

# Chapter 8

## Burnout: Risk Factors

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### 8.1 Introduction

Risk factors are the internal or external causes that increase an individual's chance of developing a disease. Factors that contribute to workplace problems and burnout have been widely discussed over the years (Maslach 2003). Because burnout was originally described in professional or volunteer health caregivers, the effects of providing care to patients and their families have been widely studied (Bakker et al. 2006).

As mentioned in previous chapters, there are three major models for the development of the burnout process. These models imply a causal relationship between the dimensions of burnout. The first one is proposed by Golembiewski and colleagues. In this model, it is suggested that burnout progresses from depersonalization through lack of personal accomplishment to emotional exhaustion (Gil-Monte et al. 1993). The phase model of Golembiewski and colleagues permits the generation of eight logically possible combinations, called phases. The model proposes that the succeeding phases are progressively virulent, from depersonalization to emotional exhaustion. Therefore, individuals with low levels of burnout would tend to report low scores in each of the three subdomains. As the level of burnout increases, the mean score for the subdomain of depersonalization would increase first, followed next by an increase in the score for (lack of) personal accomplishment, and finally by an increase in the subdomain score for emotional exhaustion. At a high level of burnout, the mean scores for all three subdomains would be high (Gryskiewicz and Buttner 1992).

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The second model was developed by Leiter and Maslach and states that burnout progresses from emotional exhaustion through depersonalization to lack of personal accomplishment (Gil-Monte et al. 1998). In this model, chronic high job demands are presumed to trigger emotional exhaustion as an individual stress response. In turn, high levels of emotional exhaustion would lead workers in both contactual professions (i.e., professions in which contact with other people constitutes a major part of the tasks) and noncontactual professions to withdraw themselves psychologically from the people they work with (for contactual professions) and their work (for non-contactual professions) in an attempt to cope with these stressors (Taris et al. 2005).

The third model, developed by Lee and Ashforth, states that emotional exhaustion can be positively related to depersonalization, but personal accomplishment developed independently of depersonalization; rather, they proposed that elevated levels of emotional exhaustion directly evoked decreases in personal accomplishment rather than indirectly through depersonalization (Taris et al. 2005).

Maslach and Leiter (1997) outlined six major influences on burnout:

1. Workload and its intensity, time demands, and complexity.
2. Lack of control of establishing and following day-to-day priorities.
3. Insufficient reward and the accompanying feelings of continually having to do more with less.
4. The feeling of community, in which relationships become impersonal and teamwork is undermined.
5. The absence of fairness, in which trust, openness, and respect are not present.
6. Conflicting values, in which choices that are made by management often conflict with their mission and core values (Ghorpade et al. 2007).

These are all external to the individual with burnout. However, there are individuals working in the same conditions who burn out while others do not. Although the current literature indicates the possibility that stressful aspects of the work environment are more important predictors of burnout than is personality (Maslach and Leiter 1997), it is important for researchers to consider individual variation (Pick and Leiter 1991). Thus, in addition to the factors associated with working conditions and job settings leading to burnout, personal characteristics and factors related to psychosocial features are also taken into consideration. In this chapter the risk factors associated with burnout will be overviewed.

## 8.2 Environmental Risk Factors for Burnout

The environmental risk factors are the risk factors external to the individual. In terms of environmental risk factors working conditions and job settings are predominantly investigated. When burnout was first described, stress had been regarded as an occupational hazard (Jennings 2008) where both the working conditions, such as interpersonal relationships, work hours, and job settings such as physical labor, daylight are heeded.

## 8.2.1 *Job Settings as Risk Factors for Burnout*

Job settings are changing and becoming more difficult as a result of globalization and increasing competition (D'Souza et al. 2003). The combination of high job demands and low control, termed job strain, has been linked to a wide range of mental and physical health outcomes. Maslach and Leiter pointed out risk factors for burnout, which comprise mainly problems of job settings (Maslach and Leiter 1997). In this section, the nature of the organization, such as work overload, insufficient reward, and the role/position of the employee, such as absence of fairness, job insecurity in this organization are evaluated.

### 8.2.1.1 Work Overload

From the organization's perspective, workload means productivity (Maslach and Leiter 1997). However from the individual's perspective workload means time and energy (Maslach and Leiter 1997). Currently, workload is handled in three ways: work is more intense, it demands more time, and it is more complex. To increase productivity in the organizations, staff members should work with greater effort at the cost of having no break (Maslach and Leiter 1997). Staff members have longer working hours and try to keep up with overwhelming demands (Maslach and Leiter 1997). At the same time staff members take on more roles simultaneously, that is, jobs require multitasking (Maslach and Leiter 1997).

Almost all studies on the effect of working hours on employees' health revealed adverse effects indicating a tendency toward burnout (Tennant 2001). In a study where managerial employees were investigated, work-related stresses such as workload and role ambiguity were found to predict depressive symptoms, which are associated with burnout (Heinisch and Jex 1997). In cancer care workers consisting of physicians, radiographers, nurses, physicists, job stress is predominantly associated with "too much office work," "time pressure," "permanently ringing telephones," and "high physical workload" (Sehlen et al. 2009). In another study with cancer clinicians, "feeling overloaded and its effect on home life" makes the greatest contribution to overall job stress, followed by "having organizational responsibilities and conflicts." Both emotional exhaustion and depersonalization are strongly associated with being overloaded (Ramirez et al. 1995). In Japan, poor working conditions, especially overwork, are strongly related to dissatisfaction and burnout among physicians (Tokuda et al. 2009). In the Physician Work Life study, odds increased by 12–15% for each additional 5 h worked per week over 40 h (McMurray et al. 2000). In another study investigating satisfaction in general internal medicine, burnout is strongly associated with long work hours and work–home interference in both the United States and The Netherlands (Linzer et al. 2001). High volume of work, with inadequate staff to do the job properly, leads to pressure to make deadlines, conflicting demands on time, and disruption of home life as a result of extended work hours (Grunfeld et al. 2000). In terms of risk factors associated with different burnout types, the variables "number of hours worked per week" and "contract

type” showed significance in the adjusted model for the “*frenetic*” (“Frenetic” type burnout refers to a category of subjects that are very involved and ambitious and who overload themselves to fulfill the demands of their jobs) burnout subtype (Montero-Marín et al. 2011). In direct care workers work overload is also associated with burnout (Gray-Stanley and Muramatsu 2011). Vigor (means enthusiasm in this particular study) and exhaustion are not connected, whereas cynicism and dedication are negatively correlated (Makikangas et al. 2011). Furthermore, the risk of acute myocardial infarction is increased by unusually long working hours, even within the year preceding the infarction (Sokejima and Kagamimori 1998).

### 8.2.1.2 Lack of Control

In professional life, individuals have control over important dimensions of their job by setting priorities for day-to-day work, selecting approaches to doing work, and making decisions about the use of resources in order to keep autonomy and involvement with work (Maslach and Leiter 1997). Dimensions of job control, such as decision authority (i.e., decision latitude concerning one’s work pace and phases, and independence from other workers while carrying out tasks) and skill discretion (i.e., the level of cognitive challenges and variety of tasks at work), could contribute differently to health outcomes. Furthermore, predictability on the job (i.e., the clarity of work goals and opportunity to foresee changes and problems at one’s work) has been suggested to represent a further component of job control (Vaananen et al. 2008). However, without control, individuals cannot balance their interests with those of the organization (Maslach and Leiter 1997). Inability to anticipate and foresee future changes may have become a particularly salient health risk factor in today’s rapidly changing work life. Future-oriented understanding of the whole work process might make one’s work more meaningful, decreasing the risk of chronic strain (Vaananen et al. 2008).

Poor work control is strongly related to dissatisfaction and burnout among physicians (Williams and Skinner 2003). In a study of Japanese physicians, poor work control and heavy on-call duty are directly associated with job dissatisfaction and short sleeping time and indirectly associated with burnout and poor mental health (Tokuda et al. 2009). Limited job autonomy is related to emotional exhaustion and reduced interest in tasks or activities (Kowalski et al. 2010). In a study of direct care workers, burnout was significantly associated with low participation in decision-making (Gray-Stanley and Muramatsu 2011).

### 8.2.1.3 Insufficient Reward

Individuals hope that their jobs bring them the material rewards of money, prestige, and security, but because of the economic crisis, the capacity of the organizations to reward their employees is reduced (Maslach and Leiter 1997). Moreover, employees have to work even harder, even though they get less, in order to keep their job.

This lack of reward causes the loss of intrinsic satisfaction that contributes to the exhaustion, cynicism, and lack of effectiveness that characterize burnout (Maslach and Leiter 1997). In cancer care workers, underpayment is one of the sources of burnout. Moreover, they do not get free time compensation for working long hours, which contributes to burnout (Sehlen et al. 2009).

#### 8.2.1.4 Breakdown of the Community

In a workplace, all the workers constitute a community where members are supposed to be supportive to each other and share the same goals of the organization. Owing to the breakdown of community at work, the personal relationships in an organization are fragmented, and the teamwork is undermined (Maslach and Leiter 1997). Social and organizational support among team members decreases conflicts and increases productivity at work.

Problematic relationships among team members are shown to increase burnout (Demir et al. 2003). In a study of 260 nurses, conflict with physicians was found to be more psychologically damaging than conflict within the nursing profession (Hillhouse and Adler 1997). However, a study exploring verbal abuse among 213 nursing personnel found the most frequent source of abuse was other nurses (Rowe and Sherlock 2005). Families were the second most frequent source of abuse, while physicians ranked third. However, high social support among team members is related to low burnout and low stress (Hillhouse and Adler 1997). Regarding the relationship between staff nurses and nurse managers, supervisor support and quality of supervision is crucial. In a qualitative study of 50 nurses conducted in the UK, managers were identified as a direct cause of stress (Taylor et al. 1999). Group cohesion was higher and job stress lower when nurse managers used a more participative management style (Leveck and Jones 1996). Social resources, such as support from supervisors or colleagues, are associated with low levels of burnout among direct care workers (Devereux et al. 2009). Alexithymic personality features (a personality construct characterized by impoverishment of fantasy, a poor capacity for symbolic thought, and difficulties in experiencing and verbalizing emotions) impair the individuals' capacity to receive and benefit from social support and, on the other hand, make them more vulnerable to interpersonal difficulties at work causing occupational burnout (Mattila et al. 2007).

#### 8.2.1.5 Absence of Fairness

Fairness is an organizational justice where the employees maintain equity between the inputs and receive according to their contribution (Maslach 2003). When an organization acts fairly, it values every person who contributes to its success; it indicates that every individual is important. The three elements of fairness—trust, openness, and respect—are essential to maintaining a person's engagement with work. In contrast, their absence contributes directly to burnout (Maslach and Leiter 1997).

In a study of Nigeria police, perceived workplace fairness was a stronger predictor of emotional exhaustion (Adebayo et al. 2008). Individuals who display a workplace incongruity in the area of fairness developed burnout in time, while those without this incongruity moved toward engagement (Maslach and Leiter 2008).

### 8.2.1.6 Conflicting Values

Values influence everything about the relationships with work. The primary values guiding customer service are to be efficient, accurate, personal, and adapted to the individual. The current crisis forces organizations to make choices that are inconsistent with their core values and those of its staff members. Thus, customer service values are negatively affected. To some extent there is a mismatch between means and ends because the value clarification process is incomplete. With organizational missions and strategies changing and often conflicting, it is not surprising that people often work at cross-purposes. At the end, a large number of well-intentioned, talented, and dedicated people find themselves stuck (Maslach and Leiter 1997).

### 8.2.1.7 Job Insecurity

While the crisis in the work environment reduces employment, the labor force is also declining because of the use of automation technology. As a result job insecurity and expected insufficient income threaten all employees (Maslach and Leiter 1997). Insecure jobs were also more likely to be accompanied by lower job control, higher job demands, and poor workplace social support (Cheng et al. 2005). Job insecurity is associated with a deterioration of psychological health (i.e., leading to psychological distress, psychosomatic complaints, psychological withdrawal, and burnout) (Dekker and Schaufeli 1995). In a study of employees of financial institutions in Guateng, job insecurity demonstrated a relationship with increased levels of burnout and decreased levels of organizational commitment and was found to hold predictive value with regard to exhaustion, cynicism, and reduced professional efficacy, as well as reduced affective and normative commitment (Bosman et al. 2005a). Furthermore, negative affectivity interacts with job insecurity to influence the burnout and work engagement of employees (Bosman et al. 2005b). On the contrary, intrinsic motivation is an important factor in the prevention of the breakthrough of the negative cycle of burnout in the context of a decrease in job resources (ten Brummelhuis et al. 2011).

## 8.2.2 Working Conditions as Risk Factors for Burnout

The physical conditions and environment of the organizations have the potential to directly or indirectly affect the health of the individuals. Working conditions are changing in parallel with the technical improvements (Smith et al. 1999).

Most of the works in the work places are automated and the offices are getting smaller and artificially illuminated. These changes possibly cause adjustment problems.

### 8.2.2.1 Human–Computer Interaction

Because of the technical improvements in the work settings, human–computer interactions increase and a high level of stress is observed in the automated jobs (Smith et al. 1999). Even though computers make the jobs simpler and less challenging, the production demands can be high, with constant work pressure and few decision-making possibilities (Smith and Carayon 1995). Moreover, the introduction of computers into the workplace was associated with substantial changes in the work processes, social relationships, management style, and the nature and content of job tasks causing job dissatisfaction and distress (Smith et al. 1999). High use of information and communication technology causes mental overload, neglect of other activities and personal needs, time pressure, role conflicts, guilt feelings, social isolation, physical symptoms, worry about electromagnetic radiation, and economic problems. Furthermore, vulnerability, misunderstandings, altered values, and feelings of inadequacy are consequently seen in technology users (Thomée et al. 2010). In companies with low employee participation in the implementation, there is a significant increase in psychosomatic complaints and a significant decrease in job satisfaction after technology implementation. Job satisfaction increases when the work with new technology is diversified and calls for high-skill qualifications, but tends to decrease for employees with low-skill qualifications who are doing monotonous work on a visual display (work in front of computer monitors requiring pursuit, reaction, response of the worker) units (Korunka et al. 1996). Training has the added benefit of enhancing employee self-esteem, and reinforces the employees' confidence in employment stability and their value to the company (Smith et al. 1999).

### 8.2.2.2 Involvement with People

Freudenberger originally used the concept of burnout itself to characterize the psychological state of volunteers who worked in alternative health care situations. In interpersonally demanding jobs (e.g., emotionally demanding “helper” roles or jobs that deal with people in stressful situations), individuals tend to have less satisfaction with their work and experience burnout (Emanuel et al. 2011). Human service professionals are generally at relatively high risk of burnout. That circumstance is because they are very often confronted with emotionally demanding relationships with the recipients of their care (Schaufeli 2003). Dealing with chronically ill, incurable, or dying patients, with a potential lack of hope, can create burnout (Olkinuora et al. 1990). Caregivers working with victims of violence carry a high risk of suffering from burnout and vicarious traumatization (Pross 2006). In a study of nurses, it is reported that client-related burnout was most closely associated with “conflict with patients,” and that either “personal



relationships at the workplace” or “conflict with patients” elevates the score for the other factors, resulting in an increase in client-related burnout (Shimizutani et al. 2008). Furthermore, in a prospective study on burnout, role conflict was negatively associated with client-related burnout after 3 years, as well as emotional demands, demands for hiding emotions, and meaning of work (Borritz et al. 2006).

### 8.2.2.3 Daylight

Artificial and inadequate illumination is one of the major problems in work settings. Adequate illumination or daylight exposure has positive effects on mood (Terman et al. 1996). Even though no relationship between burnout levels and hours of daylight exposure has been found, an indirect correlation via work stress and job satisfaction can be seen between daylight and burnout (Alimoglu and Donmez 2005). Furthermore, increased medical errors in midwinter compared with fall among nurses are speculated to be caused by darkness via the psychological status (e.g., burnout, work stress and satisfaction) of the nurses (Alimoglu and Donmez 2005).

### 8.2.2.4 Shift Work

Shift work means providing a round-the-clock service in an occupation, with a cost of causing desynchronization with society’s physiological and social rhythms, making the employees’ lives monotonous (Jamal and Baba 1997). A significant amount of the labor force is engaged in shift work. In a study on Canadian nurses, shift work is related to psychosomatic health problems, reduced skill use, diminished job satisfaction, loss of intrinsic motivation and absenteeism, but not with burnout (Jamal and Baba 1997). Rotating shift workers are suggested to hold less positive job attitudes, such as job satisfaction, organizational commitment and experience more work–home conflicts (Demerouti et al. 2004). However, emotional exhaustion is observed less frequently than expected (Demerouti et al. 2004). Rotating shift work causes disruption of social life, which deserves attention.

### 8.2.2.5 Ambient Noise

Noise in the working environment is a source of stress for the workers. Healthcare workers in the emergency rooms or intensive care units are exposed to high levels of ambient noise. Topf and Dillon (1988) found that, for 100 critical care nurses, noise-induced occupational stress was positively related to emotional exhaustion and burnout. However, this noise-induced stress was linked with intrinsic sensitivity to noise. Another survey of 100 critical care nurses found that less commitment to work was significantly linked to greater subjective disturbance due to hospital noise (Topf 1989). Permanent ringing of the telephone is the major source of burnout among cancer care nurses (Sehlen et al. 2009).



### 8.2.2.6 Overcrowding

Overcrowding is one of the major ambient stressors, especially in job settings like emergency rooms. Overcrowding in emergency departments has significant implications for quality of care, staff burnout and patient and staff satisfaction (Richardson et al. 2005). In a study of Romanian emergency department workers, a high risk of burnout was shown that was linked to high patient flow and emergency department crowding (Popa et al. 2010).

## 8.3 Individual Risk Factors for Burnout

For any burnout process, knowledge of the individual characteristics implicated in the etiology of burnout is of considerable importance. Although the current literature indicates the possibility that stressful aspects of the work environment are more important predictors of burnout than personality, it is important for researchers to consider individual variation (Pick and Leiter 1991). Reactions to stress can vary depending on the adaptability of individuals or on the coping strategies employed by them, and are therefore quite personal in nature (Shimizutani et al. 2008). Individual characteristics implicated in the etiology of burnout are composed of personality traits, predisposition to psychiatric disorders, and biological susceptibility such as genetic factors or biomarkers.

### 8.3.1 Personality Traits as Risk Factors for Burnout

Hobfoll (1989) suggested that the way people respond to challenges from their environment can be seen as a function of their personality, constitution, perceptions, and the context in which the stressor occurs. If personality is identified as a resource (Alarcon et al. 2009), individuals with fewer resources are more vulnerable to resource loss and less capable of resource gain (Alarcon et al. 2009). In the explanation of personality predispositions, some personality traits may self-select into highly stressful occupations while some other personality traits may predispose individual employees to experience stressors more intensely (Armon et al. 2011). Personality traits described as being associated with burnout are low levels of hardiness, external locus of control, passive defensive coping styles, low self-esteem, neuroticism (anxiety, hostility, depression, self-consciousness, impulsiveness, vulnerability), type A behavior (competitive, time-pressured, hostile, and with an excessive need for control), introversion, perfectionism, and sensitivity (Gustafsson et al. 2009). Among the personality traits, both neuroticism and the five basic personality factors, also known as the Big Five factors (i.e. extraversion, agreeableness, conscientiousness, emotional stability, and intellect/autonomy), of the personality are the most frequently studied in the burnout literature (Bakker et al. 2006) Even

though most of the personality traits that will be discussed below cause risk in the development of burnout, the other personality traits are associated with resilience.

### 8.3.1.1 Neuroticism

A tendency to experience negative, distressing emotions and to possess associated behavioral and cognitive traits characterizes neuroticism. Among the traits that classify this dimension are fearfulness, irritability, low self-esteem, social anxiety, poor inhibition of impulses, and helplessness (Costa and McCrae 1987). People high in neuroticism seem to use avoiding and distracting coping strategies, such as denying, wishful thinking, and self-criticism, rather than more approaching strategies, such as problem-solving and proactive behavior (Bakker et al. 2006). According to Langelaan et al. (2006), neuroticism dominates the picture in studies of burnout. Neuroticism moderated the detrimental impact of daily hassles. People with anxiety and neuroticism perceive their work environment as more threatening, with negative emotions due to daily problems (Schneider 2004) and may, for example, react in a highly emotional way in stressful situations (Bakker et al. 2006). Neuroticism and a low degree of extroversion appear to be the most important factors for predicting burnout (Bakker et al. 2006; Gustafsson et al. 2009). Armon and colleagues (2011) reported that the emotional facet of burnout was found to be significantly associated with neuroticism. Neuroticism has been associated with exhaustion (Buhler and Land 2003). In a study of nurses, neuroticism is relatively strongly associated with all scales for burnout, namely personal burnout, work-related burnout, and client-related burnout (Shimizu et al. 2008). In a study of doctors, it is reported that doctors with greater stress and emotional exhaustion, who were less satisfied with medicine as a career, had higher neuroticism scores (McManus et al. 2004). Those who are highly neurotic are more likely to report feelings of emotional exhaustion, lower levels of personal achievement, and, if healthcare providers, to dehumanize (i.e. removing from a client or patient their special human qualities) their patients (depersonalization) (Bakker et al. 2006).

### 8.3.1.2 Extraversion

Extraversion is characterized by a tendency to be self-confident, dominant, active, and excitement-seeking. Extroverts show positive emotions, higher frequency and intensity of personal interactions, and a higher need for stimulation. In addition, extraversion is, in general, associated with a tendency to be optimistic and to reappraise problems positively (Bakker et al. 2006). Extraversion is negatively associated with emotional exhaustion (Michielsen et al. 2004). The tendency of extroverts to seek interactions with other people may also counteract processes of depersonalization (Bakker et al. 2006). Indeed, Lingard (2003) reported social extraversion and action extraversion to be negatively associated with cynicism among civil engineers. Bakker and colleagues (2006) have found extraversion to be the most

consistent predictor of burnout in addition to neuroticism. The tendency to engage in intense personal interactions among extroverts may counteract depersonalization, whereas their optimism and self-confidence (Costa and McCrae 1992) are expressed in increased feelings of personal accomplishment. Bakker et al. (2006) also reported that extraversion and agreeableness particularly correlated positively with personal accomplishment when volunteers were confronted with many stressful experiences. Individuals high in extraversion may generally perceive the work environment more positively than do individuals who have a low level of extraversion (Lau et al. 2006). Ghorpade and colleagues (2007) found that emotional exhaustion is negatively related to extraversion and personal accomplishments are positively related to extraversion. However, Gustafsson and colleagues (2009) show that the levels of extraversion are fairly similar in the nonburnout and burnout groups.

### 8.3.1.3 Agreeableness

Agreeable persons are altruistic, courteous, flexible, cooperative, good-natured, and tolerant (Ghorpade et al. 2007). Agreeableness is the extent to which one is cooperative, caring, trusting, and sympathetic toward others (Costa and McCrae 1992). Agreeable employees are expected to behave in ways that evoke favorable responses from their social environments (Alarcon et al. 2009). Agreeableness correlates negatively with emotional exhaustion and positively with personal accomplishment (Piedmont 1993), and is negatively related to depersonalization (Deary et al. 2003). Because a high level of agreeableness reflects favorable perceptions of people in general, agreeable individuals are unlikely to experience negative responses (e.g. depersonalization) toward people in specific domains, such as the workplace (Alarcon et al. 2009). However, Zellars and colleagues (2000) found an admittedly weak negative relationship between agreeableness and depersonalization and no relationship between agreeableness and the two other burnout variables. Bakker et al. (2006) also reported that extraversion and agreeableness particularly correlated positively with personal accomplishment when volunteers were confronted with many stressful experiences.

### 8.3.1.4 Openness

Openness reflects the extent to which one desires uniqueness, change, and variety (Costa and McCrae 1992). Individuals high in openness are imaginative, independent thinkers, who are tolerant of ambiguity, and are amenable to new experiences and ideas (Alarcon et al. 2009). Openness to experience has been related to the use of humor as a way of dealing with stress (McCrae and Costa 1986). A modest but significant positive relationship between openness and personal accomplishment has been reported (Deary et al. 1996), and a negative relationship between openness and depersonalization (Zellars et al. 2000). Deary et al. (2003) noted that nurses with more open personalities were more likely to be emotionally exhausted.

The characteristics of nonburnout individuals are described as having a balanced openness and spontaneity toward others without being overwhelmed by feelings and not being over sentimental or sensitive when dealing with the world, whereas openness to changes and anxiety are of importance for inclusion in the burnout group (Gustafsson et al. 2009).

### 8.3.1.5 Conscientiousness

Conscientiousness is characterized by careful planning, effective organization, and efficient time management, allowing individuals to accomplish more in the time available. Conscientious individuals tend to use proactive, rational, problem-focused coping, further reducing the likelihood of depleting their resources in managing work-related stresses (Armon et al. 2011). Conscientiousness is associated with self-discipline, achievement striving, dutifulness, and competence. Employees with a high level of conscientiousness who are exposed to stressors may actively manipulate their work environments in ways that reduce or eliminate stressful working conditions. Those with a low level of conscientiousness, on the other hand, may engage in few behaviors that actively address such stressors (Alarcon et al. 2009). There is a positive relationship between conscientiousness, and personal accomplishment and depersonalization (Deary et al. 2003; Ghorpade et al. 2007), and a negative relationship between conscientiousness and emotional exhaustion (LePine et al. 2004).

### 8.3.1.6 Negative Affectivity

Positive affectivity is the general tendency to experience positive emotional states such as happiness, excitement, and energy, whereas negative affectivity is the tendency to experience negative emotional states such as sadness, anxiety, and hostility (Watson et al. 1988). Workers who are high in negative affectivity may be predisposed to perceive their work environment as being unpleasant or stressful (Connolly and Viswesvaran 2000). Indeed, research has found that negative affectivity is negatively related to burnout and that negative affectivity is positively related to perceptions of work stressors (Connolly and Viswesvaran 2000). Workers with a high level of negative affectivity may generally express negative emotions at work (e.g., anger, anxiety), which in turn could evoke unfavorable interpersonal responses from supervisors, coworkers, or customers (Alarcon et al. 2009). Alarcon and colleagues (2009) also reported that positive affectivity and negative affectivity had relatively strong relationships with emotional exhaustion and depersonalization. On the other hand, general self-efficacy and positive affectivity yielded stronger relationships with personal accomplishment. They also suggest that positive affectivity consistently yielded stronger relationships with emotional exhaustion, depersonalization, and reduced personal accomplishment than did extraversion, which means that positive affectivity and extraversion are very different variables.

### 8.3.1.7 Hardiness

Hardiness is a constellation of personality characteristics that includes commitment, control, and challenge (Kobasa et al. 1982). Hardiness is a personality construct that reflects the extent to which a person is able to endure stressors without experiencing ill effects, such as psychological or physical strains (Kobasa 1979). Hardy individuals tend to believe that they can control the events that happen to them, they generally perceive stressors as challenges rather than as threats, and they have several life domains (e.g., family, friends, religion) that they feel committed to (Alarcon et al. 2009). One of the aspects of personality considered to function as a protective factor is hardiness (Garrosa et al. 2008). Because hardiness influences problem-focused coping strategies, hardy individuals are likely to manipulate or transform their work environments in ways that reduce or eliminate stressors (Alarcon et al. 2009). It is important to find a balance between hardiness and sensitivity in order to avoid burnout (Gustafsson et al. 2009). Hardiness is associated with less demoralization and a greater sense of accomplishment (Emanuel et al. 2005). Alarcon and colleagues (2009) reported that hardiness yielded relatively strong negative relationships with all three dimensions of burnout.

### 8.3.1.8 Locus of Control

Individuals with an internal locus of control are more likely to approach work stressors with a problem-solving, proactive focus, and adapt to problems, whereas those with an external locus of control were more likely to succumb to the effects of stress. Thus, a significant interaction between an internal locus of control and work stress was found (Koeske and Kirk 1995). The association between locus of control orientation and burnout depended on the degree of participation in decision-making (Gray-Stanley and Muramatsu 2011). Individuals possessing an internal locus of control are more likely to assume situational responsibility and employ problem-solving and other practical coping strategies to cope in positive ways (Koeske and Kirk 1995) when feelings of exclusion or marginalization from the official organizational decision-making processes are experienced (Gray-Stanley and Muramatsu 2011). Locus of control effects depended on the levels of workloads, and was associated with less burnout for workers perceiving lower workload levels. Locus of control lessened burnout when workload was low also suggests limits to internal control resources. An internal locus of control may not be sufficient to counter perceptions of a heavy workload. As a result it is suggested that possessing an internal locus of control orientation can be of value in the workplace (Gray-Stanley and Muramatsu 2011).

### 8.3.1.9 Alexithymia

Alexithymia is thought to reflect a deficit in the cognitive processing of emotion, and alexithymics are thought to lack the capacity for mental representation of

emotions, and to be unable to regulate emotions and affects (Mattila et al. 2007). It is suggested that alexithymia might have a direct effect on burnout as well as an indirect effect mediated by depression. Since alexithymia is a predictor of adjustment difficulties, it is a predisposing factor to burnout due to inadequate coping with occupational stress (Mattila et al. 2007). Bratis and colleagues (2009) reported that alexithymia and depression are associated with burnout. It is concluded that alexithymic personality features impair the individual's capacity to receive and benefit from social support and, on the other hand, make them more vulnerable to interpersonal difficulties at work.

### 8.3.1.10 Type A Behavior

The label "Type A behavior" is used to describe a behavioral pattern combining ambition, competitiveness, time urgency, impatience, and hostility (Hallberg et al. 2007). Hallsten and colleagues (2005) describe Type A behavior as an "anxious engagement." Type A behavior has been previously linked to over-achievement in approaching and managing tasks (Hallberg et al. 2007). The Type A construct has two principal dimensions, achievement striving and irritability/impatience (Day and Jreige 2002; Mellam and Espnes 2003). Type A individuals are likely to perceive the work environment negatively, independent of the objective nature of one's job, and to perceive even minor or accidental slights as major injustices, to evoke negative responses from co-workers, and to manipulate their jobs in ways that produce stressors (Alarcon et al. 2009). Theoretically, it is plausible that irritable and impatient behavior increases under pressure. If so, Type A individuals may be "initially" highly engaged in work, but become more irritable and impatient when subjected to work stress. Irritability/impatience may then function as an additional stressor, inducing burnout (Hallberg et al. 2007). Employees who are prone to frequent achievement striving behavior are more likely to be engaged in their work, but they did not report burnout complaints, indicating that achievement striving is a "non-toxic" component of Type A behavior. Irritable and impatient behavior may exhaust one's mental resources and induce emotional exhaustion and cynicism. Irritability/impatience would be negatively associated with work engagement (Hallberg et al. 2007). Autonomy may moderate harmful effects of Type A behavior (Hallberg et al. 2007). Alarcon and colleagues (2009) found that Type A personality was related to personal accomplishment, but unexpectedly it was unrelated to emotional exhaustion and depersonalization, since type A individuals are supposed to include separate dimensions of achievement striving and irritability/anger (Edwards et al. 1990).

### 8.3.1.11 Type D Behavior/Personality

Individuals with a Type D personality tend to experience increased negative emotions, while at the same time inhibiting these emotions in social situations to avoid rejection or disapproval (Mommersteeg et al. 2012). The negative affectivity

component of the Type D construct was predictive of the emotional exhaustion and personal accomplishment subscales of the Maslach Burnout Inventory in healthcare professionals (Oginska-Bulik 2006). Mommersteeg and colleagues (2012) reported that type D personality was related to higher levels of the burnout subscales exhaustion, depersonalization, and reduced personal accomplishment. The negative affectivity component showed the strongest relation with exhaustion, whereas social inhibition showed no significant relation. When controlling for confounders, the relation among Type D personality, burnout, and disability pension remained, but the relation with sick leave was no longer significant. The social inhibition component of the Type D personality scale has added value in explaining burnout, possibly affecting interpersonal communication. Type D personality precedes both depression and burnout (Mommersteeg et al. 2012).

### 8.3.1.12 Perfectionism

Perfectionism may be defined as the disposition to regard anything short of perfection as unacceptable. Setting high standards for oneself and the level of concern over making mistakes in performance are the two most important dimensions studied in burnout research. Setting high standards for oneself is the self-directed form of perfectionism, whereas concern over making mistakes is the socially prescribed form of perfectionism. Perfectionism is associated with a higher burnout risk because a perfectionist behavioral pattern drains a person's mental energy and seems to be associated with workaholism (Taris et al. 2010). The effect of concern over mistakes on emotional exhaustion was indeed mediated through workaholism (Taris et al. 2010). The effects of personal characteristics on burnout are about as strong as or even stronger than that of often-studied concepts such as job demands and job control (De Lange et al. 2003). As a result perfectionists are more vulnerable to burnout.

### 8.3.1.13 Dispositional Optimism

Dispositional optimism is the general tendency to believe that good things will occur in the future and that bad things will not occur. Pessimists may perceive the same stressors as enduring conditions that are unlikely to change, resulting in burnout (Alarcon et al. 2009). Optimists are more likely to engage in behaviors aimed at actively reducing or eliminating work stressors. Optimism is negatively associated with the dimensions of burnout.

### 8.3.1.14 Proactive Personality

Proactive personality is defined as a person who is relatively unimpeded by situational forces and subsequently alters the environment. Proactive people scan for



opportunities, take action, show initiative, and persevere until they produce change or reach closure or relieve stress. Proactive personality is negatively associated with the dimensions of burnout (Alarcon et al. 2009).

### 8.3.1.15 Personality Disorders

Even though personality traits are of importance in the comprehension of the burnout process, categorical diagnosis of personality disorders in burnout patients may also be suggestive. Alemany-Martinez and colleagues (2008) reported that narcissistic (meaning that narcissistic individuals arrogantly admire themselves) and borderline personality types are the most frequent ones in “burned out” individuals. They suggest that the need to compete, to rapidly achieve objectives and appreciation for performed work makes individuals more vulnerable to suffering from this syndrome.

## 8.3.2 Demographical Features as Risk Factors for Burnout

There is a lack of population-based epidemiological studies in the area of burnout because of the nature of the disease. Thus, demographic features observed in studies are often derived from case–control studies that are considered insufficient for generalizability.

### 8.3.2.1 Gender

Theoretically, men and women are fairly similar in their experience of burnout (Maslach 2003). Women tend to experience more emotional exhaustion, whereas men are more likely to have depersonalized and callous feelings at work (Maslach 2003). It should be kept in mind that there are differences in occupations between men and women. Results from the few population-based studies that do exist show that more women than men suffer from burnout (Norlund et al. 2010). However, gender difference becomes nonsignificant when other factors were taken into account. Also, men had less willingness to admit to fatigue than women (Tokuda et al. 2009). In the Physician Work Life study, women were 1.6 times more likely to report burnout than men (McMurray et al. 2000). The odds increased by 12–15% for each additional 5 h worked per week over 40 h.

### 8.3.2.2 Age

Burnout is more prevalent in younger age groups (Maslach 2003). One explanation for this finding is that older people have more work experience than younger people.

Another explanation is that the first bout of burnout is likely to happen in the first years of one's career. If people have difficulty in dealing with burnout at this point, they leave their profession entirely or they change their job. Therefore, people who cope well with the strain of the work and who manage to handle the threat of burnout in the early years of their career, stay on to do well in their career (Maslach 2003).

### 8.3.2.3 Marital Status

Being unmarried is an independent risk factor for burnout (Ramirez et al. 1996). Workers who are single experience burnout the most, while those who are married experience the least. Employees who are divorced generally fall in between these two groups; they are closer to the singles in terms of greater emotional exhaustion, but closer to the married group in terms of lower depersonalization and greater sense of personal accomplishment (Maslach 2003). Female physicians with young children are less likely to experience burnout when they have the support of colleagues, spouses, or significant others in balancing work and home issues (McMurray et al. 2000). The reason why people with families are less vulnerable to burnout is that they tend to be older, more stable, and psychologically mature (having a solid and accurate understanding of social reality, and being more constructive and adaptive in nature). Also, their involvement with their spouse and children makes them more experienced in dealing with interpersonal problems and emotional conflicts. Individuals with children tend to be more realistic and less idealistic about job security, salary, and benefits (Maslach 2003).

### 8.3.2.4 Education

Nearly all studies on burnout are performed with educated workers in their field. Also, a high degree of emotional exhaustion among providers with post-graduate education is found (Maslach 2003). However, individuals with further training that is oriented toward pragmatic skills are less likely to experience burnout. As stated above, training has the added benefit of enhancing employee self-esteem, and reinforces the employees' confidence in employment stability and their value to the company (Smith et al. 1999). Low education level is an important factor for the level of burnout in women (Norlund et al. 2010).

## 8.3.3 Neurobiological Features as Risk Factors for Burnout

It is not easy to decide whether neurobiological features, especially biomarkers investigated in burnout studies, are the causes or consequences of burnout. Various biomarkers are studied in work-related stress conditions. Also, there is a need to

perform genetic studies in the field of burnout. Until now, the results of neurobiological studies on burnout, including genetic studies, have been conflicting.

### 8.3.3.1 Genetic Factors

Even though research on risk factors for burnout has mainly focused on circumstances at work and on personal characteristics, genetic factors have also been studied and attempts have been made to answer the question whether this is due to genetic influences or to environmental factors shared by family members. In a twin-family study, Middeldorp et al. (2006) found that there is familial clustering for burnout due to environmental factors shared by family members, explaining 22% of the variance. Genetic factors do not seem to be of importance. The significant correlation between spouses supports the conclusion that the common environment plays a role in burnout (Middeldorp et al. 2006). Another topic of interest is whether depression and burnout share the same genetic predisposition. In a twin-family study, it was found that both the relations between employment and anxious depression as well as between burnout and anxious depression could be due to overlapping etiological factors (Middeldorp et al. 2006). The search for genetic predisposition for burnout is inconclusive when the research to date is taken into consideration.

### 8.3.3.2 Biomarkers

Since burnout is a stress state, studies of burnout mainly focus on the release of catecholamines (catecholamines cause general physiological changes that prepare the body for physical activity, such as the fight-or-flight response) in peripheral blood via the autonomous nervous system and the release of cortisol via the hypothalamus–pituitary–adrenal axis (Danhof-Pont et al. 2011). In terms of cortisol (a steroid hormone that is released in response to stress, preparing the organism for coping with stress) studies, there is no difference between patients with burnout and controls with regard to the cortisol awakening response (Danhof-Pont et al. 2011). After administration of dexamethasone (a potent synthetic member of the glucocorticoid class of steroid drugs), no significant difference between patients with burnout and controls were observed with regard to the cortisol awakening response (Danhof-Pont et al. 2011). No differences were found between patients and controls in a fasting blood sample taken between 8:00 and 10:00 a.m. and observations on blood cortisol levels were conflicting (Danhof-Pont et al. 2011). Dehydroepiandrosterone sulfate (DHEAS) is a steroid hormone with an immunomodulatory function that is opposite to cortisol and there was no difference between patients with burnout and controls in terms of blood level of DHEAS in two studies, but in one of the two studies, the saliva level of DHEAS was higher in burnout patients. That is, the evidence was inconclusive for DHEAS studies

(Danhof-Pont et al. 2011). In one study, serum brain-derived neurotrophic factor level was found to be lower in burnout patients (Sertöz et al. 2008). No differences in C-reactive protein (CRP) levels, which rise in response to acute inflammation, were found between burnout cases and controls in two of the three studies, and the gender difference observed in the results remains to be verified (Danhof-Pont et al. 2011). The results for natural killer (NK) cells in burnout were also inconclusive where two studies found no relation between burnout and number of NK cells, and lower NK cell activity was associated only with higher score on depersonalization, not with other dimensions (Danhof-Pont et al. 2011). No overall differences in prolactin level (a hormone that plays a role in lactation and is also a regulator of the immune system) existed between burnout patients and controls (Danhof-Pont et al. 2011). Until now, there have been no convincing data indicating the relationship between biomarkers and burnout.

### ***8.3.4 Psychiatric Disorders as Risk Factors for Burnout***

Because there are cross-sectional, instead of longitudinal studies evaluating the relationship between psychiatric disorders, such as depression and post-traumatic stress disorder, and burnout, it is not easy to suggest whether psychiatric disorders are included in the etiology of burnout or not as was, for example, mentioned in Chap. 4.

Most of the time the risk factors for burnout are also risk factors for psychiatric disorders, especially for depression. Thus, comorbidity is always waiting to be ruled out.

#### **8.3.4.1 Depression**

Depression is statistically correlated with burnout. The percentage of shared variance between burnout and depression is estimated to be 20% (Iacovides et al. 2003). Individuals who are prone to depression (as indicated by higher scores of neuroticism) are more vulnerable to burnout (Maslach et al. 2001). Therefore, it has been hypothesized that a personal or familial susceptibility to depression may form a risk factor for developing professional burnout (Nyklicek and Pop 2005). A personal history of a depressive episode and family history of depression predicted the emotional exhaustion and, to a lesser extent, cynicism components of burnout, indicating that susceptibility to depression might consist of a risk factor for the development of professional burnout (Nyklicek and Pop 2005). Since work-related stress predicts depressive symptoms and subsequent depression, and personality traits are found to potentiate the association between work stressors and depression, burnout and depression seem to be related. In individual cases, judgment still remains with experienced clinicians using their clinical findings (Tennant 2001).

### 8.3.4.2 Post-traumatic Stress Disorder

Since burnout is a stress state, individuals may be predisposed to developing work-related psychological disorders, such as symptoms of post-traumatic stress disorder and burnout syndrome (Mealer et al. 2009). In a study of nurses, almost all of those fulfilling the diagnostic criteria for post-traumatic stress disorder were also positive for burnout. Furthermore, Mealer and colleagues (2009) suggested that nurses who have developed post-traumatic stress disorder might represent a subset of those with burnout. It seems that they share the same etiological predisposition.

## 8.4 Conclusion

A model of burnout, under the proposed perspective, will begin with an examination of the effect of the work situation on burnout. It will then include personality. The final step will culminate in an examination of how work situations interact with personality to affect burnout (Ghorpade et al. 2007).

## References

- Adebayo, D. O., Sunmola, A. M., & Udegbe, I. B. (2008). Workplace fairness and emotional exhaustion in Nigeria police: The moderating role of gender. *Anxiety, Stress and Coping*, 21, 405–416.
- Alarcon, G., Eschleman, K. J., & Bowling, N. A. (2009). Relationships between personality variables and burnout: A meta-analysis. *Work and Stress*, 23, 244–263.
- Aleman-Martínez, A., Berini-Aytés, L., & Gay-Escoda, C. (2008). The burnout syndrome and associated personality disturbances. The study in three graduate programs in Dentistry at the University of Barcelona. *Medicina Oral, Patología Oral y Cirugía Bucal*, 13, E444–E450.
- Alimoglu, M. K., & Donmez, L. (2005). Daylight exposure and the other predictors of burnout among nurses in a University Hospital. *International Journal of Nursing Studies*, 42, 549–555.
- Armon, G., Shirom, A., & Melamed, S. (2011). The big five personality factors as predictors of changes across time in burnout and its facets. *Journal of Personality*, 80, 403–427.
- Bakker, A. B., Van der Zee, K. I., Lewig, K. A., et al. (2006). The relationship between the big-5 factors and burnout: A study among volunteer counselors. *Journal of Social Psychology*, 146, 31–50.
- Borritz, M., Rugulies, R., Bjorner, J. B., et al. (2006). Burnout among employees in human service work: Design and baseline findings of the PUMA study. *Scandinavian Journal of Public Health*, 34, 49–58.
- Bosman, J., Buitendach, J. H., & Laba, K. (2005a). Job insecurity, burnout and organizational commitment among employees of a financial institution in Gauteng. *South African Journal Of Industrial Psychology*, 31, 32–40.
- Bosman, J., Rothmann, S., & Buitendach, J. H. (2005b). Job insecurity, burnout and work engagement: The impact of positive and negative affectivity. *South African Journal Of Industrial Psychology*, 31, 48–56.
- Bratis, D., Tselebis, A., & Sikaras, C. (2009). Alexithymia and its association with burnout, depression and family support among Greek nursing staff. *Human Resources for Health*, 11, 72.

- Buhler, K. E., & Land, T. (2003). Burnout and personality in intensive care: An empirical study. *Hospital Topics*, 81, 5–12.
- Cheng, Y., Chen, C. W., Chen, C. J., & Chiang, T. L. (2005). Job insecurity and its association with health among employees in the Taiwanese general population. *Social Science & Medicine*, 61, 41–52.
- Connolly, J. J., & Viswesvaran, C. (2000). The role of affectivity in job satisfaction: A metaanalysis. *Personality and Individual Differences*, 29, 265–281.
- Costa, P. T., & McCrae, R. R. (1987). Neuroticism, somatic complaints, and disease: Is the bark worse than the bite? *Journal of Personality*, 55, 299–316.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PIR) and NEO Five Factor Inventory (NEO-FFI) professional manual*. Odessa: Psychological Assessment Resources.
- D'Souza, R. M., Strazdins, L., Lim, L. L., et al. (2003). Work and health in a contemporary society: Demands, control, and insecurity. *Journal of Epidemiology and Community Health*, 57, 849–854.
- Danhof-Pont, M. B., van Veen, T., & Zitman, F. G. (2011). Biomarkers in burnout: A systematic review. *Journal of Psychosomatic Research*, 70, 505–524.
- Day, A. L., & Jreige, S. (2002). Examining Type A behavior Pattern to explain the relationship between job stressors and psychosocial outcomes. *Journal of Occupational Health Psychology*, 7, 109–120.
- De Lange, A. H., Taris, T. W., Kompier, M. A., et al. (2003). The very best of the millennium: Longitudinal research and the demand-control (–support) model. *Journal of Occupational Health Psychology*, 8, 282–305.
- Deary, I. J., Blenkin, H., Agius, R. M., Endler, N. S., Zealley, H., & Wood, R. (1996). Models of job-related stress and personal achievement among consultant doctors. *British Journal of Psychology*, 87, 3–29.
- Deary, I. J., Watson, R., & Hogston, R. (2003). A longitudinal cohort study of burnout and attrition in nursing students. *Journal of Advanced Nursing*, 43, 71–81.
- Dekker, S. W. A., & Schaufeli, W. B. (1995). The effects of job insecurity on psychological health and withdrawal: A longitudinal study. *Australian Psychologist*, 30, 57–63.
- Demerouti, E., Geurts, S. A., Bakker, A. B., & Euwema, M. (2004). The impact of shiftwork on work–home conflict, job attitudes and health. *Ergonomics*, 47, 987–1002.
- Demir, A., Ulusoy, M., & Ulusoy, M. F. (2003). Investigation of factors influencing burnout levels in the professional and private lives of nurses. *International Journal of Nursing Studies*, 40, 807–827.
- Devereux, J. M., Hastings, R. P., Noone, S. J., et al. (2009). Social support and coping as mediators or moderators of the impact of work stressors on burnout in intellectual disability support staff. *Research in Developmental Disabilities*, 30, 367–377.
- Edwards, J. R., Baglioni, A. J., Jr., & Cooper, C. L. (1990). Examining the relationships among self-report measures of the Type A behavior pattern: The effects of dimensionality, measurement error, and differences in underlying constructs. *The Journal of Applied Psychology*, 75, 440–454.
- Emanuel, L. L., Ferris, F. D., von Gunten, C. F., et al. (Eds.). (2005). *EPECT™-O: Education in Palliative and End-of-life Care for Oncology* (Module 15: Cancer doctors and burnout), The EPECT™ Project, Chicago.
- Emanuel, L. L., Ferris, F. D., von Gunten, C. F., & Von Roenn, J. H. (2011). Compassion fatigue and burnout in cancer care. Medscape. <http://compassionfatigue.ca/wp-content/uploads/2011/09/CF-and-burnout-in-cancer-care.pdf>. Accessed 8 December 2011.
- Garrosa, E., Moreno-Jimenez, B., Liang, Y., et al. (2008). The relationship between socio-demographic variables, job stressors, burnout, and hardy personality in nurses: An exploratory study. *International Journal of Nursing Studies*, 45, 418–427.
- Ghorpade, J., Lackritz, J., & Singh, G. (2007). Burnout and personality: Evidence from academia. *Journal of Career Assessment*, 15, 240–256.

- Gil-Monte, P. R., Peiro, J. M., & Valcarcel, P. (1998). A model of burnout process development: An alternative from appraisal models of stress. *Comportamento Organizacional e Gestao*, 4, 165–179.
- Gray-Stanley, J. A., & Muramatsu, N. (2011). Work stress, burnout, and social and personal resources among direct care workers. *Research in Developmental Disabilities*, 32, 1065–1074.
- Grunfeld, E., Whelan, T. J., Zitzelsberger, L., et al. (2000). Cancer care workers in Ontario: Prevalence of burnout, job stress and job satisfaction. *Canadian Medical Association Journal*, 163, 166–169.
- Gryskiewicz, N., & Buttner, E. H. (1992). Testing the robustness of the phase model of burnout: An entrepreneurial sample. *Educational and Psychological Measurement*, 52, 747–751.
- Gustafsson, G., Persson, B., Eriksson, S., et al. (2009). Personality traits among burnt out and non-burnt out health-care personnel at the same workplaces: A pilot study. *International Journal of Mental Health Nursing*, 18, 336–348.
- Hallberg, U. E., Johansson, G., & Schaufeli, W. B. (2007). Type A behavior and work situation: Associations with burnout and work engagement. *Scandinavian Journal of Psychology*, 48, 135–142.
- Hallsten, L., Josephson, M., & Torgén, M. (2005). *Performance-based self-esteem: A driving force in burnout processes and its assessment* (Scientific report [Work and health] 2005:4) Stockholm: National Institute for Working Life.
- Heinisch, D. A., & Jex, S. M. (1997). Negative affectivity and gender as moderators of the relationship between work-related stressors and depressed mood at work. *Work and Stress*, 11, 46–57.
- Hillhouse, J. J., & Adler, C. M. (1997). Investigating stress effect patterns in hospital staff nurses: Results of a cluster analysis. *Social Science & Medicine*, 45, 1781–1788.
- Hobfoll, S. (1989). Conservation of resources: A new attempt at conceptualizing stress. *The American Psychologist*, 44, 513–524.
- Iacovides, A., Fountoulakis, K. N., Kaprinis, S., & Kaprinis, G. (2003). The relationship between job stress, burnout and clinical depression. *Journal of Affective Disorders*, 75, 209–222.
- Jamal, M., & Baba, V. V. (1997). Shiftwork, burnout and well-being: A study of Canadian nurses. *International Journal of Stress Management*, 4, 197–204.
- Jennings, B. M. (2008). Work stress and burnout among nurses: Role of the work environment and working conditions. In R. G. Hughes (Ed.), *Patient safety and quality: An evidence-based handbook for nurses* (AHRQ publication no. 08–0043). Rockville: Agency for Healthcare Research and Quality.
- Kobasa, S. C. (1979). Stressful life events, personality and health: An inquiry into hardiness. *Journal of Personality and Social Psychology*, 37, 1–11.
- Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study. *Journal of Personality and Social Psychology*, 42, 168–177.
- Koeske, G. F., & Kirk, S. A. (1995). Direct and buffering effects of internal locus of control among mental health professionals. *Journal of Social Service Research*, 20, 1–28.
- Korunka, C., Huemer, K. H., Litschauer, B., et al. (1996). Working with new technologies – Hormone excretion as indicator for sustained arousal. *Biological Psychology*, 42, 39–52.
- Kowalski, C., Driller, E., Ernstmann, N., et al. (2010). Associations between emotional exhaustion, social capital, workload, and latitude in decision-making among professionals working with people with disabilities. *Research in Developmental Disabilities*, 31, 470–479.
- Langelan, S., Bakker, A. B., van Doornen, L. J. P., et al. (2006). Burnout and work engagement: Do individual differences make a difference? *Personality and Individual Differences*, 40, 521–532.
- Lau, B., Hem, E., Berg, A. M., et al. (2006). Personality types, coping, and stress in the Norwegian police service. *Personality and Individual Differences*, 41, 971–982.
- LePine, J. A., LePine, M., & Jackson, C. L. (2004). Challenge and hindrance stress: Relationships with exhaustion, motivation to learn, and learning performance. *The Journal of Applied Psychology*, 89, 883–891.
- Leveck, M. L., & Jones, C. B. (1996). The nursing practice environment, staff retention, and quality of care. *Research in Nursing & Health*, 19, 331–343.



- Lingard, H. (2003). The impact of individual and job characteristics on 'burnout' among civil engineers in Australia and the implications for employee turnover. *Construction Management & Economics*, 21, 69–80.
- Linzer, M., Visser, M. R., Oort, F. J., et al. (2001). Predicting and preventing physician burnout: Results from the United States and the Netherlands. *The American Journal of Medicine*, 111, 170–175.
- Makikangas, A., Feldt, T., Kinnunen, U., & Tolvanen, A. (2011). Do low burnout and high work engagement always go hand in hand? Investigation of the energy and identification dimensions in longitudinal data. *Anxiety, Stress and Coping*, 31, 1–24.
- Maslach, C. (2003). *Burnout: Cost of caring*. Cambridge: Malor Books.
- Maslach, C., & Leiter, M. P. (1997). *The truth about burnout: How organizations cause personal stress and what to do about it*. San Francisco: Jossey-Bass.
- Maslach, C., & Leiter, M. P. (2008). Early predictors of job burnout and engagement. *The Journal of Applied Psychology*, 93, 498–512.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397–422.
- Mattila, A. K., Ahola, K., & Honkonen, T. (2007). Alexithymia and occupational burnout are strongly associated in working population. *Journal of Psychosomatic Research*, 62, 657–665.
- McCrae, R. R., & Costa, P. T. (1986). Personality, coping, and coping effectiveness in an adult sample. *Journal of Personality*, 54, 385–405.
- McManus, I. C., Keeling, A., & Paice, E. (2004). Stress, burnout and doctors' attitudes to work are determined by personality and learning style: A twelve year longitudinal study of UK medical graduates. *BMC Medicine*, 2, 29.
- McMurray, J. E., Linzer, M., Konrad, T. R., et al. (2000). The work lives of women physicians: Results from the physician work life study. *Journal of General Internal Medicine*, 15, 372–380.
- Mealer, M., Burnham, E. L., Goode, C. J., et al. (2009). The prevalence and impact of post traumatic stress disorder and burnout syndrome in nurses. *Depression and Anxiety*, 26, 1118–1126.
- Mellam, A. C., & Espnes, G. A. (2003). Emotional distress and the Type A behavior pattern in a sample of civil servants. *Personality and Individual Differences*, 34, 1319–1325.
- Michielsens, H. J., Willemsen, T. M., Croon, M. A., et al. (2004). Determinants of general fatigue and emotional exhaustion: A prospective study. *Psychology & Health*, 19, 223–235.
- 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, 163–169.
- Mommersteeg, P. M., et al. (2012). Type D personality, depressive symptoms and work-related health outcomes. *Scandinavian Journal of Public Health*, 40, 35–42.
- Montero-Marín, J., García-Campayo, J., Fajó-Pascual, M., et al. (2011). Sociodemographic and occupational risk factors associated with the development of different burnout types: The cross-sectional University of Zaragoza study. *BMC Psychiatry*, 11, 49.
- Norlund, S., Reuterwall, C., Höög, J., et al. (2010). Burnout, working conditions and gender – Results from the northern Sweden MONICA Study. *BMC Public Health*, 10, 326.
- Nyklíček, I., & Pop, V. J. (2005). Past and familial depression predict current symptoms of professional burnout. *Journal of Affective Disorders*, 88, 63–68.
- Oginska-Bulik, N. (2006). Occupational stress and its consequences in healthcare professionals: The role of type D personality. *International Journal of Occupational Medicine and Environmental Health*, 19, 113–122.
- Olkinuora, M., Asp, S., Juntunen, J., et al. (1990). Stress symptoms, burnout and suicidal thoughts in Finnish physicians. *Social Psychiatry and Psychiatric Epidemiology*, 25, 81–86.
- Pick, D., & Leiter, M. P. (1991). Nurses' Perceptions of the nature and causes of burnout: A comparison of self-reports and standardized measures. *The Canadian Journal of Nursing Research*, 23, 33–48.

- Piedmont, R. L. (1993). A longitudinal analysis of burnout in the health care setting: The role of personal dispositions. *Journal of Personality Assessment*, 61, 457–473.
- Popa, F., Raed, A., Purcarea, V. L., et al. (2010). Occupational burnout levels in emergency medicine – A nationwide study and analysis. *Journal of Medicine and Life*, 3, 207–215.
- Pross, C. (2006). Burnout, vicarious traumatization and its prevention. *Torture*, 16, 1–9.
- Ramirez, A. J., Graham, J., Richards, M. A., et al. (1995). Burnout and psychiatric disorder among cancer clinicians. *British Journal of Cancer*, 71, 1263–1269.
- Ramirez, A. J., Graham, J., Richards, M. A., et al. (1996). Mental health of hospital consultants: The effect of stress and satisfaction at work. *Lancet*, 347, 724–728.
- Richardson, S. K., Ardagh, M., & Gee, P. (2005). Emergency department overcrowding: The Emergency Department Cardiac Analogy Model (EDCAM). *Accident and Emergency Nursing*, 13, 18–23.
- Rowe, M. M., & Sherlock, H. (2005). Stress and verbal abuse in nursing: Do burned out nurses eat their young? *Journal of Nursing Management*, 13, 242–248.
- Schaufeli, W. B. (2003). Past performance and future perspectives of burnout research. *South African Journal for Industrial and Organisational Psychology*, 29, 1–15.
- Schneider, T. R. (2004). The role of neuroticism on psychological and physiological stress responses. *Journal of Experimental Social Psychology*, 40, 795–804.
- Sehlen, S., Vordermark, D., Schäfer, C., et al. (2009). Job stress and job satisfaction of physicians, radiographers, nurses and physicists working in radiotherapy: A multicenter analysis by the DEGRO quality of life work group. *Radiation Oncology*, 4, 6.
- Sertöz, Ö. Ö., Binbay, I. T., Köylü, E., et al. (2008). The role of BDNF and HPA axis in the neurobiology of burnout syndrome. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, 32, 1459–1465.
- Shimizutani, M., Odagiri, Y., Ohya, Y., et al. (2008). Relationship of nurse burnout with personality characteristics and coping behaviors. *Industrial Health*, 46, 326–335.
- Smith, M. J., & Carayon, P. (1995). New technology, automation and implementation strategies. *International Journal of Human Factors in Manufacturing*, 5, 99–116.
- Smith, M. J., Conway, F. T., & Karsh, B. T. (1999). Occupational stress in human computer interaction. *Industrial Health*, 37, 157–173.
- Sokejima, S., & Kagamimori, S. (1998). Working hours as a risk factor for acute myocardial infarction in Japan: Case-control study. *BMJ*, 317, 775–780.
- Taris, T. W., Le Blanc, P. M., Schaufeli, W. B., & Schreurs, P. J. G. (2005). Are there causal relationships between the dimensions of the Maslach Burnout Inventory? A review and two longitudinal tests. *Work and Stress*, 19, 238–255.
- Taris, T. W., van Beek, I., & Schaufeli, W. B. (2010). Why do perfectionists have a higher burnout risk than others? The mediational effect of workaholism. *Romanian Journal of Applied Psychology*, 12, 1–7.
- Taylor, S., White, B., & Muncer, S. (1999). Nurses' cognitive structural models of work-based stress. *Journal of Advanced Nursing*, 29, 974–983.
- ten Brummelhuis, L. L., Ter Hoeven, C. L., Bakker, A. B., & Peper, B. (2011). Breaking through the loss cycle of burnout: The role of motivation. *Journal of Occupational and Organizational Psychology*, 84, 268–287.
- Tennant, C. (2001). Work-related stress and depressive disorders. *Journal of Psychosomatic Research*, 51, 697–704.
- Terman, M., Amira, L., Terman, J. S., et al. (1996). Predictors of response and nonresponse to light treatment for winter depression. *The American Journal of Psychiatry*, 153, 1423–1429.
- Thomé, S., Dellve, L., Härenstam, A., & Hagberg, M. (2010). Perceived connections between information and communication technology use and mental symptoms among young adults—A qualitative study. *BMC Public Health*, 10, 66.
- Tokuda, Y., Hayano, K., Ozaki, M., et al. (2009). The interrelationships between working conditions, job satisfaction, burnout and mental health among hospital physicians in Japan: A path analysis. *Industrial Health*, 47, 166–172.

- Topf, M. (1989). Personality hardiness, occupational stress, and burnout in critical care nurses. *Research in Nursing & Health*, 12, 179–186.
- Topf, M., & Dillon, E. (1988). Noise-induced stress as a predictor of burnout in critical care nurses. *Heart & Lung*, 17, 567–574.
- Vaananen, A., Koskinen, A., Joensuu, M., et al. (2008). Lack of predictability at work and risk of acute myocardial infarction: An 18-year prospective study of industrial employees. *American Journal of Public Health*, 98, 2264–2271.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063–1070.
- Williams, E. S., & Skinner, A. C. (2003). Outcomes of physician job satisfaction: A narrative review, implications, and directions for future research. *Health Care Management Review*, 28, 119–139.
- Zellars, K. L., Perrewe, P. L., & Hochwarter, W. A. (2000). Burnout in health care: The role of the five factors of personality. *Journal of Applied Social Psychology*, 30, 1570–1598.