

Teachers' burnout is related to lowered speed and lowered quality for demanding short-term tasks

*Tuulia M. Ortner*¹

Abstract

The present study addressed the relation between self-reported burnout experiences and objective performance in teachers. As an alternative to the distal long-term criteria that are usually used, we followed a new approach using tasks to assess samples of short-term behavior in simulated stressful situations. Tasks requiring low cognitive demand had to be solved in situations involving (a) task collision, (b) a hindrance of the scheduled course of action, or (c) awkward working conditions. Performance data and self-reported work-related experiences were obtained from 103 school teachers. Scales related to self-reported exhaustion revealed several significant medium correlations with objective performance speed as well as performance quality (between $r = .23$ and $r = .30$). Lower speed when hindered in their scheduled course of action and a lower quality of task effort under awkward working conditions were shown for teachers suffering from burnout.

Key words: Burnout, Objective Personality Test, Teacher, Stress Resistance, Performance, Exhaustion, Working Speed

¹ *Correspondence concerning this article should be addressed to:* Tuulia M. Ortner, PhD, Freie Universität Berlin, Department of Psychology, Division for Psychological Assessment, Habelschwerdter Allee 45, 14195 Berlin, Germany; email: tuulia.ortner@fu-berlin.de

School teachers face great demands on their energy and personal skills (Vandenberghe & Huberman, 1999) and rank among the professions with the highest levels of job stress (Travers & Cooper, 1993; Stoeber & Rennert, 2008). These issues may have long-term negative consequences for their teaching effectiveness and for their classroom management (Klusmann, Kunter, Trautwein, Lüdtke, & Baumert, 2006) as well as for their personal mental health: A prolonged response to chronic emotional and interpersonal occupational stressors may end in burnout. This state is typically experienced by professionals and blue-collar workers alike, especially by those who provide services to other people (Maslach, Schaufeli, & Leiter, 2001).

Most studies have relied mainly on self-report data when investigating burnout and its consequences for teachers. However, as the construct of burnout has been defined by certain personal *experiences* from the beginning, there are not even many *behavioral*-based methods available to assess the construct. This study therefore aimed to explore and potentially provide alternative or additional approaches for the assessment of burnout and stress-related consequences in teachers by further exploring relations between teachers' self-reported burnout and objective performance.

Burnout in teachers

At present, one commonly accepted definition of burnout is the three-component conceptualization introduced by Maslach (Maslach, 1982; Maslach & Jackson, 1986). Emotional *exhaustion* as the first component is characterized by a lack of energy and a feeling of loss of emotional resources, also often accompanied by feelings of frustration. The second component, depersonalization (often called *cynicism*), is characterized by the coping strategy of emotional distancing. The third component, the *diminishing of work efficacy*, includes feelings of incompetence as well as a lack of achievement.

A newer, more differentiated approach has been recently proposed by Kieschke and Schaarschmidt (2008). This approach specifically addresses teachers' burnout in a broader framework of work and health-related experiences and behaviors. Based on research on teachers' psychological health, they describe burnout as a combination of low professional commitment, low subjective significance of work, and low professional ambitions in the persons concerned. Teachers who are experiencing burnout report low satisfaction with work, whereas the ability to distance oneself from work is limited. With reference to coping resources, burnout is accompanied by resignation tendencies, low levels of offensive coping, and lowered mental stability. Moreover, teachers who are experiencing burnout characterize themselves as exhausted and experiencing excessive challenges (Schaarschmidt & Fischer, 2001; Voltmer, Spahn, Schaarschmidt, & Kieschke, 2011). Within these two approaches, burnout has been addressed as an individual status characterized by certain experiences and self-perception of behavior. Less effort has been made to gain knowledge about teachers' real performance in different emotional-cognitive stages of job exhaustion.

Burnout and performance

In recent years, a number of reviews and meta-analyses have increased the general knowledge about burnout, its correlates, and the psychological mechanisms involved (Cordes & Dogherty, 1993; Halbesleben, 2006; Lee & Ashforth, 1996; Thoresen, Kaplan, Barsky, Warren, & de Chermont, 2003), as well as the specifics of burnout within different professions, including the teaching profession (e.g., Ochiai, 2003). Most published results that have investigated the correlates and outcomes of burnout have been based on self-reports and subjective approaches instead of real performance, which are known to suffer from a series of limitations. These limitations are often categorized into *introspective limits* and *response factors* (Greenwald et al., 2002). Introspective limits refer to a person's ability to report accurately on the intended content domain, which might be caused by a lack of awareness or associations between concepts, which would therefore be independent of a person's motivation or willingness to comply with instructions (Cattell, 1958). Such sources of bias have been widely investigated and discussed. For example, Pawlik (1985) addressed leveling and sharpening as well as other errors of self-attributions. Another problem consists of the dependency of verbal judgments when addressing behaviors from linguistic conventions instead of from their relations with intuitive concepts of personality (see Semin & Krahé, 1988). Furthermore, past research has revealed that a person generally strives for coherent answers when creating a "self" in a verbal report (see McLean, Pasupathi, & Pals, 2007). Response factors, by contrast, also affect the willingness to give information about the self and include effects such as self-presentation or even faking (Ones & Viswesvaran, 1998; Ones, Viswesvaran, Dilchert, & Deller, 2006). Rubio, Hernandez, Revuelta, and Santacreu (2011) gave a review on possible effects on the relation between self-reported and de facto behavior.

Experiences of burnout are in general supposed to be negatively related to job performance. Schaufeli and Taris (2005) argued that a basic feature of fatigue is the inability and unwillingness to expend effort, and they proposed that this would be reflected by exhaustion (as an energetic component) and depersonalization (as a motivational component). Exhausted workers have been assumed to possess insufficient resources for dealing with job demands (Leiter & Maslach, 2005). Exhaustion has been suggested to mediate the relation between burnout and performance, indicating the depletion of individual coping and energy resources (Taris, 2006).

Aims of the present study

We aimed to increase knowledge of the phenomenon of burnout in teachers by investigating the relation between burnout and performance from a new perspective: As an alternative to the use of distal, long-term variables or the self-reports used in other studies as criteria, we employed tasks that provide *objective* measures of samples of short-term behavior. The computerized tasks applied in the present study represent modern approaches of objective personality tests (Cattell & Warburton, 1967) and were designed to measure the extent to which a person's performance is impaired by typical occupa-

tional short-term stressors (see Ortner & Kubinger, 2008; Ortner, Kubinger, Schrott, Radinger, & Litzenberger, 2006). In line with this definition, the tasks assess components of successful problem-solving behavior in a simulated stressful situation that involves working on simple tasks that require low cognitive demand. Taking the simulation character into account, the tasks are similar to early miniature situations introduced by Cattell (e.g., Cattell & Warburton, 1967) and can be assigned to newer approaches of Performance Assessment (Hambleton, 2000). The tasks do not assess cognitive performance or concentration, as have already been presented in previous studies that investigated the effects of burnout (Demerouti, Taris, & Bakker, 2007; Van der Linden, Keijsers, Eling, & Van Schaijk, 2005).

We addressed the question in two steps: 1) First, we addressed objective short-term behavioral correlates (assessed by a computerized test battery) of exhaustion (assessed by self-report). 2) Second, we investigated objective behavior with reference to the more multidimensional criteria of burnout in teachers described by Schaarschmidt and Fischer (2006).

We hypothesize that burnout is related to performance in short-term stressful task situations. The computerized tasks we employed in the present study were designed to assess the extent to which a person's performance is impaired by the following three common occupational stressors: (a) *Collision of tasks*, indicating a situation in which at least two different tasks have to be completed at the same time; (b) *Hindrance of scheduled course of action*, which assesses the individual performance that results if a planned course of action cannot be continued and new plans must constantly be implemented; and (c) *Awkward working conditions*, indicating a situation in which the task completion is not inhibited, but handicapped. The obtained scores represent the quality, quantity, and speed of solved tasks.

We expected exhaustion to be significantly related to performance and verified this in two ways: Investigating effects in teachers, we first expected scales assessing individual degree of exhaustion to be significantly related to performance scores for demanding short-term tasks. In a second step, we integrated additional scales that describe work-related experiences and behavior into a "burnout" or "health" profile (see Schaarschmidt & Fischer, 1997) and checked the hypothesis regarding whether persons assigned to the burnout profile show impairment in short-term performance when compared to healthy persons.

Method

Participants

Principals of public secondary schools were contacted and informed about the study. If they agreed to take part, information for teachers and background information about the study were provided via e-mail. The study was introduced as "a study on behaviors and experiences on the job and how teachers deal with demanding situations on a computer-

ized test.” Information on duration, place, other measures, and the person conducting the study were also given. Teachers were recruited from 13 different schools. One hundred three school teachers (mean age = 44.7 ($SD = 8.90$); 26.2% male) were tested in Austria (Europe). Feedback regarding individual results was offered to increase the willingness to participate. About 87.4% of the participants requested feedback on their results. They had been teaching for a mean of 18.47 years ($SD = 10.32$) and had been working at the present school for a mean of 15.98 years ($SD = 10.02$); 79.6% were working full-time. Due to ethical, union, and employment law reasons, the testing of teachers was conducted by voluntary participation under informed consent.

Measures

Burnout. The Occupational Stress and Coping Inventory (AVEM; Schaarschmidt & Fischer, 1996), English name MECCA (Schaarschmidt & Fischer, 2001), was used for assessment of burnout-related self-reported variables. This instrument assesses job-related experience and behavior patterns reflecting styles of coping with an occupational burden and, to a certain extent, the effects of this burden as well with a particular focus laid on teachers.

For the questionnaire, persons are required to evaluate their experiences and typical behavior for 66 items assigned to eleven scales. Statements are rated on 5-point rating scales ranging from “not at all” to “very much so.” The eleven dimensions are: Subjective Significance of Work (SS), Career Ambition (CA), Commitment (CO), Striving for Perfection (SP), Emotional Distancing (ED), Resignative Tendencies (RT), Active Coping (AC), Balance and Mental Stability (BM), Satisfaction with Work (SW), Satisfaction with Life (SL), and Experience of Social Support (ES). MECCA has been developed to distinguish between four empirically established relevant types (defined by patterns of scale characteristics) of work- and health-related behavior and experience. Classification into one of the groups is based on the lowest Euclidian distance of the test taker’s specific scale profile in relation to one of the four cluster patterns. The clusters were initially established by means of a cluster analysis based on a calibration sample ($n = 1589$) and were later replicated (Schaarschmidt & Fischer, 2006). MECCA especially aims to lay the foundation for preventive measures (Schaarschmidt & Fischer, 1997): 1) Type P (*unambitious*) shows experience and behavior patterns oriented toward *self-protection*: Lack of involvement with work coupled with strong dissociation from problems dealing with the work situation, mental resilience with regard to pressure, and (relative) contentment. 2) Type H (*healthy-ambitious*) shows a health-supportive behavior and experience pattern: Clear but not excessive involvement with work, combined with a maintained capacity for distancing oneself from work-related problems, positive coping behavior, and resilience with regard to pressure and strains as well as a positive attitude toward life. 3) The behavior and experience pattern of Risk Type B (*exhausted, resigned Burn-out Type*) shows reduced involvement combined with a limited capacity for dissociation from work-related problems and a strong tendency toward resignation and reduced mental resilience with regard to pressure and strain. Persons assigned to this type show lim-

ited enjoyment of life. 4) Intense involvement and lack of dissociation from work-related problems, reduced mental resilience with regard to pressure and strain, as well as limited enjoyment of life are typical for Type A (*tense*) persons. The behavior and experience patterns for Type A show distinct risks to health. Using a computerized scoring program, the most likely as well as the second most likely type of allocation can be identified for every test taker based on Euclidian distances.

The internal consistencies of the five scales lie between .76 and .90 (Schaarschmidt & Fischer, 2006). The following relevant correlations between MECCA and the Emotional Exhaustion Scale from the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1986) have been published by Schaarschmidt and Fischer (2006, correlations in brackets): Emotional Distancing ($r = -.31$), Resignative Tendencies ($r = .48$), Active Coping ($r = -.43$), Balance and Mental Stability ($r = -.47$), Satisfaction with Work ($r = -.39$), Satisfaction with Life ($r = -.48$), and Experience of Social Support ($r = -.36$).

MECCA is currently the most frequently used questionnaire for the assessment of work-related behavior and experiences in the German-speaking countries in teachers; previous studies based on MECCA have shown burnout rates among German teachers of around or even above 30% (see Schaarschmidt, 2004). It has been reviewed for use in the consulting health psychology setting (Sarges, 2000).

Performance under short-term demands. Performance in demanding work-related short-term situations has been assessed using three short computerized tasks developed by Ortner et al. (2006). The task design was intended to construct situations that typically represent certain classes of situations and allow for the assessment of persons' different reactions within standardized potentially stressful short-term situations (see Kubinger, 2009). All tasks follow the principle that a low-cognitive-demand task has to be solved during the appearance of one particular stressful short-term demand. Situations do not require particular abilities or knowledge specific to particular professions. The following tasks have been applied (medium test duration given in brackets): Collision of Tasks (CT; 7 min), Hindrance of Scheduled Course of Action (HA; 5-9 min), and the Awkward Working Conditions task (UW; 8-15 min).

Within the CT task, test takers are confronted with two different easy and habitual requirements at the same time: A *main* task (a drag-and-drop task organizing symbols according to shape and color to certain defined fields on the screen) and a decision-oriented *secondary* task indicating a need for action (dealing with typical office disturbances, e.g., a ringing phone or an incoming fax). Four possible options for dealing with the secondary task are given, which differ in amount of settlement and expenditure of time, in which the main task is frozen [Option 1 (requires 15 seconds) indicates a conscious but the most highly time consuming option, Options 2 and 3 (10 vs. 5 seconds) represent less time consuming actions or delegation, Option 4 (0 seconds) represents ignoring the interruption (the symbol indicating that the task does not disappear from the screen then)]. Test takers are instructed to complete both tasks in the best possible way. Two scores indicate performance for both requirements: The score *Quality Main Task* (QMT) is calculated by the number of correctly organized symbols. The score *Efficiency of Minor Task* (EMT) includes information regarding whether the 20 minor tasks have

been solved in an efficiently less time-consuming way (choice of Option 2 and 3). Split-half reliability of the scores is $r_{tt} = .91$ (QMT) and $r_{tt} = .57$ (EMT; Ortner et al., 2006).

For the HA task, test takers are confronted with a simulated labyrinth from a bird's eye view. The task involves the navigation of an object from a start point to an end point by using a navigational field displayed on the screen. Progress is impeded by pathways consistently "closing" (hindrances appear on the screen) until a certain number of obstacles ($n = 45$) have been passed. Test takers are given the opportunity to abort the test. Two scores represent performance, the solution *Speed* (SPE; time spent in the labyrinth until finished or time until abortion divided by the number of passed obstacles), and the percentage of hindrances passed before the task is aborted (PHP). No results regarding reliability are available because the task score cannot be divided.

The UW task requires the respondent to answer inquiries that appear on the screen requesting information (consisting of three figures). Test takers are required to look up information in five computerized data folders and entered in an on-screen calculator. Instructions brief test takers that they are working in an "antiquated office". Disturbances during tasks do not make task completion impossible, but they do impede progress. Disturbances are indicated by the cursor jumping a few centimeters "by itself", by a "freezing" of the cursor, by short disappearances of the cursor, by a decelerated reaction of the cursor, by the cursor moving by itself, by the picture on the screen "shivering" or turning black for a few seconds, and by contrasts between colors worsening. Tasks were designed in such a way that every task could be solved despite the disturbances, but with higher expenditures of time and endurance. Test takers are given the opportunity to abort the test. Scores represent the amount of successful task completion and the number of tasks faced before abortion: The Quality of Task Solution score (QTS) relates the solved items to the attempts to solve them. The second score represents the number of tasks that were confronted (solution attempts) before task abortion (PTB). Split-half correlation of the QST-score revealed a sufficient value ($r_{tt} = .84$), whereas calculation was not possible for the second score.

Overall, across the three tasks, six scores are obtained: Two scores (PHP; PTB) represent the number of tasks confronted before task abortion. Two other scores (QMT; QTS) represent the quality of work, and the first score also contains aspects of working quantity. The other scores indicate speed of solution (SPE) and the efficiency of decisions made (EMT). Summarized task characteristics and the calculation of scores are given in Table 1.

Furthermore, past studies revealed the tasks' discriminant validity according to results from an attention test and intellectual performance (Ortner & Janous, 2006; Ortner et al., 2006).



Table 1: Task characteristics, demand, number of items, and calculation of scores of computerized tasks (Note: Order of tasks is as given in table)

Task characteristics	Demand	Number of items	Scores	
Collision of Tasks (CT)	Simulated office situation with two requirements: <i>Main</i> task (a drag-and-drop task organizing symbols according to shape and color) and a decision-oriented <i>secondary</i> task indicating need for action (dealing with typical office disturbances, e.g., a ringing phone or an incoming fax). The four options differ in amount of settlement and expenditure of time.	Simultaneous appearance of both tasks, the handling of which is mutually exclusive (only sequential treatment possible).	Up to 233 coding symbols as main task (dependent upon number of finished items) and 20 inquiries as secondary tasks	<p>1. QMT - Quality of main task $QMT = CS - WS$ with CS = Coded Symbols WS = Wrongly Coded Symbols</p> <p>2. EMT - Efficiency of minor task $EMT = \sum_{z=1}^{30} na_z$ with $na_z = 1$, if inquiry z is worked on using strategy 2 or 3, otherwise $na_z = 0$</p>
Hindrance of Scheduled Course of Action (HA)	Simulated labyrinth from a bird's eye view. The task involves the navigation of an object from a start point to an end point by using a navigational field displayed on the screen. Task abortion is possible.	Progress is frustrated by pathways consistently closing until a certain number of obstacles have been passed.	One small exercising labyrinth without hindrances and a main task; after 45 hindrances in main task, no more barricades appear	<p>1. SPE - Speed $SPE = \frac{duration}{hindrances_passed}$</p> <p>2. PHP - Percentage of hindrances passed (before task abortion) $PHP = \frac{hindrances_passed}{45} * 100$</p>
Awkward Working Conditions (UW)	Responses to letters requesting information (consisting of three figures) have to be looked up in five computerized data folders and entered in an on-screen calculator. Task abortion is possible.	Instructions brief test takers that they are working in an "antiquated office". Disturbances during tasks do not make task completion impossible, but impede progress; e.g., the cursor jumps "by itself", the picture on screen "shivers" or turns black for seconds.	Five items without disturbances as exercising trials, 15 with disturbances	<p>1. QST - Quality of solved tasks $PST = \frac{\sum_{i=6}^{20} izg_i}{\sum_{i=6}^{20} ib_i}$ with $ib_i = 1$, if item i has been presented (i.e., no task abortion before the item), otherwise $ib_i = 0$; and $izg_i = 1$, if item i has been solved</p> <p>2. PTB = Percentage of tasks confronted before task abortion $PTB = \frac{\sum_{i=6}^{20} ib_i}{15} * 100$</p>

Other variables. We additionally assessed teachers' age, years spent as a teacher, as well as years spent at the current school. We also asked for a description of teaching duties and sick days during the current closing semester. Sick days were asked about independent of officially reported sickness. We presented a list of seven possible sickness categories (e.g., cardiovascular diseases, influenza/cold/loss of voice, injuries) and asked teachers to list sick days per disease in order. These were summarized as one score.

Procedure

Teachers were tested in group settings in the schools' PC rooms. The questionnaire, MECCA, assessing exhaustion and burnout, as well as a questionnaire assessing demographic and supplementary data were presented in paper form. The three tasks assessing basic aspects of behavior under stress were presented on the computer. Participants' identities were hidden by using an individual pseudonym throughout the study.

Statistics

We calculated simple zero-order correlations between the performance task scores and the MECCA scales in order to evaluate the relation between burnout and performance. Afterwards, we calculated simple main effects between the group of teachers classified by MECCA as Type H (*healthy-ambitious*), showing health-supportive behavior and experience patterns, and persons classified as Risk Type B (*exhausted, resigned Burnout Type*), to investigate performance differences.

Results

Descriptive statistics

Table 2 summarizes descriptive statistics of sample characteristics and MECCA results split into the four types of work-related behavior and experience. The number of teachers assigned to the burnout type in our sample is consistent with the percentage found in large-scale assessments (Schaarschmidt, 2004).

Zero-order correlations

Zero-order correlations between the scores on the seven MECCA scales and the performance scores are given in Table 3. Six significant correlations were revealed: A significant negative correlation was found between the score on the Resignative tendency scale (MECCA) and Speed (HA task; $r = -.28$; $p < .01$); a significant positive correlation was found between the score on the Satisfaction with Work scale (MECCA) and the

Table 2:
Means and standard deviations in the four relevant groups distinguished by MECCA including MECCA scores, performance scores, and biographical variables

	H (n = 26)	P (n = 25)	A (n = 23)	B (n = 29)
<i>MECCA</i>				
ED	17.50 (4.79)	20.80 (5.61)	10.57 (3.37)	13.31 (3.73)
RT	12.31 (3.62)	14.88 (2.68)	17.61 (4.28)	18.41 (4.57)
AC	24.62 (2.64)	21.12 (3.31)	23.52 (3.78)	20.69 (2.51)
BM	22.12 (3.12)	21.20 (4.42)	16.65 (5.11)	17.83 (4.42)
SW	26.92 (2.84)	23.04 (3.37)	23.57 (3.50)	20.48 (2.96)
SL	26.00 (2.42)	24.08 (3.49)	21.04 (3.70)	18.93 (3.77)
ES	25.58 (2.77)	24.36 (3.65)	20.48 (4.55)	19.62 (4.24)
<i>Performance Tasks</i>				
QMT	130.69 (34.09)	108.44 (43.98)	142.52 (35.30)	114.26 (48.33)
EMT	2.73 (2.56)	2.80 (2.35)	1.87 (1.96)	2.37 (1.69)
SPE	-14008.84 (7070.15)	-13228.11 (4460.90)	-15764.90 (6905.18)	-18146.77 (9424.23)
PHP	68.72 (30.80)	71.46 (30.27)	69.28 (31.81)	61.81 (30.45)
QST	0.72 (.17)	0.72 (.23)	0.61 (.26)	0.57(.20)
PTB	78.21 (34.02)	64.35 (39.22)	71.59 (40.46)	68.40 (35.26)
<i>Other variables</i>				
age	41.65 (9.71)	43.48 (8.94)	45.61 (9.50)	47.90 (6.64)
years teaching	14.71 (10.85)	17.32(9.91)	19.98 (10.85)	21.63 (8.93)
years at present school	13.37 (11.63)	14.10 (9.69)	17.63 (9.61)	18.62 (8.56)
weekly teaching duty	18.04 (5.72)	20.78 (4.01)	18.70 (4.88)	19.78 (3.32)
sick days (for last semester)	2.96 (4.56)	4.22 (7.23)	8.08 (10.81)	7.52 (11.34)

Note: Dimensions MECCA: ED = Emotional Distancing, RT = Resignative Tendencies, AC = Active Coping, BM = Balance and Mental Stability, SW = Satisfaction with Work, SL= Satisfaction with Life, ES = Experience of Social Support. Performance: Collision of Tasks: QMT = Sum of Correctly Organized Symbols Within Main Task, EMT = Efficiency in Solving the Minor Task; Hindrance of Scheduled Course of Action: SPE = *Speed*, PHP = Percentage of Hindrances Passed (before task abortion). Awkward Working Conditions: QST = Quality of Solved Tasks, PTB = Percentage of Tasks Confronted Before Task Abortion.

Table 3:
Zero-order correlations between performance scores and MECCA scale scores

	MECCA						
	ED	RT	AC	BM	SW	SL	ES
QMT	-.15 (-.17)	-.08 (-.09)	.15 (.17)	-.01 (-.01)	.26** (.30)	.13 (.15)	-.13 (-.16)
EMT	.20 (.28)	-.12 (-.17)	.05 (.07)	.10 (.15)	.04 (.06)	.00 (.00)	.11 (.17)
SPE	.10 (.11)	-.28** (-.34)	.13 (.16)	.08 (.10)	.30** (.37)	.18 (.22)	.25* (.33)
PHP	.08 (.09)	.00 (.00)	.09 (.11)	.14 (.18)	.20 (.25)	.14 (.17)	.09 (.12)
QST	.17 (.20)	-.12 (-.14)	.02 (.02)	.12 (.15)	.25* (.30)	.16 (.20)	.23* (.29)
PTB	-.04 (-.05)	.12 (.14)	.12 (.15)	-.03 (-.04)	.09 (.11)	-.03 (-.04)	-.01 (-.01)

Note: Corrected correlations are presented in brackets (scores including QMT, EMT, and QST include reliabilities of MECCA and performance tasks; SPE, PHP, and PTB only include reliabilities of MECCA scales). Dimensions MECCA: SS = Subjective Significance of Work, CA = Career Ambition, CO = Commitment, SP = Striving for Perfection, ED = Emotional Distancing, RT = Resignative Tendencies, AC = Active Coping, BM = Balance and Mental Stability, SW = Satisfaction with Work, SL = Satisfaction with Life, ES = Experience of Social Support.

Performance: Collision of Tasks: QMT = Sum of Correctly Organized Symbols Within Main Task, EMT = Efficiency in Solving the Minor Task; Hindrance of Scheduled Course of Action: SPE = Speed, PHP = Percentage of Hindrances Passed (before abortion). Awkward Working Conditions: QST = Quality of Solved Tasks, PTB = Percentage of Tasks Confronted Before Task Abortion.

* $p < .05$. ** $p < .01$.

QMT score (TC task; $r = .26$; $p < .01$) as well as with Speed (HA task; $r = .30$; $p < .01$) and the QST score (UW task; $r = .25$; $p < .05$); significant correlations were also obtained between the Experience of Social Support score (MECCA) and Speed (HA task; $r = .25$; $p < .05$), as well as with the QST score (UW Task; $r = .23$; $p < .05$).

Main effects

Simple main effects (one-tailed) revealed no significant difference between Risk Type B (*Burnout*) and Type H (*Healthy behavior*) for the scores from the Task Collision task. Analyses of the Speed score for the Hindrance of Scheduled Course of Action task revealed a significant result: Persons classified as Type B (Burnout) showed lower speed compared to persons classified as Type H, $t(51) = 1.80$, $p = .04$. For the Awkward Working Conditions task, a significant difference was revealed for the first score representing the quality of solved tasks, QST; $t(51) = 3.00$, $p = .00$. No significant difference was shown for the score representing the number of tasks confronted before abortion (PTB).

Discussion

The present study investigated the relation between burnout and performance assessed by computerized, short-term behavioral tasks. Several significant relations between scales related to exhaustion and task performance were revealed: Significant relations were shown for scores representing working speed in a situation involving hindrance of scheduled course of action, the quality of solved tasks in a situation with two colliding tasks, and the quality in a situation with awkward working conditions in terms of dealing with computer troubles.

Comparing differences between teachers who had reported a status characterized as the Burnout type (i.e., scale characteristics including reduced involvement combined with limited capacity for dissociation from work-related problems, a strong tendency toward resignation, reduced mental resilience with regard to pressure and strains, and limited enjoyment of life) with persons describing themselves as healthy, led to equivalent results: Lower speed when hindered in their scheduled course of action as well as a lower quality of task effort under awkward working conditions were shown.

The results therefore indicate lowered performance in terms of speed as well as lowered quality of task solution in a state classified as burnout. Interestingly, and this serves as one of the most revealing results of this study, although teachers' performance in a state of burnout was impaired, they did not *abort* the tasks earlier (represented by the PHP and PTB scores) significantly more often than healthy persons. In this study, teachers showing experience patterns related to burnout continued working on tests, which they could choose to end anytime, for as long as healthy persons, although they carried out the tasks with diminished quality. This result is also interesting from another aspect of interpretation: In the case of intentionally faking bad, for example, in the case of an application for early retirement, task abortion would have been a way for test takers to make an obvious display of individual exhaustion. As there was no difference shown, these results can be cautiously interpreted as burnout resulting in commitment under lowered quality rather than in an increased rate of giving up. However, as there is a lack of research on the effects of burnout on performance, further research and replications of these findings are needed.

There are limitations of this study that should be mentioned. One limitation is that most teachers classified as the burnout type who took part in the study had probably not been in the most severe states of burnout (resignation, exhaustion), as they had successfully held positions of active employment. Unfortunately, there is no realistic possibility of testing teachers in a larger sample who are in states of terminated employment, sick leave, or rehabilitation. Most studies dealing with burnout seem to suffer from this limitation. However, research including these earlier stages is still of practical interest as seen from a preventive point of view: Maintaining work *quantity* under diminished *quality* may therefore serve as an early burnout indicator and may occur in a state before complete collapse. Furthermore, maintaining the quantity of work may even contribute to the worsening of a person's actual state.

A second limitation can be seen in the fact that – although the criterion, direct performance, was measured objectively – burnout was assessed by using self-description. As burnout has been defined by patterns of experience and feelings, there is actually no other method than asking people for a direct report of their personal experiences. However, future studies might investigate the possibility of using implicit measures such as the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) for investigating burnout. These measures assess automatic cognitions and have been shown to be less susceptible to faking (Egloff & Schmukle, 2002; Steffens, 2004). Relations between implicitly assessed associations, including the concept of exhaustion and the self, or work-related attributes and objective performance, might therefore be an area for future research. Another limitation lies in the fact that we used a cross-sectional design. This seemed appropriate, as we did work on a pilot study with a very original approach and did not want to *explain* the occurrence. Our aim was to investigate the actual correlates of individual states related to burnout, which to a certain degree allowed for the assessment of the variables at the same time. However, future studies should focus on changes in the quality and quantity of work as well as changes in speed over time. To generalize our results beyond teachers, future studies might also address other professions.

In conclusion, the present findings suggest that correlations of burnout can be assessed outside of viewing broad long-term or aggregated indicators, as found in previous studies (e.g., Cropanzano, Rupp, & Byrne, 2003; Jamal & Baba, 2001). Exhaustion and burnout can already be found in basic, short-term behavior samples, where higher exhaustion is related to higher impairment. Persons in the state of burnout differed in working speed as well as in the quality of task solution, but not in the quantity. These differences might be a key feature of performance deficits under burnout and might serve as a starting point for future multimethodological assessment approaches.

Acknowledgments

I would like to thank A. Spreitzer for collecting the data and J. Zagorski for valuable comments on this article.

References

- Cattell, R. B. (1958). What is "objective" in "objective personality tests"? *Journal of Consulting Psychology, 5*, 285-289.
- Cattell, R. B., & Warburton, F. W. (1967). *Objective Personality and Motivation Tests: A Theoretical Introduction and Practical Compendium*. Chicago: University of Illinois Press.
- Cordes, C. L., & Dogherly, T. W. (1993). A review and integration of research on job burnout. *Academy of Management Review, 18*, 621-656.

- Cropanzano, R., Rupp, D. E., & Byrne, Z. S. (2003). The relationship of emotional exhaustion to work attitudes, job performance and organizational citizenship behaviours. *Journal of Applied Psychology, 88*, 160-169.
- Demerouti, E., Taris, T. W., & Bakker, A. B. (2007). Need for recovery, home work interference and performance: is lack of concentration the link? *Journal of Vocational Behaviour, 71*, 204-220.
- Egloff, B., & Schmukle, S. C. (2002). Predictive validity of an Implicit Association Test for assessing anxiety. *Journal of Personality and Social Psychology (83)*, 1441-1455.
- Greenwald, A. G., Banaji, M. R., Rudman, L. A., Farnham, S. D., Nosek, B. A., & Mellott, D. S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological Review, 109*, 3-25.
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. K. L. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology, 74*, 1464-1480.
- Halbesleben, J. R. B. (2006). Sources of social support and burnout: A meta-analytic test of the conservation of resources model. *Journal of Applied Psychology, 91*, 1134-1145.
- Hambleton, R. K. (2000). Advances in Performance Assessment Methodology. *Applied Psychological Measurement, 24*, 291-293.
- Jamal, M., & Baba, V. V. (2001). Type-A behaviour, job performance and well-being in teachers. *International journal of stress management, 8*, 231-240.
- Kieschke, U. & Schaarschmidt, U. (2008). Professional commitment and health among teachers in Germany. A typological approach. *Learning & Instruction, 18*, 429-437.
- Klusmann, U., Kunter, M., Trautwein, U., Lüdtke, O., & Baumert, J. (2008). Teachers' occupational well-being and quality of instruction: The important role of self-regulatory patterns. *Journal of Educational Psychology, 103*, 702-715.
- Kubinger, K.D. (2009). The technique of objective personality-tests sensu R.B. Cattell nowadays: The Viennese pool of computerized tests aimed at experiment-based assessment of behavior. *Acta Psychologica Sinica, 41*, 1024-1036.
- Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology, 81*, 123-133.
- Leiter, M. P., & Maslach, C. (1988). Impact of interpersonal environment on burnout and organizational commitment. *Journal of Organizational Behavior, 13*, 229-243.
- Leiter, M. P., & Maslach, C. (2005). *Banishing burnout: six strategies for improving your relationship with work*. San Francisco, CA: Jossey-Bass.
- McLean, K. C., Pasupathi, M., & Pals, J. L. (2007). Selves creating stories creating selves: A process model of self-development. *Personality and Social Psychology Review, 11*, 262-278.
- Maslach, C. (1982). *Burnout – The cost of Caring*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Maslach, C., & Jackson, S. E. (1986). *Maslach Burnout Inventory. Manual (2nd ed.)*. Palo Alto, CA: Consulting Psychologists Press.

- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job Burnout. *Annual Review of Psychology*, *52*, 397-422.
- Ochiai, M. (2003). Teacher burnout: a review. *Japanese Journal of Educational Psychology*, *51*, 351-364.
- Ones, D. S., & Viswesvaran, C. (1998). The effects of social desirability and faking on personality and integrity assessment for personnel selection. *Human Performance*, *11*, 245-271.
- Ones, D. S., Viswesvaran, C., Dilchert, S., & Deller, J. (2006). Considering response distortion in personality measurement for industrial, work and organizational psychology research and practice [Special Issue]. *Psychology Science*, *48*.
- Ortner, T. M. & Janous, G. (2006). Zur Nützlichkeit des Einsatzes eines Objektiven Persönlichkeitstests für die Auswahl von Fachhochschulstudierenden [Utility of a battery of objective personality tests to assess aptitudes to study at a University of Applied Sciences]. In T.M. Ortner, R.T. Proyer, & K.D. Kubinger (Hrsg.): *Theorie und Praxis Objektiver Persönlichkeitstests* (S. 244-253). Bern: Hans Huber.
- Ortner, T. M. & Kubinger, K. D. (2008). Objektiv und Ökonomisch: Eine Testbatterie zur Erfassung unterschiedlicher Aspekte der emotionalen Belastbarkeit im beruflichen Kontext [Objective and economic: a battery for the assessment of emotional aspects when working under pressure]. In W. Sarges & D. Scheffer: *Innovative Ansätze für die Eignungsdiagnostik* (167-173). Göttingen: Hogrefe.
- Ortner, T. M., Kubinger, K. D., Schrott, A., Radinger, R., & Litzenberger, M. (2006). *Belastbarkeits-Assessment: computerisierte Objektive Persönlichkeits-Testbatterie – Deutsch (BAcO-D) [Stress resistance assessment: computerized objective test-battery – German version]. Test: Software und Manual*. Frankfurt/M.: Harcourt Assessment.
- Pawlik, K. (1985). Cross-situational consistency behavior: models, theories, and in-field tests of the consistency issue. In E. E. Roskam (Ed.): *Measurement and personality assessment* (pp. 307-314). Amsterdam: North Holland.
- Rubio, V. J., Hernández, J. M., Revuelta, J., & Santacreu, J. (2011). Are we more consistent when talking about ourselves than when behaving? Consistency differences through a questionnaire and an objective task. *The Spanish Journal of Psychology*, *14*, 207-217.
- Sarges, W. (2000). Fragebogen zur Messung der Arbeitsmotivation: "AVEM – Arbeitsbezogenes Verhaltens- und Erlebensmuster" von U. Schaarschmidt und A. Fischer (1996) [Questionnaire for assessment of work motivation: AVEM – Work related behaviour and patterns of experiences from U. Schaarschmidt and A. Fischer (1996)]. *Zeitschrift für Arbeits- und Organisationspsychologie*, *44*, 38-42.
- Schaarschmidt, U. (2004). *Halbtagsjobber [Part-time worker]*. Weinheim: Beltz.
- Schaarschmidt, U., & Fischer, A. (1996). *Arbeitsbezogene Verhaltens- und Erlebensmuster AVEM (Occupational Stress and Coping Inventory)*. Frankfurt: Harcourt Assessment.
- Schaarschmidt, U., & Fischer, A. (1997). AVEM – ein diagnostisches Instrument zur Differenzierung von Typen gesundheitsrelevanten Verhaltens und Erlebens gegenüber der Arbeit. *Zeitschrift für Differenzielle Diagnostische Psychologie*, *18*, 151-163.

- Schaarschmidt, U., & Fischer, A. (2001). Coping with professional demands: a new diagnostic approach. In K. W. Kallus & N. P. Jimenez (Eds.), *Current psychological research in Austria* (pp. 145-149). Graz/Austria: Akademische Druck- und Verlagsanstalt.
- Schaarschmidt, U., & Fischer, A. (2006). *Arbeitsbezogene Verhaltens- und Erlebensmuster AVEM [Occupational Stress and Coping Inventory]*. Frankfurt: Harcourt Assessment.
- Schaufeli, W. B., & Taris, T. W. (2005). The conceptualization and measurement of burnout: Common ground and worlds apart. *Work & Stress, 19*, 256-262.
- Semin, G. R., & Krahé, B. (1988). Explaining perceived cross-situational consistency: Intuitive psychometrics or semantic mediation. *European Journal of Personality, 2*, 239-252.
- Steffens, M. C. (2004). Is the Implicit Association Test immune to faking? *Experimental Psychology, 51*, 165-179.
- Stoeber, J. and Rennert, D. (2008) Perfectionism in school teachers: Relations with stress appraisal, coping styles, and burnout. *Anxiety, Stress, & Coping, 21*. 37-53.
- Taris, T. W. (2006). Is there a relationship between burnout and objective performance? A critical review of 16 studies. *Work & Stress, 20*, 316-334.
- Thoresen, C. J., Kaplan, S. A., Barsky, A. P., Warren, C. R., & de Chermont, K. (2003). The affective underpinnings of job perceptions and attitudes: A meta-analytic review and integration. *Psychological Bulletin, 129*, 914-945.
- Travers, C. J., & Cooper, C. L. (1993). Mental health, job satisfaction and occupational stress among UK teachers. *Work & Stress, 7*, 203-219.
- Vandenbergh, R. and Huberman, H. (Eds.) (1999), *Understanding and Preventing Teacher Burnout: A Sourcebook of International Research and Practice*. Cambridge, England: University Press.
- Van der Linden, D., Keijsers, G. J. P., Eling, P., & Van Schaijk, R. (2005). Work stress and attentional difficulties: an initial study on burnout and cognitive failures. *Work & Stress, 19*, 23-36.
- Voltmer, E., Spahn, C., Schaarschmidt, U., & Kieschke, U. (2011). Work-related behavior and experience patterns of entrepreneurs compared to teachers and physicians. *International Archives of Occupational and Environmental Health, 84*, 479-490.