

Work Craving: A Conceptualization and Measurement

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Obsessive-compulsive models of workaholism do not allow diagnosing it as an addiction. We introduce an empirical evidence for conceptualization and measurement of work addiction as work craving. The Work Craving Scale (WCS) comprises: (a) obsessive-compulsive desire for work, (b) anticipation of self-worth compensation, (c) anticipation of reduction of negative affect or withdrawal symptoms resulting from working, and (d) neurotic perfectionism. Results ($N = 1,459$) confirmed the four-factorial structure of the WCS and indicated its good validity and reliability. The conceptualization of work craving significantly contributes to understanding of workaholism as an addiction, and should stimulate future research on work craving.

Among the criteria commonly used in the literature to diagnose workaholism are two characteristics: on the one hand, obsessive thinking about work, and, on the other hand, repeated efforts to switch off from obstinate working (e.g., McMillan & O'Driscoll, 2006; Robinson, 2007; Schaufeli, Shimazu, & Taris, 2009). These characteristics highlight the fact that, despite understanding the negative consequences of continued working, workaholics (similar to gamblers) at times experience an overwhelming, often irresistible, craving to engage in a certain behavior, in this case, working. A major stumbling block for craving research in the context of working has been the lack of a methodologically sound, multidimensional measure of work-related craving. Our interest in the study of the construct of work craving

is embedded in the theory of work craving proposed recently by Wojdylo (2013) and an international research program aiming at an analysis of personality antecedents and regulatory mechanisms of work craving. In the research reported here, we introduce an empirical evidence for workaholism as work craving and validate the Work Craving Scale (WCS) as a measure of this construct.

DEFINITIONS OF WORKAHOLISM

Many authors indicate a lack of a generally accepted definition of workaholism (e.g., McMillan & O'Driscoll, 2006; Schaufeli, Taris, & Bakker, 2006). For instance, some definitions confound workaholism with *work enthusiasm* and deny its pathological nature because they emphasize positive emotions (work enjoyment) as a possible underlying dimension of workaholism (Ng,

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Sorensen, & Feldman, 2007; Spence & Robbins, 1992). However, there is evidence that workaholism and work engagement are conceptually and empirically distinct constructs (Schaufeli, Taris, & Van Rhenen, 2008). Work enjoyment has been found to be the inherent feature of work enthusiasm and as such has to be excluded from any conceptualization of workaholism as problematic (Schaufeli, Taris, et al., 2006; McMillan, O'Driscoll, Marsh, & Brady, 2001; Mudrack, 2006; Porter, 2001).

Workaholism and work engagement share the behavioral component (working excessively hard, high work involvement), but the emotional and motivational aspects of these phenomena differ fundamentally. Whereas workaholics are motivated by an obsessive inner drive they cannot resist, engaged employees are intrinsically motivated, have a sense of energetic and effective connection with their work activities, and see themselves as able to deal well with the demands of their jobs (Taris, Schaufeli, & Shimazu, 2010). Although recent literature (Schaufeli et al., 2008) differentiates between a healthy type of working hard (i.e., work engagement) and a pathological type of working hard (i.e., workaholism), work engagement is still considered as a possible dimension of workaholism (Van Beek, Taris, & Schaufeli, 2011), meaning that engaged workaholism can be diagnosed in workers. In our opinion, the conceptualization of an engaged form of workaholism is misleading because it combines pathological features of workaholism with healthy features of work engagement.

Further definitions postulate the number of hours working as a core element of workaholism (Snir & Zohar, 2008). However, research indicates that workaholics and work enthusiasts work for a similar number of hours per week (Burke & Matthiesen, 2004) and that there are workaholics who work fewer daily hours than nonworkaholics (Poppelreuter, 1996), ruling out the dimension of time spent on working as a sufficient dimension of workaholism.

Finally, workaholism is mostly defined as obsessive thinking about work and a compulsive pattern of work seeking and working behavior that takes place at the expense of most other activities (e.g., Robinson, 2007; Schaufeli et al., 2008; Schaufeli, Bakker, van der Heijden, & Prins, 2009). Consistent with this idea, we conceptualize workaholism as a pathological diagnosis and state that only unhealthy, obsessive-compulsive work symptoms should be classified as related with workaholism (see McMillan & O'Driscoll, 2006).

AMENDMENTS FROM ADDICTION RESEARCH

In the literature on addiction, it has been postulated that an addiction of any kind (e.g., drug abuse, drinking, gambling, eating) involves three psychological components: (a) a *compulsive component* (compulsive desire), (b) an

affective or *hedonic component* based on pleasure and gratification ("liking", hedonic impact), and (c) a *learning component* (predictive associations and cognitions) (Berridge, Robinson, & Aldridge, 2009). In contrast, the recent conceptualizations of workaholism (Robinson, 2007; Schaufeli, Shimazu, et al., 2009; Spence & Robbins, 1992) focus mainly on descriptive criteria of obsessive-compulsive components inherent in an addiction. Similar to other scholars (e.g., Robinson, 2007; Schaufeli, Shimazu, et al., 2009), we agree that obsessive-compulsive features do indeed play an important functional role in work addiction. In our opinion, however, obsessive-compulsive tendencies are not sufficient to explain the addictive nature of workaholism.

Much research has identified obsessive perfectionism, the need to compensate for low self-worth, and the need to block other negative feelings through compulsive working as important processes in workaholism (Helldorfer, 1987; Homer, 1985; Killinger, 2006; Mentzel, 1979; Mudrack, 2004, 2006; Peele, 1975, 1977; Pietropinto, 1986; Porter, 1996; Robinson, 2007; Spruell, 1987). However, the self-compensatory processes and the functional role of emotion regulation have not been adequately included in the definition and measurement of work addiction so far. Recently Wojdylo (2013) proposed the theory of work addiction, which she called work craving. She argued that the main mechanism of work addiction is the compensatory function of emotions, which explains the inner drive of workaholics in fulfilling unrealistic standards of perfectionism.

Drawing on research on craving in the context of addiction as well as on research on workaholism, we first explain the craving nature of workaholism and discuss the empirical model of work craving. Second, we present four studies testing a multidimensional measure of working-related craving (the WCS). Finally, we discuss theoretical implications of our model.

THE WORK CRAVING MODEL

In the work craving model, it is proposed that workaholics—like other groups of addicts (e.g., gamblers, alcoholics)—experience an overwhelming sense of craving (a subjective state of high-drive directed at compensation of emotions), which is an inherent feature of addiction and encompasses compulsive (behavioral), hedonic (emotional), and learned (cognitive) components (Wojdylo, 2013). The model is depicted in Figure 1.

Compulsive Components of Work Craving

Recent models of workaholism concentrate mainly on obsessive-compulsive components to theoretically define the phenomenon. For instance, Robinson (2007) defined

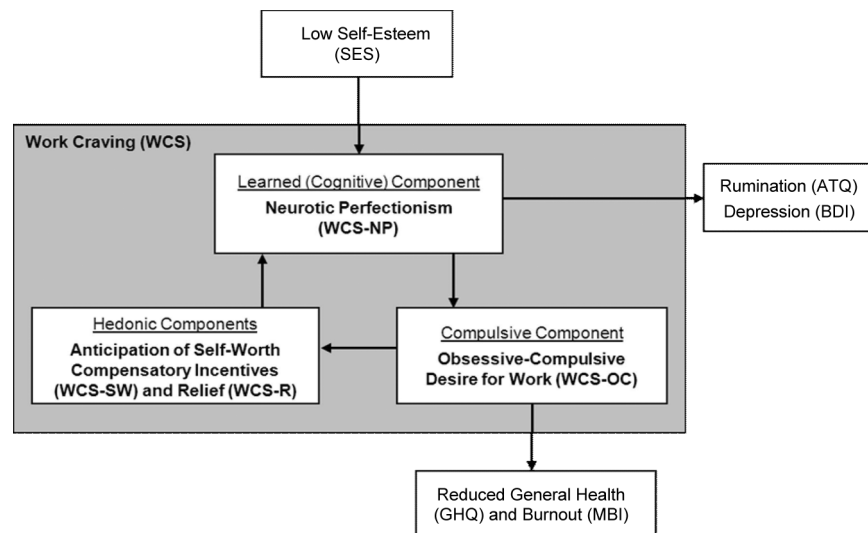


FIGURE 1 Conceptual model of components, antecedents, and outcomes of work craving. *Note.* SES = Self-Esteem Scale; WCS = Work Craving Scale general score; WCS-NP = Neurotic Perfectionism; ATQ = Automatic Thought Questionnaire; BDI = Beck Depression Inventory; WCS-SW = Anticipation of Self-Worth Compensatory Incentives from Work; WCS-R = Anticipation of Reduction of Negative Affect (Relief) or Withdrawal Symptoms Resulting from Working; WCS-OC = Obsessive-Compulsive Desire for Work; GHQ = General Health Questionnaire; MBI = Maslach Burnout Inventory.

workaholism as an obsessive-compulsive disorder that manifests itself through self-imposed demands, an inability to regulate work habits, and an overindulgence in work to the exclusion of most other life activities. Schaufeli, Shimazu, et al. (2009) emphasized the compulsive nature of workaholism by defining it as the tendency to work excessively hard (the behavioral dimension) and being obsessed with work (the cognitive dimension), which manifests itself in working compulsively. We agree that such obsessive-compulsive tendencies are important features of work craving. However, they have to be supplemented by hedonic and learned components of work craving, which represent unique aspects of the theory of work craving (Wojdylo, 2013).

Hedonic Components of Work Craving

Hedonic theories of addiction assume that substance-dependent individuals experience urges and cravings that represent emotional-motivational states that are responsible for ongoing substance use and precede and precipitate relapse episodes in addicts attempting abstinence (Baker, Sherman, & Morse, 1987; Kozlowski & Wilkinson, 1987; Ludwig & Wikler, 1974; Marlatt, 1985; Shiffman, 1979; West & Schneider, 1987). Craving for a substance (e.g., alcohol) or nonsubstance (e.g., gambling) is most frequently viewed in one of two broad ways: (a) craving as a desire for the positive incentive properties of a substance/behavior, and (b) craving as a consequence of withdrawal from a substance/behavior (Tiffany & Conklin, 2000; Young & Wohl, 2009). The simultaneous desire for positive affect and relief from negative affect has been observed in craving research with smokers

(Tiffany & Drobes, 1991), cocaine addicts (Tiffany, Singleton, Haertzen, & Henningfield, 1993), alcoholics (Love, James, & Willner, 1998), and gamblers (Young & Wohl, 2009). In the theory of work craving, it is proposed that working can provide similar hedonic incentives (Wojdylo, 2013). Specifically, hard working provides hedonic incentives in two forms: positive incentives (feelings of efficiency and self-worth) and/or escape from negative emotions (relief), for example, through distraction from problems.

On the one hand, workaholics have low self-esteem and a desire to compensate for low self-worth (Burke, 1999, 2000a, 2000b; Chamberlin & Zhang, 2009; Ishiyama & Kitayama, 1994; Killinger, 2006; Robinson, 2007; Seybold & Salomone, 1994). Therefore, it seems likely that workaholism is, for the most part, a means to increase feelings of self-worth, self-confidence, and security (Burke, 2000b; Burke & Koksall, 2002; Burke, Oberklaid, & Burgess, 2004). Working can thus provide a refuge in which the addict can take control of the situation and feel efficient (Guerreschi, 2009).

On the other hand, workaholics have a desire for relief from negative, painful emotions and feelings of inadequacy and withdrawal symptoms (e.g., Burke, 2000b; Jackson, 1992; Killinger, 2006; Ng et al., 2007; Trueman, 1995). Working excessively may permit an escape from personal problems, including fear of failure and feelings of guilt when having time off work (Burke, 2000b), interpersonal problems (Bakker, Demerouti, & Burke, 2009; Berglas, 2004; Killinger, 1991; Oates, 1971; Poppelreuter, 1996), and family difficulties (Bakker et al., 2009; Bonebright, Clay, & Ankenmann, 2000; Robinson, 1996a, 1996b; Taris, Schaufeli, & Verhoeven, 2005) and, thus,

negatively reinforce their craving for work. In the model of work craving, it proposed anticipation of self-worth enhancement and anticipation of relief as *hedonic components of work craving*. Specifically, it proposed that a workaholic will anticipate both an immediate positive experience through the engagement in perfectionistic and obsessive working and an immediate relief from negative experiences through distraction from problems.

Learned Components of Work Craving

Empirical data suggest that workaholics set unrealistically high standards for performance and are overly concerned about making mistakes: Each mistake is perceived as a threat to their self-worth. They focus on proving their ability and neglect improving their ability (Killinger, 2006; Porter, 1996). For instance, research showed that of great importance for a workaholic's persistence were the attainment of favorable judgments of competence and the avoidance of unfavorable judgments (Wojdylo, 2007, 2010a). Other findings have indicated that performance goal orientation and overly strong concerns about mistakes are facets of a negative (pathological) form of perfectionism (Stoeber & Otto, 2006; Terry-Short, Owens, Slade, & Dewey, 1995). Thus, a neurotic type of perfectionism seems to be another important component of work craving. According to the model of work craving, workaholics' pathologically high standards are typical *learned cognitions*.

Most learning theories of addiction suggest that substances produce abnormally strong or aberrant associations involved in reward learning of several types: act-outcome (A-O: cognitive, explicit recognition of the causal relationship between an act and its outcome; e.g., "Drinking relaxes me"), stimulus-response (S-R: a habitual link between a specific stimulus and a specific response; e.g., drinking as the response to stress after working hard), or stimulus-stimulus (S-S: associations among two or more stimuli; e.g., stress after working hard associated with relief after drinking). These associations could be either explicit (declarative, conscious) or implicit (procedural, unconscious; Robinson & Berridge, 1993). When people work excessively and perfectly they learn at a declarative, conscious level about causal relationships between their work actions and outcomes, such as work effects and emotional consequences (A-O cognitions; e.g., "Hard, perfectionistic working relaxes me"). They also learn declarative, predictive relationships between certain cues in the environment and ensuing rewards, for example, self-enhancement (explicit S-S learning; e.g. insecurity, low self-worth associated with self-enhancement after obsessive working).

Taken together, based on the assumptions of the theory of work craving (Wojdylo, 2013), we hypothesized here that craving for work comprises integrated systems

of wanting (obsessive-compulsiveness), liking (anticipations of positive emotions and relief), and learning (neurotic perfectionism; see Figure 1). One system alone will not generate addictive work behavior. For instance, the relationship between perfectionist standards and work effects are learned, and this learning history may have important effects. However, by itself it would not generate addictive work behavior.

It is important to note that the definition of workaholism in terms of obsessive-compulsive behavior, emotional incentives, and cognitive perfectionistic standards is consistent with recent definitions that include cognitive, emotional, and behavioral aspects of workaholism. For instance, it corresponds with McMillan and O'Driscoll's (2008) claim that workaholism may originate from faulty cognitions, emotional disturbances, and learned behaviors. The definition of work craving also corresponds with Wojdylo's (2010b) cognitive-behavioral model of workaholism in which dysfunctional cognitions (e.g., unhealthy core beliefs regarding self-worth such as perceived deficits/shame) as well as affective and behavioral components are proposed to interact in developing and maintaining workaholism. Hence, if workaholism does indeed originate from an interaction of all of these components, it must be defined as a multidimensional construct.

FOUR DIMENSIONS OF WORK CRAVING

By integrating theory and research on craving (Tiffany & Drobes, 1991; Young & Wohl, 2009; Wojdylo, 2013) and workaholism (Homer, 1985; Porter, 1996), we propose here that work craving comprises four empirically distinct dimensions (see Figure 1): (a) *obsessive-compulsive desire for work*, (b) *anticipation of self-worth compensatory incentives from work*, (c) *anticipation of reduction of negative affect (relief) and withdrawal symptoms resulting from working*, and (d) *neurotic perfectionism*.

In this four-dimensional model, work obsession/compulsion is only a subcomponent of work craving. Davison and Neale (1990) indicated that one component of craving absent in obsessive-compulsive individuals is the anticipation of positive mood states following engagement in the behavior, in this case, feelings of self-worth following working. In this sense, work craving describes the addictive nature of workaholism more comprehensively than obsessive-compulsive tendencies. In line with this, we claim that the available scales for measuring workaholism (e.g., Work Addiction Risk Test by Robinson, 2007; Workaholism Battery by Spence & Robbins, 1992; Dutch Workaholism Scale by Schaufeli, Shimazu, et al., 2009) are appropriate to measure obsessive-compulsive components of workaholism but not sufficient for the assessment of work craving.

With the model of work craving, we argue that three further dimensions are critical for the diagnosis of work addiction: anticipation of self-worth incentives, anticipation of relief, and neurotic perfectionism (see Figure 1). Self-worth compensatory incentives along with positive reinforcers in perfectionistic standards can explain why workaholics perceive some degree of benefit (e.g., psychological buzz) in perpetually working despite negative side effects. Furthermore, the integration of neurotic perfectionism in the definition of workaholism is important for differentiating workaholism from other well-established constructs like overcommitment, Type A behavior, and work enthusiasm, which are related to a nonpathological form of perfectionism (Hallberg, Johansson, & Schaufeli, 2007).

For instance, Type A individuals, with their overcommitment toward achievement strivings, are excellent performers (Preckel, von Känel, Kudielka, & Fischer, 2005; Spence, Helmreich, & Pred, 1987), have high job satisfaction, and high work engagement (Hallberg et al., 2007). Any negative impact of Type A behavior on health is related to irritability and impatience rather than neurotic standards (Hallberg et al., 2007). These findings imply that workers with Type A, in contrast to workaholics, have a healthy but not pathological perfectionism. In a similar vein, neurotic perfectionism is critical for distinguishing workaholism from work enthusiasm. Work enthusiasts set realistic standards and feel pleased and satisfied when achieving these standards. Workaholics, in contrast, can never do enough to feel satisfied with their performance.

The dual nature of perfectionism (healthy vs. pathological) has been verified in many studies (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Hamachek, 1978; Owens & Slade, 2008; Slade & Owens, 1998; Terry-Short et al., 1995). For instance, Hamachek (1978) argued that healthy perfectionists derive a real sense of pleasure from work effort and “feel free to be less precise as the situation permits” (p. 27). In contrast, for neurotic perfectionists, even the best efforts are never good enough. Slade and Owens (1998) also proposed a functional difference between healthy and pathological forms of perfectionism with the former being motivated by positive reinforcement and enjoyment of success and the latter being driven by negative reinforcement, negative emotions, and avoidance of a feared self (see also Dunkley, Zuroff, & Blankstein, 2003; Frost et al., 1993; Terry-Short et al., 1995).

In summary, in the context of features that are common for workaholics and workers with Type A behavior (e.g., achievement striving, competition) or for workaholics and work-enthusiasts (working excessively, setting high standards), it can be assumed that neurotic perfectionism could be the important dimension in defining workaholism as the pathological form of working hard.

EMPIRICAL SUPPORT FOR FOUR DIMENSIONS OF WORK CRAVING

Evidence from research (e.g., Hamachek, 1978; Slade & Owens, 1998; Terry-Short et al., 1995) provides support for the hypothesized relationships between the four dimensions of the work craving model (see Figure 1). Considerable research provides support for the assumption that workaholics’ obsessive-compulsiveness is related to perfectionism (e.g., Homer, 1985; Liang & Chu, 2009; Porter, 1996; Spence & Robbins, 1992). The data indicate that drivenness to work is connected with obsessive-compulsive personality disorder (Porter, 2001; Schwartz, 1982; Seybold & Salomone, 1994), which involves perfectionism and control at the expense of flexibility and efficiency in work behavior (Burke, 1999, 2001; McMillan & O’Driscoll, 2004; McMillan et al., 2001). Workers whose drive is rooted in an obsessive-compulsive personality prefer work and productivity over leisure activities, set unrealistically high standards of performance, and exhibit a high need for life control (Porter, 2001).

Recent studies (Van Wijhe, Peeters, & Schaufeli, 2011) have shown that workaholics use particular persistence rules for deciding on how long to continue with their work: They evaluate whether they have done enough (“enough rule”). In other words, workaholics continue hard working because they constantly feel that they have not done enough yet, thereby ignoring the fact of whether they like it (“enjoyment rule”). These findings suggest that workaholics have not only an inner drive to work hard but also neurotic perfectionistic standards that further contribute to their compulsion. The notion that compulsive working is sustained by anticipations of relief is supported by studies of Van Wijhe, Peeters, Schaufeli, and Ouwenel (2012) that have shown that workaholics spend more time on work-related activities during the evening than nonworkaholics when feeling negative emotions at the end of the workday. These findings suggest that workaholics use working as a strategy for regulating negative emotions.

The notion that obsessive-compulsive working is also sustained by expectations of self-worth compensatory incentives is supported by recent studies on workaholics’ motivation which show compulsive work to be positively related to controlled motivation—that is, external pressure and ego enhancement (Van den Broeck et al., 2011). Research also confirms the intimate link between pathological perfectionism and low self-worth. For instance, perfectionism has been associated with negative outcomes such as test anxiety, fear of negative evaluation, and low self-esteem (e.g., Flett, Hewitt, Blankstein, & O’Brien, 1991; Hill et al., 2004; Slade & Owens, 1998; Terry-Short et al., 1995). Burns (1980) argued that neurotic perfectionism involves straining compulsively toward impossible goals by measuring one’s own worth

“entirely in terms of productivity and accomplishment” (p. 34). Recently, Van Wijhe, Peeters, and Schaufeli (in press) found that workaholics have rigid personal beliefs, that is, *performance based self-esteem* (self-esteem that is contingent upon good performance). These findings suggest that striving for self-validation is indeed important in the work craving process.

Porter’s (1996) studies also support the assumption about the relationship between pathological perfectionism, workaholics’ obsessive work activities, and self-worth. Because perfectionist standards are unrealistic, they increase the risk that work involvement fails (in subjective terms) and jeopardizes self-worth. Workaholics must pursue more and more of the same obsessive behavior in their striving for reliable and perfect performance. As Porter stated, “Workaholics keep pursuing work as a means to someday perform so well that there can be no doubt about self-worth, which never occurs” (p. 75).

OVERVIEW OF THE CURRENT RESEARCH

The present study is a part of the Work Craving International Project, a large cohort research realized in Poland and Germany (“Work craving—personality antecedents and regulatory mechanisms”). The Work Craving International Project aims at examining the new conceptualization of workaholism—work craving and its personality mechanisms. The general purpose of the present studies was to verify the theory of work craving (Wojdylo, 2013) and to examine the psychometric properties of a self-report measure assessing work craving (WCS) developed by Wojdylo and Buczny (2010).¹

The first objective was to establish the factorial structure of the WCS (Study 1). The second objective was to examine the convergent validity of the WCS by testing its relationship with workaholism symptoms as assessed by the Work Addiction Risk Test (WART; Robinson, 1999). We expected all four components of the WCS to be positively related to the WART (Study 1), for two reasons. One reason is that being the emotional-motivational state of high drive directed at compensation of emotions, work craving is likely to have a relationship with other behavioral and cognitive indicators of workaholism measured by the WART (e.g., compulsive tendencies, control, self-worth). The second reason is that the label of the Obsession-Compulsion WART scale is misleading because the majority of the nine items of this factor refer to working hard, without any reference to

the underlying motivation (see Schaufeli, Shimazu, et al., 2009). Thus, the expectation was that all of the components of the WCS (and not only the WCS component of Obsessive-Compulsive Desire for Work) would correlate with the WART.

The third objective was to embed work craving into a nomological network of related constructs that can be conceived of as components, antecedents, and/or consequences of work craving. Consistent with previous findings on workaholism and the conceptualization of work craving as a pathological syndrome, we expected the WCS to be associated with high rumination, high depression, and low self-esteem (Study 1). As already alluded to, it is well-established that workaholism is associated with low self-worth (e.g., Burke, 1999, 2000a, 2000b; Chamberlin & Zhang, 2009) and depressive tendencies (Carroll & Robinson, 2000). Research has shown that nonsubstance craving is also related to depression and negative emotions (e.g., Blaszczynski & McConaghy, 1989; McCormick, Russo, & Ramirez, 1984; Young & Wohl, 2009). Thus, we expected our new measure of workaholism as work craving to be related to low self-worth, rumination, and depression. Recent studies also reveal that workaholics report relatively high levels of health complaints (e.g., Buelens & Poelmans, 2004; McMillan & O’Driscoll, 2004; Spence & Robbins, 1992; Taris et al., 2005). Thus, we expected that work craving might be related to negative health consequences and burnout (Studies 2 and 4).

To test the discriminant validity of the four WCS factors, we tested the similarities and differences in their relationships with the various validation criteria. As specified in our theoretical model in Figure 1, we conceptualized low self-esteem as an antecedent and rumination, depression, general health, and burnout as outcomes of work craving. This classification was based on their trait- versus symptom-like description in the literature and is not central to our model because work craving may also be a coping response to such symptoms. More important, we expected self-esteem, rumination, and depression to be most strongly associated with neurotic perfectionism because of their overlapping cognitive contents. Thus, the hedonic and compulsive WCS components were expected to show mainly indirect relationships with self-esteem, rumination, and depression mediated through neurotic perfectionism (Study 1). In contrast, we expected general health and burnout to most strongly associated with the compulsive component of work craving. Thus, the hedonic and learned WCS components were expected to show mainly indirect relationships with general health and burnout mediated through the obsessive-compulsive desire for work (Studies 2 and 4).

The fourth objective of the study was to examine the incremental validity of work craving. We expected the WCS to explain the variance in related constructs over and above the variance explained by the WART (Study 1). Finally, we aimed at examining the discriminant validity of

¹The first analyses of the measurement tool (see Study 1) were presented at the XL Congress of European Association for Behavioural and Cognitive Therapies, EABCT, Milan, Italy (Wojdylo & Buczny, 2010). This article extends the results of the conference presentation with additional analyses of Study 1 data and with Studies 2 to 4.

our operationalization of workaholism as work craving. Consistent with previous findings (Schaufeli et al., 2008), we expected the WCS to be empirically distinct from (i.e., to have nonsignificant or only low positive correlations with) working hours (Study 1), work enthusiasm (Study 3), and burnout (Study 4). We expected the relationship between work craving and number of hours worked to be nonsignificant or low because recent research showed that some workaholics have a lower than average workload (e.g., workaholics worked 6.5 h. daily; Poppelreuter, 1996).

GENERAL DATA COLLECTION PROCEDURE

In the present studies we collected the data from Polish employees from about 60 different companies in two large cities (more than 500,000 citizens), two medium-size cities (200,000 to 500,000 citizens), and one small city (less than 100,000 citizens) in Poland.

We included in the studies only professional, managerial, and administrative employees (e.g., managers, teachers) and did not include employees whose jobs require mainly manual labor (e.g., bricklayers). We followed sampling methods applied by different workaholism or burnout researchers (e.g., Demerouti, Mostert, & Bakker, 2010; Schaufeli, Shimazu, et al., 2009) and tried to obtain multiple and heterogeneous samples in order to extend the external validity of our results.

Participants were recruited in four stages. In the first stage, we sent invitations to companies asking them to participate in the study. We introduced our study as research on work styles, behaviors at the work place, and current emotional (Studies 1, 3, & 4) or health status (Study 2). In Study 1, we randomly assigned participating companies to three groups representing samples A, B, and C (Study 1). In a subsequent wave of data collection, we randomly assigned participating companies to three groups representing samples D (Study 2), E (Study 3), and F (Study 4). All samples were completely independent of each other.

In the second stage, we invited employees within the different companies to participate in the survey. In the third stage, all employees who were willing to participate received questionnaires (paper and pencil) and were asked to complete them during the following one (Studies 2 and 4) or 2 weeks (Studies 1 and 3). Prospective participants were assured that a code number was assigned to anonymize responses and that participation in the study was completely voluntary. Participants were asked to return the completed questionnaires by depositing them into a sealed box at a central location (e.g., the company's lobby). Finally, completed questionnaires were collected from the boxes.

Effectiveness in data collection was 95% in Studies 1 and 2, 90% in Study 3, and 92% in Study 4. The general

level of missing data was very low (less than 2%), and there were no missing data for the items of the WCS. We handled missing data using the maximum-likelihood estimation (ML) imputation procedure (Allison, 2003). Missing data were found when work enthusiasm (Utrecht Work Engagement Scale [UWES]) and health behaviors (Inventory of Health-Related Behaviors [IHRB]) were measured. The multivariate normality assumption was not violated. We used the MG (multigroup) ML method to deal with missing data using the procedure described by Allison (2003). The WCS was always presented as the first in the battery of instruments, but other questionnaires were presented in counterbalanced order. The rationale for this procedure was to avoid any effects that completing the other measures might have on responses to the WCS.

STUDY 1

Study 1 was designed to verify the four-factorial structure of workaholism as measured with the WCS using confirmatory factor analyses (CFAs). Furthermore, several correlational analyses were run to test the convergent validity of the WCS with an alternative workaholism measure (WART), the nomological network of related constructs (rumination, depression, and self-esteem), and the discriminant validity with respect to working hours.² The analyses were performed on the data gathered from the three different samples of employees (A, B, and C) with different occupations in Poland. In the three samples, we measured workaholism with the WCS and the WART, working hours, and demographic variables (age, sex). To ensure participants' willingness to complete the questionnaires, we decided to limit the number of questionnaires given to the participants. Specifically, in three single samples, we measured rumination (Sample A), depression (Sample B), and self-esteem (Sample C). The total number of participants (in Samples A, B, and C) was 1,139.

Method

Participants

Sample A consisted of 362 workers of different occupations (e.g., office workers, accountants, teachers), working for different companies (insurance agencies, financial institutions, schools, etc.). There were 256 female and 106 male participants in Sample A. Of these, 344 participants had full-time jobs (18 had part-time

²We thank our students of the University in Gdansk, of the University of Social Sciences and Humanities in Sopot, and Ewa Magier-Lakomy for their help with the data collection. We thank Professor Fred Bryant, Professor Albert Satorra, Professor Roman Konarski, and Dr. Gerhard Mels for very helpful suggestions in computing scaled chi-square difference test in confirmatory factory analyses of WCS model.

jobs), and 114 participants were managers. Moreover, 172 participants completed high school, and 190 had an M.A. or equivalent academic degree. Mean age was 37.31 years ($SD = 11.60$).

Sample B consisted of 183 workers of different occupations working for different companies (banks, school, building industry, university, etc.). There were 110 female and 73 male participants in Sample B. Of these, 171 had full-time jobs (11 had part-time jobs), and 53 participants were managers. Moreover, 176 participants had an M.A. or equivalent academic degree, and 57 participants completed high school as their highest educational level. Mean age was 32.71 years ($SD = 9.81$).

Sample C consisted of 594 workers of different occupations (e.g., teachers, bankers, engineers, academics, social workers), working for different companies. There were 351 female and 243 male participants in Sample C. Of these, 578 participants had full-time jobs (16 had part-time jobs), and 161 participants were managers. Moreover, 402 individuals had an M.A. or equivalent academic degree, and 192 completed high school as their highest educational level. Mean age was 38.79 years ($SD = 11.97$).

Measures

Workaholism. To measure workaholism, we used the original Polish version of the WCS (Wojdylo & Buczny, 2010). An initial pool of 28 items was generated on the basis of a questionnaire assessing smoking urges (Tiffany & Drobes, 1991) and a questionnaire assessing neurotic perfectionism (Frost, Marten, Lahart & Rosenblate, 1990) and adapted for a work context by specifying the items for the study of workaholism. To obtain feedback on the content validity of the newly generated 28 items, a handful of academics who had published research on workaholism were asked to review them. This measurement tool investigates the four components of workaholism, each of them by means of seven items. In Table 1, all items of the four subscales are listed. Respondents received the following instructions for completing the WCS: "The questionnaire contains statements regarding the attitude to professional work. On the 7-point scale, ranging from 1 (*I completely do not agree*) to 7 (*I completely agree*), indicate to what extent you agree/disagree with each statement."

The internal consistency (Cronbach's alpha) of the WCS subscales in the present studies were as follows: Obsessive-Compulsive Desire for Work (WCS-OC), $\alpha = .80$; Anticipation of Self-Worth Compensatory Incentives from Work (WCS-SW), $\alpha = .81$; Anticipation of Reduction of Negative Affect and Withdrawal Symptoms (WCS-R), $\alpha = .80$; Neurotic Perfectionism (WCS-NP), $\alpha = .80$; and for the general scale score (WCS), $\alpha = .94$.

The WART (Robinson, 1999) was also used to assess workaholism. The full 25-item scale ($\alpha = .88$) comprised

five factors: Obsession/Compulsion (nine items, sample item: "I feel guilty when I am not working on something"; $\alpha = .82$); Control (seven items, e.g., "I lose my temper when things don't go my way or work out to suit me"; $\alpha = .76$); Impaired Communication/Self Absorption (five items, e.g., "I ask the same question over again, without realizing it, after I've already been given the answer once"; $\alpha = .66$); Inability to Delegate (one item "I prefer to do most things myself rather than ask for help"); Self-Worth (two items, e.g., "I am more interested in the final results of my work than in the process"; $\alpha = .63$; cf. Taris et al., 2005). Items were rated on a 4-point scale ranging from 1 (*never true*) to 4 (*always true*) according to how well each item describes work habits. On both scales (the WCS and the WART), higher scores indicate higher workaholism.

Rumination. To measure rumination tendency, the Automatic Thought Questionnaire (ATQ; Hollon & Kendall, 1980) was used. The ATQ is a 28-item self-report single-factor scale ($\alpha = .97$). Participants were asked to indicate how frequently, if at all, a variety of thoughts occurred to them over the last week. Items were rated on a 5-point scale ranging from 1 (*no at all*) to 5 (*all the time*). Higher scores indicate higher levels of rumination. This scale was completed by Sample A.

Depression. We used the 21-item Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) to assess depression. Items were aggregated to form a single score ($\alpha = .87$) with higher scores indicating stronger depression. This scale was completed by Sample B.

Self-esteem. To measure self-esteem, the Self-Esteem Scale (SES; Rosenberg, 1965) was used. The scale measures individuals' conscious convictions of global self-esteem ($\alpha = .82$). Ten items were rated on a 4-point scale ranging from 1 (*I strongly disagree*) to 4 (*I strongly agree*). Higher scores indicate higher levels of self-esteem. The SES was completed by Sample C.

Working hours. This variable was measured with a single item: "How many hours do you actually work in an average week?" Previous research has shown that single-item measures are proper to measure one-dimensional and unambiguous constructs like working hours (cf. Demerouti et al., 2010; Van Beek et al., 2011). Working hours were measured in all three samples.

Results and Discussion

Confirmatory Factor Analyses

CFAs as implemented in LISREL 8.8 (Jöreskog & Sörbom, 2006) were used to check the hypothesized four-factor structure of the WCS and to analyze the covariance

TABLE 1
Items of the WCS^a and Factor Loadings (*Completely Standardized Lambda X*) and Explained Variance on Each Item (*R*²) for the Final Four-Factor Model (RML Estimation)

| Item | Factor Loading (λ_x) ^b | <i>R</i> ² |
|--|---|-----------------------|
| Obsessive-Compulsive Desire for Work (WCS-OC) | | |
| 1. My desire for work overpowers me. | .647 | .419 |
| 3. I think I should work more and more. | .432 | .187 |
| 6. I have an urge to work more and more. | .805 | .648 |
| 13. All I need right now is to work. | .753 | .567 |
| 15. Sometimes I work until I'm extremely exhausted. | .450 | .202 |
| 21. I miss work right now. | .612 | .374 |
| 28. If I'm not working, it is hard for me to think about something other than work. | .637 | .406 |
| Anticipation of Self-Worth Compensatory Incentives from Work (WCS-SW) | | |
| 7. I need to work hard in order to feel effective in what I'm doing. | .758 | .574 |
| 10. If I'm overworking, I feel I am "OK". | .762 | .581 |
| 14. If I'm not working hard, I cannot feel self-satisfied. | .768 | .589 |
| 16. My overworking makes me feel accepted by others. | .570 | .324 |
| 23. My overworking makes me feel competent. | .768 | .590 |
| 25. Overworking makes me feel important. | .724 | .525 |
| 26. If I'm overworking, I feel that I'm a worthy person. | .617 | .381 |
| Anticipation of Reduction of Negative Affect (Relief) and Withdrawal Symptoms (WCS-R) | | |
| 5. I would be less irritated right now if I could work. | .788 | .621 |
| 9. If I'm not working hard enough I feel guilty for neglecting my work. | .693 | .481 |
| 12. "Diving" into work would make me less depressed. | .749 | .560 |
| 17. If I were working hard now, I would feel less exhausted. | .756 | .571 |
| 19. Working excessively now would make me less tired. | .750 | .562 |
| 20. Working now would bring me a relief. | .803 | .645 |
| 24. I can relax only if I'm working hard. | .642 | .412 |
| Neurotic Perfectionism (WCS-NP) | | |
| 2. If somebody performs a task better than me, I feel defeated. | .748 | .559 |
| 4. I often stay longer at work because I keep correcting mistakes repeatedly in order to make the work perfect | .559 | .312 |
| 8. People will evaluate me very negatively if I make a mistake working. | .774 | .598 |
| 11. It takes me a lot of time to work perfectly. | .445 | .198 |
| 18. If I won't set myself the highest standards I will end up as a second-class person. | .734 | .538 |
| 22. Even though I perform a task very carefully, I feel that it is done not correctly enough. | .569 | .323 |
| 27. Even if I've done only a part of my job incorrectly, I consider it to be a complete failure. | .691 | .478 |

Note. *N* = 1,139. WCS = Work Craving Scale; ^aThe original version of the WCS (in Polish) is available from the authors. ^bAll factor loadings were significant (*p* < .001).

matrix. The ML method was used, and the goodness-of-fit of the models was evaluated using the chi-square test statistic, the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). Values larger than .90 for CFI and TLI, and .08 or lower for RMSEA or SRMR indicate good model fit (Byrne, 2009; Hu & Bentler, 1999). Because the assumption of multivariate normality was violated, we decided to conduct an alternative CFA using robust ML (RML) estimation.

We based the analyses on three different models. In the one-factor model we assumed that the structure of WCS is one-dimensional. The four-factor factor model was used to test our hypothesis. In the hierarchical model, we

assumed that all four postulated first-order dimensions converge in one main second-order factor representing work craving. When the four-factor model was computed, all factor loadings were freely estimated, all factors were allowed to intercorrelate, and factor variances were standardized to identify the CFA model. When the hierarchical model was computed, in each first-order factor a single item loading was fixed to 1 in the order to specify the variance of each first-order factor. Loadings were fixed for items 3, 26, 24, 11 (see Table 1).

Consistent with our assumptions, results of the confirmatory factor analyses showed that the four-factor model had a better fit than the one-factor and hierarchical models (see Table 2). For further analyses it is important to note that the four-factor model had a better fit to the

TABLE 2
Model Fit Statistics and Indices of Close-Fit Indices for Confirmatory Factor Analyses of the Work Craving Scale in Study 1

| Model | $\chi^2(df)$ | CFI | TLI | RMSEA (90% Confidence) | SRMR |
|--------------------------------------|-----------------|------|------|------------------------|------|
| Maximum-Likelihood Estimation | | | | | |
| One-factor | 4683.94* (350) | .949 | .944 | .104 (.102–.104) | .057 |
| Four-factor | 2539.57* (344) | .975 | .972 | .074 (.072–.078) | .051 |
| Hierarchical | 26311.29* (346) | .969 | .966 | .082 (.081–.083) | .055 |
| Robust Maximum-Likelihood Estimation | | | | | |
| One-factor | 3430.73* (350) | .959 | .956 | .088 (.085–.091) | .057 |
| Four-factor | 1887.66* (344) | .979 | .977 | .063 (.060–.066) | .051 |
| Hierarchical | 1997.00* (346) | .978 | .976 | .065 (.062–.068) | .055 |

Note. Samples A, B, C; $N = 1,139$. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

* $p < .001$.

data than the one-factor model if ML estimation was computed ($\Delta\chi^2 = 2144.37$, $\Delta df = 6$, $p < .001$). The same conclusion was made for RML estimation ($\Delta\chi^2 = 854.88$, $\Delta df = 6$, $p < .001$). When RML models were compared, a scaled chi-square difference test was used (cf. Bryant & Satorra, 2012).

Intercorrelations between the factors in the four-factor model were higher than .76 ($Mdn = .83$). To estimate the proportion of variance that each factor of the WCS shared with the second-order factor (i.e., work craving), we computed R^2 for each factor of the hierarchical model. The highest coefficient was .96 for the WCS-OC factor, followed by .91 for the WCS-R factor, .79 for the WCS-SW factor, and .67 for the WCS-NP factor. These results show that all four factors are highly correlated with each other and with work craving, and confirm the psychometric adequacy of the WCS. All factor loadings (completely standardized lambda X) and R^2 for each item are displayed in Table 1. Thus, the results of the CFAs confirmed the factorial validity of the hypothesized four-factor model of work craving as measured with the WCS.

Because data from the participating employees are nested within companies (i.e., 30 different firms in Study 1), we decided to run a multilevel CFA to control the influence of sampling on the fit of the four-factor structure of the WCS. We constrained factor loadings to be equal across companies. The results showed good fit of the four-factor structure, $\chi^2(712) = 2458.70$ ($p < .001$), RMSEA = .065, CFI = .97. Interclass correlations (ICCs) were low (WCS-OC ICC = 0.04, WCS-SW ICC = 0.01, WCS-R ICC = 0.03, WCS-NP ICC = 0.03). We compared the results of a constrained factor loadings model to results of CFA for a model in which factor loadings were freely estimated when ML estimation was computed, $\chi^2(688) = 2424.28$, $p < .001$, RMSEA = .064, CFI = .97.³ The difference in chi-square was nonsignificant ($\Delta\chi^2 =$

34.42, $\Delta df = 24$). This means that differences across companies in the four-factor structure were nonsignificant and suggests that work craving is an individual-level but not a group-level construct.

In Study 1, we collected data from 717 female and 422 male participants. This gender imbalance could have affected CFA calculation, so we decided to inspect model fit across gender and thus performed a series of CFAs. First, we conducted CFAs for the four-factor model on the data collected from females and males separately. Results show good fit of the model in both samples: (a) female, $\chi^2(344) = 1832.95$, $p < .001$, RMSEA = .078, CFI = .97, and (b) male, $\chi^2(344) = 1150.33$, $p < .001$, RMSEA = .075, CFI = .97. Moreover, we calculated CFAs for the one-factor model of the WCS in each sample. In the group of females results were $\chi^2(350) = 5275.67$, $p < .001$, RMSEA = .111, CFI = .95; in the group of male participants, $\chi^2(350) = 4914.67$, $p < .001$, RMSEA = .104, CFI = .95. The same conclusions were obtained when a scaled chi-square difference test was used. The results show that the four-factor model fit the data better than the one-factor model for both female and male participants.

In the multigroup CFA, factor loadings were constrained to be equal across gender. The results showed good fit, $\chi^2(712) = 3015.78$, $p < .001$, RMSEA = .074, CFI = .97, and interclass correlations were very low (WCS-SW ICC = 0.005, WCS-R ICC = 0.004, WCS-NP ICC = 0.006, WCS-OC ICC = 0.005). We compared the results for constrained factor loadings model with results of CFA for a model in which factor loadings were freely estimated, $\chi^2(688) = 2983.28$, $p < .001$, RMSEA = .077, CFI = .97. The difference between the chi-squares was nonsignificant ($\Delta\chi^2 = 32.50$, $\Delta df = 24$). This means that the differences between factor loadings were nonsignificant.

Descriptive Statistics and Correlations

Descriptive information and correlations for the three samples are presented in Tables 3 and 4. Results for the

³LISREL 8.8 does not support the computation of a scaled chi-square difference test for RML estimation and multilevel CFA.

TABLE 3
Means, Standard Deviations, and Correlations Between Work Craving and Additional Variables in Study 1 (Samples A and B only)

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | M | SD |
|------------------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|------|-------|-------|
| 1. WCS-SW | — | .76*** | .74*** | .76*** | .91*** | .06 | .09 | .19*** | .46*** | .33*** | | 3.55 | 1.29 |
| 2. WCS-R | .75*** | — | .75*** | .80*** | .92*** | .12* | .05 | .20*** | .49*** | .44*** | | 2.72 | 1.17 |
| 3. WCS-NP | .71*** | .68*** | — | .71*** | .89*** | .09 | .12* | .23*** | .54*** | .48*** | | 2.94 | 1.14 |
| 4. WCS-OC | .72*** | .87*** | .68*** | — | .90** | .11* | .06 | .22*** | .47*** | .36*** | | 2.67 | 1.06 |
| 5. WCS | .90*** | .92*** | .86*** | .91*** | — | .10* | .09 | .23*** | .54*** | .44*** | | 3.00 | 1.06 |
| 6. Age | -.15* | -.08 | -.09 | -.13 | -.12 | — | -.14** | .09 | .03 | .01 | | 37.31 | 11.60 |
| 7. Sex | .07 | .07 | .08 | .12 | .10 | .01 | — | .11* | .10 | .03 | | 1.29 | .46 |
| 8. Working hours | .03 | -.02 | .13 | .04 | .05 | -.15* | .29** | — | .13** | .15* | | 40.03 | 8.93 |
| 9. WART | .60*** | .59*** | .67*** | .61*** | .69*** | -.08 | .06 | .10 | — | .51*** | | 2.16 | .46 |
| 10. ATQ | | | | | | | | | | — | | 1.89 | .77 |
| 11. BDI | .21** | .21** | .26*** | .17* | .24*** | -.06 | -.17* | -.08 | .34*** | | — | | |
| M | 3.62 | 2.69 | 3.11 | 2.69 | 3.03 | 32.71 | 1.40 | 41.40 | 2.25 | | 5.90 | | |
| SD | 1.31 | 1.24 | 1.20 | 1.13 | 1.10 | 9.81 | .49 | 12.15 | .49 | | 6.19 | | |

Note. Correlations for Sample A ($N = 362$) are presented above the diagonal, and correlations for Sample B ($N = 183$) are presented below the diagonal. Descriptive statistics for Sample A are on the right side of the Table (for Sample B on the bottom). WCS-SW = Anticipation of Self-Worth Compensatory Incentives from Work; WCS-R = Anticipation of Reduction of Negative Affect (Relief) and Withdrawal Symptoms Resulting from Working; WCS-NP = Neurotic Perfectionism; WCS-OC = Obsessive-Compulsive Desire for Work; WCS = Work Craving Scale general score; WART = Work Addiction Risk Test; ATQ = Automatic Thought Questionnaire; BDI = Beck Depression Inventory; Sex: 1 = female, 2 = male.

* $p < .05$. ** $p < .01$. *** $p < .001$.

demographic variables indicate no differences between male and female participants ($t_s < 1.96$) on the degree of work craving. Thus, workaholism as measured with the WCS seems to be gender independent. Moreover, there were no noteworthy relationships between the WCS scales and age. Thus, it seems that workaholism could develop at each phase of a work career and across the investigated life span (i.e., between 24 and 50 years of age).

The WART. Across three samples, work craving was positively correlated with workaholism as measured with the WART. Correlations ranged from moderate (Samples A and C) to high (Sample B), sharing between 22% and 49% of variance, respectively. It can be concluded that the WCS has satisfactory convergent validity. However, there is no full overlap between WCS and WART (i.e., less than 50% of shared variance). Thus, we can conclude that

TABLE 4
Means, Standard Deviations, and Correlations Between Work Craving and Additional Variables in Study 1 (Sample C only) and Study 2

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | M | SD |
|------------------|--------|---------|---------|---------|---------|------|-----|-----|--------|---------|------|------|-------|-------|
| 1. WCS-SW | — | .72*** | .71*** | .71*** | .90*** | .09* | .01 | .04 | .55*** | -.17** | | | 3.65 | 1.31 |
| 2. WCS-R | .88*** | — | .64*** | .81*** | .89*** | .07 | .01 | .07 | .46*** | -.22*** | | | 2.69 | 1.19 |
| 3. WCS-NP | .86*** | .80** | — | .65*** | .85*** | .02 | .05 | .07 | .59*** | -.23*** | | | 3.13 | 1.18 |
| 4. WCS-OC | .84*** | .89** | .81*** | — | .89*** | .02 | .06 | .06 | .50*** | -.26*** | | | 2.62 | 1.03 |
| 5. WCS | .96*** | .95** | .92*** | .94** | — | .06 | .03 | .07 | .59*** | -.24*** | | | 3.02 | 1.04 |
| 6. Age | | | | | | — | .03 | .01 | .01 | -.05 | | | 38.79 | 11.97 |
| 7. Sex | | | | | | | — | .19 | .09* | .03 | | | 1.41 | .49 |
| 8. Working hours | | | | | | | | — | .13* | -.05 | | | 39.88 | 9.87 |
| 9. WART | | | | | | | | | — | -.19*** | | | 2.17 | .44 |
| 10. SES | | | | | | | | | | — | | | 3.11 | .46 |
| 11. GHQ-28 | -.29** | -.36*** | -.33*** | -.41*** | -.37*** | | | | | | — | | | |
| 12. IHRB | -.22* | -.23* | -.17 | -.26** | -.24** | | | | | | .14 | — | | |
| M | 2.79 | 2.55 | 2.77 | 2.45 | 2.64 | | | | | | 3.07 | 3.19 | | |
| SD | 1.29 | 1.24 | 1.86 | 1.12 | 1.14 | | | | | | .48 | .58 | | |

Note. Correlations for Sample C in Study 1 ($n = 594$) are presented above the diagonal, and correlations for Study 2 ($N = 100$) are presented below the diagonal. Descriptive statistics for Sample C are on the right side of the Table (for Study 2 on the bottom). WCS-SW = Anticipation of Self-Worth Compensatory Incentives from Work; WCS-R = Anticipation of Reduction of Negative Affect (Relief) and Withdrawal Symptoms Resulting from Working; WCS-NP = Neurotic Perfectionism; WCS-OC = Obsessive-Compulsive Desire for Work; WCS = Work Craving Scale general score; WCS = General score on the WCS; Sex: 1 = female, 2 = male; WART = Work Addiction Risk Test; SES = Self-Esteem Scale; GHQ-28 = General Health Questionnaire; IHRB = Inventory of Health-Related Behaviors.

* $p < .05$. ** $p < .01$. *** $p < .001$.

work craving also has unique attributes compared to workaholism as defined by Robinson (1999).

Rumination (ATQ). Consistent with our hypothesis, work craving was positively correlated with rumination (see Table 3). On a descriptive level, the strongest correlation was observed between rumination and neurotic perfectionism (29% of explained variance). This means that workaholics in our sample tended to ruminate, were overwhelmed by self-doubts, and revealed negative affect associated with the self (cf. Altamirano, Miyake, & Whitmer, 2010).

Depression (BDI). Consistent with our assumptions, work craving was positively related to depression. On a descriptive level, the correlation between BDI and WCS was strongest for neurotic perfectionism (7% of explained variance). The finding that workaholics tend to suffer from depression could mean that they have problems with mood regulation; feel detached from their physical self; and experience anxiety, worthlessness, and even existential emptiness.

On average, the level of depression was not high (M BDI = 5.90). Nevertheless, we observed strong individual differences in the level of depression. Among participants with high workaholism (+1SD group; $WCS > 4.13$; $n = 30$), 25% had a BDI > 10 (and 11% had a BDI > 14; indicating a mild depression), whereas only 40% revealed lower depression than the sample mean. Among participants with low workaholism (−1 SD group; $WCS < 1.93$; $n = 30$), only 3% had a BDI > 10 (and no one had a BDI > 14), whereas 80% revealed lower depression than the sample mean. The difference in the proportion of participants with a BDI > 10 observed between high and low workaholism groups (25% vs. 3%) was significant, $\chi^2(1) = 13.31$, $p < .001$, Cramer's $V = 0.47$.

Self-esteem (SES). Consistent with our assumptions, work craving was negatively correlated with self-esteem, accounting for about 4% of the variance. On descriptive level, obsessive-compulsive desire for work had the strongest negative association with the self-esteem.

Working hours. Consistent with our expectations, correlations between work craving and working hours were nonsignificant (Samples B and C) or rather low (Sample A). Thus, working hours should not be considered to be a characteristic of workaholic individuals. Findings support the assumed differentiation between work craving and work engagement and contribute to the discriminant validity of the WCS.

Hierarchical Multiple Regression Analyses

To test the incremental validity of the WCS, hierarchical multiple regression analyses were conducted with

rumination, depression, and self-esteem as dependent variables. Predictor variables were the WART (Step 1) and the four WCS scales (Step 2). As presented in Table 5, the WCS significantly contributed to the prediction of rumination (additional 8%) and self-esteem (additional 4%) over and above that of the WART. The WCS did not incrementally contribute to depression. When controlling for work craving, the WART lost its predictive power for rumination and self-esteem (see Step 2 in Table 5). Results support the assumption that the new conceptualization of work craving uniquely contributes to our understanding of phenomena associated with workaholism.

Mediation Analyses

Rumination as an outcome of WCS-NP. To test the assumption that neurotic perfectionism has a particularly strong, direct relationship with rumination and that the other components of work craving are more indirectly related to rumination through neurotic perfectionism, we tested two mediation models using the PROCESS macro (Model 6) by Hayes (2012, 2013). As depicted in Figure 1, we used rumination (ATQ) as an outcome and tested the paths from WCS-OC (predictor) through one of the hedonic components WCS-SW/WCS-R and WCS-NP as mediators.

In the WCS-SW model, results indicated that WCS-NP had a direct effect on rumination ($B = .30$, $t = 6.48$, $p < .001$), whereas WCS-OC ($B = .06$, $t = 1.16$, ns) and

TABLE 5
Hierarchical Multiple Regression Analyses Predicting Rumination, Depression, and Self-Esteem From Workaholism as Measured With the WART and the WCS in Study 1

| | Rumination (ATQ) | | Depression (BDI) | | Self-Esteem (SES) | |
|-------------|---------------------|---------|---------------------|---------|----------------------|---------|
| | ΔR^2 | β | ΔR^2 | β | ΔR^2 | β |
| Step 1 | .26*** | | .11*** | | .03*** | |
| WART | | .51*** | | .33*** | | −.19*** |
| Step 2 | .08*** | | .01 | | .04*** | |
| WART | | .53*** | | .30** | | −.07 |
| WCS-SW | | −.17* | | .01 | | .14* |
| WCS-R | | .23** | | .11 | | −.04 |
| WCS-NP | | .28*** | | .10 | | −.13** |
| WCS-OC | | −.06 | | −.18 | | −.20** |
| Total R^2 | .36*** | | .10*** | | .07*** | |
| N | 362 | | 183 | | 594 | |

Note. $N = 1,139$. WCS = Work Craving Scale; WART = Work Addiction Risk Test; WCS-SW = Anticipation of Self-Worth Compensatory Incentives from Work; WCS-R = Anticipation of Reduction of Negative Affect (Relief) and Withdrawal Symptoms Resulting from Working; WCS-NP = Neurotic Perfectionism; WCS-OC = Obsessive-Compulsive Desire for Work; ATQ = Automatic Thought Questionnaire; BDI = Beck Depression Inventory; SES = Self-Esteem Scale.

* $p < .05$. ** $p < .01$. *** $p < .001$.

WCS-SW ($B = -.05$, $t = -1.08$, ns) did not have any direct effects on rumination. However, WCS-OC had indirect effects on rumination through WCS-NP and through the sequence of WCS-SW and WCS-NP because the limits of the 95% confidence interval did not include zero (see upper left columns of Table 6). In the WCS-R model, results indicated that WCS-NP ($B = .23$, $t = 4.93$, $p < .001$) and WCS-R ($B = .14$, $t = 2.62$, $p < .001$) had direct effects on rumination, whereas WCS-OC ($B = -.05$, $t = -.93$, ns) did not. However, WCS-OC had indirect effects on rumination through WCS-NP, through WCS-R, and through the sequence of WCS-SW and WCS-NP (see upper right columns of Table 6).

To test alternative models of mediation, we conceptualized rumination as an outcome of work craving similar to general health in Figure 1. We tested the direct and indirect paths from one of the hedonic components (predictor) through WCS-NP and WCS-OC (mediators) on rumination. There were direct effects of WCS-NP ($B = .25$, $t = 5.28$, $p < .001$) and WCS-R ($B = .17$, $t = 3.04$, $p < .01$) but not of WCS-SW ($B = -.08$, $t = -1.87$, ns) and WCS-OC ($B = -.02$, $t = -.34$, ns). Consistent with expectations, there were no significant indirect effects of the hedonic components (WCS-SW and WCS-R) or the cognitive component (WCS-NP) through WCS-OC on rumination.

Findings are consistent with our assumption that neurotic perfectionism is particularly strongly and directly associated with rumination, whereas the other components of work craving significantly relate to rumination mainly indirectly through neurotic perfectionism.

Depression as an outcome of WCS-NP. We conducted the same set of mediation analyses with depression as an outcome of work craving. The results are conceptually identical to those for rumination. The results of the model testing the direct and indirect paths from WCS-OC (predictor) through WCS-SW and WCS-NP (mediators) indicated that WCS-NP had direct effects on depression ($B = 1.20$, $t = 2.10$, $p < .05$), whereas WCS-OC ($B = -.22$, $t = -.36$, ns) and WCS-SW ($B = .36$, $t = .65$, ns) did not. Consistent with expectations, however, WCS-OC had indirect effects on depression through WCS-NP ($B = .44$, $\text{BootLLCI} = .09$, $\text{BootULCI} = .95$) and through the sequence of WCS-SW and WCS-NP ($B = .42$, $\text{BootLLCI} = .08$, $\text{BootULCI} = .86$). The results of the model from WCS-OC through WCS-R and WCS-NP further indicated that WCS-R ($B = -.22$, $t = -.36$, ns) had no direct effect on depression. Consistent with expectations, however, WCS-OC had indirect effects on depression through WCS-NP ($B = .50$, $\text{BootLLCI} = .06$,

TABLE 6
Summary of Indirect Effects in Mediation Analyses Predicting Rumination (ATQ), Hedonic Components of Work Craving (WCS-SW and WCS-R), and General Health (GHQ) in Studies 1 and 2

| Indirect Effects of WCS-OC Through | Rumination (ATQ) | | | | Rumination (ATQ) | | | |
|--|----------------------|---------|-----------|----------|----------------------|---------|-----------|-----------|
| | B | Boot SE | Boot LLCI | BootULCI | B | Boot SE | Boot LLCI | Boot ULCI |
| WCS-SW/R ^a | -.04 | .04 | -.12 | .03 | .12 | .05 | .04 | .22 |
| WCS-SW/R ^a → WCS-NP | .11 | .02 | .07 | .17 | .10 | .03 | .06 | .16 |
| WCS-NP | .12 | .03 | .07 | .18 | .07 | .02 | .04 | .12 |
| Total | .19 | .05 | .10 | .28 | .30 | .05 | .21 | .39 |
| Indirect Effects of SES Through | WCS-SW | | | | WCS-R | | | |
| | B | Boot SE | Boot LLCI | BootULCI | B | Boot SE | Boot LLCI | Boot ULCI |
| WCS-NP | -.30 | .07 | -.45 | -.19 | -.12 | .03 | -.26 | -.07 |
| WCS-NP → WCS-OC | -.18 | .04 | -.26 | -.11 | -.26 | .05 | -.37 | -.16 |
| WCS-OC | -.14 | .05 | -.24 | -.06 | -.20 | .06 | -.33 | -.09 |
| Total | -.62 | .11 | -.83 | -.43 | -.58 | .09 | -.77 | -.40 |
| Indirect Effects of WCS-SW/R ^a Through | General Health (GHQ) | | | | General Health (GHQ) | | | |
| | B | Boot SE | Boot LLCI | BootULCI | B | Boot SE | Boot LLCI | Boot ULCI |
| WCS-NP | -.04 | .04 | -.11 | .04 | -.00 | .04 | -.07 | .08 |
| WCS-NP → WCS-OC | -.04 | .02 | -.11 | -.01 | -.03 | .02 | -.08 | -.01 |
| WCS-OC | -.09 | .03 | -.16 | -.03 | -.09 | .05 | -.20 | -.01 |
| Total | -.17 | .06 | -.28 | -.06 | -.12 | .06 | -.24 | -.01 |

Note. ATQ = Automatic Thought Questionnaire; WCS-SW = Anticipation of Self-Worth Compensatory Incentives from Work; WCS-R = Anticipation of Reduction of Negative Affect (Relief) and Withdrawal Symptoms Resulting from Working; GHQ = General Health Questionnaire; WCS-OC = Obsessive-Compulsive Desire for Work; LLCI = Lower Limit Confidence Interval; ULCI = Upper Limit Confidence Interval; WCS-NP = Neurotic Perfectionism.

^aResults for WCS-SW are presented in left columns and results for WCS-R in right columns.

* $p < .05$. ** $p < .01$. *** $p < .001$.

BootULCI = 1.26) and through the sequence of WCS-R and WCS-NP ($B = .39$, BootLLCI = .06, BootULCI = .91).

Again, we tested alternative models of mediation. We tested the direct and indirect paths from one of the hedonic components (predictor) through WCS-NP and WCS-OC (mediators) on depression (similar to general health in Figure 1). Whereas WCS-NP had a significant direct effect on depression ($B = 1.15$, $t = 2.01$, $p < .05$), the other three components of work craving did not ($B < |.07|$, $t < |.85|$, ns). Consistent with expectations, there were also no significant indirect effects of the hedonic components (WCS-SW and WCS-R) or the cognitive component (WCS-NP) through WCS-OC on depression.

Findings are consistent with our assumption that neurotic perfectionism is particularly strongly and directly associated with depression, whereas the other components of work craving significantly relate to depression rather indirectly through neurotic perfectionism.

Self-esteem as an antecedent of WCS-NP. To test the assumption that self-esteem is an antecedent of work craving that is directly related to neurotic perfectionism, whereas the relationships with the other components of work craving are mainly mediated through neurotic perfectionism (see Figure 1), we used self-esteem (SES) as a predictor, WCS-NP and WCS-OC as mediators and one of the two hedonic components as an outcome (WCS-SW and WCS-R, respectively).

In the WCS-SW model, results indicated that self-esteem had highly significant direct effects on WCS-NP ($B = -.60$, $t = -5.63$, $p < .001$) and WCS-OC ($B = -.26$, $t = -3.49$, $p < .001$) but not on WCS-SW ($B = .14$, $t = 1.81$, ns). Consistent with expectations, however, self-esteem had significant indirect effects on WCS-SW through WCS-NP, through WCS-OC, and through the sequence of WCS-NP and WCS-OC (see left columns in the middle of Table 6). In the WCS-R model, results indicated that self-esteem was also not directly related to WCS-R ($B = -.01$, $t = -.03$, ns), but indirectly through WCS-NP, through WCS-OC, and through the sequence of WCS-NP and WCS-OC (see right columns in the middle of Table 6).

To test alternative models of mediation, we conceptualized self-esteem as an outcome of work craving similar to general health in Figure 1. We tested the direct and indirect paths from one of the hedonic components (predictor) through WCS-NP and WCS-OC (mediators) on self-esteem (similar to general health in Figure 1). Results yielded significant direct effects of WCS-SW ($B = .06$, $t = 3.11$, $p < .01$), WCS-NP ($B = -.07$, $t = -3.41$, $p < .001$), and WCS-OC ($B = -.09$, $t = -3.25$, $p < .01$) but not of WCS-R ($B = -.03$, $t = -1.20$, ns) on self-esteem. In addition, there were significant indirect effects of WCS-SW on self-esteem through WCS-NP ($B = -.03$, BootLLCI = $-.05$, BootULCI = $-.01$), through WCS-OC ($B = -.02$,

BootLLCI = $-.03$, BootULCI = $-.01$), and through the sequence of WCS-NP and WCS-OC ($B = -.01$, BootLLCI = $-.01$, BootULCI = $-.01$), as well as significant indirect effects of WCS-R on self-esteem through WCS-NP ($B = -.02$, BootLLCI = $-.04$, BootULCI = $-.01$), through WCS-OC ($B = -.05$, BootLLCI = $-.07$, BootULCI = $-.02$), and through the sequence of WCS-NP and WCS-OC ($B = -.01$, BootLLCI = $-.01$, BootULCI = $-.01$).

Findings support our assumption that self-esteem is closely associated with neurotic perfectionism and that neurotic perfectionism mediates the relationship between self-esteem and the other components of work craving. In contrast to depression and rumination, however, self-esteem is also closely related to obsession-compulsion and the anticipation of self-worth compensatory incentives from work. Thus, self-esteem seems to be related to multiple components of work craving simultaneously.

STUDY 2

The aim of Study 2 was to further validate work craving by examining correlations between the WCS and measures of health—specifically, mental health status and health-related behaviors. Because of the conceptualization of work craving as pathological, we expected negative relationships between the WCS and health indices.

Method

Participants

The sample consisted of 100 workers (46 female, 54 male) of different occupations (e.g., bankers, office workers, teachers) working for different companies. Forty-seven participants were managers. There were 46 female and 54 male participants. Of these, 92 participants had full-time jobs (eight had part-time jobs). Moreover, as the highest level of education, 22 participants completed high school, and 78 had an M.A. or equivalent academic degree. Mean age was 38.29 years ($SD = 11.04$).

Measures

Workaholism. We used the WCS in order to measure four dimensions of workaholism ($\alpha > .76$).

General health. The General Health Questionnaire (GHQ-28; Goldberg & Hillier, 1979) was used to assess the mental health status. Generally, the GHQ-28 has four subscales (seven items each), but we consider only the general score ($\alpha = .88$). Each item describes problems in mental functioning. All 28 mental health status items were rated on a 4-point scale ranging from 1 (*much more than usual*) to 4 (*not at all*). Higher scores indicate better mental health.

Health behaviors. The Inventory of Health-Related Behaviors (IHRB; Juczynski, 2001) was used to assess the general frequency of prohealth behaviors (proper nutrition habits, prohealth practices, prophylaxis, and stress avoiding strategies). We used only the general score of this 24-item scale ($\alpha = .88$). Items were rated on a 5-point scale ranging from 1 (*almost never*) to 5 (*almost always*). The higher the scores, the more healthy behaviors participants professed undertaking (e.g., Binkowska-Bury & Januszewski, 2010).

Results and Discussion

Table 4 presents the correlations and descriptive statistics for the main variables in Study 2. Consistent with our assumptions, all correlations between the WCS and the health scales were negative and significant indicating that higher workaholism was associated with lower health (e.g., physical well-being) and fewer health behaviors. It is noteworthy that the two health scales did not intercorrelate significantly ($r = .14$), which means that they assess different health issues. Thus, high levels of workaholism can affect multiple aspects of well-being. It is associated with low general health status (headaches, physical tension, etc.) as well as low levels of prohealth behaviors (eating healthy food, physical exercise, stress reduction, etc.). The WCS correlated more strongly with the GHQ-28 (all $ps < .01$) than the IHRB. On a descriptive level, obsessive-compulsive desire for work had the strongest negative correlation with general health status and prohealth behaviors (with 16% and 7% of the shared variance, respectively).

Mediation Analyses

To further test the assumption that reduced general health is especially associated with WCS-OC, we tested two mediation models using the PROCESS macro (Model 6) by Hayes (2012, 2013). We conceptualized general health (GHQ) as an outcome of work craving. Consistent with the model in Figure 1, we used one of the two hedonic components as a predictor (WCS-SW and WCS-R, respectively) and WCS-NP and WCS-OC as mediators.

In the WCS-SW model, results indicated that only WCS-OC ($B = -.18, t = -3.00, p < .001$) had a direct effect on general health whereas WCS-NP ($B = -.05, t = -.78, ns$) and WCS-SW ($B = .08, t = 1.36, ns$) were not directly related to general health. Consistent with expectations, however, WCS-SW had significant indirect effects on general health through WCS-OC and through the sequence of WCS-NP and WCS-OC (see lower left columns of Table 6). In the WCS-R model, results indicated that only WCS-OC ($B = -.15, t = -1.99, p < .05$) had a direct effect on general health, whereas WCS-NP ($B = -.01, t = -.04, ns$) and WCS-R ($B = .00, t = .11, ns$) did not. Consistent with expectations, however, WCS-R had significant

indirect effects on general health through WCS-OC and through the sequence of WCS-NP and WCS-OC (see lower right columns of Table 6).

To test alternative models of mediation, we conceptualized general health as an outcome of work craving similar to rumination in Figure 1. We tested the direct and indirect paths from WCS-OC (predictor) through one of the hedonic components (WCS-SW and WCS-R, respectively) and WCS-NP as mediators. Results indicated that only WCS-OC ($B = -.18, t = -3.00, p < .01$) had a significant direct effect on general health, whereas the other three components of work craving had no direct effects on general health ($B < |.09|, t < |1.40|, ns$). Consistent with expectations, there were also no indirect effects of WCS-OC through WCS-SW/R, through WCS-NP, or through the sequence of WCS-SW/R and WCS-NP on general health.

The findings are consistent with our assumption that the obsessive-compulsive desire for work is most strongly and directly associated with general health, whereas the other components of work craving significantly relate to general health only indirectly through obsessive-compulsive desire for work.

STUDY 3

The aim of Study 3 was to further demonstrate discriminant validity of the WCS. We consider work craving as being distinct from work enthusiasm (cf. Schaufeli et al., 2009). Thus, we expected the relationship between work craving and work engagement to be rather small.

Method

Participants

The sample consisted of 100 workers of different occupations (teachers and officials). There were 37 female and 63 male participants, and all participants had full-time jobs. Moreover, 10 participants completed high school, and 90 participants had an M.A. or equivalent academic degree. Mean age was 40.03 years ($SD = 5.67$).

Measures

Workaholism. We used the WCS in the order to measure four dimensions of workaholism ($\alpha s > .80$).

Work enthusiasm. Work enthusiasm was assessed with the Polish version of the original 17-item UWES (Schaufeli, Bakker, & Salanova, 2006; 17 items; $\alpha = .87$). The scale includes the three constituting dimensions of work enthusiasm: vigor (six items, e.g., "At my work, I feel bursting with energy"), dedication (five items, e.g., "I find the work that I do full of meaning and purpose"), and absorption (six items, e.g., "When I am working, I

forget everything else around me"). Items were scored on a 7-point frequency rating scale ranging from 0 (*never*) to 6 (*each day*). According to the recommendation of Schaufeli, Bakker, et al. (2006), we decided to use the general score of the UWES scale as a measure of work enthusiasm. Higher scores indicated higher work enthusiasm.

Results and Discussion

Table 7 presents correlations and descriptive statistics. Consistent with our assumptions, correlations between the WCS and the UWES were nonsignificant. The results of Study 3 indicate that the two constructs of work craving and work enthusiasm are substantially different (less than 4% of shared variance) and contribute to the discriminant validity of work craving.

STUDY 4

The aim of Study 4 was to further contribute to the discriminant validity of the WCS by examining correlations with burnout. We expected modest correlations because burnout may occur as a consequence of workaholism (e.g., Van Beek et al., 2011). Nevertheless, we expected sufficient unique variance in work craving and burnout to treat them as distinct constructs.

Method

Participants

The sample consisted of 120 workers of office workers who worked at a large insurance company. There were 77

female and 43 male participants in the study, and only seven of them were managers. All participants had full-time job. Moreover, 38 participants completed high school, and 82 had M.A. or equivalent academic degree. Mean age was 36.24 years ($SD = 9.97$).

Measures

Workaholism. The WCS was used to measure four dimensions of workaholism ($\alpha s > .80$).

Burnout. Work burnout was assessed with the Polish version of the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996). The MBI consists of 22 items and includes three subscales: Emotional Exhaustion (MBI-EE; nine items; $\alpha = .84$; e.g., "I feel emotionally drained from my work"), Depersonalization (MBI-D; six items; $\alpha = .74$; e.g., "I've become more callous toward people since I took this job"), and Personal Accomplishment (MBI-PA; seven items; $\alpha = .84$; e.g., "In my work, I deal with emotional problems very calmly"). Items were scored on a 7-point frequency rating scale ranging from 0 (*never*) to 6 (*each day*). Higher scores indicated higher burnout (lower personal accomplishment).

Results and Discussion

Table 7 presents the correlations and descriptive statistics of the main variables. Consistent with expectations, we found modest correlations between the WCS and the MBI scales. The results support the assumption that burnout could occur as a consequence of work craving and are consistent with previous findings of a positive relationship between workaholism and health problems (Buelens &

TABLE 7
Means, Standard Deviations, and Correlations Between Work Craving, Work Engagement (Study 3), and Burnout (Study 4)

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | M | SD |
|-----------|---------|--------|--------|---------|---------|-----|--------|------|------|------|------|
| 1. WCS-SW | — | .70 | .69** | .79** | .91** | .19 | | | | 3.19 | 1.01 |
| 2. WCS-R | .86*** | — | .64** | .78** | .88** | .01 | | | | 2.84 | .95 |
| 3. WCS-NP | .78*** | .76*** | — | .70** | .84** | .02 | | | | 3.15 | .82 |
| 4. WCS-OC | .80*** | .88*** | .73*** | — | .92** | .16 | | | | 2.76 | .89 |
| 5. WCS | .94*** | .95*** | .89*** | .93*** | — | .11 | | | | 2.98 | .82 |
| 6. UWES | | | | | | — | | | | 3.74 | .77 |
| 7. MBI-EE | .21** | .21** | .25** | .28** | .26** | | — | | | | |
| 8. MBI-D | .23** | .20* | .26** | .26** | .26** | | .59*** | — | | | |
| 9. MBI-PA | -.32*** | -.30** | -.17* | -.29*** | -.29*** | | .11 | .21* | — | | |
| M | 2.92 | 2.60 | 2.86 | 2.44 | 2.70 | | 2.52 | 2.23 | 3.51 | | |
| SD | 1.28 | 1.13 | 1.15 | 1.00 | 1.01 | | 1.34 | 1.13 | 1.44 | | |

Note. Correlations for Study 3 ($N = 100$) are presented above the diagonal, and correlations for Study 4 ($N = 120$) are presented below the diagonal. Descriptive statistics for Study 3 are on the right side of the Table (for Study 4 on the bottom). WCS-SW = Anticipation of Self-Worth Compensatory Incentives from Work; WCS-R = Anticipation of Reduction of Negative Affect (Relief) and Withdrawal Symptoms Resulting from Working; WCS-NP = Neurotic Perfectionism; WCS-OC = Obsessive-Compulsive Desire for Work; WCS = Work Craving Scale general score; UWES = Utrecht Work Engagement Scale. The Maslach Burnout Inventory: MBI-EE = Emotional Exhaustion; MBI-D = Depersonalization; MBI-PA = Personal Accomplishment.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Poelmans, 2004; Burke, 1999, 2000b; McMillan, O'Driscoll, & Burke, 2003; Schaufeli et al., 2008). Furthermore, results support the assumption that work craving is distinct from burnout because the two measures shared less than 10% of their variance.

Mediation Analyses

To further test the assumption that burnout is especially associated with WCS-OC, we tested two mediation models using the PROCESS macro (Model 6) by Hayes (2012, 2013). Similar to general health (see Figure 1), we conceptualized burnout (MBI) as an outcome of work craving. Consistent with the model in Figure 1, we used one of the two hedonic components as a predictor (WCS-SW and WCS-R, respectively), and WCS-NP and WCS-OC as mediators. Results were conceptually identical to those for general health.

In both models, WCS-OC was the only component of work craving directly related to burnout ($B = .34$, $t = 1.99$, $p < .05$). The other three WCS scales did not show any direct relationships with burnout ($B < |.15|$, $t < |1.05|$, ns). Consistent with expectations, however, WCS-SW had significant indirect effects on burnout through WCS-OC ($B = .13$, BootLLCI = .01, BootULCI = .26) and through the sequence of WCS-NP and WCS-OC ($B = .05$, BootLLCI = .01, BootULCI = .12), and WCS-R had significant indirect effects on burnout through WCS-OC ($B = .24$, BootLLCI = .02, BootULCI = .50) and through the sequence of WCS-NP and WCS-OC ($B = .04$, BootLLCI = .01, BootULCI = .11).

To test alternative models of mediation, we conceptualized burnout as an outcome of work craving similar to rumination in Figure 1. More specifically, we tested the direct and indirect paths from WCS-OC (predictor) through one of the hedonic components (WCS-SW and WCS-R, respectively) and WCS-NP as mediators. WCS-OC was the only WCS component with a direct relationship to burnout ($B = .36$, $t = 2.11$, $p < .05$). Consistent with expectations, there were also no indirect effects of WCS-OC through WCS-SW/R, through WCS-NP, or through the sequence of WCS-SW/R and WCS-NP on burnout.

Findings are consistent with our assumption that the obsessive-compulsive desire for work is most strongly and directly associated with burnout, whereas the other components of work craving significantly relate to burnout mainly indirectly through obsessive-compulsive desire for work.

GENERAL DISCUSSION

In the present article, we verified empirically the theory of workaholism as work craving proposed by Wojdylo (2013) and presented psychometrical analyses of the WCS as an

instrument for its measurement. Work craving was defined as a subjective state of inner drive aimed at compensation of negative emotions through performance-conditioned self-worth and neurotic perfectionism in work-related activities. Our research on work craving is the first attempt to draw on empirical analyses of work related craving and to develop a measurement that is in line with diagnostic criteria for other cravings (substance and nonsubstance). It allows diagnosing workaholism clearly as a psychiatric, clinical category and as an unhealthy form of craving symptoms. Following the definition of workaholism as work craving, our questionnaire includes four scales: obsessive-compulsive desire for work (WCS-OC), anticipation of self-worth compensatory incentives from work (WCS-SW), anticipation of reduction of negative affect (relief) or withdrawal symptoms resulting from working (WCS-R), and neurotic perfectionism (WCS-NP). This four-factor structure was successfully validated and revealed good internal consistency.

The results of four studies confirmed the factorial, convergent, discriminant, and incremental validity of the WCS. We found moderate and positive correlations between the WCS and the WART (Robinson, 1999) but rather small or insignificant negative correlations with work enthusiasm (e.g., Schaufeli, Bakker, et al., 2006), and modest positive correlations with burnout (e.g., Maslach et al., 1996; Schaufeli, Taris, et al., 2009). The correlational pattern empirically confirms the substantial difference between work craving, work enthusiasm, and burnout, which is consistent with recent results on workaholism (e.g., Schaufeli, Shimazu, et al., 2009).

Additional data showed that the WCS was not related to working hours, a finding that indicates that hours spend at work should not be considered to be an indicator of workaholism. These results are in line with previous data, which indicate that there are a number of psychological processes that may motivate people to work hard other than work addiction (e.g., autonomous motivation; cf. Van Beek et al., 2011).

Subsequent correlational analyses revealed that work craving is positively related to rumination and depression and negatively to self-esteem. These findings are consistent with studies showing that workaholics have low self-esteem (e.g., Burke, 1999, 2000a, 2000b) and suffer from depression (e.g., Haymon, 1993). The results extend these findings because work craving has an incremental contribution to high rumination and low self-esteem compared to a previous measure of workaholism (i.e., the WART). Furthermore, our findings extend the range of negative health consequences associated with workaholism and support the craving nature of workaholism. Consistent with this conceptualization, our research showed that work craving (as a psychiatric, clinical form of workaholism) was negatively correlated with mental health status (e.g., headaches or physical tension) and pro-health

behaviors (e.g., healthy nutrition or keeping fit). Thus, work craving includes a mechanism that is inconsistent with the hierarchy of needs postulated by Maslow (1943) because workaholics tolerate frustration of “lower” needs for health and safety in order to satisfy “higher” needs for self-acceptance and self-worth.

Our mediation analyses indicate theory-grounded similarities and differences in the relationships of the four dimensions of work craving with several measures of criterion validity. First, rumination and depression are outcomes (and/or antecedents) of work craving that are most strongly related to neurotic perfectionism. The hedonic and obsessive-compulsive components of work craving are related to rumination and depression mainly indirectly through neurotic perfectionism. Second, low general health and burnout are outcomes (and/or antecedents) of work craving that are most strongly related to obsession-compulsion. The hedonic and learned components of work craving are related to general health and burnout mainly indirectly through obsession-compulsion. Finally, self-esteem is the only construct that is highly intertwined with several components of work craving simultaneously. Of course, cross-sectional analyses of indirect effects are very limited in their ability to provide unbiased estimates of mediation (e.g., Maxwell & Cole, 2007; Maxwell, Cole, & Mitchell, 2011). In our Work Craving International Project, we aspire to longitudinal designs to test mediation more definitively and determine a causal direction of effects. Nevertheless, the findings are consistent with our assumption of four distinct components inherent in work craving.

We see some added value of the WCS in comparison with the most frequently applied measures of workaholism: the WART (Robinson, 2007), the Workaholism Battery (Spence & Robbins, 1992), or the Dutch Workaholism Scale (Schaufeli, Shimazu, et al., 2009). First, the existing scales measure obsessive-compulsive tendencies as main indicators of workaholism. In our view, the obsessive-compulsive tendencies are an important and necessary component of workaholism. However, they are not sufficient to comprehensively explain the addictive nature of workaholism. Thus, the existing measures allow diagnosing workaholism as an obsessive-compulsive phenomenon but not as a craving phenomenon with an addictive nature. In addition to obsessive-compulsive symptoms, the WCS (Wojdylo & Buczny, 2010) includes the hedonic and learned components inherent in an addiction and allows the measurement of workaholism as a craving phenomenon. With our empirical evidence for the model of work as craving, we argued that three further dimensions are critical for the diagnosis of work addiction: anticipation of self-worth incentives, anticipation of relief, and neurotic perfectionism.

Second, the three additional criteria derived from addiction research and integrated into the model of work

craving (self-worth compensatory incentives along with positive reinforcers and perfectionistic standards) can explain why workaholics perceive some degree of benefit (i.e., psychological buzz) in perpetually working despite negative side effects, and why they cannot stop working even though they want to. Third, in our opinion, the work craving conceptualization allows, more clearly than obsessive-compulsive tendencies alone, the differentiation of work addiction from other forms of working excessively (e.g., work enthusiasm, Type A behavior).

PRACTICAL IMPLICATIONS

The work craving model has many practical implications. We contend that the WCS may be useful for treatment providers. The chronic nature of addictions and the associated risks (e.g., health impairment) highlight the importance of prevention and early therapeutic interventions at the individual as well as the organizational level. The early identification of work craving patterns could prevent the long-term health consequences and the economic costs to organizations (e.g., inefficiency, worker absence). Moreover, the identification of psychological substrates in addiction using the WCS can provide new targets for treatment.

From a practical point of view, distinguishing between disordered and healthy forms of working excessively has interesting implications for cognitive behavioral therapy. In the case of individuals who work excessively and are driven by neurotic perfectionism, therapy would aim at (a) education about work hygiene, (b) challenging negative cognitions about fear of failure and making mistakes, and (c) improving patients' self-image and general self-esteem. To the extent that neurotic perfectionism can be viewed as a form of avoidance behavior (e.g., avoiding feelings of low self-worth), interventions that expose the individual to the feared contingency will be valuable as well.

LIMITATIONS AND FUTURE PERSPECTIVES

Our initial findings on work craving are promising. Nevertheless, further research is necessary. First, it would be informative to broaden the nomological network of work craving by investigating the relationships with more constructs and possible consequences of work craving. Second, our findings are correlational and cross-sectional so far. To clarify the causal role of work craving in work performance, social behaviors, and health outcomes, it would be necessary to conduct longitudinal studies (cf. Maxwell & Cole, 2007; Maxwell et al., 2011). For instance, we expect work craving to reduce work performance (e.g.,

in cognitive-resource-dependent tasks) in the long run and to play a causal role in the aggravation of negative health outcomes.

Finally, the present research focused on interindividual differences in work craving from a personality perspective. In future research, it would be informative to test whether specific types of work environments differentially influence the risk for work craving. According to the work craving model, the impact of specific work environments on workaholism can be explained in regard to the implications they have for self-enhancement motives. For instance, occupation groups like business services are typically considered to be more prestigious than social services. This notion is supported by recent studies showing that workers in specific types of work environments become excessively committed: Those in the business services have higher drive and lower enjoyment than those in the social services (Johnstone & Johnston, 2005). Porter (1996) found demanding work environments, in which the staff experience work pressure and are pushed to dedicate themselves to the company, contribute to the development and maintenance of workaholism.

CONCLUSION

In conclusion, the conceptualization of workaholism as work craving sheds new light on possible mechanisms underlying work addiction. Furthermore, the WCS seems to be a reliable and valid instrument for assessing work addiction and may stimulate more research on workaholism by providing a measurement tool that optimally integrates theory and research on workaholism and addiction. Finally, the present approach can widen the scope for future developments of efficient programs for prevention and treatment of workaholism.

ACKNOWLEDGMENTS

This project was supported by Polish National Science Centre Grant (DEC/2011/01/M/HS6/02567).

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