HIGHLIGHTS

- The burnout–depression distinction is conceptually unclear.
- Empirical evidence for the distinctiveness of burnout is inconsistent.
- The heterogeneity of depression has been overlooked in burnout research.
- The absence of consensual diagnostic criteria for burnout impedes research advance.
- Systematic clinical observation is needed to characterize burnout.

ARTICLE INFO

Article history:

Received 20 April 2014

Received in revised form 8 January 2015

Accepted 9 January 2015

Available online 17 January 2015

Keywords:

Burnout

Depression

Depressive disorders

Differential diagnosis

Review

Stress

ABSTRACT

Whether burnout is a form of depression or a distinct phenomenon is an object of controversy. The aim of the present article was to provide an up-to-date review of the literature dedicated to the question of burnout–depression overlap. A systematic literature search was carried out in PubMed, PsycINFO, and IngentaConnect. A total of 92 studies were identified as informing the issue of burnout–depression overlap. The current state of the art suggests that the distinction between burnout and depression is conceptually fragile. It is notably unclear how the state of burnout (i.e., the end stage of the burnout process) is conceived to differ from clinical depression. Empirically, evidence for the distinctiveness of the burnout phenomenon has been inconsistent, with the most recent studies casting doubt on that distinctiveness. The absence of consensual diagnostic criteria for burnout and burnout research's insufficient consideration of the heterogeneity of depressive disorders constitute major obstacles to the resolution of the raised issue. In conclusion, the epistemic status of the seminal, field-dominating definition of burnout is questioned. It is suggested that systematic clinical observation should be given a central place in future research on burnout–depression overlap.

© 2015 Published by Elsevier Ltd.

Contents

1. Introduction	29
1.1. What is burnout?	29
1.2. What is depression?	30
1.3. Structure of the present article	31
2. Method	31
3. Conceptual and theoretical considerations	31
4. Empirical and practical investigations	32
4.1. Are burnout and depression distinguishable in terms of symptoms?	32
4.2. How are burnout and depression correlated?	33
4.3. Are burnout and depression distinguishable in factor analyses?	33
4.4. Does burnout predict depression and/or vice versa?	33
4.5. Can burnout and depression be distinguished at somatic and biological levels?	34
4.6. Are job-related versus generic factors discriminating burnout from depression?	34

* Corresponding author at: Université de Franche-Comté, Département de Psychologie, 30-32 rue Mégevand, 25030 Besançon Cedex, France. Tel.: +33 381 665 441; fax: +33 381 665 440. E-mail address: renzo.bianchi@univ-fcomte.fr (R. Bianchi).

5. Conclusion	35
Role of funding sources	35
Contributors	35
Conflict of interest	35
Appendix A.	35
References	37

1. Introduction

The overlap of burnout and depression has been debated since the birth of the burnout construct in the 1970s. In what is generally considered the inaugural article on burnout, [Freudenberger \(1974\)](#) already indicated that when suffering from burnout, “the person looks, acts and seems depressed” (p. 161). Despite a considerable amount of research on burnout since that time ([Schaufeli, Leiter, & Maslach, 2009](#)), the singularity of the burnout phenomenon vis-à-vis depression has remained unclear because of common etiological pathways and shared symptoms ([Ahola, Hakanen, Perhoniemi, & Mutanen, 2014](#); [Bianchi, Boffy, Hingray, Truchot, & Laurent, 2013](#); [Hallsten, 1993](#); [Rydmark et al., 2006](#); [Schonfeld, 1991](#); [Shirom, 2005](#); [Taris, 2006a](#)).

Previous literature reviews focusing on the distinction of burnout and depression have yielded mixed conclusions, while somewhat favoring the hypothesis that burnout is distinct from depression. Based on the analysis of 18 studies dealing with burnout and depression, [Glass and McKnight \(1996\)](#) argued that burnout and depressive symptomatology do not show complete isomorphism and, therefore, are not redundant concepts. In a similar vein, [Schaufeli and Enzmann \(1998\)](#) advanced the view that “burnout and depression (...) are distinct, albeit related constructs” (p. 41); the authors went on to write that “it seems that burnout is a genuine phenomenon” (p. 41). For [Iacovides, Fountoulakis, Kaprinis, and Kaprinis \(2003\)](#), “empirical research suggests that burnout and depression are separate entities, even though they may share several common characteristics” (p. 218). [Schaufeli \(2003\)](#), in a discussion of the nosological status of burnout, contended that “burnout can be considered a mental disorder that may be differentiated clinically as well as empirically from other mental disorders, most notably depression” (p. 5). Finally, according to [Thomas \(2004\)](#) who proposed an overview of burnout in medical residents, “the nature and direction of the association between depression and burnout for residents remain unclear” (p. 2887). Although the burnout–depression overlap has been reviewed and discussed in the past (see also [Maslach & Schaufeli, 1993](#)), important work has been dedicated to this issue in the last decade (e.g., [Ahola & Hakanen, 2007](#); [Hakanen & Schaufeli, 2012](#)), with several studies having challenged the hypothesis that burnout is distinct from depression (e.g., [Ahola, Hakanen et al., 2014](#); [Bianchi et al., 2013](#)). This evolution of research in recent years suggests that a new literature review is timely. The aim of the present article is to propose an up-to-date review of the literature dealing with the burnout–depression overlap.

1.1. What is burnout?

Many conceptions of burnout have been proposed during the last four decades (e.g., [Farber, 2000](#); [Halbesleben & Demerouti, 2005](#); [Kristensen, Borritz, Villadsen, & Christensen, 2005](#); [Malach-Pines, 2005](#); [Maslach, Schaufeli, & Leiter, 2001](#); [Shirom, 2003](#); for an overview of earlier conceptions, see [Schaufeli & Enzmann, 1998](#)). According to the most consensual of these conceptions, burnout is a three-dimensional syndrome made up of (emotional) exhaustion, cynicism (also termed depersonalization), and lack of professional efficacy (or reduced personal accomplishment) that develops in response to chronic occupational stress ([Maslach & Jackson, 1981, 1986](#); [Maslach, Jackson, & Leiter, 1996](#); [Maslach et al., 2001](#)). Exhaustion refers to the feelings of being emotionally drained and physically overextended; energy is lacking and

mood is low. Cynicism characterizes a distant and callous attitude toward one's job; the individual is de-motivated and withdraws from his/her work. Lastly, lack of professional efficacy includes feelings of inadequacy and incompetence associated with loss of self-confidence. Thus defined, burnout is assessed with the Maslach Burnout Inventory (MBI), a self-administered questionnaire ([Maslach & Jackson, 1981, 1986](#); [Maslach et al., 1996](#)). The MBI was the first standardized instrument designed to assess burnout. The MBI has played a key role in shaping burnout research ([Schaufeli et al., 2009](#)). By the end of the 1990s, the MBI was used in more than 90% of the journal articles concerning burnout (see [Schaufeli & Enzmann, 1998, p. 71](#)). Although the MBI-related definition of burnout dominates the field ([Schaufeli et al., 2009](#)), other conceptions of the phenomenon have been proposed and other assessment instruments have been designed, notably the Burnout Measure (BM; [Malach-Pines, 2005](#); [Pines, 1993](#); [Pines & Aronson, 1988](#); [Pines, Aronson, & Kafry, 1981](#)), the Shirom–Melamed Burnout Measure (SMBM; [Melamed, Kushnir, & Shirom, 1992](#); [Shirom, 1989, 2003](#)), and the Oldenburg Burnout Inventory (OLBI; [Demerouti, Bakker, Vardakou, & Kantas, 2003](#); [Halbesleben & Demerouti, 2005](#)). To our knowledge, no structured clinical interview has been developed for the assessment of burnout.

The main conceptions of burnout share the general idea that burnout is the result of prolonged, unresolvable stress at work or, put differently, that burnout is caused by a long-term mismatch between the demands associated with the job and the resources of the worker ([Hobfoll & Shirom, 2001](#); [Maslach et al., 2001](#); [Weber & Jaekel-Reinhard, 2000](#)). Thus, burnout is the product of an enduring adaptive failure and should not be confused with nonmorbid, acute job stress ([Schaufeli & Buunk, 2004](#); [Schaufeli & Enzmann, 1998](#)). Similarly, the chief conceptions of burnout unanimously posit that fatigue (typically called “exhaustion”) is the core of burnout ([Cox, Tisserand, & Taris, 2005](#)), although recent findings suggest that both the level of fatigue and the appraisal of fatigue in burned out individuals do not differ from those reported in patients with major depression or anxiety disorders and may therefore not be relevant to the understanding of the specific pathological processes associated with burnout ([Bianchi et al., 2013](#); [Van Dam, Keijsers, Verbraak, Eling, & Becker, 2013](#)).

No biological marker of burnout has been found ([Danhof-Pont, van Veen, & Zitman, 2011](#)). Nevertheless, burnout has increasingly been regarded as a hypocortisolemic disorder ([Chida & Steptoe, 2009](#); [Fries, Hesse, Hellhammer, & Hellhammer, 2005](#)), consistent with the fact that cortisol reduces both normal and pathological fatigue (e.g., [Tops, van Peer, Wijers, & Korf, 2006](#); [Wheatland, 2005](#); see also [Kumari et al., 2009](#)). Cortisol is the end product as well as a key effector of the neuroendocrine stress response. It has been involved in general pathogenesis, due to its systemic effect on the organism ([Hellhammer & Hellhammer, 2008](#); [Sapolsky, 2004](#)). Burnout being considered a stress-related condition ([Maslach et al., 2001](#)), growing attention has been directed toward cortisol in burnout research ([Danhof-Pont et al., 2011](#); [Kakiashvili, Leszek, & Rutkowski, 2013](#)).

Depending on the way it is conceptualized, burnout is viewed as a process within a dimensional approach or a state (i.e., the end stage of the aforementioned process) within a categorical approach ([Brenninkmeijer & van Yperen, 2003](#); [Hallsten, 1993](#); [Paine, 1982](#); [Schaufeli, 2003](#); [Schaufeli & Enzmann, 1998](#)). A dimensional approach allows for a *quantification* of burnout and situates the afflicted individual on a continuum—the individual experiences burnout to a

given degree. A categorical approach allows for a *qualification* of the phenomenon—burnout is either present or absent—that is particularly relevant to medical decision-making (e.g., as to whether a given individual should benefit from sick leave). The end stage of the burnout process is regarded as the clinical form of burnout (see *Schaufeli & Enzmann, 1998, p. 74*).

However, no binding diagnostic criteria are available for identifying cases of burnout (*Weber & Jaekel-Reinhard, 2000*). Burnout is not present in the *Diagnostic and Statistical Manual of Mental Disorders*, currently in its fifth edition (*DSM-5; American Psychiatric Association, 2013*), and only appears as a factor influencing health status and contact with health services (coded Z73.0 and defined as a “state of vital exhaustion”) in the *International Classification of Diseases (ICD-10; World Health Organization, 1992)*. This state of affairs has led burnout researchers to develop a variety of working criteria when their goal is to diagnose burnout or grade burnout’s severity (*Bianchi, Schonfeld, & Laurent, 2014; Kalimo, Pahkin, Mutanen, & Toppinen-Tanner, 2003; Schaufeli, Bakker, Hoogduin, Schaap, & Kladler, 2001*). To date, the burnout construct has been questioned regarding its basic structure (unidimensional versus multidimensional), scope (work-related versus cross-domain or context-free), cardinal symptoms (e.g., as to whether cognitive impairment should be included), course (e.g., onset, duration, offset, relapse), and distinctiveness with respect to depressive, anxiety, adjustment, and fatigue disorders (e.g., *Bianchi et al., 2013; Cathébras, 1991; Cox et al., 2005; Hakanen & Schaufeli, 2012; Jonsdottir et al., 2013; Kristensen et al., 2005; Leone, Wessely, Huibers, Knottnerus, & Kant, 2010; Schaufeli & Enzmann, 1998; Schaufeli & Taris, 2005; Schonfeld, 1991; Shirom, 2003, 2005; Shirom & Ezrachi, 2003; Taris, 2006a; Toker, Shapira, Berliner, Melamed & Shirom, 2005*).

Given the absence of consensually accepted diagnostic criteria, the prevalence of burnout, strictly speaking, is unknown. Nevertheless, burnout has been increasingly regarded as a serious burden for working individuals, organizations, and society as a whole (*Maslach et al., 2001; Morse, Salyers, Rollins, Monroe-DeVita, & Pfahler, 2012; Schaufeli et al., 2009*). At an occupational level, burnout has been associated with absenteeism (*Ahola et al., 2008; Toppinen-Tanner, Ojajärvi, Väänänen, Kalimo, & Jäppinen, 2005*), presenteeism¹ (*Demerouti, Le Blanc, Bakker, Schaufeli, & Hox, 2009*), poorer work performance (*Taris, 2006b*), job turnover (*Leiter & Maslach, 2009; Shimizu, Feng, & Nagata, 2005; Swider & Zimmerman, 2010*), and chronic work disability and disability pensions (*Ahola, Toppinen-Tanner, Huuhtanen, Koskinen, & Vaananen, 2009; Ahola et al., 2009*). At a more global level, burnout has been shown to prospectively predict severe injuries (*Ahola, Salminen, Toppinen-Tanner, Koskinen, & Vaananen, 2014*), insomnia (*Armon, Shirom, Shapira, & Melamed, 2008*), cases of coronary heart disease (*Toker, Melamed, Berliner, Zeltser, & Shapira, 2012*) as well as hospitalization for mental and cardiovascular disorders (*Toppinen-Tanner, Ahola, Koskinen, & Väänänen, 2009*). In addition, burnout has been related to accelerated biological aging (*Ahola et al., 2012*) and all-cause mortality (*Ahola, Väänänen, Koskinen, Kouvonen, & Shirom, 2010*).

Today, burnout has become a privileged construct in the study of ill-health at work. The creation of the scientific journal *Burnout Research* illustrates the structuring of burnout research as an emancipated field of research. However, the *social focus* of burnout research (*Maslach et al., 2001*) has partly eclipsed the clinical characterization of the “burnout syndrome” (*Weber & Jaekel-Reinhard, 2000*), contributing to definitional ambiguity, and resulting in “diagnostic noise” vis-à-vis depression. Several authors, indeed, have warned against the use of the burnout label in medical settings in the current context of diagnostic uncertainty because of a risk of leaving depressive episodes untreated, or of providing inappropriate treatment (*Bahlmann, Angermeyer, & Schomerus, 2013; Bianchi, Schonfeld et al., 2014; Rössler, Hengartner, Ajdacic-Gross, & Angst, 2014*). This state of affairs underlines a pressing

need to clarify the nosological status of burnout in relation to depression.

1.2. What is depression?

The concept of depression is deeply rooted in the history of medical science. Its genesis can be traced back to Greek antiquity and Hippocrates’s theory of melancholic humor, and continued through Galenic medicine and medieval times (*Paykel, 2008*). The emergence of the modern concept of depression is linked to the rise of psychiatry during the 19th century. Nowadays, the *DSM* is widely recognized as the classification system that defines depression for research and clinical purposes (*Ingram & Siegle, 2009*). The *DSM-5 (American Psychiatric Association, 2013)* distinguishes several depressive disorders and provides diagnostic criteria for each of them. For instance, the *DSM-5* lists nine main symptoms characterizing *major depression*: Depressed mood, anhedonia (loss of interest and pleasure), decreased or increased appetite and/or weight, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness and/or guilt, impaired concentration or decision making, and suicidal ideation (*American Psychiatric Association, 2013; Beck & Alford, 2009*). A diagnosis of major depressive episode requires at least two weeks of depressed mood or anhedonia accompanied by at least four additional depressive symptoms (*American Psychiatric Association, 2013*). A diagnosis of depression can be refined through subtype specification. Distinct subtypes of depression have been related to distinct neurobiological profiles. For example, *melancholic depression*—a subtype of depression marked by nonreactive mood and responsiveness to tricyclic antidepressants (TCAs)—is considered a hypercortisolemic disorder and has been associated with appetite–weight decrease and insomnia whereas *atypical depression*—a subtype of depression marked by reactive mood and nonresponsiveness to TCAs—is considered a hypocortisolemic disorder and has been associated with appetite–weight increase and hypersomnia (*American Psychiatric Association, 2013; Gold & Chrousos, 2002; Hellhammer & Hellhammer, 2008*). Thus, depression covers a broad spectrum of disorders.

Depression has been investigated both in its clinical and subclinical forms (sometimes referred to as *dysphoria*; e.g., *Ellis, Beevers, & Wells, 2011*), and both from categorical and dimensional approaches (*Ingram & Siegle, 2009*). Depression measures can be divided into two categories, clinician ratings and self-report inventories (*Nezu, Nezu, Friedman, & Lee, 2009*). An example of an instrument allowing clinician ratings is the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID; *First, Spitzer, Gibbon, & Williams, 1997*). Whereas the SCID is structured to match specific *DSM-IV (American Psychiatric Association, 1994)* diagnostic criteria, it utilizes the skills of trained clinicians by permitting them to probe, restate questions, challenge respondents, and ask for clarification (*Nezu et al., 2009*). Clinician ratings constitute the method of reference for diagnosing clinical depression. Among self-report inventories, the Center for Epidemiologic Studies Depression Scale (CES-D; *Radloff, 1977*), the Beck Depression Inventory—II (BDI-II; *Beck, Steer, & Brown, 1996*), and the 9-item depression scale of the Patient Health Questionnaire (PHQ-9; *Kroenke, Spitzer, & Williams, 2001*) have been commonly used. Self-report inventories are notably employed for investigating subclinical forms of depression or grading the severity of depressive disorders once formal diagnoses have been established. Depression has been examined in various contexts, including the occupational context (*Adler et al., 2006; Grynderup et al., 2013; Kahn, 2008; McTernan, Dollard, & LaMontagne, 2013; Rydmark et al., 2006; Schonfeld, 2001*), and studied extensively from an infra-individual (e.g., cellular, molecular), an individual, and a supra-individual (social) standpoint (*Allen & Badcock, 2006; Barnett & Gotlib, 1988; Billings & Moos, 1982; Bonde, 2008; Krishnan & Nestler, 2008; Lara & Klein, 1999; Netterstrøm et al., 2008; Post, 1992; Ritsher, Warner, Johnson, & Dohrenwend, 2001*).

¹ Presenteeism refers to attending work while ill (*Johns, 2010*).

As in the etiology of burnout, unresolvable stress plays a central role in the etiology of depression (e.g., Caspi et al., 2003; Daley, Hammen, & Rao, 2000; Hammen, Brennan, Keenan-Miller, Hazel, & Najman, 2010; Leonard, 2010; regarding work stress and depression, see Melchior et al., 2007; Stansfeld & Candy, 2006; Tennant, 2001; Wang, 2005; Wang et al., 2012). The sustained impossibility of controlling one's environment and actively neutralizing stressors is a key pathogenic factor in many theories of depression (Abramson, Metalsky, & Alloy, 1989; Allen & Badcock, 2006; Beck & Alford, 2009; Hill, Hellemans, Verma, Gorzalka, & Weinberg, 2012; Laborit, 1993; Nesse, 2000; Peterson, Maier, & Seligman, 1993; Seligman, 1972, 1975; Ursin & Eriksen, 2004). Sapolsky (2004) affirmed that "it is impossible to understand either the biology or psychology of major depressions without recognizing the critical role played in the disease by stress" (p. 271). Thase (2009) noted that "(...) most, if not all, forms of depression involve dysfunctional adaptations of the brain systems that regulate adaptations to stress" (p. 188). Depression is a nodal public health problem. In the United States, 17% of adults experience at least one episode of major depression during their life (Kessler et al., 2005).

1.3. Structure of the present article

In the present article, the issue of the burnout–depression overlap is first addressed from a theoretical viewpoint through an analysis of the way the added value of the burnout construct has been presented and justified so far (for an overview, see Table 1). In the second part of the paper, findings from empirical studies that examined the link between burnout and depression are synthesized in order to determine whether the distinctiveness of burnout has been clearly demonstrated (for an overview, see Table 2). Throughout the paper, future avenues of investigation are outlined based on gaps identified in current literature.

2. Method

A systematic literature search was carried out in PubMed, PsycINFO, and IngentaConnect to October 2014 using the conjunction of keywords "burnout AND depression." The following filters were applied: "English language," "peer-reviewed journals," and "humans." To be included in the present literature review, an article had to inform the comparison of burnout with depression. The systematic search was accompanied of a hand search based on the literature referenced in the retained articles. A total of 92 studies were included, divided into 67 cross-sectional studies (Table A.1) and 25 longitudinal studies (Table A.2). The different steps of the literature selection are summarized in Fig. 1.

3. Conceptual and theoretical considerations

At the heart of the distinction between burnout and depression lies the idea that burnout—at least initially—is job-related and situation-specific whereas depression is context-free and pervasive (e.g., Freudenberger & Richelson, 1980; Iacovides et al., 2003; Maslach et al., 2001; Shirom, 2005; Warr, 1987). Following this line of reasoning,

Table 1
Overview of the conceptually-examined overlap between burnout and depression.

1. In a dimensional approach, it is unclear how burnout as a process is conceived to differ from a process of depression.
2. In a categorical approach, it is unclear how burnout as a state is conceived to differ from a state of depression.
3. Associating burnout with a job-related scope does not guarantee its nosological distinctiveness with respect to depression.
4. The largely atheoretical origin of the burnout construct seems to be still an obstacle to its differentiation.
5. The arbitrariness surrounding the field-dominating definition of burnout is fundamentally problematic.

Table 2
Overview of the empirically-examined overlap between burnout and depression.

1. Burnout is associated with a depressive clinical picture.
2. Burnout is substantially correlated to depressive symptoms, pointing to considerable overlap of burnout with depression.
3. Burnout has been distinguished from depressive symptoms using factor analysis.
4. Burnout seems to be both predicting and predicted by depressive symptoms, following a circular causal pathway.
5. The investigation of the biological embodiment of burnout is currently inconclusive because the heterogeneity of depression is overlooked.
6. The extent to which job-specific and generic factors discriminate burnout from depression is unclear.
7. History of clinical depression is a risk factor for both new depression and burnout.

burnout and depression would fundamentally differ in scope (Maslach & Schaufeli, 1993), the former being relatively work-restricted, the latter domain-transcending. Thus, an individual could be initially burned out at work and functioning well in another domain, whereas depression would inevitably impregnate every situation of an individual's life (Farber, 1983; Freudenberger & Richelson, 1980). This view, which is nearly as old as the burnout construct, has been widely adopted across the main conceptions of burnout (e.g., Maslach et al., 2001; Shirom, 2005).

Despite its remarkable influence, however, the idea of a scope-based distinction between burnout and depression is problematic in several respects. First, if conceptualizing burnout and depression on a continuum (one is more or less burned out; one is more or less depressed), it should be noted that the early stages of the depression process can be domain-specific—for example, job-related—like the early stages of the burnout process (e.g., Rydmark et al., 2006). Put differently, depression, like burnout, can originate in suffering at work and develop as occupational stress unfolds and intensifies. From this standpoint, therefore, "job-relatedness" is not discriminant. Second, if adopting a categorical, "all-or-nothing" approach to burnout and depression (one is burned out or not; one is depressed or not), it is worth observing that clinical burnout is pervasive in nature like clinical depression. Indeed, the state associated with clinical burnout (e.g., overwhelming exhaustion) and the correlates of this state (e.g., leaving one's job or receiving drug treatment) can de facto impact the whole life of the afflicted individual. As Farber (1983) already put it, "burnout, if

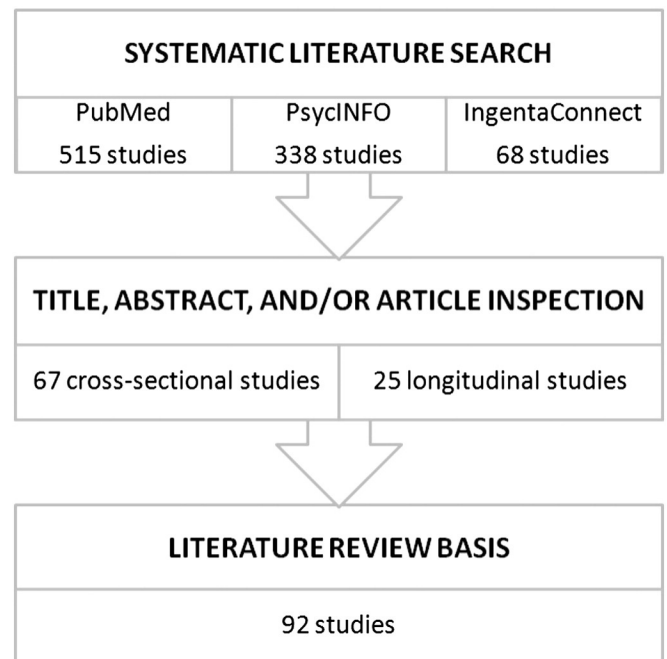


Fig. 1. Overview of the different steps followed in the literature selection process.

continued unchecked, will invariably affect nonwork situations” (p. 14). Again, domain-specificity does not clearly discriminate burnout from depression. Third, attributing a given condition or disorder to a specific domain (e.g., work) does not change the nature of this condition or disorder. Then, if the only feature that could be invoked to distinguish burnout from depression at a theoretical level was “job-relatedness,” it could be argued that burnout is an index of workplace depression (Kahn, 2008)—a view that has been almost unanimously rejected by burnout researchers (for some notable exceptions, see Hallsten, 1993; Schonfeld, 1991). Lastly, the idea that burnout is, in its early stages, job-related and situation-specific whereas depression is context-free and pervasive says nothing about what distinguishes the late stages of burnout from depression, leaving a key problem unresolved. All in all, the scope-based distinction between burnout and depression is thus open to question. From the premise that burnout is initially job-related and situation-specific does not follow the conclusion that burnout is phenomenologically or nosologically distinct from depression.

To summarize, gray areas subsist in the theoretical distinction between burnout and depression. It is unclear (a) how burnout as a process is conceived to differ from a process of depression (dimensional approach) and (b) how burnout as a state is conceived to differ from a state of depression (categorical approach). Importantly, a purely scope-based distinction between burnout and depression does not explain how burnout differs from *work-related* depression (Kahn, 2008; Rydmark et al., 2006). The dissipation of this conceptual fog should be high on the agenda of burnout researchers. Burnout originally emerged from a relatively atheoretical, “grass-roots” approach to occupational health (Maslach et al., 2001). Forty years later, these conditions of production seem to be still undermining burnout’s differentiation.

4. Empirical and practical investigations

Having examined the burnout–depression overlap from a strictly conceptual standpoint, we now turn to empirical levels of analysis. Six questions will be successively dealt with:

1. Are burnout and depression distinguishable in terms of symptoms?
2. How are burnout and depression correlated?
3. Are burnout and depression distinguishable in factor analyses?
4. Does burnout predict depression and/or vice versa?
5. Can burnout and depression be distinguished at somatic and biological levels?
6. Are job-related versus generic factors discriminating burnout from depression?

Burnout was assessed with the MBI in about 8/10 of the studies under review (Fig. A.1), confirming the predominance of this instrument in burnout research. A dimensional approach to burnout was adopted in a majority of the reviewed studies (Fig. A.2).

4.1. Are burnout and depression distinguishable in terms of symptoms?

Burnout’s clinical picture has often been presented in a way that is evocative of depression. For instance, Schaufeli and Buunk (2004) indicate that “first and foremost, burnt-out individuals feel helpless, hopeless and powerless” (p. 399), a characterization of burnout which is reminiscent of the hopelessness theory of depression, based on the concept of learned helplessness (Abramson et al., 1989; Peterson et al., 1993; Pryce et al., 2011; Seligman, 1972, 1975). In a similar vein, Maslach and Leiter (1997) emphasize that burnout is not only about the “presence of negative emotions” but also about the “absence of positive ones” (p. 28), linking burnout to the experience of depressed mood and anhedonia, the two core symptoms of depression (American Psychiatric Association, 2013; Beck & Alford, 2009; Pryce et al., 2011). The proximity of descriptions of burnout to those of depression has

led some researchers to suggest that burnout may be more fruitfully conceptualized as depressive symptoms resulting from adverse work environments (Schonfeld, 1991) or even to affirm that the state of burnout is “a form of depression” (Hallsten, 1993, p. 99; see Glass & McKnight, 1996; Schaufeli & Enzmann, 1998). Other authors have advanced the view that burnout overlaps with depression at a symptom level but only to a limited extent (e.g., Brennkemeyer et al., 2001; Iacovides et al., 2003).

Depressive symptoms of all sorts have in fact been observed in individuals with burnout (e.g., Bianchi et al., 2013; Dyrbye et al., 2008; Peterson et al., 2008; Soares et al., 2007; Takai et al., 2009; for reviews of early findings: Kahill, 1988; Schaufeli & Enzmann, 1998). As an illustration, Ahola et al. (2005) reported that about 53% of the participants displaying “severe” burnout ($n = 78$) presented a depressive disorder. Bianchi, Schonfeld et al. (2014) found that up to 90% of the individuals with burnout ($n = 67$) met criteria for a provisional diagnosis of depression, depending on the degree of conservatism of the cutpoints defining burnout. In a study that directly compared depressive symptoms in a group of burned out workers ($n = 46$) and a group of clinically depressed outpatients ($n = 46$) using a DSM-based approach, Bianchi et al. (2013) observed no diagnostically significant difference between the two groups. No burned out participant appeared to be free of depressive symptoms. The association of burnout with depressive symptoms has been confirmed in longitudinal studies (e.g., Glise et al., 2012; Hättinen et al., 2009). In a study that adopted a person-centered approach and relied on both a cross-sectional and a three-wave, seven-year longitudinal design, Ahola, Hakanen et al. (2014) found that burnout and depressive symptoms clustered and developed together. The authors concluded that “burnout could be used as an equivalent to depressive symptoms in work life” (p. 35), consistent with earlier, minority views of the burnout–depression overlap (Bianchi et al., 2013; Schonfeld, 1991). Besides, it has been suggested that the pathophysiological changes underlying burnout may be less pronounced than those observed in major depression, notably with regard to executive functioning (Beck et al., 2013). However, studies comparing burnout and major depression directly are lacking. Finally, Bianchi and Laurent (2014), in a recent eye-tracking study ($n = 54$), observed that burnout and depression predicted similar patterns of attentional alterations, consisting in increased attention for dysphoric stimuli and decreased attention for positive stimuli. Burnout and depression appeared to be interchangeable predictors of these alterations, pointing out structural similarities between burnout and depression.

To date, isolating substantial differences between burnout and depression at a symptom level has been challenging. Burnout seems irreducible to the symptoms comprised by its dimensions (e.g., exhaustion, cynicism, and lack of professional efficacy). For instance, Bianchi et al.’s (2013) study suggests that burned out workers can exhibit the full array of depressive symptoms, consistent with the view that burnout symptoms are components of a wider depressive syndrome rather than the constituents of a separate entity. Evidently, the degree of symptom overlap observed between burnout and depression is a function of the way burnout and depression are defined. When adopting a categorical approach to burnout, the cutpoints used for identifying burnout are thus central. Pending consensual diagnostic criteria for burnout, we recommend that future categorical research privilege cutoff scores that closely reflect formal definitions of burnout. The state of burnout is *not* a transient response to an occasional challenge that could appear and disappear from one day to another (Schaufeli & Buunk, 2004). On the contrary, a burned out worker is supposed to be “constantly overwhelmed, stressed and exhausted” (Leiter & Maslach, 2005, p. 2) and the state of burnout is conceptualized as “a final stage in a breakdown in adaptation that results from the long-term imbalance of demands and resources” (Schaufeli & Buunk, 2004, p. 389). Consequently, liberal cutoff scores associated with low symptom frequencies should be avoided when interested in isolating cases of burnout (see also Schaufeli & Enzmann, 1998, p. 58). Based on this reasoning, it is likely

that some of the past categorical studies (e.g., Ahola et al., 2005) underestimated the overlap of (fully developed) burnout with (clinical) depression.

4.2. How are burnout and depression correlated?

A positive correlation between burnout and depression has been reported in numerous studies. This usual finding (Glass & McKnight, 1996; Schaufeli & Enzmann, 1998; Schaufeli, Enzmann, & Girault, 1993) has been replicated in many occupational groups and work or work-like contexts by using different measures of burnout (e.g., MBI, BM, SMBM) and depression (e.g., CES-D, BDI) and by placing burnout and depression side by side in various ways (e.g., based on global scores or sub-scores related to specific dimensions). Among the three most studied components of burnout, emotional exhaustion shows the strongest link to depression with moderate to high correlations. The link of depression with depersonalization and reduced personal accomplishment tends to be weaker, with low to moderate correlations being generally highlighted. Correlations above .60 are frequently observed between MBI's global scores and measures of depression (e.g., $r = .68$ in Bianchi et al.'s (2013) study). Such results are of course dependent on the weight allocated to each subscale of the MBI in the global score computation (e.g., Ahola, Hakonen et al., 2014). When assessed with the BM, burnout is found to be highly correlated to depression (e.g., $r = .67$ in Takai et al.'s (2009) study). Correlation coefficients between SMBM-assessed burnout and depression measured contemporaneously range from .50 to .60. Moderate to high correlations are observed between depression and the components of burnout (exhaustion and disengagement) as assessed by the OLB.

An often overlooked point regarding the correlation of burnout and depression is that in many studies using the MBI, emotional exhaustion, the core component of burnout, is more strongly related to depression than to the other two components of burnout (depersonalization and reduced personal accomplishment). For instance, in studies by Landsbergis (1988), Glass et al. (1993), Sears et al. (2000), Brenninkmeyer et al. (2001), and Steinhart et al. (2011), the correlation between emotional exhaustion and depression was higher than the correlation between emotional exhaustion and reduced personal accomplishment. In a longitudinal study of 1964 dentists by Hakonen and Schaufeli (2012), emotional exhaustion was more highly correlated to depression than to depersonalization at three different measurement times over a seven-year period. In a similar vein, Bianchi et al. (2013), based on a sample of 1648 teachers, found that emotional exhaustion was more strongly linked to depression than to both depersonalization and reduced personal accomplishment. Such results, which have been frequently reported (see also Bakker et al., 2000; Bianchi, Schonfeld et al., 2014), question the pertinence of the dimensions that have been initially chosen to define burnout as a syndrome (Schaufeli, 2003; Shirom & Melamed, 2006; see also Van Dam et al., 2013). Crucially, the reason for considering depersonalization and reduced personal accomplishment more cardinal features of burnout than “classical” depressive symptoms is unclear.

4.3. Are burnout and depression distinguishable in factor analyses?

At first glance, dimensions of burnout resemble depressive features (Leiter & Durup, 1994; Schonfeld, 1991). For instance, exhaustion overlaps with fatigue and loss of energy in depression on its physical side, and with depressed mood on its emotional side, as illustrated by MBI's items such as “I feel like I'm at the end of my rope” or “I feel used up at the end of a workday” (Maslach & Jackson, 1981; Maslach et al., 1996). Notwithstanding these apparent similarities, most studies that factor-analyzed burnout and depression scales concluded that burnout was a distinct entity (e.g., Bakker et al., 2000; Glass et al., 1993; Leiter & Durup, 1994; Schaufeli et al., 2001; Toker & Biron, 2012). As an example, based on a sample of 307 healthcare workers, Leiter and Durup (1994) conducted confirmatory factor analyses (CFAs) of the MBI, the

BDI, and the depression-dejection subscale of the Profile of Mood States (POMS). CFAs resulted in a two second-order factor model suggesting the discriminant validity of burnout and depression. Bakker et al. (2000), factor-analyzing the MBI's and the CES-D's items in a study including 154 teachers, distinguished among the three subscales of the MBI and two, three, or four subscales of the CES-D. It should be noted that burnout has been difficult to disentangle from depression when assessed with the BM (Schaufeli et al., 2001; Shirom & Ezrachi, 2003).

Most factoring studies concluded that burnout can be psychometrically distinguished from depression. However, two observations should be made. First, how the factoring played out in these studies may be less related to content (burnout versus depression) than to how the time frames and response alternatives of the items are structured in the scales of interest (Bowling, 2005). As an illustration, the time frame of MBI items (a few times a year [1], monthly [2], ..., every day [7]) is quite different from that of CES-D items, which apply to the previous week (less than one day [0], 1–2 days [1], ..., 5–7 days [3]; Bakker et al., 2000). A similar limitation applies when the MBI is confronted to either the BDI or the POMS (Leiter & Durup, 1994). Second, the ICD-10 criteria for neurasthenia (World Health Organization, 1992; neurasthenia is coded F48.0 and is part of the “other neurotic disorders” category) have sometimes been used as a diagnostic guideline for assessing burnout (Schaufeli et al., 2001), thus replacing possible overlap between burnout and depression by *definitional* overlap between burnout and neurasthenia (see also Roelofs, Verbraak, Keijsers, de Bruin, & Schmidt, 2005). It is worth remembering that neurasthenia was first described in the second part of the 19th century (Beard, 1869) and is already distinguished from depression in the ICD-10 (World Health Organization, 1992). Put differently, if burnout is equated with neurasthenia *by definition*, there is much less of an issue around the burnout–depression distinction but simultaneously, the burnout construct becomes a copy of a 145-year-old preexisting notion.

4.4. Does burnout predict depression and/or vice versa?

It has been hypothesized that burnout may be a phase in the development of depression, but also that depression may negatively influence the experience of work and generate burnout; this has led to conceive circular influences between burnout and depression (e.g., Ahola & Hakonen, 2007; Ahola et al., 2006). Both hypotheses have been empirically supported, by cross-sectional and longitudinal studies. Studies dealing with the predictive value of burnout and depression typically focused on subclinical forms of burnout and depression.

The association of burnout with depression has been observed in numerous cross-sectional studies (e.g., Baba et al., 1999; Bakker et al., 2000; Dorz et al., 2003; Glass et al., 1993; Korkeila et al., 2003; Mutkins et al., 2011; Nyklíček & Pop, 2005). Given the limitations inherent to cross-sectional designs with regard to temporal precedence, several longitudinal studies have been carried out, especially during the last decade. Only studies in which the baseline levels of the outcome variable were statistically controlled for are presented here.

The expected reciprocal causation between burnout and depression has been reported in four longitudinal studies (Ahola & Hakonen, 2007; McKnight & Glass, 1995; Salmela-Aro et al., 2009; Toker & Biron, 2012). For instance, Toker and Biron (2012), in a three-wave, 40-month study involving 1632 employees, found that an increase in depression from time 1 to time 2 predicted an increase in burnout from time 2 to time 3, and vice versa. The authors detected no significant difference in strength between the effect of an increase in job burnout on a subsequent increase in depression, and vice versa.

Five longitudinal studies reported a unidirectional relationship with burnout predicting depression (Armon et al., 2014; Hakonen & Schaufeli, 2012; Hakonen et al., 2008; Salmela-Aro et al., 2009; Shin et al., 2013). For example, in their three-wave, seven-year study comprising 1964 dentists, Hakonen and Schaufeli (2012) concluded that burnout predicted depression rather the other way around. Given that

depression is likely to (a) decrease the resources of the worker to meet the demands of his/her job and (b) darken the worker's view of his/her job, an effect of depressive symptoms on burnout could be expected (Adler et al., 2006; Ahola & Hakanen, 2007). The reason why such an effect was not observed in Hakanen and Schaufeli's (2012) study is left to be clarified (see also Hakanen et al., 2008). Bi-directional links were checked for in those studies, except in Armon et al.'s (2014) study.

Lastly, three longitudinal studies reported a one-direction link from depression to burnout (Armon et al., 2012; Campbell et al., 2010; Salmela-Aro et al., 2008). In a seven-wave, ten-year study involving 297 university students (at the time of the first measurement), Salmela-Aro et al. (2008) found that participants with a high-depression trajectory exhibited more burnout in the long run than those with a low- or a moderate-depression trajectory, suggesting that depression may be a risk factor for burnout. Bi-directional links were tested in none of these three studies.

In sum, a circular causal relationship may exist between burnout and depression. However, the findings are heterogeneous. Differences in follow-up duration, the number of waves of measurement, and theoretical and statistical approaches are likely to account for a great part of this heterogeneity. Regardless of their specific theoretical frameworks and subsequent hypotheses, future studies should systematically provide bi-directional analyses when examining the relationship between burnout and depression to avoid biasing conclusions toward one direction or another. It should be noted, finally, that studies designed to determine whether burnout predicts depression and/or the other way round acknowledge the premise that burnout and depression are two different entities. Such studies, thus, tend to endorse the burnout–depression distinction rather than to test it.

4.5. Can burnout and depression be distinguished at somatic and biological levels?

In the last decade, research dedicated to the embodiment of burnout has grown. Burnout being regarded as a product of chronic stress, the systems known to be altered in chronic stress—including the cardiovascular, immune, and endocrine systems—have constituted objects of investigation. The SMBM-related conception of burnout (Shirom, 2003) has prevailed over the field-dominating, MBI-related conception of burnout (Maslach et al., 2001) in the study of the somatic and biological manifestations of burnout.

Landsbergis (1988) found that burnout and depression were similarly linked to self-reported symptoms of coronary heart disease (CHD; $n = 289$); moderate, positive correlations emerged. Grossi et al. (2003) observed that, compared to women with low burnout ($n = 20$), those with high burnout ($n = 43$) manifested higher levels of tumor necrosis factor alpha (a pro-inflammatory agent) and glycated hemoglobin (a marker of plasma glucose concentration), independently of depression. Toker et al. (2005) showed that in women ($n = 630$), burnout, but not depression, was positively associated with microinflammation (expressed by heightened concentrations of high-sensitivity C-reactive protein [hs-CRP] and fibrinogen) whereas in men ($n = 933$) depression, but not burnout, was positively associated with hs-CRP and fibrinogen concentrations. Toker et al. (2012), in a 1–8 year(s) prospective study involving 8838 employees (3126 women), found that baseline burnout was positively associated with incidence of CHD independently of depression—it is noteworthy that depression also constitutes an independent risk factor for CHD (Goldston & Baillie, 2008; Rugulies, 2002; Suls & Bunde, 2005). Like depression, burnout has been identified as a risk factor for type 2 diabetes (Melamed, Shirom, Toker, & Shapira, 2006; Mezuk, Eaton, Albrecht, & Golden, 2008; Sapolsky, 2004). Lastly, depression and burnout may be similarly related to obesity although conflicting results have been produced (Armon, Shirom, Berliner, Shapira, & Melamed, 2008; Kitaoka-Higashiguchi et al., 2009; Lu, 2007; Luppino et al., 2010).

In an attempt to distinguish burnout from depression, it has been argued that burnout was associated with *hypocortisolism* whereas depression was marked by *hypercortisolism* (see Toker et al., 2012; see also Marchand et al., 2014). Hypercortisolism, however, characterizes only a fraction of individuals presenting with the melancholic subtype of depression (Gold & Chrousos, 2002; Lamers et al., 2013), and hypocortisolism has been related to atypical depression, another frequently-met subtype of depression (Hellhammer & Hellhammer, 2008; Lamers et al., 2013; Tops, Riese, Oldehinkel, Rijdsdijk, and Ormel, 2008). Recent developmental models suggest that hypocortisolism may appear after a period of chronic, unresolvable stress accompanied by hypercortisolism, as part of an organism's response to the damaging effects of hypercortisolemia (Fries et al., 2005). Interestingly, atypical depression shares many other features with burnout, including the tendency to be chronic and the centrality of fatigue symptoms (American Psychiatric Association, 2013; Quitkin, 2002; Shirom, 2005; Tops et al., 2007). Comparing cortisol metabolism in burnout and atypical depression may be a fruitful way to further study the burnout–depression overlap.

Although the somatic and biological levels of analysis seem to suggest some degree of discriminant validity of burnout and depression, the absence of subtyping in the study of depression precludes any definite conclusion. Given that opposite endocrine and vegetative profiles can be observed in depression depending on its subtypes, not considering these subtypes is a major limitation in this field of investigation.

4.6. Are job-related versus generic factors discriminating burnout from depression?

Burnout and depressive symptoms have been assessed in relation to a variety of job-specific and generic factors over the years (e.g., Brenninkmeyer et al., 2001; Garbarino et al., 2013; Glass et al., 1993; Landsbergis, 1988; Lopes Cardozo et al., 2012; Marchand & Durand, 2011; Steinhardt et al., 2011). While some studies suggest that burnout is preferentially associated with job-specific factors and depression with generic ones, other studies do not report such domain-dependent differences or reveal reversed patterns of results, with depression appearing as more strongly associated than burnout with job-specific factors. Overall, exhaustion, cynicism, and lack of professional efficacy are often differently linked to the factors of interest, making firm conclusions regarding the distinctiveness of burnout with respect to depression difficult to draw.

In support of the view that burnout might be primarily associated with job-specific factors, Bakker et al. (2000), based on data from a sample of 154 teachers, reported that lack of reciprocity in private life predicted depression but not burnout whereas lack of reciprocity in occupational life predicted burnout and only indirectly depression. By contrast, in Hakanen and Schaufeli's (2012) longitudinal study ($n = 1964$), dimensions of work engagement (vigor, dedication, and absorption) were more strongly correlated to dimensions of depression (negative attitudes and performance difficulties) than to dimensions of burnout (emotional exhaustion and depersonalization), exemplifying the possibility that job-related factors be primarily associated with depression. Lastly, Toker and Biron (2012), in their 40-month survey of 1632 employees, showed that burnout and depression were similarly (and negatively) associated with physical activity. The authors documented a buffering effect of physical activity for both burnout and depression. Interestingly, although it has been advanced that symptoms of burnout manifest themselves in “normal” individuals who did not suffer from psychopathology before (see Maslach et al., 2001, p. 404; see also Maslach & Schaufeli, 1993, p. 15), several studies suggest that a history of depressive disorders, either personal or familial, is a risk factor for both burnout and depression (Bianchi et al., 2013; Dahlin & Runeson, 2007; Nyklíček & Pop, 2005; Rössler et al., 2014).

Burnout and depression have been found to differ in their link to both job-specific and generic factors. However, the nature of this

difference remains difficult to characterize, notably because burnout is seldom conceived as a unified entity. A particularly puzzling finding is the often-observed stronger connection between depression and job-specific factors than between job-specific factors and burnout (e.g., Hakanen & Schaufeli, 2012). Such an observation tends to confirm that the traditional, scope-based distinction between burnout and depression should be re-examined (Bianchi, Truchot, Laurent, Brisson, & Schonfeld, 2014). Furthermore, as in most areas of burnout research, studies dealing with (clinical) burnout and clinical depression are lacking. Whether vulnerability factors for depression also predispose to burnout remains largely unexplored. Investigating, for instance, the role of depressive attributions, dysfunctional attitudes or ruminative responses (Joormann, 2009) in the genesis of burnout may provide useful information about the burnout–depression overlap.

5. Conclusion

Relatively fragile from a strictly conceptual standpoint (Table 1), the distinction between burnout and depression is partly supported by empirical research (Table 2). Close scrutiny of the available literature, however, suggests that the evidence for the singularity of the burnout phenomenon is inconsistent. The paucity of research on the relationship between the *state* of burnout and *clinical* depression and insufficient consideration of the heterogeneity of the spectrum of depressive disorders (e.g., between the melancholic and atypical subtypes of depression) constitute major limitations to current knowledge and prevent any definite conclusion regarding the burnout–depression overlap. Instead of comparing burnout to rather unspecified sets of depressive symptoms, we recommend that investigators take into account the plurality of depressive disorders in future research and, more particularly, that they further examine the link between burnout and atypical depression, given the endocrine and clinical similarities of the two entities (Bianchi, Schonfeld et al., 2014; Hellhammer & Hellhammer, 2008).

Besides, when attempting to distinguish burnout from depression, attention should be paid to *not* generalizing findings associated with the early stages of burnout to its late stages (Bianchi et al., 2013; Ingram & Siegle, 2009). In order to deal with the current lack of consensual diagnostic criteria for burnout, conservative cutoff scores should be used when interested in isolating cases of burnout. Choosing cutoff

scores corresponding to high frequencies of symptoms and, therefore, showing close adherence to formal definitions of the state of burnout can be considered a minimal precaution for avoiding spurious conclusions regarding the overlap of burnout with depression. The absence of consensual diagnostic criteria for burnout has led to a multiplication of the operationalizations of the burnout construct. The correction of this trend should be a priority for burnout researchers (see also Shirom, 2005).

To close this article, we would like to draw attention to a fundamental question related to the conceptualization and measurement of burnout that may be critical to the issue of the burnout–depression overlap. The MBI has played a referential role in burnout research, influencing the growth of the whole field, and remains the privileged instrument for assessing burnout (Maslach et al., 2001; Schaufeli et al., 2009). However, as noted by Schaufeli (2003), “the MBI is neither grounded in firm clinical observation nor based on sound theorizing” (p. 3; see also Shirom, 2005). Instead, “it has been developed inductively by factor-analyzing a rather arbitrary set of items” (Schaufeli, 2003, p. 3). Examining the genesis of the MBI on this basis, one can reasonably wonder whether the initial definition of burnout (Maslach & Jackson, 1981) has not been elected prematurely, with the risk of having reified a conceptual chimera (see Schaufeli & Enzmann, 1998, p. 188; see also Shirom & Melamed, 2006, pp. 178–179). Inevitably, the arbitrariness surrounding the elaboration of the MBI reappears as a central problem as soon as burnout is to be compared to other entities, depression in the present case. In the end, *systematic* clinical observation may be indispensable to clearly identify the singularity, if any, of the burnout phenomenon and decide whether a new nosological category is needed.

Role of funding sources

No funding source involved.

Contributors

The first author conducted literature searches and wrote the initial draft of the manuscript. All authors contributed to review several versions of the manuscript and have approved the final manuscript.

Conflict of interest

The authors state that there is no conflict of interest.

Appendix A

Table A.1

Cross-sectional studies dealing with the overlap of burnout and depression (67 studies; 58,785 participants).

Studies (in chronological order)	Approach	Burnout measurement	Depression measurement	Country	<i>n</i>
1. Belcastro and Hays (1984)	Categorical	MBI	TSCII	USA	265
2. Meier (1984)	Dimensional	MBI/MBA	CCD	USA	320
3. Firth, McIntee, McKeown, and Britton (1986)	Dimensional	MBI	BDI-SF/SSS	UK	200
4. Firth et al. (1986)	Dimensional	MBI	BDI-SF/SSS	UK	200
5. Landsbergis (1988)	Dimensional	MBI	JCS-JSS	USA	289
6. Glass, McKnight, and Valdimarsdottir (1993)	Dimensional	MBI	BDI	USA	162
7. Dell'Erba, Venturi, Rizzo, Porcù, and Pancheri (1994)	Categorical	RBI	RBI	Italy	109
8. Dion and Tessier (1994)	Dimensional	MBI	BDI	Canada	123
9. Leiter and Durup (1994)	Dimensional	MBI	BDI/POMS (DD)	Canada	307
10. Bellani et al. (1996)	Mixed	MBI	IPAT-DS	Italy	194
11. Molassiotis and Haberman (1996)	Dimensional	MBI	HADS	USA	40
12. Martin et al. (1997)	Mixed	MBI	CES-D	France	1200
13. Virginia (1998)	Dimensional	MBI	CES-D	USA	142
14. Baba, Galperin, and Lituchy (1999)	Dimensional	MBI	CES-D	SVG/TT	119
15. Iacovides, Fountoulakis, and Ierodiakonou (1999)	Categorical	MBI	ZSDS	Greece	368
16. Bakker et al. (2000)	Dimensional	MBI	CES-D	Netherlands	154
17. Sears, Urizar, and Evans (2000)	Dimensional	MBI	CES-D	USA	264
18. Brenninkmeyer, van Yperen, and Buunk (2001)	Mixed	MBI	CES-D	Netherlands	190
19. Schaufeli et al. (2001)	Mixed	BM/MBI	SCL-90	Netherlands	139
20. Tselebis, Moulou, and Ilias (2001)	Dimensional	MBI	BDI	Greece	79
21. Shanafelt, Bradley, Wipf, and Back (2002)	Categorical	MBI	PRIME-MD	USA	115

(continued on next page)

Table A.1 (continued)

Studies (in chronological order)	Approach	Burnout measurement	Depression measurement	Country	n
22. Dorz, Novara, Sica, and Sanavio (2003)	Dimensional	MBI	DQ	Italy	528
23. Grossi, Perski, Evengård, Blomkvist, and Orth-Gomér (2003)	Mixed	BM/MBI/SMBM	BDI	Sweden	63
24. Korkeila et al. (2003)	Mixed	MBI	SSS	Finland	294
25. Shirom and Ezrachi (2003)	Dimensional	BM	ZSDS-R	Israel	704
26. Ahola et al. (2005)	Categorical	MBI-GS	CIDI	Finland	3276
27. Nyklíček and Pop (2005)	Mixed	MBI-GS	EDS	Netherlands	3385
28. Toker, Shapira, Berliner, Melamed, and Shirom (2005)	Mixed	SMBM	PHQ-9	Israel	1563
29. Ahola et al. (2006)	Categorical	MBI-GS	BDI-II/CIDI	Finland	3270
30. Becker, Milad, and Klock (2006)	Categorical	MBI	CES-D	USA	125
31. Cresswell and Eklund (2006)	Dimensional	ABQ/MBI-GS	DASS	New Zealand	392
32. Middeldorp, Cath, and Boomsma (2006)	Dimensional	MBI-GS	YASR (AD)	Netherlands	5317
33. Mohammadi (2006)	Dimensional	MBI	SCL-90	Iran	300
34. Murphy, Duxbury, and Higgins (2006)	Dimensional	MBI-Mod	HDLF-DMS	Canada	2507
35. Ahola et al. (2007)	Categorical	MBI-GS	NRPP	Finland	3276
36. Raggio and Malacarne (2007)	Dimensional	MBI	POMS	Italy	50
37. Soares, Grossi, and Sundin (2007)	Categorical	SMBM	GHQ-12	Sweden	3591
38. Peterson et al. (2008)	Mixed	OLBI	HADS	Sweden	3719
39. Papastylanou, Kaila, and Polychronopoulos (2009)	Dimensional	MBI	CES-D	Greece	562
40. Takai et al. (2009)	Mixed	BM	BDI-II	Japan	84
41. Waldman et al. (2009)	Categorical	MBI	BDI-II	Argentina	210
42. Zhong et al. (2009)	Dimensional	MBI-GS	BDI	China	300
43. Bakir, Ozer, Ozcan, Cetin, and Fedai (2010)	Dimensional	MBI	BDI	Turkey	377
44. Brand et al. (2010)	Dimensional	TS	TS	Switzerland	2231
45. Tourigny, Baba, and Wang (2010)	Dimensional	MBI	CES-D	Japan/China	789
46. Marchand and Durand (2011)	Dimensional	MBI-GS	BDI/GHQ-12	Canada	410
47. Mutkins, Brown, and Thorsteinsson (2011)	Dimensional	MBI	DASS	Australia	80
48. Steinhardt, Smith Jaggars, Faulk, and Gloria (2011)	Dimensional	MBI	CES-D	USA	267
49. Chang, Eddins-Folensbee, and Coverdale (2012)	Categorical	MBI-Mod	PHQ-2	USA	336
50. Gil-Monte (2012)	Dimensional	SpaBI	ZSDS	Spain	700
51. Govardhan, Pinelli, and Schnatz (2012)	Mixed	MBI	CES-D	USA	57
52. Young, Fang, Golshan, Moutier, and Zisook (2012)	Mixed	MBI-SS	PHQ-9	USA	2059
53. Basaran, Karadavut, Uneri, Balbaloglu, and Atasoy (2013)	Mixed	MBI	BDI	Turkey	206
54. Bianchi et al. (2013)	Mixed	MBI	BDI-II	France	1704
55. De Oliveira et al. (2013)	Categorical	MBI-Mod	HANDS	USA	1508
56. Garbarino, Cuomo, Chiorri, and Magnavita (2013)	Mixed	MBI	BDI	Italy	289
57. Gayman and Bradley (2013)	Dimensional	SSS	CES-D-Mod	USA	825
58. Gerber, Lindwall, Lindegård, Börjesson, and Jonsdottir (2013)	Categorical	SMBM	HADS	Sweden	197
59. Lebensohn et al. (2013)	Mixed	MBI	CES-D	USA	168
60. Mendel, Kissling, Reichhart, Buhner, and Hamann (2013)	Categorical	–	–	Germany	748
61. Van Dam et al. (2013)	Categorical	MBI-GS/SSI	MINI	Netherlands	324
62. Whitebird, Asche, Thompson, Rossom, and Heinrich (2013)	Mixed	ProQoL-RIII	PHQ-8	USA	547
63. Bianchi, Schonfeld et al. (2014)	Mixed	MBI	PHQ-9	France	5575
64. Bianchi and Laurent (2014)	Dimensional	MBI/BM-SV	BDI-II	France	54
65. Madathil, Heck, and Schulberg (2014)	Dimensional	MBI	BSI-Mod	USA	89
66. Marchand, Durand, Juster, and Lupien (2014)	Mixed	MBI-GS	BDI-II	Canada	401
67. Rogers, Creed, and Searle (2014)	Dimensional	CBI	PHQ-2	Australia	349

ABQ: Athlete Burnout Questionnaire; BDI: Beck Depression Inventory; BDI-II: BDI—Second Edition; BDI-SF: BDI—Short Form; BM: Burnout Measure; BM-SV: Burnout Measure Short Version; BSI-Mod: Modified version of the Brief Symptom Inventory; CBI: Copenhagen Burnout Inventory; CCD: Costello–Comrey Depression scale; CES-D: Center for Epidemiologic Studies—Depression scale; CES-D-Mod: Modified version of the CES-D; CIDI: Composite International Diagnostic Interview; DASS: Depression Anxiety Stress Scale; DEPS: Depression Scale; DQ: Depression Questionnaire; EDS: Edinburgh Depression Scale; GHQ-12: General Health Questionnaire 12-item version; HADS: Hospital Anxiety and Depression Scale; HANDS: Harvard Department of Psychiatry/National Depression Screening Day Scale; IPAT-DS: Institute for Personality and Ability Testing Depression Scale; JCS-JSS: Job Content Survey—Job Strain Scales; MBA: Meier Burnout Assessment; MBI: Maslach Burnout Inventory; MBI-GS: MBI—General Survey; MBI-Mod: Modified version of the MBI; MBI-SS: MBI—Student Survey; MINI: Mini International Neuropsychiatric Interview; NRPP: National Register of Psychopharmacological Prescriptions; OLBI: Oldenburg Burnout Inventory; PHQ-2: Patient Health Questionnaire 2-item depression module; PHQ-8: PHQ 8-item depression module; PHQ-9: PHQ 9-item depression module; PRIME-MD: Primary Care Evaluation of Mental Disorders Procedure; POMS: Profile of Mood States; POMS (DD): POMS (Depression–Dejection); ProQoL-RIII: Professional Quality of Life Assessment R-III Scale; RBI: Rome Burnout Inventory; SpaBI: Spanish Burnout Inventory; SCL-90: Symptom Checklist 90; SMBM: Shirom–Melamed Burnout Measure; SSI: Semi-structured interview; SSS: Study-specific scale(s); SVG: Saint Vincent and the

Table A.2

Longitudinal studies dealing with the overlap of burnout and depression (25 studies; 36,334 participants).

Studies (in chronological order)	Follow-up duration	Approach	Burnout measurement	Depression measurement	Country	n
1. Greenglass and Burke (1990)	1 year	Dimensional	MBI	HSCL	Canada	361
2. McKnight and Glass (1995)	2 years	Dimensional	MBI	BDI	USA	100
3. De Lange, Taris, Kompier, Houtman, and Bongers (2004)	4 years	Mixed	EE-Mod	CES-D	Netherlands	668
4. Hättinen, Kinnunen, Pekkonen, and Aro (2004)	4 months	Mixed	MBI-GS	BDI	Finland	128
5. Ahola and Hakonen (2007)	3 years	Categorical	MBI	BDI-SF	Finland	2555
6. Dahlin and Runeson (2007)	3–4 years	Categorical	OLBI	MDI/MINI	Sweden	80
7. Armon, Shirom, Berliner, Shapira, and Melamed (2008)	18 months	Dimensional	SMBM	PHQ-9	Israel	1064
8. Hakonen, Schaufeli, and Ahola (2008)	3 years	Dimensional	MBI	BDI-SF	Finland	2555
9. Salmela-Aro, Aunola, and Nurmi (2008)	10 years	Categorical	MBI-GS	BDI-R	Finland	297
10. Hättinen et al. (2009)	18 months	Categorical	MBI-GS	BDI	Finland	85
11. Salmela-Aro, Savolainen, and Holopainen (2009)	1 year/3 years	Dimensional	SBI	DEPS	Finland	658/597

Table A.2 (continued)

Studies (in chronological order)	Follow-up duration	Approach	Burnout measurement	Depression measurement	Country	n
12. Campbell, Prochazka, Yamashita, and Gopal (2010)	3 years	Categorical	MBI	PRIME-MD	USA	86
13. Nielsen et al. (2011)	1 year	Categorical	SBA	SBA	Denmark	644
14. Armon, Shirom, and Melamed (2012)	2 years	Dimensional	SMBM	PHQ-9	Israel	1105
15. Glise, Ahlborg, and Jonsdottir (2012)	18 months	Categorical	SMBM	SMI/HADS	Sweden	232
16. Hakanen and Schaufeli (2012)	7 years	Dimensional	MBI	BDI-SF	Finland	1964
17. Lopes Cardozo et al. (2012)	6–18 months	Mixed	MBI	HSCL-25	USA	212
18. Toker and Biron (2012)	40 months	Dimensional	SMBM	PHQ-9	Israel	1632
19. Toker et al. (2012)	1–8 year(s)	Dimensional	SMBM	PHQ-9	Israel	8838
20. Beck, Gerber, Brand, Pühse, and Holsboer-Trachsler (2013)	3 months	Categorical	MBI/SMBM	BDI	Switzerland	24
21. Lindwall, Gerber, Jonsdottir, Börjesson, and Ahlborg (2013)	6 years	Mixed	SMBM	HADS	Sweden	3717
22. Shin, Noh, Jang, Park, and Lee (2013)	1 year	Dimensional	MBI	CES-D	South Korea	499
23. Ahola, Hakanen et al. (2014)	7 years	Mixed	MBI	BDI-SF	Finland	3255
24. Armon, Melamed, Toker, Berliner, and Shapira (2014)	18 months	Dimensional	SMBM	PHQ-8	Israel	4861
25. Idris, Dollard, and Yulita (2014)	3 months	Dimensional	EE-Mod	PHQ-9	Malaysia	117

ANOVA: ANalysis Of VAriance; BDI: Beck Depression Inventory; BDI-R: BDI–Revised version; BDI-SF: BDI–Short Form; CES-D: Center for Epidemiologic Studies–Depression scale; DEPS: Depression Scale; EE-Mod: Modified version of the Emotional Exhaustion subscale of the Maslach Burnout Inventory; GEE: Generalized Estimating Equation; HADS: Hospital Anxiety and Depression Scale; HSCL: Hopkins Symptom Checklist; HSCL-25: HSCL 25-item version; MBI: Maslach Burnout Inventory; MBI-GS: MBI–General Survey; MDI: Major Depression Inventory; MINI: Mini International Neuropsychiatric Interview; OLB: Oldenburg Burnout Inventory; PHQ-8: Patient Health Questionnaire 8-item depression module; PHQ-9: PHQ 9-item depression module; PRIME-MD: Primary Care Evaluation of Mental Disorders Procedure; SBA: Sickness Benefit Application form; SBI: School Burnout Inventory; SEM: Structural Equation Modeling; SMI: Structured Medical Interview; SMBM: Shirom–Melamed Burnout Measure; USA: United States of America.

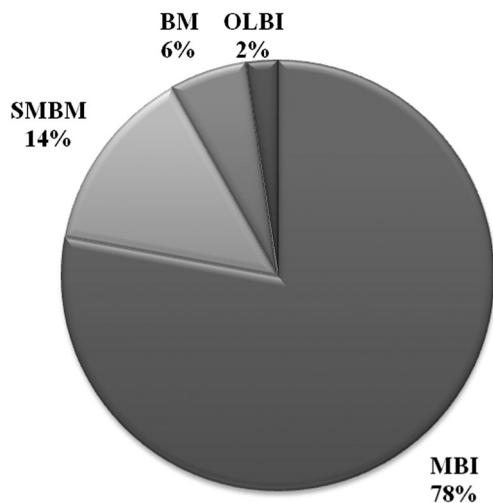


Fig. A.1. Relative frequency of use (%) of the main burnout measures. BM: Burnout Measure; MBI: Maslach Burnout Inventory; OLBI: Oldenburg Burnout Inventory; SMBM: Shirom–Melamed Burnout Measure.

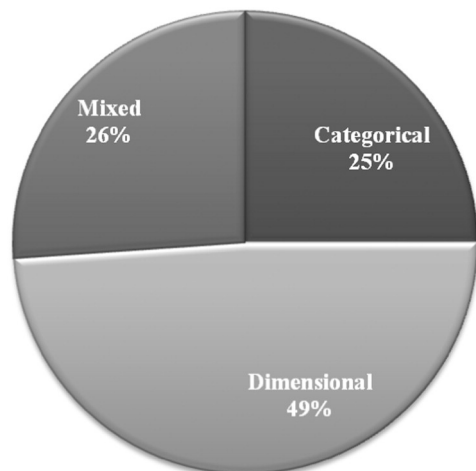


Fig. A.2. Relative frequency of use (%) of dimensional, categorical, and mixed approaches to burnout and depression.

References

Abramson, L.Y., Metalsky, G.I., & Alloy, L.B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review*, 96(2), 358–372.

Adler, D.A., McLaughlin, T.J., Rogers, W.H., Chang, H., Lapsitzky, L., & Lerner, D. (2006). Job performance deficits due to depression. *American Journal of Psychiatry*, 163(9), 1569–1576.

Ahola, K., Gould, R., Virtanen, M., Honkonen, T., Aromaa, A., & Lönnqvist, J. (2009). Occupational burnout as a predictor of disability pension: A population-based cohort study. *Occupational and Environmental Medicine*, 66(5), 284–290.

Ahola, K., & Hakanen, J. (2007). Job strain, burnout, and depressive symptoms: A prospective study among dentists. *Journal of Affective Disorders*, 104(1), 103–110.

Ahola, K., Hakanen, J., Perhoniemi, R., & Mutanen, P. (2014). Relationship between burnout and depressive symptoms: A study using the person-centred approach. *Burnout Research*, 1(1), 29–37.

Ahola, K., Honkonen, T., Isometsä, E., Kalimo, R., Nykyri, E., Aromaa, A., et al. (2005). The relationship between job-related burnout and depressive disorders—Results from the Finnish Health 2000 Study. *Journal of Affective Disorders*, 88(1), 55–62.

Ahola, K., Honkonen, T., Kivimäki, M., Virtanen, M., Isometsä, E., Aromaa, A., et al. (2006). Contribution of burnout to the association between job strain and depression: The Health 2000 Study. *Journal of Occupational and Environmental Medicine*, 48(10), 1023–1030.

Ahola, K., Honkonen, T., Virtanen, M., Kivimäki, M., Isometsä, E., Aromaa, A., et al. (2007). Interventions in relation to occupational burnout: The population-based health 2000 study. *Journal Of Occupational And Environmental Medicine / American College Of Occupational And Environmental Medicine*, 49(9), 943–952.

Ahola, K., Kivimäki, M., Honkonen, T., Virtanen, M., Koskinen, S., Vahtera, J., et al. (2008). Occupational burnout and medically certified sickness absence: A population-based study of Finnish employees. *Journal of Psychosomatic Research*, 64(2), 185–193.

Ahola, K., Salminen, S., Toppinen-Tanner, S., Koskinen, A., & Vaananen, A. (2014). Occupational burnout and severe injuries: An eight-year prospective cohort study among Finnish forest industry workers. *Journal of Occupational Health*, 55(6), 450–457.

Ahola, K., Sirén, I., Kivimäki, M., Ripatti, S., Aromaa, A., Lönnqvist, J., et al. (2012). Work-related exhaustion and telomere length: A population-based study. *PLoS ONE*, 7(7), e40186.

Ahola, K., Toppinen-Tanner, S., Huuhtanen, P., Koskinen, A., & Vaananen, A. (2009). Occupational burnout and chronic work disability: An eight-year cohort study on pensioning among Finnish forest industry workers. *Journal of Affective Disorders*, 115(1–2), 150–159.

Ahola, K., Väänänen, A., Koskinen, A., Kouvonen, A., & Shirom, A. (2010). Burnout as a predictor of all-cause mortality among industrial employees: A 10-year prospective register-linkage study. *Journal of Psychosomatic Research*, 69(1), 51–57.

Allen, N.B., & Badcock, P.B.T. (2006). Darwinian models of depression: A review of evolutionary accounts of mood and mood disorders. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 30(5), 815–826.

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Armon, G., Melamed, S., Toker, S., Berliner, S., & Shapira, I. (2014). Joint effect of chronic medical illness and burnout on depressive symptoms among employed adults. *Health Psychology*, 33(3), 264–272.

Armon, G., Shirom, A., Berliner, S., Shapira, I., & Melamed, S. (2008). A prospective study of the association between obesity and burnout among apparently healthy men and women. *Journal of Occupational Health Psychology*, 13(1), 43–57.

- Armon, G., Shirom, A., & Melamed, S. (2012). The Big Five personality factors as predictors of changes across time in burnout and its facets. *Journal of Personality, 80*(2), 403–427.
- Armon, G., Shirom, A., Shapira, I., & Melamed, S. (2008). On the nature of burnout–insomnia relationships: A prospective study of employed adults. *Journal of Psychosomatic Research, 65*(1), 5–12.
- Baba, V.V., Galperin, B.L., & Lituchy, T.R. (1999). Occupational mental health: A study of work-related depression among nurses in the Caribbean. *International Journal of Nursing Studies, 36*(2), 163–169.
- Bahlmann, J., Angermeyer, M.C., & Schomerus, G. (2013). "Burnout" statt "Depression" – eine Strategie zur Vermeidung von Stigma? [Calling it "burnout" instead of "depression" – A strategy to avoid stigma?] *Psychiatrische Praxis, 40*(2), 78–82.
- Bakir, B., Ozer, M., Ozcan, C. T., Cetin, M., & Fedai, T. (2010). The association between burnout, and depressive symptoms in a Turkish military nurse sample. *Bulletin of Clinical Psychopharmacology, 20*(2), 160–163.
- Bakker, A.B., Schaufeli, W.B., Demerouti, E., Janssen, P.P.M., Van Der Hulst, R., & Brouwer, J. (2000). Using equity theory to examine the difference between burnout and depression. *Anxiety, Stress & Coping, 13*(3), 247–268.
- Barnett, P.A., & Gotlib, I.H. (1988). Psychosocial functioning and depression: Distinguishing among antecedents, concomitants, and consequences. *Psychological Bulletin, 104*(1), 97–126.
- Basaran, A., Karadavut, K. I., Uneri, S. O., Balbaloglu, O., & Atasoy, N. (2013). The effect of having a children with cerebral palsy on quality of life, burn-out, depression and anxiety scores: A comparative study. *European Journal of Physical and Rehabilitation Medicine, 104*(1), 97–126.
- Beard, G. (1869). Neurasthenia or nervous exhaustion. *Boston Medical and Surgical Journal, 3*(13), 217–221.
- Beck, A.T., & Alford, B.A. (2009). *Depression: Causes and treatment* (2nd ed.). Philadelphia, PA: University of Pennsylvania Press.
- Beck, J., Gerber, M., Brand, S., Pühse, U., & Holsboer-Trachsler, E. (2013). Executive function performance is reduced during occupational burnout but can recover to the level of healthy controls. *Journal of Psychiatric Research, 47*(11), 1824–1830.
- Beck, A.T., Steer, R.A., & Brown, G.K. (1996). *Manual for the BDI-II*. San Antonio, TX: Psychological Corporation.
- Becker, J. L., Milad, M. P., & Klock, S. C. (2006). Burnout, depression, and career satisfaction: Cross-sectional study of obstetrics and gynecology residents. *American Journal of Obstetrics and Gynecology, 195*(5), 1444–1449.
- Belcastro, P. A., & Hays, L. C. (1984). Ergophilia... ergophobia... ergo... burnout? *Professional Psychology: Research and Practice, 15*(2), 260–270.
- Bellani, M. L., Furlani, F., Gneccchi, M., Pezzotta, P., Trotti, E. M., & Bellotti, G. G. (1996). Burnout and related factors among HIV/AIDS health care workers. *AIDS Care, 8*(2), 207–221.
- Bianchi, R., Boffy, C., Hingray, C., Truchot, D., & Laurent, E. (2013). Comparative symptomatology of burnout and depression. *Journal of Health Psychology, 18*(6), 782–787.
- Bianchi, R., & Laurent, E. (2014). Emotional information processing in depression and burnout: An eye-tracking study. *European Archives of Psychiatry and Clinical Neuroscience* Online first publication (October 9). <http://dx.doi.org/10.1007/s00406-014-0549-x>.
- Bianchi, R., Schonfeld, I.S., & Laurent, E. (2014). Is burnout a depressive disorder? A re-examination with special focus on atypical depression. *International Journal of Stress Management, 21*(4), 307–324.
- Bianchi, R., Truchot, D., Laurent, E., Brisson, R., & Schonfeld, I.S. (2014). Is burnout solely job-related? A critical comment. *Scandinavian Journal of Psychology, 55*(4), 357–361.
- Billings, A.C., & Moos, R.H. (1982). Psychosocial theory and research on depression: An integrative framework and review. *Clinical Psychology Review, 2*(2), 213–237.
- Bonde, J.P.E. (2008). Psychosocial factors at work and risk of depression: A systematic review of the epidemiological evidence. *Occupational and Environmental Medicine, 65*(7), 438–445.
- Bowling, A. (2005). Mode of questionnaire administration can have serious effects on data quality. *Journal of Public Health, 27*(3), 281–291.
- Brand, S., Beck, J., Hatzinger, M., Harbaugh, A., Ruch, W., & Holsboer-Trachsler, E. (2010). Associations between satisfaction with life, burnout-related emotional and physical exhaustion, and sleep complaints. *The World Journal of Biological Psychiatry, 11*(5), 744–754.
- Breninkmeijer, V., & van Yperen, N.W. (2003). How to conduct research on burnout: Advantages and disadvantages of a unidimensional approach in burnout research. *Occupational and Environmental Medicine, 60*(Suppl. 1), i16–i20.
- Breninkmeyer, V., van Yperen, N.W., & Buunk, B.P. (2001). Burnout and depression are not identical twins: Is decline of superiority a distinguishing feature? *Personality and Individual Differences, 30*(5), 873–880.
- Campbell, J., Prochazka, A.V., Yamashita, T., & Gopal, R. (2010). Predictors of persistent burnout in internal medicine residents: A prospective cohort study. *Academic Medicine, 85*(10), 1630–1634.
- Caspi, A., Sugden, K., Moffitt, T.E., Taylor, A., Craig, I.W., Harrington, H., et al. (2003). Influence of life stress on depression: Moderation by a polymorphism in the 5-HTT gene. *Science, 301*(5631), 386–389.
- Cathébras, P. (1991). Du « burn out » au « syndrome des yuppies » : deux avatars modernes de la fatigue. *Sciences sociales et santé, 9*(3), 65–94.
- Chang, E., Eddins-Folensbee, F., & Coverdale, J. (2012). Survey of the prevalence of burnout, stress, depression, and the use of supports by medical students at one school. *Academic Psychiatry, 36*(3), 177–182.
- Chida, Y., & Steptoe, A. (2009). Cortisol awakening response and psychosocial factors: A systematic review and meta-analysis. *Biological Psychology, 80*(3), 265–278.
- Cox, T., Tisserand, M., & Taris, T. (2005). The conceptualization and measurement of burnout: Questions and directions. *Work & Stress, 19*(3), 187–191.
- Cresswell, S. L., & Eklund, R. C. (2006). The convergent and discriminant validity of burnout measures in sport: A multi-trait/multi-method analysis. *Journal of Sports Sciences, 24*(2), 209–220.
- Dahlin, M., & Runeson, B. (2007). Burnout and psychiatric morbidity among medical students entering clinical training: A three year prospective questionnaire and interview-based study. *BMC Medical Education, 7*(1), 6.
- Daley, S.E., Hammen, C., & Rao, U. (2000). Predictors of first onset and recurrence of major depression in young women during the 5 years following high school graduation. *Journal of Abnormal Psychology, 109*(3), 525–533.
- Danhof-Pont, M.B., van Veen, T., & Zitman, F.G. (2011). Biomarkers in burnout: A systematic review. *Journal of Psychosomatic Research, 70*(6), 505–524.
- De Lange, A. H., Taris, T. W., Kompier, M. A. J., Houtman, I. L. D., & Bongers, P. M. (2004). The relationships between work characteristics and mental health: Examining normal, reversed and reciprocal relationships in a 4-wave study. *Work & Stress, 18*(2), 149–166.
- Dell'Erba, G., Venturi, P., Rizzo, F., Porcù, S., & Pancheri, P. (1994). Burnout and health status in Italian air traffic controllers. *Aviation, Space, and Environmental Medicine, 65*(4), 315–322.
- Demerouti, E., Bakker, A.B., Vardakou, I., & Kantas, A. (2003). The convergent validity of two burnout instruments: A multitrait–multimethod analysis. *European Journal of Psychological Assessment, 19*(1), 12–23.
- Demerouti, E., Le Blanc, P.M., Bakker, A.B., Schaufeli, W.B., & Hox, J. (2009). Present but sick: A three-wave study on job demands, presenteeism and burnout. *Career Development International, 14*(1), 50–68.
- De Oliveira, G. S., Chang, R., Fitzgerald, P. C., Almeida, M. D., Castro-Alves, L. S., Ahmad, S., et al. (2013). The prevalence of burnout and depression and their association with adherence to safety and practice standards: A survey of United States anesthesiology trainees. *Anesthesia & Analgesia, 117*(1), 182–193.
- Dion, G., & Tessier, R. (1994). Validation de la traduction de l'inventaire d'épuisement professionnel de Maslach et Jackson. *Canadian Journal of Behavioural Science, 26*(2), 210–227.
- Dorz, S., Novara, C., Sica, C., & Sanavio, E. (2003). Predicting burnout among HIV/AIDS and oncology health care workers. *Psychology & Health, 18*(5), 677–684.
- Dyrbye, L.N., Thomas, M.R., Massie, F.S., Power, D.V., Eacker, A., Harper, W., et al. (2008). Burnout and suicidal ideation among U.S. medical students. *Annals of Internal Medicine, 149*(5), 334–341.
- Ellis, A.J., Beavers, C.G., & Wells, T.T. (2011). Attention allocation and incidental recognition of emotional information in dysphoria. *Cognitive Therapy and Research, 35*(5), 1–9.
- Farber, B.A. (1983). *Stress and burnout in the human service professions*. New York, NY: Pergamon Press.
- Farber, B.A. (2000). Treatment strategies for different types of teacher burnout. *Journal of Clinical Psychology, 56*(5), 675–689.
- First, M.B., Spitzer, R.L., Gibbon, M., & Williams, J.B. (1997). *User's guide for the Structured Clinical Interview for DSM-IV Axis I disorders*. Washington, DC: American Psychiatric Press.
- Firth, H., McIntee, J., McKeown, P., & Britton, P. (1986). Burnout and professional depression: Related concepts? *Journal of Advanced Nursing, 11*(6), 633–641.
- Freudenberger, H.J. (1974). Staff burnout. *Journal of Social Issues, 30*(1), 159–165.
- Freudenberger, H.J., & Richelson, G. (1980). *Burnout: How to beat the high cost of success*. New York, NY: Bantam Books.
- Fries, E., Hesse, J., Hellhammer, J., & Hellhammer, D.H. (2005). A new view on hypocortisolism. *Psychoneuroendocrinology, 30*(10), 1010–1016.
- Garbarino, S., Cuomo, G., Chiorri, C., & Magnavita, N. (2013). Association of work-related stress with mental health problems in a special police force unit. *BMJ Open, 3*(7), e002791.
- Gayman, M. D., & Bradley, M. S. (2013). Organizational climate, work stress, and depressive symptoms among probation and parole officers. *Criminal Justice Studies, 26*(3), 326–346.
- Gerber, M., Lindwall, M., Lindegård, A., Börjesson, M., & Jonsdottir, I. H. (2013). Cardiorespiratory fitness protects against stress-related symptoms of burnout and depression. *Patient Education and Counseling, 93*(1), 146–152.
- Gil-Monte, P. R. (2012). The influence of guilt on the relationship between burnout and depression. *European Psychologist, 17*(3), 231–236.
- Glass, D.C., & McKnight, J.D. (1996). Perceived control, depressive symptomatology, and professional burnout: A review of the evidence. *Psychology & Health, 11*(1), 23–48.
- Glass, D.C., McKnight, J.D., & Valdimarsdottir, H. (1993). Depression, burnout, and perceptions of control in hospital nurses. *Journal of Consulting and Clinical Psychology, 61*(1), 147–155.
- Glise, K., Ahlborg, G., & Jonsdottir, I. (2012). Course of mental symptoms in patients with stress-related exhaustion: Does sex or age make a difference? *BMC Psychiatry, 12*(1), 18.
- Gold, P.W., & Chrousos, G.P. (2002). Organization of the stress system and its dysregulation in melancholic and atypical depression: High vs low CRH/NE states. *Molecular Psychiatry, 7*(3), 254–275.
- Goldston, K., & Baillie, A.J. (2008). Depression and coronary heart disease: A review of the epidemiological evidence, explanatory mechanisms and management approaches. *Clinical Psychology Review, 28*(2), 288–306.
- Govardhan, L. M., Pinelli, V., & Schnatz, P. F. (2012). Burnout, depression and job satisfaction in obstetrics and gynecology residents. *Connecticut Medicine, 76*(7), 389–395.
- Greenglass, E.R., & Burke, R.J. (1990). Burnout over time. *Journal of Health and Human Resources Administration, 13*(2), 192–204.
- Grossi, G., Perski, A., Evengård, B., Blomkvist, V., & Orth-Gomér, K. (2003). Physiological correlates of burnout among women. *Journal of Psychosomatic Research, 55*(4), 309–316.

- Grynderup, M.B., Mors, O., Hansen, Å. M., Andersen, J.H., Bonde, J.P., Kærgaard, A., et al. (2013). Work-unit measures of organisational justice and risk of depression—A 2-year cohort study. *Occupational and Environmental Medicine*, 70(6), 380–385.
- Hakanen, J.J., & Schaufeli, W.B. (2012). Do burnout and work engagement predict depressive symptoms and life satisfaction? A three-wave seven-year prospective study. *Journal of Affective Disorders*, 141(2), 415–424.
- Hakanen, J.J., Schaufeli, W.B., & Ahola, K. (2008). The Job Demands–Resources model: A three-year cross-lagged study of burnout, depression, commitment, and work engagement. *Work & Stress*, 22(3), 224–241.
- Halbesleben, J.R.B., & Demerouti, E. (2005). The construct validity of an alternative measure of burnout: Investigating the English translation of the Oldenburg Burnout Inventory. *Work & Stress*, 19(3), 208–220.
- Hallsten, L. (1993). Burning out: A framework. In W.B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 95–113). London, United Kingdom: Taylor & Francis.
- Hammen, C., Brennan, P.A., Keenan-Miller, D., Hazel, N.A., & Najman, J.M. (2010). Chronic and acute stress, gender, and serotonin transporter gene–environment interactions predicting depression symptoms in youth. *Journal of Child Psychology and Psychiatry*, 51(2), 180–187.
- Hätinen, M., Kinnunen, U., Mäkikangas, A., Kalimo, R., Tolvanen, A., & Pekkonen, M. (2009). Burnout during a long-term rehabilitation: Comparing low burnout, high burnout–Benefited, and high burnout–Not benefited trajectories. *Anxiety, Stress & Coping*, 22(3), 341–360.
- Hätinen, M., Kinnunen, U., Pekkonen, M., & Aro, A. (2004). Burnout patterns in rehabilitation: Short-term changes in job conditions, personal resources, and health. *Journal of Occupational Health Psychology*, 9(3), 220–237.
- Hellhammer, D.H., & Hellhammer, J. (2008). *Stress: The brain–body connection*. Basel, Switzerland: Karger.
- Hill, M.N., Hellems, K.G.C., Verma, P., Gorzalka, B.B., & Weinberg, J. (2012). Neurobiology of chronic mild stress: Parallels to major depression. *Neuroscience & Biobehavioral Reviews*, 36(9), 2085–2117.
- Hobfoll, S.E., & Shirom, A. (2001). Conservation of resources theory: Applications to stress and management in the workplace. In R.T. Golembiewski (Ed.), *Handbook of organizational behavior* (pp. 57–80) (2nd ed.). New York, NY: Marcel Dekker.
- Iacovides, A., Fountoulakis, K. N., & Ierodiakonou, C. (1999). Is it possible to predict burnout in nursing staff and its possible progression to depression? *Primary Care Psychiatry*, 5(2), 77–78.
- Iacovides, A., Fountoulakis, K.N., Kaprinis, S., & Kaprinis, G. (2003). The relationship between job stress, burnout and clinical depression. *Journal of Affective Disorders*, 75(3), 209–221.
- Idris, M. A., Dollard, M. F., & Yulita (2014). Psychosocial safety climate, emotional demands, burnout, and depression: A longitudinal multilevel study in the Malaysian private sector. *Journal of Occupational Health Psychology*, 19(3), 291–302.
- Ingram, R.E., & Siegle, G.J. (2009). Methodological issues in the study of depression. In I.H. Gotlib, & C.L. Hammen (Eds.), *Handbook of depression* (pp. 69–92) (2nd ed.). New York, NY: Guilford Press.
- Johns, G. (2010). Presenteeism in the workplace: A review and research agenda. *Journal of Organizational Behavior*, 31(4), 519–542.
- Jonsdottir, I.H., Nordlund, A., Ellbin, S., Ljung, T., Glise, K., Währborg, P., et al. (2013). Cognitive impairment in patients with stress-related exhaustion. *Stress*, 16(2), 181–190.
- Jormann, J. (2009). Cognitive aspects of depression. In I.H. Gotlib, & C.L. Hammen (Eds.), *Handbook of depression* (pp. 298–321) (2nd ed.). New York, NY: Guilford Press.
- Kahill, S. (1988). Symptoms of professional burnout: A review of the empirical evidence. *Canadian Psychology*, 29(3), 284–297.
- Kahn, J.P. (2008). Diagnosis and referral of workplace depression. *Journal of Occupational and Environmental Medicine*, 50(4), 396–400.
- Kakiashvili, T., Leszek, J., & Rutkowski, K. (2013). The medical perspective on burnout. *International Journal of Occupational Medicine and Environmental Health*, 26(3), 401–412.
- Kalimo, R., Pahkin, K., Mutanen, P., & Toppinen-Tanner, S. (2003). Staying well or burning out at work: Work characteristics and personal resources as long-term predictors. *Work & Stress*, 17(2), 109–122.
- Kessler, R.C., Berglund, P., Demler, O., Jin, R., Merikangas, K.R., & Walters, E.E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62(6), 593–602.
- Kitaoka-Higashiguchi, K., Morikawa, Y., Miura, K., Sakurai, M., Ishizaki, M., Kido, T., et al. (2009). Burnout and risk factors for arteriosclerotic disease: Follow-up study. *Journal of Occupational Health*, 51(2), 123–131.
- Korkeila, J.A., Töyry, S., Kumpulainen, K., Toivola, J.-M., Räsänen, K., & Kalimo, R. (2003). Burnout and self-perceived health among Finnish psychiatrists and child psychiatrists: A national survey. *Scandinavian Journal of Public Health*, 31(2), 85–91.
- Krishnan, V., & Nestler, E.J. (2008). The molecular neurobiology of depression. *Nature*, 455(7215), 894–902.
- Kristensen, T.S., Borritz, M., Villadsen, E., & Christensen, K.B. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress*, 19(3), 192–207.
- Kroenke, K., Spitzer, R.L., & Williams, J.B.W. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606–613.
- Kumari, M., Badrick, E., Chandola, T., Adam, E.K., Stafford, M., Marmot, M.G., et al. (2009). Cortisol secretion and fatigue: Associations in a community based cohort. *Psychoneuroendocrinology*, 34(10), 1476–1485.
- Laborit, H. (1993). Inhibition of action: An interdisciplinary approach to its mechanism and psychopathology. In K.C. Traue, & J.W. Pennebaker (Eds.), *Emotion inhibition and health* (pp. 57–79). Irkland, WA: Hogrefe & Huber Publishers.
- Lamers, F., Vogelzangs, N., Merikangas, K.R., de Jonge, P., Beekman, A.T.F., & Penninx, B.W.J.H. (2013). Evidence for a differential role of HPA-axis function, inflammation and metabolic syndrome in melancholic versus atypical depression. *Molecular Psychiatry*, 18(6), 692–699.
- Landsbergis, P.A. (1988). Occupational stress among health care workers: A test of the job demands–control model. *Journal of Organizational Behavior*, 9(3), 217–239.
- Lara, M.E., & Klein, D.N. (1999). Psychosocial processes underlying the maintenance and persistence of depression: Implications for understanding chronic depression. *Clinical Psychology Review*, 19(5), 553–570.
- Lebensohn, P., Dodds, S., Benn, R., Brooks, A. J., Birch, M., Cook, P., et al. (2013). Resident wellness behaviors: Relationship to stress, depression, and burnout. *Family Medicine*, 45(8), 541–549.
- Leiter, M.P., & Durup, J. (1994). The discriminant validity of burnout and depression: A confirmatory factor analytic study. *Anxiety, Stress & Coping*, 7(4), 357–373.
- Leiter, M.P., & Maslach, C. (2005). *Banishing burnout: Six strategies for improving your relationship with work*. San Francisco, CA: Jossey-Bass.
- Leiter, M.P., & Maslach, C. (2009). Nurse turnover: The mediating role of burnout. *Journal of Nursing Management*, 17(3), 331–339.
- Leonard, B.E. (2010). The concept of depression as a dysfunction of the immune system. *Current Immunology Reviews*, 6(3), 205–212.
- Leone, S.S., Wessely, S., Huibers, M.J.H., Knottnerus, J.A., & Kant, I. (2010). Two sides of the same coin? On the history and phenomenology of chronic fatigue and burnout. *Psychology & Health*, 26(4), 449–464.
- Lindwall, M., Gerber, M., Jonsdottir, I. H., Börjesson, M., & Ahlberg, G., Jr (2013). The relationships of change in physical activity with change in depression, anxiety, and burnout: A longitudinal study of Swedish healthcare workers. *Health Psychology Online* first publication (November 18). <http://dx.doi.org/10.1037/a0034402>.
- Lopes Cardozo, B., Gotway Crawford, C., Eriksson, C., Zhu, J., Sabin, M., Ager, A., et al. (2012). Psychological distress, depression, anxiety, and burnout among international humanitarian aid workers: A longitudinal study. *PLoS ONE*, 7(9), e44948.
- Lu, X.-Y. (2007). The leptin hypothesis of depression: A potential link between mood disorders and obesity? *Current Opinion in Pharmacology*, 7(6), 648–652.
- Luppino, F.S., de Wit, L.M., Bouvy, P.F., Stijnen, T., Cuijpers, P., Penninx, B.W.J.H., et al. (2010). Overweight, obesity, and depression: A systematic review and meta-analysis of longitudinal studies. *Archives of General Psychiatry*, 67(3), 220–229.
- Madathil, R., Heck, N. C., & Schulderberg, D. (2014). Burnout in psychiatric nursing: Examining the interplay of autonomy, leadership style, and depressive symptoms. *Archives of Psychiatric Nursing*, 28(3), 160–166.
- Malach-Pines, A. (2005). The burnout measure, short version. *International Journal of Stress Management*, 12(1), 78–88.
- Marchand, A., & Durand, P. (2011). Psychological distress, depression, and burnout: Similar contribution of the Job Demand–Control and Job Demand–Control–Support models? *Journal of Occupational and Environmental Medicine*, 53(2), 185–189.
- Marchand, A., Durand, P., Juster, R.P., & Lupien, S.J. (2014). Workers' psychological distress, depression, and burnout symptoms: Associations with diurnal cortisol profiles. *Scandinavian Journal of Work, Environment & Health*, 40(3), 305–314.
- Martin, F., Poyen, D., Boudierlique, E., Gouvernet, J., Rivet, B., Disdier, P., et al. (1997). Depression and burnout in hospital health care professionals. *International Journal of Occupational and Environmental Health*, 3(3), 204–209.
- Maslach, C., & Jackson, S.E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior*, 2(2), 99–113.
- Maslach, C., & Jackson, S.E. (1986). *Maslach Burnout Inventory manual* (2nd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Maslach, C., Jackson, S.E., & Leiter, M.P. (1996). *Maslach Burnout Inventory manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Maslach, C., & Leiter, M. P. (1997). *The truth about burnout*. San Francisco, CA: Jossey Bass.
- Maslach, C., & Schaufeli, W.B. (1993). Historical and conceptual development of burnout. In W.B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 1–16). New York, NY: Taylor & Francis.
- Maslach, C., Schaufeli, W.B., & Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397–422.
- McKnight, J.D., & Glass, D.C. (1995). Perceptions of control, burnout, and depressive symptomatology: A replication and extension. *Journal of Consulting and Clinical Psychology*, 63(3), 490–494.
- McTernan, W.P., Dollard, M.F., & LaMontagne, A.D. (2013). Depression in the workplace: An economic cost analysis of depression-related productivity loss attributable to job strain and bullying. *Work & Stress*, 27(4), 321–338.
- Meier, S. T. (1984). The construct validity of burnout. *Journal of Occupational Psychology & Health*, 57(3), 211–219.
- Melamed, S., Kushnir, T., & Shirom, A. (1992). Burnout and risk factors for cardiovascular diseases. *Behavioral Medicine*, 18(2), 53–60.
- Melamed, S., Shirom, A., Toker, S., & Shapira, I. (2006). Burnout and risk of type 2 diabetes: A prospective study of apparently healthy employed persons. *Psychosomatic Medicine*, 68(6), 863–869.
- Melchior, M., Caspi, A., Milne, B.J., Danese, A., Poulton, R., & Moffitt, T.E. (2007). Work stress precipitates depression and anxiety in young, working women and men. *Psychological Medicine*, 37(8), 1119–1129.
- Mendel, R., Kissling, W., Reichhart, T., Buhner, M., & Hamann, J. (2013). Managers' reactions towards employees' disclosure of psychiatric or somatic diagnoses. *Epidemiology and Psychiatric Sciences Online* first publication (December 5). <http://dx.doi.org/10.1017/S2045796013000711>.
- Mezuk, B., Eaton, W.W., Albrecht, S., & Golden, S.H. (2008). Depression and type 2 diabetes over the lifespan: A meta-analysis. *Diabetes Care*, 31(12), 2383–2390.
- Middeldorp, C. M., Cath, D. C., & Boomsma, D. I. (2006). A twin-family study of the association between employment, burnout and anxious depression. *Journal of Affective Disorders*, 90(2–3), 163–169.

- Mohammadi, S. (2006). Burnout and psychological health in high school teachers. *Journal of Iranian Psychologists*, 3(9), 15–23.
- Molassiotis, A., & Haberman, M. (1996). Evaluation of burnout and job satisfaction in marrow transplant nurses. *Cancer Nursing*, 19(5), 360–367.
- Morse, G., Salyers, M.P., Rollins, A.L., Monroe-DeVita, M., & Pfahler, C. (2012). Burnout in mental health services: A review of the problem and its remediation. *Administration and Policy in Mental Health*, 39(5), 341–352.
- Murphy, S. A., Duxbury, L., & Higgins, C. (2006). The individual and organizational consequences of stress, anxiety, and depression in the workplace: A case study. *Canadian Journal of Community Mental Health*, 25(2), 143–157.
- Mutkins, E., Brown, R.F., & Thorsteinsson, E.B. (2011). Stress, depression, workplace and social supports and burnout in intellectual disability support staff. *Journal of Intellectual Disability Research*, 55(5), 500–510.
- Nesse, R.M. (2000). Is depression an adaptation? *Archives of General Psychiatry*, 57(1), 14–20.
- Netterström, B., Conrad, N., Bech, P., Fink, P., Olsen, O., Rugulies, R., et al. (2008). The relation between work-related psychosocial factors and the development of depression. *Epidemiologic Reviews*, 30(1), 118–132.
- Nezu, A.M., Nezu, C.M., Friedman, J., & Lee, M. (2009). Assessment of depression. In I.H. Gotlib, & C.L. Hammen (Eds.), *Handbook of depression* (pp. 44–68) (2nd ed.). New York, NY: Guilford Press.
- Nielsen, M.B.D., Madsen, I.E.H., Bültmann, U., Christensen, U., Diderichsen, F., & Rugulies, R. (2011). Predictors of return to work in employees sick-listed with mental health problems: Findings from a longitudinal study. *European Journal of Public Health*, 21(6), 806–811.
- Nykliček, I., & Pop, V.J. (2005). Past and familial depression predict current symptoms of professional burnout. *Journal of Affective Disorders*, 88(1), 63–68.
- Paine, W.S. (1982). The burnout syndrome in context. In J.W. Jones (Ed.), *The burnout syndrome* (pp. 1–29). Park Ridge, IL: London House.
- Papastylianou, A., Kaila, M., & Polychronopoulos, M. (2009). Teachers' burnout, depression, role ambiguity and conflict. *Social Psychology of Education*, 12(3), 295–314.
- Paykel, E.S. (2008). Basic concepts of depression. *Dialogues in Clinical Neuroscience*, 10(3), 279–289.
- Peterson, U., Demerouti, E., Bergström, G., Samuelsson, M., Åsberg, M., & Nygren, Å. (2008). Burnout and physical and mental health among Swedish healthcare workers. *Journal of Advanced Nursing*, 62(1), 84–95.
- Peterson, C., Maier, S.F., & Seligman, M.E.P. (1993). *Learned helplessness: A theory for the age of personal control*. New York, NY: Oxford University Press.
- Pines, A. (1993). Burnout: An existential perspective. In W.B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 19–32). Washington, DC: Taylor & Francis.
- Pines, A., & Aronson, E. (1988). *Career burnout: Causes and cures*. New York, NY: Free Press.
- Pines, A., Aronson, E., & Kafry, D. (1981). *Burnout: From tedium to personal growth*. New York, NY: Free Press.
- Post, R.M. (1992). Transduction of psychosocial stress into the neurobiology of recurrent affective disorder. *American Journal of Psychiatry*, 149(8), 999–1010.
- Pryce, C.R., Azzinnari, D., Spinelli, S., Seifritz, E., Tegethoff, M., & Meinschmidt, G. (2011). Helplessness: A systematic translational review of theory and evidence for its relevance to understanding and treating depression. *Pharmacology & Therapeutics*, 132(3), 242–267.
- Quitkin, F.M. (2002). Depression with atypical features: Diagnostic validity, prevalence, and treatment. *The Primary Care Companion to the Journal of Clinical Psychiatry*, 4(3), 94–99.
- Radloff, L.S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1(3), 385–401.
- Raggio, B., & Malacarne, P. (2007). Burnout in intensive care unit. *Minerva Anestesiologica*, 73(4), 195–200.
- Ritsher, J.E.B., Warner, V., Johnson, J.G., & Dohrenwend, B.P. (2001). Inter-generational longitudinal study of social class and depression: A test of social causation and social selection models. *British Journal of Psychiatry*, 178(40), s84–s90.
- Roelofs, J., Verbraak, M., Keijsers, G.P.J., de Bruin, M.B.N., & Schmidt, A.J.M. (2005). Psychometric properties of a Dutch version of the Maslach Burnout Inventory General Survey (MBI-DV) in individuals with and without clinical burnout. *Stress and Health*, 21(1), 17–25.
- Rogers, M. E., Creed, P. A., & Searle, J. (2014). Emotional labour, training stress, burnout, and depressive symptoms in junior doctors. *Journal of Vocational Education and Training*, 66(2), 232–248.
- Rössler, W., Hengartner, M., Ajdacic-Gross, V., & Angst, J. (2014). Predictors of burnout: Results from a prospective community study. *European Archives of Psychiatry and Clinical Neuroscience* Online first publication (June 14). <http://dx.doi.org/10.1007/s00406-014-0512-x>.
- Rugulies, R. (2002). Depression as a predictor for coronary heart disease: A review and meta-analysis. *American Journal of Preventive Medicine*, 23(1), 51–61.
- Rydmark, I., Wahlberg, K., Ghatan, P.H., Modell, S., Nygren, Å., Ingvar, M., et al. (2006). Neuroendocrine, cognitive and structural imaging characteristics of women on longterm sickleave with job stress-induced depression. *Biological Psychiatry*, 60(8), 867–873.
- Salmela-Aro, K., Aunola, K., & Nurmi, J. -E. (2008). Trajectories of depressive symptoms during emerging adulthood: Antecedents and consequences. *European Journal of Developmental Psychology*, 5(4), 439–465.
- Salmela-Aro, K., Savolainen, H., & Holopainen, L. (2009). Depressive symptoms and school burnout during adolescence: Evidence from two cross-lagged longitudinal studies. *Journal of Youth and Adolescence*, 38(10), 1316–1327.
- Sapolsky, R.M. (2004). *Why zebras don't get ulcers* (3rd ed.). New York, NY: Holt Paperbacks.
- Schaufeli, W.B. (2003). Past performance and future perspectives of burnout research. *South African Journal of Industrial Psychology*, 29(4), 1–15.
- Schaufeli, W.B., Bakker, A.B., Hoogduin, K., Schaap, C., & Kladler, A. (2001). On the clinical validity of the Maslach Burnout Inventory and the Burnout Measure. *Psychology & Health*, 16(5), 565–582.
- Schaufeli, W.B., & Buunk, B.P. (2004). Burnout: An overview of 25 years of research and theorizing. In M.J. Schabracq, J.A.M. Winnubst, & C.L. Cooper (Eds.), *The handbook of work and health psychology* (pp. 383–425) (2nd ed.). Chichester, United Kingdom: Wiley.
- Schaufeli, W.B., & Enzmann, D. (1998). *The burnout companion to study and practice: A critical analysis*. London, United Kingdom: Taylor & Francis.
- Schaufeli, W.B., Enzmann, D., & Girault, N. (1993). The measurement of burnout: A review. In W.B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 199–215). New York, NY: Taylor & Francis.
- Schaufeli, W.B., Leiter, M.P., & Maslach, C. (2009). Burnout: 35 years of research and practice. *Career Development International*, 14(3), 204–220.
- Schaufeli, W.B., & Taris, T.W. (2005). The conceptualization and measurement of burnout: Common ground and worlds apart. *Work & Stress*, 19(3), 256–262.
- Schonfeld, I.S. (1991). *Burnout in teachers: Is it burnout or is it depression?* (Report No. 335329). Washington, DC: Education Resources Information Center.
- Schonfeld, I.S. (2001). Stress in 1st-year women teachers: The context of social support and coping. *Genetic, Social, and General Psychology Monographs*, 127(2), 133–168.
- Sears, S.F., Jr., Urizar, G.G., Jr., & Evans, G.D. (2000). Examining a stress-coping model of burnout and depression in extension agents. *Journal of Occupational Health Psychology*, 5(1), 56–62.
- Seligman, M.E.P. (1972). Learned helplessness. *Annual Review of Medicine*, 23(1), 407–412.
- Seligman, M.E.P. (1975). *Helplessness: On depression, development, and death*. San Francisco, CA: W. H. Freeman.
- Shanafelt, T. D., Bradley, K. A., Wipf, J. E., & Back, A. L. (2002). Burnout and self-reported patient care in an internal medicine residency program. *Annals of Internal Medicine*, 136(5), 358–367.
- Shimizu, T., Feng, Q., & Nagata, S. (2005). Relationship between turnover and burnout among Japanese hospital nurses. *Journal of Occupational Health*, 47(4), 334–336.
- Shin, H., Noh, H., Jang, Y., Park, Y.M., & Lee, S.M. (2013). A longitudinal examination of the relationship between teacher burnout and depression. *Journal of Employment Counseling*, 50(3), 124–137.
- Shirom, A. (1989). Burnout in work organizations. In C.L. Cooper, & I. Robertson (Eds.), *International Review of Industrial and Organizational Psychology* (pp. 26–48). New York, NY: Wiley.
- Shirom, A. (2003). Job-related burnout: A review. In J.C. Quick, & L.E. Tetrick (Eds.), *Handbook of occupational health psychology* (pp. 245–264). Washington, DC: American Psychological Association.
- Shirom, A. (2005). Reflections on the study of burnout. *Work & Stress*, 19(3), 263–270.
- Shirom, A., & Ezrachi, Y. (2003). On the discriminant validity of burnout, depression and anxiety: A re-examination of the Burnout Measure. *Anxiety, Stress & Coping*, 16(1), 83–97.
- Shirom, A., & Melamed, S. (2006). A comparison of the construct validity of two burnout measures in two groups of professionals. *International Journal of Stress Management*, 13(2), 176–200.
- Soares, J.J.F., Grossi, G., & Sundin, Ö. (2007). Burnout among women: Associations with demographic/socio-economic, work, life-style and health factors. *Archives of Women's Mental Health*, 10(2), 61–71.
- Stansfeld, S., & Candy, B. (2006). Psychosocial work environment and mental health—A meta-analytic review. *Scandinavian Journal of Work, Environment & Health*, 32(6), 443–462.
- Steinhardt, M.A., Smith Jaggars, S.E., Faulk, K.E., & Gloria, C.T. (2011). Chronic work stress and depressive symptoms: Assessing the mediating role of teacher burnout. *Stress and Health*, 27(5), 420–429.
- Suls, J., & Bunde, J. (2005). Anger, anxiety, and depression as risk factors for cardiovascular disease: The problems and implications of overlapping affective dispositions. *Psychological Bulletin*, 131(2), 260–300.
- Swider, B.W., & Zimmerman, R.D. (2010). Born to burnout: A meta-analytic path model of personality, job burnout, and work outcomes. *Journal of Vocational Behavior*, 76(3), 487–506.
- Takai, M., Takahashi, M., Iwamitsu, Y., Ando, N., Okazaki, S., Nakajima, K., et al. (2009). The experience of burnout among home caregivers of patients with dementia: Relations to depression and quality of life. *Archives of Gerontology and Geriatrics*, 49(1), e1–e5.
- Taris, T.W. (2006a). Bricks without clay: On urban myths in occupational health psychology. *Work & Stress*, 20(2), 99–104.
- Taris, T.W. (2006b). Is there a relationship between burnout and objective performance? A critical review of 16 studies. *Work & Stress*, 20(4), 316–334.
- Tennant, C. (2001). Work-related stress and depressive disorders. *Journal of Psychosomatic Research*, 51(5), 697–704.
- Thase, M.E. (2009). Neurobiological aspects of depression. In I.H. Gotlib, & C.L. Hammen (Eds.), *Handbook of depression* (pp. 187–217) (2nd ed.). New York, NY: Guilford Press.
- Thomas, N.K. (2004). Resident burnout. *Journal of the American Medical Association*, 292(23), 2880–2889.
- Toker, S., & Biron, M. (2012). Job burnout and depression: Unraveling their temporal relationship and considering the role of physical activity. *Journal of Applied Psychology*, 97(3), 699–710.
- Toker, S., Melamed, S., Berliner, S., Zeltser, D., & Shapira, I. (2012). Burnout and risk of coronary heart diseases: A prospective study of 8838 employees. *Psychosomatic Medicine*, 74(8), 840–847.
- Toker, S., Shapira, I., Berliner, S., Melamed, S., & Shirom, A. (2005). The association between burnout, depression, anxiety, and inflammation biomarkers: C-reactive

- protein and fibrinogen in men and women. *Journal of Occupational Health Psychology*, 10(4), 344–362.
- Toppinen-Tanner, S., Ahola, K., Koskinen, A., & Väänänen, A. (2009). Burnout predicts hospitalization for mental and cardiovascular disorders: 10-year prospective results from industrial sector. *Stress and Health*, 25(4), 287–296.
- Toppinen-Tanner, S., Ojajarvi, A., Väänänen, A., Kalimo, R., & Jäppinen, P. (2005). Burnout as a predictor of medically certified sick-leave absences and their diagnosed causes. *Behavioral Medicine*, 31(1), 18–32.
- Tops, M., Boksem, M.A.S., Wijers, A.A., van Duinen, H., Den Boer, J.A., Meijman, T.F., et al. (2007). The psychobiology of burnout: Are there two different syndromes? *Neuropsychobiology*, 55(3–4), 143–150.
- Tops, M., Riese, H., Oldehinkel, A. J., Rijdsdijk, F. V., & Ormel, J. (2008). Rejection sensitivity relates to hypocortisolism and depressed mood state in young women. *Psychoneuroendocrinology*, 33(5), 551–559.
- Tops, M., van Peer, J.M., Wijers, A.A., & Korf, J. (2006). Acute cortisol administration reduces subjective fatigue in healthy women. *Psychophysiology*, 43(6), 653–656.
- Tourigny, L., Baba, V. V., & Wang, X. (2010). Burnout and depression among nurses in Japan and China: The moderating effects of job satisfaction and absence. *The International Journal of Human Resource Management*, 21(15), 2741–2761.
- Tselebis, A., Moulou, A., & Ilias, I. (2001). Burnout versus depression and sense of coherence: Study of Greek nursing staff. *Nursing & Health Sciences*, 3(2), 69–71.
- Ursin, H., & Eriksen, H.R. (2004). The cognitive activation theory of stress. *Psychoneuroendocrinology*, 29(5), 567–592.
- Van Dam, A., Keijsers, G., Verbraak, M., Eling, P., & Becker, E. (2013). Level and appraisal of fatigue are not specific in burnout. *Clinical Psychology & Psychotherapy* Online first publication (September 11). <http://dx.doi.org/10.1002/cpp.1869>.
- Virginia, S. G. (1998). Burnout and depression among Roman Catholic secular, religious, and monastic clergy. *Pastoral Psychology*, 47(1), 49–67.
- Waldman, S. V., Diez, J. C. L., Arazi, H. C., Linetzky, B., Guinjoan, S., & Grancelli, H. (2009). Burnout, perceived stress, and depression among cardiology residents in Argentina. *Academic Psychiatry*, 33(4), 296–301.
- Wang, J. (2005). Work stress as a risk factor for major depressive episode(s). *Psychological Medicine*, 35(6), 865–871.
- Wang, J., Smailes, E., Sareen, J., Schmitz, N., Fick, G., & Patten, S. (2012). Three job-related stress models and depression: A population-based study. *Social Psychiatry and Psychiatric Epidemiology*, 47(2), 185–193.
- Warr, P. (1987). *Work, unemployment and mental health*. Oxford, United Kingdom: Oxford University Press.
- Weber, A., & Jaekel-Reinhard, A. (2000). Burnout syndrome: A disease of modern societies? *Occupational Medicine*, 50(7), 512–517.
- Wheatland, R. (2005). Chronic ACTH autoantibodies are a significant pathological factor in the disruption of the hypothalamic–pituitary–adrenal axis in chronic fatigue syndrome, anorexia nervosa and major depression. *Medical Hypotheses*, 65(2), 287–295.
- Whitebird, R. R., Asche, S. E., Thompson, G. L., Rossom, R., & Heinrich, R. (2013). Stress, burnout, compassion fatigue, and mental health in hospice workers in Minnesota. *Journal of Palliative Medicine*, 16(12), 1534–1539.
- World Health Organization (1992). *The ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines*. Geneva, Switzerland: Author.
- Young, C., Fang, D., Golshan, S., Moutier, C., & Zisook, S. (2012). Burnout in premedical undergraduate students. *Academic Psychiatry*, 36(1), 11–16.
- Zhong, J. I. E., You, J., Gan, Y., Zhang, Y., Lu, C., & Wang, H. (2009). Job stress, burnout, depression symptoms, and physical health among Chinese university teachers. *Psychological Reports*, 105(3F), 1248–1254.