

# **Workaholism Among Medical Residents: It Is the Combination of Working Excessively and Compulsively That Counts**

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*Workaholism is defined as an irresistible inner drive to work excessively. Accordingly, it is assessed with a questionnaire that measures working excessively (WE) and working compulsively (WC), representing the behavioral and cognitive aspects of workaholism, respectively. A cluster-analysis using a nationwide sample of Dutch medical residents (N = 2,115) resulted in 4 groups: (a) workaholics, (b) nonworkaholics, (c) hardworking residents, and (d) compulsive working residents. As predicted, the combination of WE and WC was related to the most unfavorable conditions in terms of resident's job demands (i.e., work overload, work-home conflict, overwork, role conflict, mental demands, emotional demands, and organizational demands), job resources (i.e., social support from colleagues, participation in decision making, feedback,*

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*supervisory coaching, and opportunities to learn), well-being (i.e., burnout, happiness, recovery), and organizational behavior (i.e., "presenteeism," and medical performance). Taken together, our results confirm the suitability of conceptualizing workaholism as an inner drive to work excessively hard.*

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As its originator wrote, the term *workaholism* "is a neologism, an invented word, a semihumorous word for addiction to work" (Oates, 1971). It had a catchy ring and soon became a colloquial term and a well-liked topic in the popular, business, and self-help press, which is illustrated by the fact that in February 2009 workaholism yielded nearly 123,000 Google hits. This widespread popularity stands in sharp contrast to the relatively few scholarly publications that have appeared on workaholism. For instance, there were only 131 studies identified in the scientific business literature (Ng, Sorensen, & Feldman, 2007). Our own literature search using PsycINFO (February 2009) revealed 209 publications with the keyword *workaholism*, of which only 93 used this term in the title. One of the main reasons for this large discrepancy between public and scientific interest in workaholism is that no agreement exists regarding the conceptualization and measurement of workaholism (McMillan & O'Driscoll, 2006).

The current article contributes to the discussion about the meaning and measurement of workaholism by introducing a straightforward and parsimonious definition that goes back to its founding father Wayne Oates and that can be considered the common denominator of other definitions: workaholism is the tendency to work excessively in a compulsive way. This conceptualization implies that workaholism is constituted by the combination of working excessively (WE) and working compulsively (WC). It follows that workaholism cannot be reduced to either of these two components. Therefore the aim of the current study is to demonstrate that the combination of WE and WC—rather than both components separately—is related to the most unfavorable scores on job demands, job resources, well-being, and organizational behavior.

It is important to note that workaholism differs from work engagement, both conceptually as well as empirically. There is some confusion in the literature as to whether workaholism is entirely "bad" or that it can also be "good." As argued elsewhere (Schaufeli, Taris, & Bakker, 2008), good forms of workaholism include the aspect of work enjoyment and therefore come very close to work engagement as a positive, fulfilling work related state of mind that is characterized by vigor, dedication, and absorption (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002). Empirically, workaholism and engagement can be discriminated because both concepts load on different factors and they are differentially related with indicators of excessive work, job demands, job resources, social relations, and health and organizational outcomes (Schaufeli, Taris, & Van

Rhenen, 2008). Hence, for reasons of conceptual clarity, instead of discriminating between good and bad forms of workaholism we propose to discriminate between workaholism (being bad) and work engagement (being good). Vallerand (2008) made a conceptually similar distinction when differentiating between harmonious passion and obsessive passion.

We investigate medical residents, who despite being a prototypical risk group (e.g., Harpaz & Snir, 2003; Scott, Moore, & Miceli, 1997) have not been included before in a study on workaholism. This is remarkable indeed because it seems that medical residents work excessively long hours. For instance, a national U.S. survey found that, on average, residents were 56.9 hr per week on call in the hospital (Daugherty, DeWitt, & Rowley, 1998). Elsewhere, it was estimated that the group under study—Dutch medical residents—work on average 51 hr per week (van der Heijden, Dillingh, Sprangers, Bakker, & Prins (2006). In a similar vein, depending on the year that was surveyed, between 63% and 85% of junior doctors did not take sick leave although they suffered from illness (Perkin, Higton, & Witcomb, 2003). So an important precondition for workaholism seems to be met; medical residents work excess hours, even when they feel ill. Of course, the reason for working long hours among medical residents may also be external because of peer-group pressure, excessive demands from supervisors, organizational constraints (understaffing), or professional culture. However, it seems fair to conclude that the hospital environment constitutes a fertile ground for the development of workaholism among residents, particularly for those who have a propensity for work addiction (Mudrack, 2006).

## THE TWO-DIMENSIONAL NATURE OF WORKAHOLISM

The most obvious characteristic of workaholics is that they work far beyond what is required. Consequently, they devote an excessive amount of time and energy to their work, thereby neglecting other spheres of life (e.g., Buelens & Poelmans, 2004; Mudrack & Naughton, 2001). For instance, North American workaholics work on average 50 to 60 hr per week (Brett & Stroh, 2003), which agrees with the work hours of medical residents (see above). However, conceiving workaholism exclusively in terms of the number of working hours would be wrong because it would neglect its addictive nature. After all, people may work long hours without being addicted to it for many reasons, including financial problems, poor marriage, social pressure, or career advancement, as we noted above for medical residents. Rather than being motivated by such external factors, a typical work addict is motivated by an obsessive internal drive that she or he cannot resist. Hence, we defined workaholism as an irresistible inner drive to work excessively hard (cf. Schaufeli, Taris, & Bakker, 2008).

This two-dimensional conceptualization of workaholism corresponds with its original meaning as formulated by Oates (1971), who described workaholism as “the compulsion or the uncontrollable need to work incessantly” (p. 11). Analogously to alcoholics, for workaholics their need to work is so exaggerated that it endangers their health, reduces their happiness, and deteriorates their interpersonal relations and social functioning, he argued.

In addition, our conceptualization of workaholism also agrees with lay perception, as illustrated by a study of McMillan and O’Driscoll (2006). They asked workers, and colleagues and partners of workaholics the question “How would you describe someone who is workaholic?” After content analysis, it appeared that the two most frequent answering categories were: “time spent working or thinking about work” (39%) and “obsessive personal style” (22%), together representing 61% of the responses. Clearly, these two answering categories correspond to our dimensions of WE and WC, respectively.

Last but not least, various independent overviews confirm that both dimensions feature across most definitions of workaholism. For instance, Scott et al. (1997) observed that virtually all definitions assume that workaholics: (a) spend a great deal of time on work activities when given the discretion to do so—they are excessively hard workers; (b) are reluctant to disengage from work, and they persistently and frequently think about work even when they are not working—they are obsessed workers; and (c) work beyond what is reasonably expected from them to meet organizational or economic requirements. The latter is in fact a specification of the first and the second features because it deals with the motivation for spending an excessive amount of time to work. So taken together, Scott et al.’s (1997) conceptual analyses revealed that workaholics work harder than is required out of an obsessive inner drive, and not because of external factors. In a similar vein, in seven of the nine workaholism definitions that were listed by McMillan and O’Driscoll (2006), working excessively hard and being propelled by an obsessive inner drive are mentioned as its core characteristics. Finally, a recent analysis of scholarly definitions by Ng et al. (2007) concludes that hard work at the expense of other important life roles and an obsessive internal drive to work are the two core aspects of workaholism.

## **CORRELATES OF WORKAHOLISM**

Four kinds of correlates have been associated with workaholism: job demands, job resources, well-being, and organizational behavior. The rationale for including these four types of correlates comes from the Job Demands–Resources (JD–R) model that posits that work characteristics can be broken down in into two broad categories: job demands that are associated

with effort, and job resources that have motivational potential (Bakker & Demerouti, 2007). Moreover, according to the JD–R model, high job demands (e.g., work overload) lead to poor well-being (e.g., burnout) and poor organizational outcomes (e.g., performance), whereas job resources (e.g., opportunities for learning and development) are positively associated with well-being and positive organizational outcomes (e.g., performance).

### **Job Demands**

It has been observed that in their attempts to continue working, workaholics may go as far as to actively create more work for themselves, for instance, by making their work more complicated than necessary or by refusing to delegate work (Burke, 2001b; Machlowitz, 1980). Accordingly, positive relationships were observed between workaholism and job demands such as work overload and role problems (Burke, 2000; Burke & Koxsal, 2002; Kanai & Wakabayashi, 2001; Kanai, Wakabayashi, & Fling, 1996). In addition, and not surprising, positive relations have been found between workaholism and number of work hours (Aziz & Zickar, 2006; Schaufeli, Taris, & Bakker, 2008), and work–home conflict (Aziz & Zickar, 2006; Bakker, Demerouti, & Burke, 2009; Bonebright, Clay, & Ankenmann, 2000; Schaufeli et al., 2008; Taris, Schaufeli, & Verhoeven, 2005). Moreover, levels of marital estrangement are higher among workaholics than among nonworkaholics (Robinson, Flowers, & Carroll, 2001). It seems that workaholics work long hours and therefore feel that their jobs interfere with their personal and family lives. In the present study, we included in addition to general job demands (i.e., work overload, overtime, role problems, and work-home conflict), mental, organizational, and emotional demands. These three types of demands are particularly important for medical residents because they have to process large quantities of information and make complicated decisions (mental demands), they work in a complex organizational environment (organizational demands), and they must deal with suffering patients and their families (emotional demands).

### **Job Resources**

Compared to job demands, relationships of workaholism with job resources have been studied less often, perhaps with the exception of career prospects (Burke, 2001b) and social relationships at work (Buelens & Poelmans, 2004; Schaufeli, Taris, & Van Rhenen, 2008). Both appeared to be negatively related to workaholism. This agrees with the idea that workaholics

are not driven by extrinsic factors such as job resources, but rather propelled by an obsessive inner drive (Brett & Stroh, 2003). In the present study, we included general job resources (i.e., social support from colleagues, job control, and participation in decision making), and more specific resources that are particularly important for the resident's traineeship such as opportunities for learning and development, supervisory coaching, and performance feedback. Because of their one-sided and obsessive involvement in their work linked with their obstinacy, rigidity, and high superego (Mudrack, 2006; Porter, 2001), workaholics are not likely to draw on job resources. Instead, they go their own way, motivated by their strong inner drive.

### Well-Being

It has been consistently observed that workaholics report relatively low levels of subjective well-being or happiness (Aziz & Zickar, 2006; Bonebright et al., 2000; Buelens & Poelmans, 2004; Burke, 2001a, 2008; Schaufeli, Taris, & Bakker, 2006), which agrees with the idea that workaholism is an addiction that make workaholics feel unhappy with their lives. In addition, high levels of job strain and (mental) health complaints, particularly burnout, have been observed among workaholics (Andreassen, Ursin, & Eriksen, 2007; Burke, Richardsen, & Mortinussen, 2004; Schaufeli, Taris, & Van Rhenen, 2008; Taris et al., 2005). This is compatible with the notion that by working excessively hard workaholics drain their energy backup, which leaves them mentally exhausted (Maslach, 1986). This is in line with previous research that shows that working long hours is associated with elevated levels of strain and ill health (for a review, see Van der Hulst, 2003). One of the mechanisms that is likely to be involved in the link between workaholism (WE) and burnout (exhaustion) is lack of recovery; employees who work long hours have insufficient opportunity to recover by sleeping, relaxing, or spending time on leisure activities (Sonnentag & Zijlstra, 2006). Thus, workaholics use up their energy reservoir, which has negative consequences in the long run. For instance, a study among coach drivers found significant positive effects of need recovery on psychosomatic complaints and exhaustion (Sluiter, Van der Beek, & Frings-Dresen, 1999). For that reason, in the present study not only burnout but also recovery was assessed.

### Organizational Behavior

Behavioral indicators of well-being have rarely been studied in relation to workaholism. Therefore, we included *presenteeism* in our study, which

means coming to work while actually feeling ill (Aronsson, Gustafsson, & Dallner, 2000; Demerouti, Le Blanc, Bakker, Schaufeli, & Hox, 2009). As noted above, presenteeism is a widespread phenomenon among medical residents (Perkin et al., 2003). They do not go on sick leave mainly for the reason that their colleagues have to do extra work and because of consultant pressure. Because of their strong inner drive to work, we expect a positive relationship between workaholism and presenteeism: Workaholics—although feeling ill—come to work; they are almost literally driven to work.

Whereas some authors have maintained that workaholics are extremely productive (e.g., Machlowitz, 1980), others have claimed the opposite—workaholics work hard rather than smart (Oates, 1971). Furthermore, they create difficulties for their coworkers, they suffer from perfectionism, they are rigid and inflexible, and they do not delegate (Killinger, 2006; Porter, 2001). Unfortunately, virtually no empirical research has been carried out on the relationship between workaholism and job performance. We expect that, given the long list of negative attitudes and behaviors that might interfere with job performance (Scott et al., 1997, p. 291), workaholics are not necessarily good and perhaps even poor performers.

### THE CURRENT STUDY

First, we set out to identify clusters of medical residents, based on their scores on both indicators of workaholism. Elsewhere—using the same sample<sup>1</sup>—we defined four groups of medical residents a priori by cross-tabulating those who scored above and below the median on each of the subscales measuring WE and WC, respectively (Schaufeli, Taris, & Bakker, 2008). The current study takes an inductive approach by using cluster-analyses to evaluate which groups emerge empirically. We expect that at least two groups will emerge (Hypothesis 1): one group of medical residents that scores high on both WE and WC (workaholics), and one group that scores low on both indicators (nonworkaholics).

Next, we compare the groups that emerge from the cluster-analysis with respect to various types of correlates of workaholism. More specifically, we hypothesize that, compared to nonworkaholic residents (or any other group that might emerge from the previous cluster-analyses), workaholics show the most unfavorable scores in terms of job demands, job resources, well-being, and organizational behavior (Hypothesis 2).

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<sup>1</sup> In the current study, the same variables were used as in Schaufeli, Taris, and Bakker (2008), except for absence frequency and absence duration which have been eliminated because of the poor validity of self-reported sickness absence data.



## METHOD

### Procedure and Sample

All 5,245 Dutch medical residents in the October 1, 2005, national register of the Royal Dutch Medical Association were included in the sample and received a questionnaire by mail; 105 respondents indicated by return mail that they were no longer residents. Of the remaining 5,140 residents, 2,240 responded (43.7%), of whom 2,115 completed the questionnaire and 125 indicated they did not wish to participate. The top three reasons for not responding were: "I am too busy" (23%), "The questionnaire is too long" (22%), and "I lack energy" (11%). A cover letter was included that explained the purpose of the study—a working conditions survey—and emphasized anonymity. The majority of the participants were women (60.7%), and the mean age of the sample is 31.5 years ( $SD = 3.5$ ). Almost 77% were married or live together with a partner, and 32% of the respondents have one or more children. The five most important specialties included are internal medicine (13.7%), psychiatry (11.4%), surgery (8.0%), pediatrics (7.6%), and anesthesiology (7.0%).

### Measures

#### *Workaholism*

Workaholism was measured with the 10-item Dutch Workaholism Scale (DUWAS; Schaufeli, Shimazu, & Taris, in press) that includes two scales: Working Excessively (5 items,  $\alpha = .67$ ) and Working Compulsively (5 items,  $\alpha = .77$ ). Both scales (see Appendix) were scored on a 5-point rating scale ranging from 1 (*never*) to 5 (*always*). Recently, in a Japanese and Dutch sample (in which the current sample was not included), convergent validity of the DUWAS was shown with measures of excess working time, and discriminant validity was shown with measures of burnout and work engagement. More specifically, workaholics had a high relative risk on burnout and a low relative risk on work engagement (Schaufeli et al., in press). In the current study, a confirmatory factor analysis revealed that the hypothesized two-factor structure of the DUWAS fit well to the data,  $\chi^2(34) = 360.46$ , goodness-of-fit index (GFI) = .97, adjusted goodness-of-fit index (AGFI) = .95, root-mean-square error of approximation (RMSEA) = .07, normed fit index (NFI) = .92, non-normed fit index (NNFI) = .91, comparative fit index (CFI) = .93. The correlation between both latent factors was estimated .55 ( $p < .001$ ).



### *Job Demands*

Work overload (4 items;  $\alpha = .87$ ), mental demands (4 items;  $\alpha = .77$ ), organizational demands (5 items;  $\alpha = .64$ ), and emotional demands (4 items;  $\alpha = .71$ ), were assessed with shortened scales (e.g., Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003) of the Questionnaire on the Experience and Evaluation of Work (QEEW), which is widely used by applied researchers in The Netherlands (Van Veldhoven, De Jonge, Broersen, Kompier & Meijman, 2002). Example items are: "Do you have to work very fast?" (work overload); "Do you have a lot of meetings?" (organizational demands); "Does your work demand a lot of concentration?" (mental demands); and "Does your work put you in emotionally upsetting situations?" (emotional demands). Work-home conflict was measured with three items from the Survey Work-Home Interference Nijmegen (SWING; Geurts et al., 2005;  $\alpha = .71$ ). Participants were asked to indicate the extent to which their work negatively influences their home situation, for example, "How often does it happen that you find it difficult to fulfill your domestic obligations because you are constantly thinking about your work?" Role conflict was assessed with a self-constructed, four-item scale that focuses on role conflicts between the resident's role as a doctor and as a trainee ( $\alpha = .64$ ). An example item is: "How often does it happen that because of your training, it is difficult to fulfill the requirements as a doctor?" Finally, an index was calculated of the percentage of overtime using the formula  $[(a - c)/c] \times 100$ , where  $a$  equals the number of actual work hours per week and  $c$  equals the number of contractual working hours per week. The mean percentage of overtime is 16.5% ( $SD = 14.7$ ), meaning that, on average, employees worked 16.5% longer than they should according to their official labor contract.

### *Job Resources*

Six job resources were measured with several scales that have been developed and validated by Bakker et al. (2003): social support from colleagues (3 items;  $\alpha = .87$ ), job control (3 items;  $\alpha = .73$ ), opportunity to learn and to develop (3 items;  $\alpha = .80$ ), performance feedback (5 items;  $\alpha = .83$ ), supervisory coaching (6 items;  $\alpha = .86$ ), and participation in decision making (4 items;  $\alpha = .77$ ). Example items are: "If necessary, can you ask your colleagues for help?" (social support); "Do you have freedom in carrying out your work activities?" (autonomy); "Do you learn new things in your work?" (opportunities to learn and to develop); "Does your work provide you with direct feedback on how well you are doing your work?" (feedback); "My supervisor stimulates me to develop my talents" (coaching);

and “I feel that I am involved in making important decisions” (participation in decision making). All demands and resources items were scored on a 5-point rating scale ranging from 1 (*never*) to 5 (*always*).

### *Well-Being*

Three indicators of well-being were used. First, burnout was assessed with three scales of the Dutch version (Schaufeli & Van Dierendonck, 2000) of the Maslach Burnout Inventory–Human Services Survey: Emotional exhaustion (8 items;  $\alpha = .89$ ), Depersonalization (5 items;  $\alpha = .73$ ), and Personal Accomplishment (7 items;  $\alpha = .78$ ). Example items are: “I feel emotionally drained from my work” (exhaustion), “I don’t really care what happens to some recipients” (depersonalization), and “I have accomplished many worthwhile things in this job” (personal accomplishment). All items were scored on a 7-point scale ranging from 0 (*never*) to 6 (*always*). High scores on exhaustion and cynicism and low scores on personal accomplishment are indicative of burnout. Second, recovery after work was assessed with a self-constructed scale (4 items;  $\alpha = .71$ ). An example item is “When I come home from work I have time to recover”. The answering scale ranges from 1 (*never*) to 5 (*always*). Third, subjective well-being was assessed in terms of happiness (Diener, Suh, Lucas, & Smith, 1999) by a single item (“Taken everything together, how happy are you with your life?”) that was scored on a 10-point scale ranging from 0 (*totally unhappy*) to 10 (*extremely happy*;  $M = 7.7$ ,  $SD = 1.1$ ).

### *Organizational Behavior*

A negative (presenteeism) and a positive (performance) aspect of residents’ organizational behavior was assessed. *Presenteeism* was measured with a single item “How often did you go to work in the previous year despite feeling sick?” Answering categories were 0 times (21.2%), 1 to 3 times (66.3%), 4 to 7 times (10.1%), to over 8 times (2.2). Medical performance was assessed with a self-constructed scale (6 items;  $\alpha = .69$ ). An example item is “I make mistakes that have negative consequences for my patients.” The items were developed based on a previous study of errors made by residents (Shanafelt, Bradley, Wipf, & Back, 2002). Residents responded on how often certain situations had arisen during their entire residency program, with answers ranging from 1 (*never occurs*) to 5 (*occurs often*). The negatively phrased items were recoded so that a high score indicates good medical performance.

## RESULTS

### Descriptive Statistics

The means, standard deviations, internal consistencies (Cronbach's alpha), and correlations between the study variables are displayed in Table 1. All correlations between workaholism (WE and WC) and the remaining 20 study variables are significant and in the expected direction. Moreover, the mean correlation of WE and WC with these variables is similar ( $r = .24$ ) and the pattern of their correlations does not differ much. However, one notable exception is observed: overwork and work overload are much stronger related with WE than with WC. This confirms the validity of the former subscale that taps WE. The highest correlation of workaholism (WE and WC) is observed with exhaustion, a core dimension of burnout.

### Workaholism Profiles

Cluster analysis was used to identify groups of medical residents who have different workaholic profiles based on their WE and WC scores. As recommended by Gore (2000), a combination was used of hierarchical and nonhierarchical clustering methods. In the first step, to identify the number of clusters, hierarchical cluster analysis was carried out using Ward's method, based on squared Euclidian distances. Because hierarchical cluster analysis is sensitive to outliers in the data, we eliminated 29 cases with values more than 3 standard deviations below or above the mean on either WE or WC (1.3% of the sample). In hierarchical cluster analyses, the total number of retained clusters is based on a priori theorizing, parsimony of the cluster solution, and explanatory power; that is, the cluster solution has to explain approximately 50% of the variance in each of the workaholism dimensions (Milligan & Cooper, 1985).

Four clusters were retained explaining 57% and 84% of the variance in WE and WC, respectively. Hence, the threshold of 50% was exceeded for the four-cluster solution. A three-cluster solution explained only 48% of the variance in WE, whereas a five-cluster solution is less parsimonious and also appeared difficult to interpret.

In the second step, the extracted four initial cluster centers that were identified using hierarchical cluster analyses were used as starting points for an iterative, nonhierarchical  $k$ -means cluster analysis. Contrary to hierarchical cluster analyses, in nonhierarchical analyses a solution is obtained, based on an a priori determined number of clusters; in our case four clusters. When using nonhierarchical analysis, individuals might get reassigned compared to the

**Table 1.** Means, Standard Deviations, PM Correlations, and Cronbach's Alpha (on the Diagonal) of the Study Variables

No.	Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1	Work overload	3.30	0.80	.87						
2	Overwork %	116.5	14.7	.27	NA					
3	Work-home conflict	2.28	0.69	.08	-.02	.71				
4	Role conflict	2.04	0.56	.37	.16	.31	.64			
5	Mental demands	3.99	0.59	.33	.10	.05	.20	.77		
6	Emotional demands	2.46	0.57	.38	.15	.16	.37	.28	.71	
7	Organizational demands	2.83	0.66	.28	.10	.23	.42	.16	.33	.64
8	Support colleagues	3.60	0.85	-.13	-.03	-.14	-.20	.03	-.14	-.19
9	Coaching	2.88	0.72	-.16	-.07	-.08	-.15	-.01	-.13	-.16
10	Job control	3.03	0.68	-.11	-.04	-.10	-.15	-.07	-.07	-.15
11	Performance feedback	3.01	0.74	-.21	-.07	-.12	-.24	-.04	-.17	-.21
12	Opportunity to learn	3.75	0.64	-.16	-.06	-.16	-.25	.00	-.20	-.20
13	Participate in decision making	3.02	0.75	-.23	-.04	-.16	-.28	-.12	-.23	-.24
14	Exhaustion	1.98	1.05	.39	.13	.25	.47	.22	.42	.37
15	Depersonalization	1.42	0.88	.24	.10	.17	.30	.12	.32	.22
16	Accomplishment	4.43	0.74	-.10	-.02	-.11	-.11	.06	-.06	-.14
17	Recovery	3.01	0.83	-.13	.02	-.30	-.19	-.09	-.07	-.19
18	Happiness	7.68	1.06	-.19	-.08	-.30	-.28	-.08	-.24	-.22
19	Presenteeism	1.93	0.63	.18	.07	.16	.18	.10	.18	.13
20	Medical performance	2.84	0.56	-.28	-.08	-.16	-.31	-.12	-.28	-.21
21	Working excessively	2.26	0.45	.58	.27	.11	.40	.29	.31	.30
22	Working compulsively	1.98	0.60	.28	.11	.21	.38	.22	.29	.29

Note.  $N = 2,115$ .  $r > .05$ ,  $p < .05$ ;  $r > .06$ ,  $p < .01$ ;  $r > .08$ ,  $p < .001$ .

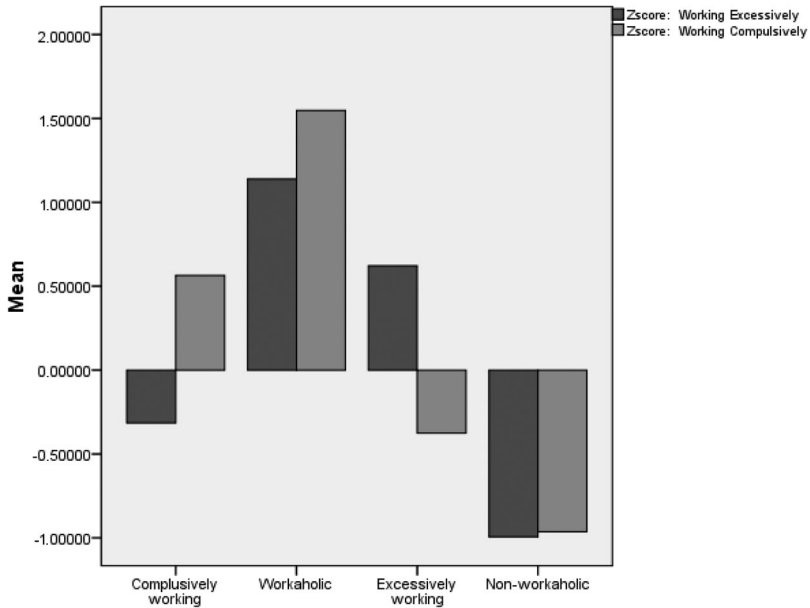
initial hierarchical cluster assignment. In fact, nonhierarchical cluster analysis is used as a way of further fine tuning the preliminary cluster solution by way of an iterative process (Gore, 2000). The final four-cluster solution is presented in Figure 1, by using  $z$  scores. Analogously to Cohen's  $d$ , 0.2 standard deviation is considered a small effect, 0.5 is a medium effect, and 0.8 a large effect (Cohen, 1988).

As can be seen from Figure 1, all four retained clusters are characterized by  $z$  scores that moderately to strongly deviate from the mean, suggesting that the groups differ considerably in terms of their workaholism profiles. More particularly, WE and WC differ largely ( $>.8$ ) from their means in the workaholic and the nonworkaholic groups, whereas WE and WC differ moderately ( $>.5$ ) from their means in the excessively and compulsively working groups, respectively. These group differences are confirmed by an analysis of variance (ANOVA) with cluster membership as independent variable. The ANOVA reveals a highly significant difference between clusters in levels of both WE and WC (See Table 2). Values for eta-squared ( $\eta^2$ ) indicate that 63% and 77% of the variance in WE and WC, respectively, can be attributed to differences between the four groups. As a result, four groups can be distinguished: (a) workaholics (16%), who score highest on WE as

8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
.87														
.31	.86													
.24	.40	.73												
.23	.62	.27	.83											
.30	.45	.36	.46	.80										
.27	.44	.52	.45	.49	.77									
-.25	-.25	-.23	-.30	-.38	-.38	.89								
-.14	-.18	-.14	-.24	-.30	-.26	.53	.73							
.25	.24	.23	.18	.31	.25	-.23	-.21	.78						
.15	.09	.08	.09	.09	.12	-.15	-.04	.04	.71					
.24	.27	.22	.21	.36	.28	-.51	-.30	.26	.10	NA				
-.09	-.11	-.05	-.11	-.12	-.12	.21	.12	-.01	-.16	-.15	NA			
.09	.15	.10	.24	.18	.21	-.39	-.43	.10	.07	.17	.09	.69		
-.18	-.09	-.10	-.15	-.14	-.18	.45	.22	-.09	-.14	-.24	.20	-.28	.67	
-.20	-.14	-.11	-.21	-.25	-.21	.50	.33	-.17	-.15	-.32	.17	-.22	.46	.77

well as WC; (b) nonworkaholics (29%), who score lowest on both dimensions; (c) excessive working residents (29%), who score relatively high on WE and relatively low on WC; and (d) compulsively working residents (26%), who score relatively high on WC and relatively low on WE. This means that Hypothesis 1 is supported, which stated that at least two groups representing workaholics and nonworkaholics would emerge.

To examine the stability or replicability of this four-cluster solution, a double-split cross-validation procedure was used (Breckenridge, 2000). For that purpose the sample was randomly split into halves (Subsample 1,  $n = 1,073$  and Subsample 2,  $n = 1,020$ ). Next, the two-step procedure as outlined above (hierarchical cluster analysis, followed by nonhierarchical analysis) was applied to Subsamples 1 and 2, respectively. The medical residents in each half of the sample were assigned to new clusters on the basis of their Euclidean distances to the cluster centers of the other half of the sample. These new clusters were then compared for agreement with the original cluster by means of Cohen's  $\kappa$ . In Subsample 1 a value of  $\kappa = .73$  was observed and in Subsample 2 a value of  $\kappa = .65$ . Because values of Cohen's  $\kappa$  of at least .60 are considered to represent acceptable agreement (Asendorpf, Borkenau, Ostendorf, & Van Aken, 2001), our study provides substantial



**Figure 1.** Mean z scores of working excessively and working compulsively for compulsive working residents ( $n = 540$ ), workaholic residents ( $n = 327$ ), excessive working residents ( $n = 619$ ), and nonworkaholic residents ( $n = 607$ ).

evidence for the stability of the four cluster solution consisting of compulsively working, excessively working, workaholic, and nonworkaholic medical residents.

### Differences Between the Groups

To test our hypothesis that, compared with the other three groups, workaholic residents score less favorable on the various correlates of workaholism, a multivariate analysis of variance (MANOVA) was conducted with cluster membership as the independent variable and all indicators of job demands, job resources, well-being, and organizational behavior as dependent variables. A highly significant multivariate effect was observed, Wilks'  $\lambda$ ;  $F(60, 5720) = 20.51, p < .001, \eta^2 = .18$ .

The result of subsequent univariate  $F$  values,  $\eta^2$ , and pairwise comparisons (using the least significant difference test) are shown in Table 2. In accordance with our expectations, and with only one exception (job control), the workaholic group exhibits the most unfavorable scores on all 20 indicators of job demands, job resources, well-being, and organizational behaviors.

**Table 2.** z Scores for Workaholism (WE and WC) and Means for Job Demands, Job Resources, Well-Being, and Organizational Behavior for Each Cluster, Together With F Values and Effect Sizes ( $\eta^2$ )

Variable	Compulsive working residents <sup>a</sup>	Workaholic residents <sup>b</sup>	Excessive working residents <sup>c</sup>	Nonworkaholic residents <sup>d</sup>	F value	$\eta^2$
<b>Workaholism</b>						
Working excessively	-0.32 <sup>a</sup>	1.40 <sub>b</sub>	0.62 <sub>c</sub>	-0.99 <sub>d</sub>	1204.41 <sup>***</sup>	.63
Working compulsively	0.56 <sup>a</sup>	1.55 <sub>b</sub>	-0.38 <sub>c</sub>	-0.97 <sub>d</sub>	237.73 <sup>***</sup>	.77
<b>Job demands</b>						
Work overload	3.17 <sup>a</sup>	3.84 <sub>b</sub>	3.62 <sub>c</sub>	2.80 <sub>d</sub>	190.67 <sup>***</sup>	.23
Overwork %	14.59 <sup>a</sup>	20.40 <sub>b</sub>	18.21 <sub>c</sub>	12.45 <sub>d</sub>	28.90 <sup>***</sup>	.04
Work-home conflict	2.32 <sup>a</sup>	2.87 <sub>b</sub>	2.33 <sub>c</sub>	1.85 <sub>c</sub>	189.42 <sup>***</sup>	.23
Role conflict	2.07 <sup>a</sup>	2.43 <sub>b</sub>	2.09 <sup>a</sup>	1.76 <sub>c</sub>	68.62 <sup>***</sup>	.15
Mental demands	4.05 <sup>a</sup>	4.26 <sub>b</sub>	4.04 <sub>c</sub>	3.77 <sub>c</sub>	56.51 <sup>***</sup>	.08
Emotional demands	2.45 <sup>a</sup>	2.83 <sub>b</sub>	2.52 <sup>a</sup>	2.25 <sub>c</sub>	76.31 <sup>***</sup>	.11
Organizational demands	2.86 <sup>a</sup>	3.15 <sub>b</sub>	2.92 <sup>a</sup>	2.55 <sub>c</sub>	66.62 <sup>***</sup>	.09
<b>Job resources</b>						
Support colleagues	3.59 <sup>a</sup>	3.29 <sub>b</sub>	3.60 <sup>a</sup>	3.81 <sub>c</sub>	25.57 <sup>***</sup>	.04
Coaching	2.84 <sup>a</sup>	2.74 <sub>b</sub>	2.88 <sup>a</sup>	3.01 <sub>c</sub>	9.81 <sup>***</sup>	.02
Job control	3.02 <sup>a</sup>	2.95 <sub>b</sub>	3.02 <sup>a</sup>	3.14 <sub>b</sub>	5.76 <sup>***</sup>	.01
Feedback	3.04 <sup>a</sup>	2.87 <sub>b</sub>	3.13 <sup>a</sup>	3.26 <sub>c</sub>	19.58 <sup>***</sup>	.03
Opportunity to learn	3.70 <sup>a</sup>	3.49 <sub>b</sub>	3.82 <sup>a</sup>	3.89 <sub>d</sub>	32.18 <sup>***</sup>	.03
Participate in decision making	3.02 <sup>a</sup>	2.73 <sub>b</sub>	3.04 <sup>a</sup>	3.22 <sub>c</sub>	28.90 <sup>***</sup>	.05
<b>Well-being</b>						
Exhaustion	2.09 <sup>a</sup>	2.93 <sub>b</sub>	1.99 <sup>a</sup>	1.33 <sub>c</sub>	208.94 <sup>***</sup>	.25
Depersonalization	1.58 <sup>a</sup>	1.88 <sub>b</sub>	1.39 <sup>a</sup>	1.07 <sub>d</sub>	70.68 <sup>***</sup>	.10
Accomplishment	4.40 <sup>a</sup>	4.23 <sub>b</sub>	4.50 <sup>a</sup>	4.55 <sub>c</sub>	13.76 <sup>***</sup>	.02
Recovery	2.95 <sup>a</sup>	2.86 <sub>b</sub>	2.99 <sup>a</sup>	3.20 <sub>c</sub>	14.07 <sup>***</sup>	.02
Happiness	7.60 <sup>a</sup>	7.11 <sub>b</sub>	7.70 <sup>a</sup>	8.11 <sub>c</sub>	65.51 <sup>***</sup>	.09
<b>Organizational behavior</b>						
Presenteeism	1.96 <sup>a</sup>	2.14 <sub>b</sub>	1.95 <sup>a</sup>	1.78 <sub>c</sub>	22.46 <sup>***</sup>	.03
Medical performance	2.88 <sup>a</sup>	2.59 <sub>b</sub>	2.77 <sup>a</sup>	3.04 <sub>c</sub>	51.80 <sup>***</sup>	.09

Note. Values with different subscripts differ significantly from each other at  $p < .01$ . WE = working excessively. WC = working compulsively. <sup>a</sup>  $n = 540$  (26%). <sup>b</sup>  $n = 327$  (16%). <sup>c</sup>  $n = 619$  (29%). <sup>d</sup>  $n = 607$  (29%). <sup>\*\*\*</sup>  $p < .001$ .



In contrast, and again with only one exception (personal accomplishment), the nonworkaholic group scored significantly more favorable on all dependent variables. Finally, the excessive working residents and the compulsive working residents did not differ significantly on 15 of the 20 dependent variables (i.e., 75%). Values of eta-squared are highest ( $>.10$ ) for work overload, work-home conflict, role conflict, emotional demands, and burnout (exhaustion and depersonalization), indicating that in these variables the highest proportion of variance is explained by differences between the four groups.

This means that with only one exception (job control), Hypothesis 2 was supported that stated that, compared to nonworkaholics, workaholic residents show the most unfavorable scores in terms of job demands, job resources, well-being, and organizational behavior. Moreover, excessive working and compulsive working residents score in between of these two groups.

## DISCUSSION

We defined workaholism as a syndrome—that is, as a set of two characteristics that occur together: WE and WC. The former represents the behavioral component of workaholism and latter the cognitive component. This means that workaholism is characterized by the combination of high scores on both workaholism scales. Based on the correlation between latent WE and WC dimensions, it is estimated that both workaholism dimensions share about 30% of their variance. The co-occurrence of WE and WC is also corroborated by the results of our cluster analysis from which four groups emerged that were labeled: workaholics (those scoring high on both WE and WC), hardworking residents (those who scored relatively high on WE and relatively low on WC), compulsive working residents (those who scored relatively high on WC and relatively low on WE), and nonworkaholics (who scored low on both scales). In addition to the two expected groups (Hypothesis 1; workaholics and nonworkaholics), two additional groups were found. Careful cross-validation, using two random subsamples, confirmed the stability and replicability of this four cluster solution. So in addition to the expected workaholic and nonworkaholic groups, two other groups emerged. The proportion of workaholics in this sample is estimated 16%, which means that about one in every six medical residents scores more than one standard deviation above the mean WE score and more than 1.5 standard deviations above the mean WC score. This finding also suggests that WC is a slightly more important feature of workaholics than WE. This agrees with the observation that particularly the drive component of workaholism is strongly related to such factors as job stress and impaired well-being (Burke, 1999;

Burke, 2000), and psychological distress and psychosomatic symptoms (Burke, 1999, 2001a; Schaufeli, Taris, & Van Rhenen, 2008). In a similar vein, a positive relationship between workaholism and the Type A behavioral pattern has been reported, which might be explained by the common drive component, which in Type A that takes the form of feelings of irritability, impatience, and achievement striving (Burke et al., 2004).

As predicted (Hypothesis 2), compared to the (three) other groups, workaholic residents experience the highest job demands, the poorest job resources, the highest levels of burnout and presenteeism, and the lowest levels of recovery, happiness, and performance. The profile of the nonworkaholic group is an almost perfect mirror image of workaholics' profile. Compared to all other groups, they exhibit the lowest job demands, the highest job resources, the highest levels of well-being, and the most favorable organizational behaviors. This agrees with the results of a study of Buelens et al. (2004), who compared eight different groups of workers based on a high/low dichotomy on three workaholism dimensions: work involvement, drive, and work enjoyment. They found that, compared to the other groups, work addicts—characterized by high scores on involvement and drive, and low scores on enjoyment—had the most unfavorable scores on a host of variables, including work-to-family conflict, work conflict, satisfaction with family and colleagues, and stress and health complaints. This was particularly the case for “relaxed workers,” who are characterized by low involvement and drive and high enjoyment. In a somewhat similar vein, Schaufeli, Taris, and Van Rhenen (2008) found that compared to workaholic managers, their engaged peers were more satisfied with their jobs and experienced less psychological distress.

Finally, the similarities between the groups of excessively and compulsively working residents are much larger than their differences. Both groups differ significantly on relatively few workaholism correlates (25%), with the former group scoring higher on overwork and work overload and lower on burnout (depersonalization and reduced personal accomplishment), and the latter groups scoring higher on opportunities to learn. It is not surprising that particularly the hardworking residents perform more overwork and (therefore) feel more overloaded as compared to those who merely work compulsively. As a matter of fact, this result confirms the content validity of the WE scale because by definition excessive workers work long hours and are therefore likely to feel overloaded (see also Schaufeli, Taris, & Van Rhenen, 2008). We can only speculate about the remaining differences between excessive and compulsive working residents. For instance, perhaps compulsive working residents feel that they accomplish less in their jobs because they are perfectionists who are dedicated to achieving extremely high standards that they might never meet (Mudrack, 2006). Moreover, Porter (2001) argued that such perfectionist workaholics are characterized by anger and

frustration that leads to poor social relationships at work. This may explain the relatively high depersonalization scores of the compulsive working residents as compared to the excessive working residents; anger and frustration might result in treating patients in a callous and cynical (depersonalizing) way. Future research could further investigate the unique correlates of both core components of workaholism.

When the same group of medical residents as in the current study was a priori classified in into four groups that resulted a the cross-tabulation of medical residents that scored above and below the median on WE and WC (Schaufeli, Taris, & Bakker, 2008), it appeared that 41% scored high on both dimensions and 32% scored low on both dimension. Furthermore, 14% scored high on WE but low on WC, whereas 13% scored high on WC but low on WE. Although the empirical grouping that resulted from our cluster analyses is similar to the a priori grouping that is based on median values, the proportion of residents differs markedly between both groupings. More particularly, compared to the a priori grouping, the empirical grouping includes a substantively lower percentage of workaholics (16% vs. 41%), and about twice as many hard workers (29% vs. 14%) and compulsive workers (26% vs. 13%). Obviously, the empirical grouping resulted in a smaller, more selective workaholism group. This is corroborated by the fact that, compared to the a priori workaholism group, the empirically derived workaholism group scored more unfavorable on all workaholism correlates (Schaufeli, Taris, & Bakker, 2008; p. 218). Thus, we conclude that the workaholism group that is identified empirically in the current study is superior to the a priori defined group that is based on median splits of WE and WC. Based on the results of the current study, we recommend using cut-off points 1 standard deviation above and below the mean to identify those we score "high" and "low" on WE and WC, respectively. The combination of high scores of both dimensions can be used to identify the group of "workaholics," whereas the combination of low scores is indicative for the "nonworkaholic" group.

### **Limitations and Directions for Future Research**

All data are based on self-reports, which means that the magnitudes of the effects that we reported may have been biased due to common method variance or the wish to answer consistently (Conway, 2002). Unfortunately, we cannot test the strength of this type of variance, but recently Spector (2006) argued that common method variance is not as troublesome as one might expect in studies such as the current one. For instance, 25% of the correlations between the study variables (see Table 1) is very low (i.e.,  $r = <|.10|$ ).

According to Spector, it is very unlikely that common method variance plays a significant role when such a large percentage of self-reported constructs is basically unrelated; that is, share 1% or less of their variance. Nevertheless, to avoid common method variance, future research on workaholism should include non-self-reports as well, such as peer ratings from colleagues (Burke & Ng, 2007) or acquaintances (Aziz & Zickar, 2006; Bakker et al., 2009).

Another limitation is our rather homogeneous sample that consists of highly educated professionals. This may have caused restriction of range in some variables and potentially threatens the external validity of our findings. However, the specific sample studied can also be considered a major strength of our study because the entire population was included—all Dutch medical residents were invited to participate. Moreover, and probably even more important, our sample represents an occupational group that is at risk for workaholism; over 16% scored high on both workaholism dimensions. Because the main reasons for not responding are “being too busy” and “feeling tired” it is unlikely that our results are biased because “healthy” residents are overrepresented in the sample. If biased at all, it is perhaps more likely that workaholics—being busy and feeling tired—have not been included in the sample. Nevertheless, future research should replicate our results in other occupational groups and show that the two-dimensional conceptualization of workaholism is superior to either of its parts.

Finally, two scales had internal consistency coefficients that were lower than the recommended criterion of .70 (Nunnally & Bernstein, 1994), their alpha values were .64 and .67. However, this criterion of .70 is an arbitrary value that is not universally accepted. As an example of the arbitrariness of his criterion, Nunnally (1967) mentioned that alphas ranging from .50 to .60 would be acceptable, but in the second edition of his book (Nunnally, 1969), he suggested a value .70—without further justification. Moreover, the minimally required degree of reliability is a function of the research purpose; for individual level, diagnostic research alpha should be much higher than for the basic, group-level research reported in our study (Peterson, 1994).

### **Practical Implications**

The current study suggests that workaholism—a combination of WE and WC—is detrimental, not only for the individual medical residents, but also for the hospitals in which they are employed. More particular, compared to their hardworking, compulsive, or nonworkaholic colleagues, workaholic residents are more exhausted; recover less well; show a stronger tendency to relate to their patients in a more callous and cynical way; feel that they accomplish less; and above all, according to their own opinion, they perform

poorer, medically speaking. These are serious indications that patient care suffers when residents are addicted to their work. Hence, it is important to identify, prevent, and combat workaholism among residents in hospital settings.

Our two-dimensional workaholism questionnaire can be used as a group-based screening device to identify workaholics, albeit with caution because of the somewhat low internal consistency of the scale that assesses working excessively. Once identified, the responsible supervisors should coach medical residents in changing their harmful workaholic behaviors and cognitions as part of their medical training. The importance of supervisory coaching is underlined by a recent study that found that medical residents are more dissatisfied with the emotional, appreciative and informative social support from their supervisor, compared with fellow residents and nurses (Prins et al., 2007). Supervisory coaching should also include putting into perspective the prevailing medical ethos that fosters rather than discourages workaholism. Working excessively hard is a crucial ingredient of the heroic medical ethos and it is usually perceived as synonymous with proper patient care. Our study showed that, although working excessively hard is detrimental for medical residents and their patients, the combination with WC is even worse.

### Final Note

Our analyses suggest that the combination of WE and WC is more powerful in producing unfavorable psychological outcomes than either of these two components separately. In other words, it seems that it is the combination of working excessively hard and WC that counts.

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(Appendix follows)

## Appendix

### Dutch Workaholism Scale (DUWAS)

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#### Working excessively (WE)

1. I seem to be in a hurry and racing against the clock.
  2. I find myself continuing to work after my coworkers have called it quits.
  3. I stay busy and keep many irons in the fire.
  4. I spend more time working than on socializing with friends, on hobbies, or on leisure activities.
  5. I find myself doing two or three things at one time, such as eating lunch and writing a memo while talking on the telephone.
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#### Working compulsively (WC)

1. It's important to me to work hard even when I don't enjoy what I'm doing.
2. I feel that there's something inside me that drives me to work hard.
3. I feel obliged to work hard, even when it's not enjoyable.
4. I feel guilty when I take time off work.
5. It is hard for me to relax when I'm not working.

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