Burnout Assessment Tool (BAT)

A fresh look at burnout

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Abstract

This chapter presents a fresh view on burnout and its measurement based on a redefinition of burnout. Although not all scholars agree on the definition, the vast majority of scientific publications use a tripartite description of burnout that includes exhaustion, mental distance, and reduced professional efficacy. However, there are conceptual problems with this definition as well as psychometric and practical issues with the instrument that is based on this conceptualization and is considered the gold standard to measure burnout: The Maslach Burnout Inventory (MBI). Therefore, burnout was redefined as a syndrome that includes four symptoms: exhaustion, mental distance, and cognitive and emotional impairment. In this view, a lack of energy impedes the functional capacity to adequately regulate one's cognitive and emotional processes, whereas mental distancing serves as an ineffective coping strategy to reduce exhaustion by withdrawing from work. Building on this reconceptualization, a novel burnout questionnaire was developed, the Burnout Assessment Tool (BAT). In this chapter, evidence is presented on the reliability and validity of the BAT, of which also a short version exists. More specifically, it appears, on the one hand, that the four-factor structure of the BAT is invariant across countries, gender, age, and ethnicity, whereas, on the other hand, also a composite total burnout score can be used to assess the level of burnout. Moreover, the reliability, convergent and divergent of the BAT is demonstrated, and burnout, as assessed with the BAT, fits into the nomological network of the Job-Demands Resources Model. That is, as expected, BAT-burnout is positively associated with job demands and negatively with job resources. Furthermore, relationships are found with several outcomes as well as personal resources, including personality traits. In practical terms, the BAT can be used to assess severe burnout in individuals in occupational health settings, as well as to estimate the prevalence of those who are at risk for burnout in organizations.

Introduction

Burnout is a metaphor that refers to a state of mental exhaustion. This term was first introduced in the United States at the end of the 1970s (Maslach & Schaufeli, 1993), albeit that various examples of burnout *avant-la-lettre* exist, for example, nineteenth-

century neurasthenia – literally nervous weakness (Schaufeli, 2017). Meanwhile, a number of European countries recognized burnout as an occupational disease or work-related disorder (Lastovkova et al., 2018), and employers are obliged to periodically assess psychosocial risks among their employees and to implement policies to prevent job stress and burnout (Aumayer-Pintar et al., 2018). Yet, there is no scholarly consensus about the very nature of burnout beyond the fact that it refers to mental exhaustion. For instance, a panel of 50 international experts identified 11 definitions of burnout and proposed – after semantic analysis – a consensual definition that effectively reduces burnout to mere exhaustion: "In a worker, occupational burnout [...] is an exhaustion due to prolonged exposure to work-related problems" (Guseva-Canu et al., 2021, p. 95). In contrast, the World Health Organization (2019) defines burnout in its International Classification of Diseases as a multidimensional occupational phenomenon resulting from chronic workplace stress that has not been successfully managed, characterized by the following: (1) feelings of energy depletion or exhaustion; (2) increased mental distance from one's job, or feelings of negativism or cynicism related to one's job; and (3) reduced professional efficacy. Instead of conceptually rooted, both definitions are descriptive and hence lack any theoretical underpinning.

Theoretical Background

In our view, a theoretical underpinning is essential and also required for an appropriate operationalization of the construct. For this, we go back to the seminal work of Edward Thorndike (1874–1949), the grand old man of fatigue at work, who maintained that the basic tenet of fatigue is "the intolerance of any effort" (1914, p. 104). In his view, fatigue is both the *inability* and the *unwillingness* to spend effort at work, which is reflected by its energetic and motivational component, respectively. Building on his work, Schaufeli and Taris (2005) argued that inability (exhaustion) and unwillingness (mental distance) constitute two sides of the same burnout coin. Hence, based on a theoretical analysis, mental distancing is assumed to be the second constituting dimension of burnout in addition to exhaustion. This meshes with the results of a recent review of 12 burnout questionnaires; 8 of which operationalized burnout as a multidimensional concept and included an exhaustion as well as a mental distance subscale, whereas the remaining 3 questionnaires were unidimensional and essentially reduced burnout to exhaustion (Schaufeli et al., 2020a).

Although many burnout instruments exist, the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981a) is considered the gold standard to assess burnout as it was used in about 90% of all studies on the subject (Boudreau et al., 2015). Yet, the MBI has three major flaws. First, instead of being deducted from a conceptual framework, the MBI was developed inductively, based on interviews with human service professionals (Maslach & Schaufeli, 1993). Results were factor-analyzed, and three factors emerged that were considered to constitute burnout: exhaustion, mental distance, and reduced professional efficacy; a fourth factor – commitment –

was initially also proposed in the research version of the MBI (Maslach & Jackson, 1981b) but was not included in subsequent versions. Later, serious doubts arose because rather than constituting an element of burnout, reduced efficacy seems to be a cause or consequence of burnout (Schaufeli & Taris, 2005).

Second, the MBI suffers from technical, psychometric weaknesses. For instance, a meta-analysis concluded that the reliability estimates of its mental distance and efficacy subscales "...were well below recommended levels for high-stakes decisions, such as the diagnosis of burnout syndrome" (Wheeler et al., 2011, p. 231). Furthermore, it was shown that reversing the positively worded efficacy items, in order to indicate a *lack* of efficacy, introduces an artifact (Schaufeli & Salanova, 2007). As a consequence, instead of being a part of burnout, efficacy appeared as a part of work engagement. This is in line with the doubts about the role of efficacy in burnout.

Third, the usefulness of the MBI for individual burnout assessment is rather poor. According to the test manual, the MBI does not produce a single burnout score that is indicative for overall burnout (Maslach et al., 2017). Additionally, the MBI manual does not report burnout cutoff scores, that is, no attempt has been made to determine at what point a score denotes burnout. However, this is what practitioners need, particularly in Europe where burnout is an occupational disease which needs to be assessed reliably.

Development and Validation of the Burnout Assessment Tool

Hence, in order to overcome the conceptual, psychometric, and practical flaws of the MBI, Schaufeli et al. (2020a) developed a novel burnout instrument for individual and group-based assessment of burnout, the Burnout Assessment Tool, or BAT. For this, 50 professionals (occupational physicians, general practitioners, and psychologists) were interviewed who deal with burned-out employees on a daily basis (Schaufeli et al. 2020a). A dialectic method was used combining a deductive with an inductive approach. That means that, on the one hand, a conceptual model was used that considers the inability (exhaustion) and unwillingness (distancing) to put effort in the job as the hallmark of burnout, to guide the analyses and interpretation of our interview results (deductive approach). On the other hand, interview results were allowed to alter or supplement our conceptual model (inductive approach). After content analyses, four core dimensions emerged: (1) exhaustion (i.e., a severe loss of energy that results in feelings of both physical and mental exhaustion); (2) mental distance (i.e., a strong reluctance or aversion to work, indifference, and cynicism); (3) cognitive impairment (i.e., memory problems, attention and concentration deficits, and poor cognitive performance); and (4) emotional impairment (i.e., intense emotional reactions such as anger or sadness, and feeling overwhelmed by one's emotions). Interestingly, professional inefficacy was virtually not mentioned in the interviews. However, in addition to the four core burnout symptoms, secondary atypical symptoms were mentioned such as depressed mood, psychological distress,

and psychosomatic complaints. Because these symptoms are not characteristics of burnout, we focused exclusively on the four core dimensions in his chapter.

In our view, exhaustion plays a central role in the dynamics of burnout, as was postulated by Schaufeli and Taris (2005), as well as recognized by an expert panel (Guseva-Canu et al., 2021) and confirmed by interviews with professionals. This lack of energy reduces the functional capacity to adequately regulate one's cognitive and emotional processes, leading to cognitive and emotional impairment. In other words, information processing and emotion management are hampered because employees feel too tired to do so. Mental distancing can be seen as a coping strategy by withdrawing from work, which is perceived as the root cause of exhaustion. However, this coping attempt may be ineffective because, instead of *alleviating*, it *increases* stress at work – for instance, because it might cause conflicts with colleagues – and hence exacerbates the employee's feelings of exhaustion. In sum, we redefined burnout as a syndrome that is characterized by exhaustion and the concomitant reduced ability to regulate cognitive and emotional processes, as well as by mental distancing that acts as a counterproductive, ineffective coping strategy (Desart & De Witte, 2019). The BAT aligns with this reconceptualization of burnout by assessing four interrelated symptom dimensions (exhaustion, cognitive and emotional impairment, and mental distance) that refer to the same underlying condition – burnout.

For the introduction and the initial validation of the BAT, representative samples of the Flemish (Belgium) and Dutch working population were used (Schaufeli et al., 2020a, b). Different language versions were available, as well as a student version and a version for those out of work. In addition to the original 23-item version of the BAT, also a shortened 12-item version was developed (Schaufeli et al., 2020b). An international research consortium has been established to discuss, plan, and coordinate research with the BAT (for more details. see: www.burnoutassessmenttool.be).

Evidence of Reliability and Validity

Since the introduction of the BAT in 2020, an increasing number of studies have been carried out all around the globe. Below, we present a brief overview not only of psychometric studies, but also of investigations that map the nomological network of the BAT, intervention research, and prevalence studies.

Dimensionality and Factorial Validity

The BAT conceptualizes burnout as a *syndrome,* which implies that the BAT should produce both a composite score that refers to the burnout syndrome, *as well as* different subscale scores that refer to each of the four symptom dimensions. From a psychometric perspective, the former requires unidimensionality, whereas the latter requires distinction between different facets representing the construct. Indeed, it appears that the BAT can be considered as a unidimensional instrument including

four contributing facets, i.e., subscales. Using representative samples of Flemish and Dutch employees, Hadžibajramović et al. (2021) confirmed that the data fitted the unidimensional Rasch model, meaning that the BAT-23 can be considered a unidimensional measure with interval scale properties. More specific analyses revealed that this unidimensionality applies for men and woman as well as across age groups. Similar results were obtained in a sample of Swedish midwives (Hadžibajramović et al., 2022a), and in two independent samples from Brazil and Portugal (Sinval et al., 2022). Furthermore, the shortened BAT-12 also fitted the Rasch model in the Flemish and Dutch samples (Hadzibajramović et al., 2022b) and in a sample of Romanian employees (Oprea et al., 2021). In conclusion, the composite sore of the BAT can be used as a single indicator of an employee's burnout level.

Another way of examining the underlying structure of the BAT is using confirmatory factor analysis (CFA) whereby the fit to the data of various competing factor structures is tested. Usually, a four-factor model that assumes that the BAT consists of four correlating subscales was tested against a second-order model that assumes that all four subscales load on a common higher burnout factor. Usually, the second-order model, which agrees with the notion of a burnout syndrome, fitted better compared to the four-dimensional model. This was demonstrated for the BAT-23 among employees from Austria, Finland, Flanders, Germany, Ireland, Japan, The Netherlands (De Beer et al., 2020), Brazil, Portugal (Sinval et al., 2022), Italy (Consiglio et al., 2021), and Ecuador (Vinueza-Solórzano et al., 2021), as well as for specific samples such as Italian teachers (Angelini et al., 2021) and Italian students (Romano et al., 2022). The factorial validity of the second-order model was also conformed for the BAT-12 among employees from Romania (Oprea et al., 2021) and Ecuador (Vinueza-Solórzano et al., 2021). Moreover, the second-order factor structure appeared to be invariant across countries (De Beer et al., 2020; Sinval et al., 2022) meaning that, for instance, factor loadings of items are similar for all countries. This means that the BAT assesses burnout in a similar way in various countries so that it can be used for reliable and valid cross-national comparisons.

Also, a bifactor model, which assumes that each item *simultaneously* loads on a general burnout factor *as well as* a specific burnout dimension, was successfully tested. For instance, De Beer et al. (2022a) showed in a South African sample that the fit of the bifactor model of the BAT- 23 was superior to that of the second-order model. Moreover, the BAT showed strong measurement invariance for gender and ethnicity. Also, a Japanese study found a superior fit of the bifactor model for the BAT-23 compared to the second-order factor (Sakakibara et al., 2020). This result was replicated in an Italian sample for the BAT-12 (Mazzetti et al., 2022). Like the second-order factor model, the bifactor model also agrees with the notion of a burnout syndrome. The former shows the contribution of all four components to the common burnout factor, whereas the latter shows the relative contribution of each item to the common burnout factor. For instance, it appears that the exhaustion item "At work, I feel physically exhausted" and the distance item "I struggle to find any enthusiasm for my work" contributed the most to the overall burnout score (De Beer et al., 2022a).

Taken together, psychometric research demonstrated that both versions of the BAT (BAT-23 and BAT-12) can be used to assess the overall burnout by using the total scale score as well as its four dimensions, using each subscale score including exhaustion, mental distance, and emotional and cognitive impairment. Furthermore, the underlying factor structure of the BAT was found invariant across countries, gender, age, and ethnicity.

Reliability

The internal consistency of the overall BAT-23 and its subscales was good with Cronbach α coefficients exceeding 0.90 for the total scale and 0.80 for the subscales in various countries such as Austria, Belgium (Flanders), Finland, Germany, Ireland, Japan, The Netherlands (De Beer et al., 2020), Ecuador (Vinueza-Solórzano et al., 2021), Italy (Consiglio et al., 2021), and Korea (Cho, 2020), as well as Brazil and Portugal (Sinval et al. 2022).

For the BAT-12, values of α are by definition somewhat lower, with values exceeding 0.80 for the total scale and 0.70 for its subscales, for instance, in Italy (Mazzetti et al., 2022), Romania (Oprea et al., 2021), The Netherlands, Belgium (Schaufeli et al., 2020b), Brazil, and Portugal (Sinval et al., 2022).

Also, Mac Donald's ω – an alternative measure for reliability that relies on fewer and more realistic assumptions compared to α – showed good results with values exceeding 0.90 for the total BAT-23 and 0.80 for its subscales (Vinueza-Solórzano et al., 2021; Borelli et al., 2022; Vinueza-Solórzano et al., 2021; Sinval et al., 2022). Like with values of α, ω is by definition somewhat lower for the BAT-12 (Vinueza-Solórzano et al., 2021; Sinval et al., 2022). Only in Ecuador, the mental distance scale did not suffice the criterion for ω, which might be due to sampling limitations.

Finally, the stability of the four BAT-23 dimensions was assessed in a longitudinal study with a time lag of 2 months (Spagnoli et al., 2021); resulting in adequate stability for exhaustion ($r_t = 0.52$), mental distance ($r_t = 0.66$), cognitive impairment ($r_t = 0.54$), and emotional impairment ($r_t = 0.54$). Using a US sample and a 6-month time interval, De Vries and Bakker (2022) found a high stability ($r_t = 0.81$) for the total BAT-23. Hence, it can be concluded that, overall, the BAT is a reliable instrument with satisfactory internal consistency and stability.

Convergent, Divergent, and Incremental Validity

On the one hand, the BAT is expected to be related with other measures that tap burnout (convergence) while, on the other hand, it should not completely overlap with such measures and also have some specificity (divergent validity). To investigate this, Schaufeli et al. (2020a) used a multi-trait-multi-method (MTMM) and included two other burnout measures in addition to the BAT-23; the Maslach Burnout Inventory (MBI; Maslach et al., 2017) and the Oldenburg Burnout Inventory (OLBI; Demerouti et al., 2003). Results showed that while there was some

convergence in the two core dimensions of burnout (exhaustion and mental distance), divergence exists as well, indicating the unique and independent contributions for each measure. For the MBI, the latter related to the professional efficacy dimension and for the BAT to cognitive and emotional impairment.

Using the same MTMM approach in a Japanese sample, Sakakibara et al. (2020) replicated the discriminant and convergent validity of the BAT-23 vis-à-vis the MBI. Consiglio et al. (2021) also used the same MTMM approach in an Italian sample, but this time without the MBI-professional efficacy dimension. As in the other studies, they found convergence of burnout symptoms but no complete overlap between the BAT-23 and the MBI.

Finally, De Beer et al. (2022a) studied the relationship of the BAT-23 and the MBI by using bifactor models of both questionnaires. Issues came up with fitting the bifactor model of the MBI, so that it had to be respecified by combining the exhaustion and cynicism subscales. Nevertheless, the general burnout factor of the BAT correlated highly ($r = 0.90$) with that of the MBI. It is noteworthy that professional efficacy seems to be a specific factor that does not contribute much to the general MBI-score, illustrating that the underlying factor structure may not be commensurate with a burnout syndrome.

Evidence for the incremental validity of the BAT comes from an Italian study in which psychological distress was predicted by the BAT as well as the MBI (Consiglio et al., 2021). Regression analyses showed that the BAT explained 8% of the variance in distress after controlling for MBI-burnout, whereas reversely the MBI only explained 1% of additional variance after controlling for BAT-burnout. Hence, incremental validity of the BAT vis-à-vis the MBI was demonstrated.

Although the BAT is strongly correlated with other burnout measures demonstrating convergent validity, it does not completely overlap and has some distinctive features as well, which supports divergent validity of the scale. Moreover, the BAT explains additional variance in distress over and beyond the MBI, which evidences its incremental validity.

Discriminant Validity

The BAT-23 is not identical to measures of well-being as it only partly overlaps with such measures. For instance, based on the Average Variance Extracted, Schaufeli et al. (2020a) showed that the total score of the BAT-23 can be discriminated from workaholism (Dutch Workaholism Scale, DUWAS; Rantanen et al., 2015), job boredom (Dutch Boredom Scale, DUBS; Reijseger et al., 2013), work engagement (Utrecht Work Engagement Scale, UWES; Schaufeli et al., 2006), and depressed mood (Four-Dimensional Symptom Questionnaire, 4DSQ; Terluin et al., 2004). These results were replicated for the BAT-12 in a Romanian sample, using the same well-being measures, except depressed mood (Oprea et al., 2021). Three Italian studies included the WHO-5 Well-Being Index (Topp et al., 2015) and found negative correlations with the BAT-23 ranging from -0.48 to -0.67 (Agnelli et al., 2021; Romano et al., 2022; Borelli et al., 2022). In addition, positive

correlations with the Academic Anxiety Scale (Romano et al., 2019) and the Health Survey Short Form (SF-15; Ware et al., 1996) were found of −0.57 and −0.35, respectively. Furthermore, Sinval et al. (2022) reported that correlations with work engagement (UWES) are virtually similar for the BAT-23 and the BAT-12.

Using a Japanese sample, Yokoyama et al. (2022) showed that workaholism was positively and work engagement negatively and independently related to BAT-burnout, both directly and well as indirectly through self-endangering behavior. This attests that burnout as assessed with the BAT can be differentiated from workaholism and work engagement. In a somewhat similar vein, Pereira et al. (2021a) successfully tested a model in which the BAT-burnout mediated the relation between work-related quality of life and mental health symptoms, hence confirming that the BAT can be discriminated from these two well-being concepts.

Finally, Van der Vaart and De Beer (2021) conducted Latent Profile Analysis with the subscales of the BAT and the UWES (vigor, dedication, and absorption) and identified five groups of employees. These were labeled: (1) *burnout* (very high BAT and very low UWES scores); (2) *at risk* (elevated BAT and low UWES scores); (3) *stars* (low BAT and high UWES scores); (4) *balanced* (average BAT and UWES scores); and (5) *workaholics* (moderately high BAT and UWES scores). These results demonstrated that simultaneous analysis of the BAT and the UWES resulted in different groups of employees with different scoring patterns, and hence that both measures tap different mental conditions. It can be concluded that the BAT can be distinguished from other aspects of employee well-being such as workaholism, job boredom, work engagement, anxiety, depressed mood, general health, and quality of life, thus showing discriminant validity vis-á-vis these constructs.

Nomological Network

Given that the BAT is supposed to measure burnout, it should relate to other variables that are known to constitute the nomological network of burnout. For reviewing the empirical results of the BAT, we use the Job Demands Resources (JD-R) model (Bakker & Demerouti, 2017) as a conceptual framework. The JD-R model maintains that job demands are positively and job resources and personal resources are negatively related to burnout. Therefore, burnout is associated with the presence of demands and the absence of resources. Moreover, the model assumes that personal vulnerability factors are positively related to burnout. More specifically the JD-R model posits that burnout mediates the relationship between work characteristics (job demands and job resources), on the one hand, and work and health outcomes, on the other.

Job Demand and Job Resources

Several studies have been carried out using Structural Equation Modeling (SEM) to test the assumptions of the JD-R model. In accordance with this model, Cho (2020)

showed that BAT-burnout fully mediated the relationship between job demands (work overload and role ambiguity) and outcomes (turnover intentions and depression). Also, Sakakibara et al. (2020) found that BAT-burnout fully mediated the relationship between job demands (i.e., qualitative, quantitative, and emotional demands) and turnover intention. In a somewhat similar vein, De Beer (2021) successfully tested another mediation model in which emotional load was positively related to BAT-burnout, which, in its turn, was positively related to psychological distress and turnover intention, and negatively to professional efficacy. Note that in this model reduced professional efficacy was not considered a constituting element of burnout (as in the MBI) but as its consequence. In yet another SEM study, De Beer et al. (2022b) successfully integrated the BAT in the JD-R model. More specifically, the BAT-burnout mediated the relationship between job demands (work overload) and turnover intention, as well as the relation between lack of job resources (role clarity and support from colleagues and supervisor) and turnover intention. The model also included work engagement, which – in accordance with the JD-R model – only mediated between job resources and turnover.

Other studies (e.g., Oprea et al., 2021; Mazzetti et al., 2022; Innstrand, 2022; Sjöblom et al., 2022) reported positive correlations of the BAT-12 with job demands (i.e., work overload, time pressure, role conflict, work-home conflict, psychological contract breach, and interpersonal conflict). Moreover, negative correlations were found with job resources (i.e., role clarity, coworker and supervisor support, job control, performance feedback, psychological safety meaningful work, and opportunities for learning). Finally, BAT-burnout was also negatively related with positive outcomes (i.e., in-role and extrarole performance, job satisfaction, and affective commitment). Roughly speaking, the observed correlations of these studies range between 0.30 and 0.45, whereas latent correlations range between 0.50 and 0.60. Latent correlations that do not include measurement error are by definition higher than observed correlations. It appears that the size of the (latent) correlations was virtually the same for the BAT-12 and the BAT-23 (Sinval et al., 2022). Some studies (e.g., Innstrand, 2022) controlled for gender, age, and employment status, and this did not seriously affect the strength of the relationships. Finally, Pereira et al. (2021b) found that shift work employees had higher burnout-scores compared to those on a regular work schedule. This effect was independent from employee's level of engagement, self-efficacy, depression, and anxiety.

All studies above assumed a *stressor* effect, namely, that job demands and lack of resources have a positive impact on burnout, but a recent meta-analysis (Guthier et al., 2020) showed that the reverse *strain* effect, whereby the level of burnout effects the perception of job characteristics, was even stronger. For the BAT, this strain effect was suggested by a study of Buonomo et al. (2022) indicating that burned-out health professionals receive less compassion from their colleagues and supervisors, which, in its turn, deteriorates their health and well-being. Another study using social network analysis uncovered how the BAT-burnout was related to teacher's interpersonal relationships in terms of advice-seeking at work (Aboutalebi-Karkavandi et al., 2022). More specifically, teachers who scored high on cognitive impairment tended to seek advice from a greater number of others, whereas those

high in exhaustion tended to be sought out less as advisors to others. Those high in mental distance, who feel indifferent and cynical about their job and have a strong reluctance to work, were generally less likely to seek advice from other school staff at all.

Personal Resources

Various studies (e.g., Oprea et al., 2021; Mazzetti et al., 2022; Pereira et al. 2021c; Mai et al., 2022; Sjöblom et al., 2022) reported negative correlations of the BAT with emotional stability, conscientiousness, task and social self-efficacy, optimism, resilience, sense of coherence, self-leadership strategies (e.g., goal-oriented strategies), and self-esteem. Generally, the observed correlations ranged between 0.50 and 0.60 including some studies that controlled for age, gender, and level of education (e.g., Pereira et al., 2021c). Also, a positive relation was found between the BAT-burnout and sensory processing difficulties, notably hypersensitivity and low sensory registration (Van den Boogert et al., 2022). The authors rightfully noted that the causal order needs to be clarified in future longitudinal research, as processing difficulties can be both an antecedent or a consequence of burnout (or both). The most comprehensive study has been carried out by De Vries et al. (2022), who used the HEXACO personality model that includes honesty-humility (H), emotionality (E), extraversion (X), agreeableness (A), conscientiousness (C), and openness to experience (O). They found that all personality traits, except openness to experience, were uniquely and inversely related to the BAT-burnout with β-values between 0.25 and 0.30, while emotionality was positively linked to burnout. Finally, a longitudinal study found that perfectionistic concerns (i.e., the fear of making mistakes and being overly critical of one's performance) but *not* perfectionistic strivings (i.e., holding high performance-related expectations for oneself) predicted burnout 2 months later (Spagnoli et al., 2021).

In sum, the associations of burnout as assessed with the BAT agree with the predictions of the JD-R model, namely, that job demands were found positively related to burnout and job resources negatively. Additionally, burnout mediated the relationship of job characteristics (demands and resources) and work outcomes. Finally, burnout was related to a number of personal resources, including personality traits.

Longitudinal Research

The studies on burnout and job characteristics reviewed earlier in this chapter are all cross-sectional in nature meaning that – strictly speaking – no causal inferences can be made. Meanwhile, also some longitudinal studies with the BAT have been carried out. For instance, De Vries and Bakker (2022) showed that physical job demands predict the BAT-burnout 6 months later and Sørengaard and Langvik (2022) found that fair and supportive leadership leads to lower levels of burnout 6 months later,

even after controlling for job demands, gender, age, and perceived stress. In another longitudinal study, Otto et al. (2020) showed that burnout prevention behaviors (i.e., increasing job control, increasing supervisor and coworker social support, seeking tasks that energize, engaging in relaxing activities, and reducing work-home conflict) reduced burnout 2 months later. Finally, in a 30-day diary study Fleuren et al. (2022) found that employee high in burnout scored significantly higher on negative affect and lower on positive affect and work engagement on the day that they learned about the COVID-19 diagnosis of a close friend or family member. Additionally, it was found that employees high in burnout sustained higher levels of COVID-19 worrying, albeit that their negative and positive affect returned to pre-event levels in the postevent days. So taken together, it seems that certain stressors (i.e., physical job demands and learning about a COVID-diagnosis) and job resources (i.e., supportive leadership) as well as burnout prevention behaviors (e.g., increasing job control) predict future burnout as assessed with the BAT.

Intervention Research

To date, only one intervention study used the BAT. Daniels et al. (2022) carried out a randomized controlled trial to study the effectiveness of a nature-based intervention during work time to reduce burnout. The intervention took two 1.5 hr sessions a week for 3 consecutive weeks and included, for instance, a nature experience walk, a workshop land art, an edible nature walk, and a cycling tour. Compared to the nonintervention control group, the intervention group showed not only the lower BAT-scores, but also lower salivary cortisol and higher visual information-processing speed. Hence, this study provided evidence that exposure to nature during work hours may reduce stress and improve cognitive performance. It also showed that the BAT was able to detect short-term changes in burnout.

Prevalence of Burnout

Basically, levels of burnout can be determined by comparing mean values of the BAT or by determining the proportion that suffer from burnout. To estimate that proportion a qualification of certain BAT-scores is necessary that may either be based on a representative sample (statistical norm) or on a sample of those suffering from severe burnout (clinical cutoff). The former can be used to classify employees who score "low," "average," "high," or "very high" on burnout compared with a reference group, notably a national representative sample (Schaufeli et al., 2020b). The latter can be used to distinguish between employees who suffer from burnout and those who do not (Schaufeli et al., 2023).

De Beer et al. (2020) compared the mean BAT-23 scores across representative employee samples from Austria, Belgium (Flanders), Finland, Germany, Ireland, Japan, and The Netherlands and found only slight differences between these six European countries, but relatively high burnout-scores for Japan. Also, burnout

scores of Italian employees were comparable with other European countries and much lower compared to their Japanese colleagues (Consiglio et al., 2021). In both studies, the mean BAT scores were compared across countries instead of statistical norms of clinical cutoff scores.

Using a clinical cutoff score (Schaufeli et al., 2023), it was estimated that 13.6% of the Dutch working population suffers from severe, clinical burnout compared to 7.6% and 6.6% of the Flemish and Finnish working population, respectively. In a similar vein and using the same cutoff value, Hagqvist et al. (2022) found that 4.7% of a representative Swedish physician sample suffered from severe clinical burnout. More specifically, the prevalence of burnout ranged from 1.3% in anesthesiologists to 14.5% in emergency physicians; also among junior physicians, severe burnout was relatively high (13%). Two other studies used the same clinical cutoff value but found a much higher burnout prevalence: 19% among physicians in Hessen (Germany) and 26% among staff of three hospitals in French-speaking Belgium (Hellin et al., 2022). All three studies were carried out during the COVID-pandemic that may potentially impact on the difference. Mazzetti et al. (2022) compared scores of employees in their sample who filled in the BAT-12 before and during the pandemic and found that – after controlling for age, gender, and education – the former scored significantly higher compared to the latter. This result should be interpreted with caution because the study was cross-sectional and both groups were compared retrospectively.

A unique longitudinal Finnish population study assessed the BAT-23 3 months before the COVID-19 outbreak in December 2019/January 2020 and 3, 6, 12, and 18 months later (Kaltainen & Hakanen, 2022). Overall, the level of burnout remained rather stable. Only between the 3- and 6-month follow-up, a small but statistically significant increase was observed, which was associated with a slight drop in work engagement. These results were controlled for age, gender, and education. The authors conclude that employees seem to be rather mentally resilient against the pandemic.

Finally, in New Zealand, Haar (2022) used a somewhat less stringent cutoff value and found that 17% of the managers in the sample were at risk for burnout, compared to merely 8% of nonmanaging employees. Moreover, the former had 51% likelihood of high turnover intent (compared to 12% of managers not at-risk) and the latter 47% likelihood (compared to 13% of employees not at risk). Managers not only had a higher level of burnout, but they also considered leaving the organization more often.

Taken together, European employees report less BAT-burnout compared to their Japanese peers, and it seems that the COVID-pandemic did not have a severe impact on the level of burnout. The prevalence of severe burnout differs considerably across studies and are difficult to interpret.

Conclusion

The BAT was developed because a comprehensive perspective on burnout was needed, which had to be informed by the most recent definitions used in the research community as well as by the WHO (2019). This mutual dependence of object

(burnout) and method (MBI) is undesirable because it impedes new and innovative research that can lead to a better understanding of burnout. Another reason for developing the BAT are major conceptual, psychometric, and practical flaws of existing measures such as the MBI. Therefore, we took up the challenge and redefined burnout as a syndrome that occurs among employees, which is a combination of exhaustion and the concomitant reduced ability to regulate cognitive and emotional processes, on the one hand, and mental distancing as an ineffective coping strategy, on the other. Based on this novel notion of burnout, the BAT was developed as an alternative to the MBI, which was considered as the gold standard to tap burnout.

Main Research Findings

Meanwhile, over 40 studies have been carried out all over the globe and published in English plus a dozen or more in local languages. This chapter reviewed most of these studies, and the main conclusions can be summarized in the following ten points:

1. The underlying structure of the BAT is best represented by a bifactor model in which each item contributes to a general, overall burnout factor as well as to one of the four specific subscales. This agrees with the notion of a burnout syndrome; implying that a unidimensional, total burnout score can be used, as well as subscale scores. The underlying structure of the BAT was found invariant across countries, gender, age, and ethnicity.
2. The overall-BAT and its subscales are reliable in terms of internal consistency and stability across time, meaning that the BAT can be used for individual and group assessment.
3. Despite its stability over time, the BAT is able to detect changes in burnout, as demonstrated in an intervention and a longitudinal panel study.
4. The BAT was strongly correlated with other burnout measures, including the MBI, but the overlap is far from complete, meaning that the BAT also has distinctive features. In addition, the BAT explains supplementary variance in distress over and beyond the MBI.
5. Burnout – as assessed with the BAT – can be distinguished from workaholism, job boredom, work engagement, anxiety, depressed mood, general health, and quality of life.
6. The BAT fits well in the nomological network as described by the JD-R model. This means that BAT-scores are positively related to job demands and negatively to job resources. As postulated by the JDR-model, BAT-burnout mediates the relationship of job characteristics (demands and resources) and work outcomes, such as turnover intention, depression, and psychological distress.
7. Burnout as assessed with the BAT was negatively related to four Big Five personality traits (emotional stability, agreeableness, conscientiousness, and extraversion), but not to openness to experience. This agrees with a meta-analysis about burnout and personality (Swider & Zimmermann, 2010).

8. Longitudinal research with the BAT showed that – similar to the MBI – job characteristics (demands and resources) have an impact on burnout, but also that a reverse strain effect exists, namely, that burnout has an impact on future perceptions of job characteristics (Guthier et al., 2020).

9. As far as the prevalence is concerned, compared to Europe, BAT-burnout levels were higher in the Japanese working population. Moreover, it seems that the COVID pandemic did not have a severe impact on the burnout levels.

10. Finally, the prevalence of severe burnout differs across studies, whereby sample characteristics might play a role. Generally speaking, research findings with the shortened 12-item version of the BAT are similar to that of the original 23-item version.

Overall, international research findings suggest that the BAT, which is based on a novel conceptualization of burnout, is a reliable and valid instrument to assess this syndrome. On the one hand, the BAT successfully tackled the flaws of the MBI as it is based on a firmer theoretical basis, showed superior psychometric properties (factorial validity and reliability), and can produce an overall burnout score. On the other hand, the BAT seems to measure the same type of construct as the MBI and can be integrated in the same nomological network as the MBI. Hence, it looks like the BAT combines the best of both worlds.

Practical Use

In principle, the BAT can be used for two purposes: individual and group assessment. It can help health professionals to assess the level of burnout of a particular employee and identify those who suffer from severe or "clinical" burnout (Van Dam, 2021). Based on samples from healthy employees and employees who were diagnosed with burnout, clinical cutoff scores were developed for the BAT (Schaufeli et al., 2023). For diagnosing burnout, occupational physicians used the interview guidelines of Royal Dutch Medical Association (Van der Klink & Van Dijk, 2014). Using a traffic light model, employees can be classified as: (1) not suffering from burnout (green); (2) at-risk for burnout (orange); or severe burnout (red). A large Dutch study among employees who called in sick for mental reasons showed that the BAT was able to discriminate between those with severe burnout, depression, and psychological distress (Schaufeli et al., 2022). Moreover, the study showed that the BAT outperformed a commonly used depression inventory (4DSQ; Terluin et al., 2004) when it comes to identifying burnout cases. Finally, it appeared that the results were comparable for the BAT-23 and the BAT-12. This means that the short version of the BAT can be used as a reliable and valid measure to assess burnout in organizations, for instance, by including it in an occupational health survey. The longer version of the BAT is to be preferred for individual burnout assessment because of its slightly higher reliability.

Table 1 Clinical cutoff values for the BAT

	Level	Value
BAT-23		
Exhaustion	Orange	3.06
	Red	3.31
Mental distance	Orange	2.10
	Red	3.30
Cognitive impairment	Orange	2.70
	Red	3.10
Emotional impairment	Orange	2.30
	Red	2.90
Total burnout score	Orange	2.59
	Red	3.02
BAT-12		
Total burnout score	Orange	2.54
	Red	2.96

Therefore, it can be concluded that the BAT can be used in occupational health settings for discriminating between employees with and without burnout. A recent study using samples from Flanders, the Netherlands, and Finland showed that similar clinical cutoffs of the BAT (23 and 12) can be used across countries (Schaufeli et al., 2023). Table 1 displays the clinical cutoff scores of the BAT that are based on mean scale scores. Persons scoring, for instance, 3.02 or more on the BAT-23 (total score) are supposed to suffer from severe burnout (red label), whereas those scoring 2.59 or higher are at risk for burnout (orange label). The corresponding values for the BAT-12 are 2.96 and 2.54, respectively.

It is recommended to use the "red" criterion for severe burnout as this has a high specificity, meaning that the likelihood to select those who actually do *not* suffer from burnout (false positives) is as low as 10%. For a more fine-grained assessment of burnout, it is recommended to use the subscales of the BAT-23, as these are longer and therefore slightly more reliable than those of the BAT-12.

Particularly the BAT-12 is suited for group assessment in organizations, for instance, via a working conditions survey, which are mandatory in many European countries (Lastovkova et al., 2018). In contexts like this, the BAT can be either used as a screenings device for identifying employees who are at-risk for burnout, or as a tool for identifying risk factors for burnout (i.e., job demands, poor job resources). In both cases, the outcomes of the survey may be used for implementing preventive measures, in the former case for strengthening individual employees (e.g., stress management or skills training) and in the latter for improving jobs (e.g., reducing workload, increasing job control). For the first, individual-based purpose, clinical cutoffs (the traffic light) can be used (Table 1), as well as statistical norms that classify employees with "low," "average," "high," or "very high" burnout levels compared to a national representative sample. "Low" corresponds with the 25% lowest scoring employees in the representative sample (25th percentile), "high" corresponds with the 25% highest scoring employees (75th percentile), and "very

Table 2 Statistical norms for the BAT, based on a representative sample of the Flemish working population

BAT-23	Exhaustion	Mental distance	Cognitive impairment	Emotional impairment	Total score
Low	≤. 1.75	≤. 1.20	≤. 1.80	≤. 1.20	≤. 1.60
Average	1.76–2.70	1.21–2.40	1.81–2.59	1.21–2.19	1.61–2.40
High	2.71–3.74	2.41–3.59	2.60–3.39	2.20–3.19	2.41–3.29
Very high	≥3.75	≥3.60	≥3.40	≥3.20	≥3.30
BAT-12					
Low	≤. 1.66	≤. 1.00	≤. 1.66	≤. 1.00	≤. 1.50
Average	1.67–2.99	1.01–2.65	1.67–2.33	1.01–2.00	1.51–2.35
High	3.00–3.99	2.66–3.99	2.34–3.32	2.01–3.00	2.36–3.17
Very high	≥4.00	≥4.00	≥3.33	≥3.01	≥3.18

high" corresponds with the top 5% (95th percentile). The largest group scores "average," meaning that their BAT-score falls between the 25th and the 75th percentile. For various countries such as Belgium (Flanders), Finland, and The Netherlands, such statistical norms exist that are based on percentiles of the score distribution of the BAT in national representative samples. By way of example, Table 2 displays the Flemish statistical norms for the BAT that are based on mean scale scores. Persons scoring, for instance, 3.30 or higher on the BAT-23 (total score) have a "very high" level of burnout compared with Flemish employees, whereas those scoring between 1.61 and 2.40 have an "average" level. For the BAT-12, the corresponding values are 3.18 and 1.51–2.35.

For the organization-based purpose of identifying risk-factors for burnout, the BAT-scores can be correlated (or regressed on) job demands and job resources, using the JDR-Model (Bakker & Demerouti, 2017) as a conceptual framework. Schaufeli & Taris (2014) listed about 60 potential job demands and job resources (and a dozen personal resources) that are related to burnout.

Future Research Directions

Although the current BAT research findings are encouraging, as demonstrated in this chapter, more research is needed. Three future research directions stand out. First, the concurrent validity of the BAT compared to other burnout instruments – particularly the MBI – should be further established. After all, the proof of the pudding is in the eating: Does the BAT outperform the MBI? For instance, a prospective study showed that the MBI was not practically useful in predicting long-term sickness absence (≥42 days) due to mental or other reasons across a 1-year period (Roelen et al., 2015). It remains to be seen if the BAT performs better.

Second, although it seems that particularly in Europe levels of BAT-burnout do not differ much (De Beer et al., 2020) and similar clinical cutoff values can be used across countries (Schaufeli et al., 2023), more research is needed on statistical norms and clinical cutoffs in other European countries and beyond. It is still unclear in how far the current norms and cutoffs generalize beyond the countries in which they were established. The validation of norms and cutoffs is a pressing need, because even 40 years after the introduction of the MBI no valid criteria exist that may be used as reference for comparing burnout levels. Although the first three editions of the MBI-manual included statistical norms – based on convenience samples instead of representative samples – they disappeared from the latest fourth edition (Maslach et al., 2017). In fact, Maslach and Leiter (2022) now strongly argue against the diagnostic use of the MBI because, in their view, burnout is a relation issue between the individual and the job and not a disorder or disease. We believe it is both, and therefore cutoffs and norms are essential for using any burnout instrument in practice.

Finally, our definition of burnout asserts that mental distancing is a counterproductive, ineffective coping strategy to deal with feelings of exhaustion and the associated cognitive and emotional impairments. This assumes a temporary order in which exhaustion and impairment precede mental distance. Future research should uncover the dynamic of burnout as assessed by the BAT and investigate how the syndrome unfolds.

Final Note

The BAT, which is based on a fresh look on burnout, seems to be a valid and reliable instrument to assess burnout. The research summarized in this chapter suggests that the BAT can be used as a viable, alternative measure that gauges the burnout syndrome (total score), as well as its four core components (exhaustion, cognitive and emotional impairment, and mental distance). The BAT is freely available in about 30 language versions and can be downloaded from www.burnoutassessmenttool.be. In the Appendix, the English version of the BAT is included.

Appendix

Burnout Assessment Tool (BAT)

Instruction

The following statements are related to your work situation and how you experience this situation. Please state how often each statement applies to you.

Scoring

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

	Never	Rarely	Sometimes	Often	Always
Exhaustion					
1. At work, I feel mentally exhausted*	☐	☐	☐	☐	☐
2. Everything I do at work requires a great deal of effort	☐	☐	☐	☐	☐
3. After a day at work, I find it hard to recover my energy*	☐	☐	☐	☐	☐
4. At work, I feel physically exhausted*	☐	☐	☐	☐	☐
5. When I get up in the morning, I lack the energy to start a new day at work	☐	☐	☐	☐	☐
6. I want to be active at work, but somehow I am unable to manage	☐	☐	☐	☐	☐
7. When I exert myself at work, I quickly get tired	☐	☐	☐	☐	☐
8. At the end of my working day, I feel mentally exhausted and drained	☐	☐	☐	☐	☐
Mental distance					
9. I struggle to find any enthusiasm for my work*	☐	☐	☐	☐	☐
10. At work, I do not think much about what I am doing, and I function on autopilot	☐	☐	☐	☐	☐
11. I feel a strong aversion towards my job*	☐	☐	☐	☐	☐
12. I feel indifferent about my job	☐	☐	☐	☐	☐
13. I'm cynical about what my work means to others*	☐	☐	☐	☐	☐
Cognitive impairment					
14. At work, I have trouble staying focused*	☐	☐	☐	☐	☐
15. At work I struggle to think clearly	☐	☐	☐	☐	☐
16. I'm forgetful and distracted at work	☐	☐	☐	☐	☐
17. When I'm working, I have trouble concentrating*	☐	☐	☐	☐	☐
18. I make mistakes in my work because I have my mind on other things*	☐	☐	☐	☐	☐
Emotional impairment					
19. At work, I feel unable to control my emotions*	☐	☐	☐	☐	☐
20. I do not recognize myself in the way I react emotionally at work*	☐	☐	☐	☐	☐

	Never	Rarely	Sometimes	Often	Always
21. During my work I become irritable when things don't go my way	☐	☐	☐	☐	☐
22. I get upset or sad at work without knowing why	☐	☐	☐	☐	☐
23. At work I may overreact unintentionally*	☐	☐	☐	☐	☐

Note: * = Short version

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