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THESIS

The Empirical Distinctiveness of Workaholism and Work
Engagement and their Relationship with Job Outcomes

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Abstract

Background. Virtually no empirical research has been carried out on the empirical distinctiveness of workaholism and work engagement and their relationship with possible antecedents and consequences.

Purpose. The aim of this study was to show the empirical distinctiveness between workaholism and work engagement. Moreover the mediating role of job demands (i.e., job overload and work-life balance) between workaholism and performance (both in-role and extra-role), satisfaction (both job and life) and ill-health (both physical and psychological) was studied. The mediating role of work engagement between job resources (i.e., family support, work support, novelty and job control) and the same outcome variables was also studied.

Method. Stepwise hierarchical regression analyses were used to test the empirical distinctiveness of workaholism and work engagement among 1325 employees from a Japanese production company. Baron and Kenny's (1986) four steps of regression analyses were used to test whether job demands act as a mediator between workaholism and job outcomes and whether work engagement functions as a mediator between job resources and job outcomes.

Results. Results show that workaholism and work engagement have different relations with job demands, job resources and job outcomes, indicating that workaholism and work engagement are empirically distinctive constructs. Work engagement acts as a full or partial mediator between some job resources and outcome variables. Job demands do not act as a mediator between workaholism and the outcome variables.

Introduction

The Japanese culture is often stereotyped as a workaholic culture (Hiyama & Yoshihara, 2008). Even Walt Disney recognized the difference in attitude towards work between the Western world and Japan in the animated movie 'Snow White and the seven dwarfs' (1937). In the English version of the classic song "Heigh Ho" the seven dwarfs sing "heigh ho, heigh ho, it's home from work we go". Whereas in the Japanese version of the famous song they sing "heigh ho, heigh ho, shigoto ga suki", which can be translated to "I love to work". In the movie, the seven dwarfs return home from work at 5PM. A practice that is not common in

Japan, as the average number of weekly work hours is almost 48 (Snir & Harpaz, 2006). According to the International Labour Organization (ILO) report (2004), 28.1% of Japanese employees worked 50 hours or more per week in 2001. Some types of workers in Japan even work 66.4 hours per week on average (Hiyama & Yoshihara).

Work plays a crucial role in the lives of most Japanese and overtime work is more part of daily life (Kanai & Wakabayashi, 2004), instead of an exception as it is in The Netherlands, where only 1.4% of the employees worked 50 hours or more per week (Hiyama & Yoshihara, 2008). During the period of economic growth in Japan, both the seniority wage system and the lifetime employment system were popular. But the Japanese economy has only recovered slightly since the collapse of Japan's bubble economy, which has direct implications for employment (Kanai, 2009). This long hours working style can have devastating consequences, such as work-family conflict (Aziz & Zickar, 2006; Dahlgren, Kecklund & Akerstedt, 2006; Kanai, 2006, 2009; Piotrowski & Vodanovich, 2008), physical ill-health (Dahlgren, Kecklund & Akerstedt, 2006 ; Hiyama & Yoshihara, 2008; Kanai, 2009; Piotrowski & Vodanovich, 2008 ; Shimazu & Schaufeli, 2009; Shimazu, Schaufeli & Taris, 2010) and mental health problems (Hiyama & Yoshihara, 2008; Kanai, 2009; Piotrowski & Vodanovich, 2008; Shimazu & Schaufeli, 2009; Shimazu, Schaufeli & Taris, 2010). But the most serious consequences of overwork are "karoshi", which is sudden death due to overwork and "karojisatsu", which is suicide due to overwork (Hiyama & Yoshihara, 2008). Japanese workaholism is associated with the work habit that emphasizes faithfulness to a given role, intensity of work and devotion to the organization, being reinforced by such ideas of selflessness, lifetime employment and the seniority system (Kanai, Wakabayashi & Fling, 1996). Failure to meet employers' expectations and work-related psychological stress can lead to a depressive state and subsequent suicide. The workaholic culture in Japan should be revised, because people work to live, not to die (Kanai, 2009).

Workaholism

The term workaholism originates from Oates (1971), who first coined the term in his book 'confessions of a workaholic', to describe his own work addiction. He defined workaholics as people whose need to work has become so exaggerated that it may constitute a danger to their health, personal happiness, interpersonal relations and social functioning. Ever since, it has become a colloquial term in the popular press as well as in empirical research. The lay public

uses the term workaholism as a synonym with working extremely hard. McMillan and O'Driscoll (2006) asked workers, colleagues and partners how they would describe a workaholic, to which more than half responded with "time spent working or thinking about work" and "obsessive personal style". Given the ease with how the lay public uses the term workaholism, it is surprising that even after four decades researchers have little consensus about its meaning beyond its core element: heavy work investment.

Some researchers view workaholism as a positive phenomenon. When seen as dedicated employees who are impassioned and enamored of work, organizational leaders would want to hire, develop and retain them (Scott, Moore, & Miceli, 1997). Korn, Pratt and Lambrou (1987) call workaholics 'hyper-performers' as seen from an organizational perspective. Leaders, usually work addicts themselves (Shimazu & Schaufeli, 2009), often view workaholism as a positive attribute and applaud, praise, expect and even demand workaholic behavior from their employees. American workers are frequently exhorted to emulate their hard-working Japanese counterparts, thereby helping their organization compete globally (Scott et al., 1997).

Others view workaholism as a negative phenomenon. This seems to be the more popular view recently. Piotrowski and Vodanovich (2008) look at workaholism as a developmental and progressive process with dysfunctional features such as heightened levels of job stress, work-family conflict, increased health symptoms, teamwork problems and job performance decrements. Workaholics are further described as task-oriented, compulsive, perfectionistic, neurotic, rigid, impatient and self-centered. They rationalize overtime, identify themselves with work, lack the ability to relax (Andreassen, Ursin & Eriksen, 2007) and neglect other aspects of life for excessive indulgence in work (Schaufeli, Taris & Bakker, 2006). Aziz and Zickar (2006) found considerable support for the notion of workaholism as a syndrome. This is supported by Shimazu and Schaufeli (2009) who describe workaholism as an obsessive-compulsive disorder that manifests itself through an inability to regulate work habits.

A precise definition of workaholism is needed for multiple reasons. First of all researchers can't consistently measure and study a phenomenon without a precise definition. Studies are also likely to produce opposing conclusions about causes and effects when authors define workaholism in different ways (Scott et al., 1997). It is important that a definition of workaholism is found that researchers accept and use, because of the implications for managerial practice. The evidence that workaholism has negative consequences is increasing

(Taris & Schaufeli, 2007). At the same time there is evidence that the amount of people who can be considered as workaholics is increasing as well (Taris & Schaufeli, 2003). This can be a dangerous combination for the health of many organizations. It is becoming more and more easy to spend a large amount of time on work due to technological gadgets that make it possible to work where, when and for how long somebody wants (Taris & Schaufeli, 2003). Other reasons for the increase in workaholism are the increasing complexity of professions and the constant pressure to be more efficient. On the psychological level, employees' desire to achieve, accomplish and succeed seems to be increased as a way to enhance self-esteem (Griffiths, 2005).

Many researchers have provided definitions of workaholism (McMillan & O'Driscoll, 2006). The first academic definition comes from Spence and Robbins (1992), who stated that work involvement (being highly committed to work and devoting a good deal of time to it), drive (feeling compelled to work hard because of inner pressures) and work enjoyment (experiencing work to be pleasant and fulfilling) are the three defining characteristics of workaholism. Scott et al. (1997) had multiple problems with this definition and conducted their own analysis to develop a "correct" definition of workaholism. According to them organization members engage in workaholic behavior pattern when: (1) they spend a great deal of time in work activities when given the discretion to do so; (2) they persistently and frequently think about work when they are not at work; and (3) they work beyond what is reasonably expected to meet the requirements of the job or to meet basic economic needs.

Most scholars agree that working long hours is a core characteristic of workaholism. However, it would be misleading to conceive workaholism exclusively in terms of the number of working hours because it neglects its addictive nature (Schaufeli et al., 2006). There are many reasons for people to work hard without being addicted, for example financial problems, a poor marriage or social pressure. A typical work addict is motivated by an obsessive internal drive that can't be resisted rather than being motivated by external factors (Schaufeli, Taris & Bakker, 2008). This is in line with the research as performed by Scott et al. (1997).

The third characteristic of the definition of workaholism as given by Scott et al. (1997) can be seen as a specification of the first and the second element, because it deals with the motivation for spending an excessive amount of time on work (Schaufeli et al., 2008). McMillan and O'Driscoll's (2006) analyses of scholarly definitions shows that most definitions of workaholism include working excessively hard and being propelled by an obsessive inner drive as core characteristics. Hence, Schaufeli et al. (2008) developed a new

comprehensive conceptualization of workaholism. They define workaholism as the tendency to work excessively hard (the behavioral dimension) in a compulsive way (the cognitive dimension). Working excessively hard points to the fact that workaholics tend to allocate exceptionally much time to work and that they work beyond what is reasonably expected to meet organizational or economic requirements. Working compulsively recognizes that workaholics are obsessed with their work and persistently and frequently think about work, even when not working. This definition corresponds with the meaning of the term as it was originally used by Oates (1971) and agrees with lay perception (McMillan & O'Driscoll, 2006). In line with this conceptualization two scales have been operationalized by Schaufeli et al. (2008), namely Working Excessively (WE) and Working Compulsively (WC), who together form the Dutch Workaholism Scale (DUWAS). This brief self-report measure to assess workaholism can be used across nations, because it shows factorial validity across The Netherlands and Japan as well as both convergent and discriminant validity (Schaufeli, Shimazu & Taris, 2010).

Workaholics create more work for themselves by making simple projects more complicated than necessary. They work longer and harder than others, not because their jobs require them to do so, but because they tend to create high job demands for themselves. Job demands refer to those aspects of a job that require sustained physical and/or psychological costs (Hakanen, Schaufeli & Ahola, 2008). These high perceived job demands act as a mediator between workaholism and ill-health such as exhaustion: workaholics experience high job demands, which in turn are related to exhaustion (Taris, Schaufeli & Verhoeven, 2005). Especially the inability to detach from work (i.e., the psychological component of the workaholic syndrome) is a potent predictor of health and well-being (Taris, Geurts, Schaufeli, Blonk & Lagerveld, 2008). The negative relationship between workaholism and job satisfaction (Burke, 2001) may also be mediated by job demands. Workaholism is a predictor of (more) work-life conflict, which may lead them to not enjoy their job and be less satisfied with their job. Work-life imbalance may also lead to a lower satisfaction with life, because workaholics are less likely to enjoy their leisure time (Brady, Vodanovich & Rotunda, 2008). Schaufeli et al. (2006) strongly believe that workaholism should only be considered a negative psychological state, including the addictive nature. The good forms of workaholism, that include work enjoyment, are similar to work engagement.

Work engagement

The concept of work engagement emerged from burnout research as an attempt to cover the entire spectrum running from employee unwell-being to employee well-being (Shimazu & Schaufeli, 2009). A number of definitions of employee engagement have been provided in the academic literature (Saks, 2006). Most definitions include emotional and intellectual commitment to the organization. According to Maslach and Leiter (1997) engagement is characterized by the direct opposites of the three burnout dimensions. Engaged employees show energy instead of exhaustion, involvement instead of cynicism and efficacy instead of ineffectiveness. Alternatively, work engagement is considered an independent, distinct concept that is related negatively to burnout. As such, work engagement can be defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication and absorption (Schaufeli, Salanova, González-Romá & Bakker, 2002). Vigor refers to high levels of energy and mental resilience while working, the willingness to invest effort in one's work and persistence even in the face of difficulties. Dedication is characterized by a sense of significance, enthusiasm, inspiration, pride and challenge at work. Absorption consists of being fully concentrated, happy and deeply engrossed in one's work whereby time passes quickly and one has difficulty detaching oneself from work.

Engaged employees 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 job (Schaufeli, Taris & Van Rhenen, 2008). These kinds of employees can make a true difference, because they offer a competitive advantage to organizations (Bakker, Schaufeli, Leiter & Taris, 2008). A growing body of evidence supports the relationship between engagement of the employee and organizational outcomes (Simpson, 2009). The so called "engagement gap" is costing US businesses \$300 billion a year in lost productivity (Bates, 2004).

Engaged employees may seem similar to workaholics in the sense that they both work hard, are involved and feel engrossed in their work. However, in contrast to workaholics, engaged employees lack the typical compulsive drive (Schaufeli, Taris, LeBlanc, Peeters, Bakker & De Jonge, 2001). Engaged employees enjoy doing things outside work, they do not feel guilty when not working and they do not work hard because of a strong and irresistible drive but for them work is fun (Schaufeli et al., 2006). Their underlying motivation (the cognitive aspect) to work hard differs fundamentally (Shimazu & Schaufeli, 2009). For the sake of conceptual clarity, instead of discriminating between good and bad forms of

workaholism, Schaufeli et al. (2006) propose to discriminate between workaholism (being intrinsically bad) and work engagement (being intrinsically good).

Empirical distinctiveness

The empirical distinctiveness between workaholism and work engagement can be demonstrated by measuring their relationship with other variables. Very few studies have dealt with this topic, because both concepts emerged relatively recently (Taris, Schaufeli & Shimazu, 2010). In addition to the fact that workaholism and work engagement are weakly and positively related to each other (Shimazu & Schaufeli, 2009), some indications exist that suggest their discriminant validity. For instance, Schaufeli, Taris and Bakker (2006) studied three types of correlates: overwork, well-being and job performance. They found that like engagement, workaholism is associated with overwork, but this association is stronger for the work excess component than for the compulsion component of workaholism; workaholism is negatively related to employee well-being, whereas associations with work engagement are positive and work engagement is positively related to job performance, whereas no relationship was found with workaholism. Moreover, Schaufeli et al. (2006) showed that the instruments to assess workaholism and work engagement can be distinguished.

Schaufeli, Taris and Van Rhenen (2008) also demonstrated that workaholism and work engagement can be separated empirically, because both concepts show a unique pattern of relationships with variables representing working long hours, job characteristics, work outcomes, social relationships and perceived health. Shimazu and Schaufeli (2009) confirmed the difference in relationship with perceived health by showing that workaholism is related to unwell-being in comparison to work engagement that is related to well-being. These results have been replicated including the relationship with desirable job characteristics (Taris, Schaufeli & Shimazu, 2010). High levels of engagement are usually associated with good health, well-being and desirable job characteristics (in terms of support and control); conversely, such relationships are absent or negative for workaholic workers.

The underlying psychological mechanisms, that is the motivational systems, differs fundamentally between workaholism and work engagement. Workaholics are likely to be motivated by so-called performance goals, whereas engaged employees are motivated by mastery goals (Elliot, 2005 in Schaufeli, Taris & Bakker, 2008). Workaholics are absorbed in their work, because they feel driven to work. Their absorption is a matter of compulsion; they

are intrapersonally motivated or pushed to work. Work engaged employees are absorbed in their work because of enjoyment. They are intrinsically motivated or pulled towards work (Taris, Schaufeli & Shimazu, 2010).

Job outcomes

This study is particularly concerned with the relationship between workaholism and work engagement on the one hand and job performance on the other hand. Job performance can be split into in-role performance and extra-role performance. The former being defined as those officially required outcomes and behaviors that directly serve the goals of the organization (Bakker, Demerouti & Verbeke, 2004; Schaufeli, Taris & Bakker, 2006). In-role performance can be seen as the work that one is supposed to do as standard job activities (Chen, Eisenberger, Johnson, Sucharski & Aselage, 2009; Taris & Schaufeli, 2007). Extra-role performance, also known as organizational citizenship behavior, is defined as discretionary behaviors that are believed to directly promote the effective functioning of an organization without necessarily directly influencing an employee's productivity (Schaufeli, Taris & Bakker, 2006). Those discretionary behaviors might consist of aiding fellow employees, avoiding of problems with colleagues (Bakker, Demerouti & Verbeke, 2004), taking actions that protect the organization from risk, offering constructive suggestions and gaining knowledge and skills that are beneficial to the organization (Chen et al., 2009).

The relationship between workaholism and performance is still unclear, because virtually no empirical research has been carried out on this topic (Ng, Sorensen & Feldman, 2007). Scott et al. (1997) identified workaholism as an important variable and proposed several consequences for job performance depending on the type of workaholic behavior. The first empirical research on the relationship between workaholism – as defined as the tendency to work excessively hard in a compulsive way – and job performance – split in in-role and extra-role – was conducted by Schaufeli, Taris and Bakker (2006). They found that workaholics work hard rather than smart, create difficulties for their co-workers, suffer from perfectionism, are rigid and inflexible and do not delegate. Both working excessively (WE) and working compulsively (WC) were found to be weakly positively related to extra-role performance, but did not show a relationship with in-role performance. In an attempt to develop an instrument to measure workaholism Mudrack and Naughton (2001) even included extra-role performance, indicating that spending considerable time and energy in work

activities that are unlikely to be technically required and thinking of ways to perform work better are related to, if not part of, workaholism.

Shimazu and Schaufeli (2009) measured performance as overall performance and found that workaholism was weakly negatively related. Interestingly, they found that only the work compulsively component was significantly related to performance. A negative relationship between workaholism and job performance was also suggested by Burke (2001) who found that workaholic behaviors were not associated with salary increases. The poor performance of workaholics might be explained by the fact that they spend more time on their work which may exhaust them emotionally and cognitively over time. Furthermore, since workaholics are so deeply involved in their work, they have unreasonably high performance standards, which can lead to more negative perceptions of one's own abilities and performance (Shimazu & Schaufeli, 2009). These job demands can act as a mediator between workaholism and performance.

As the counterpart of burn-out, work engagement is often associated with positive performance outcomes (Shimazu & Schaufeli, 2009). Both in-role and extra-role performance show a strong relationship with work engagement (Schaufeli, Taris & Bakker, 2006). Engaged employees received higher ratings from their colleagues on both in-role and extra-role performance, indicating that engaged employees perform well and are willing to go the extra mile (Bakker, Demerouti & Verbeke, 2004). From a business-unit-level perspective, engagement was found to have a medium positive relationship with composite performance (i.e., productivity and profitability) (Harter, Schmidt & Hayes, 2002). These positive findings also apply to students. The more engaged students are with their studies, the more exams they pass during subsequent semesters (Schaufeli, Martinez, Marques Pinto, Salanova & Bakker, 2002) and the higher their next year's grade point average (Salanova, Bresó & Schaufeli, 2005). Salanova, Agut and Peiró (2005) argue that service climate acts as a mediator in the relationship between work engagement and performance by stating that providing work units with organizational resources increases their collective engagement, which in turn helps to foster an excellent service climate which consequently increases customer appraisal of employee performance.

According to the Job Demands-Resources (JD-R) model psychosocial work characteristics can be categorized into two groups, regardless of the type of job: job demands and job resources (Hakanen et al., 2008). Job resources are those aspects of a job that may reduce job demands and the associated physiological and psychological costs (i.e. ill-health),

are functional in achieving work goals (i.e. performance) and stimulate personal growth, learning and development (i.e. satisfaction). The model is further characterized by a motivational process, triggered by job resources, that increases work engagement which, in turn, is associated with positive outcomes such as performance, satisfaction and health. In other words, work engagement can be seen as a mediator between job resources and positive job outcomes (Hakanen et al., 2008; Salanova & Schaufeli, 2008; Schaufeli & Bakker, 2004; Schaufeli, Bakker & Van Rhenen, 2009).

Engagement is a state where resources exceed the demands of the job, allowing the employee to perform in unique ways and at very high levels. Engaged employees are able to perform at such high levels, because they are better able to invest resources in different aspects of performance (Halbesleben & Wheeler, 2008). Other reasons why engaged workers perform better than non-engaged workers are that engaged employees often experience positive emotions, experience better health, create their own resources, and transfer their engagement to others in the work team (Bakker, Demerouti & Verbeke, 2004). The relationship between work engagement and performance is not the same for all workers, though. Gorgievski, Bakker and Schaufeli (2010) demonstrated that work engagement is positively related to in-role performance for both the self-employed and salaried employees, but only for the salaried employees was a relationship with extra-role performance found.

As stated before, workaholism and work engagement share the characteristic of working long hours. Yet they seem to have different effects on performance, health and satisfaction. This can be explained by the finding that overwork has no effect on exhaustion, work-nonwork conflict (Taris, Schaufeli & Verhoeven, 2005) and well-being (Taris et al., 2008). One explanation for the lack of effects of long working hours is that job control plays a crucial role. Employees with high job control can decide what they do and when they take a break. This way they can choose interesting and pleasurable tasks and recover from their tasks during and after their work (Taris et al., 2005). Or as Burke (1999 in Taris et al., 2005) concisely summarized ‘it is not how hard you work (i.e. the number of hours one works) but how you work hard (i.e. how one perceives one’s job demands)’.

Hypotheses

The discussion above leads to expect (*Hypothesis 1*) that workaholism is positively related to job demands, ill-health and extra-role performance. Furthermore, workaholism is

negatively related to job resources, life satisfaction and job satisfaction. In regards to work engagement it is expected (*Hypothesis 2*) that work engagement is positively related to job resources, satisfaction and performance – both in-role as extra-role – and this relationship is stronger than for workaholism. Furthermore, work engagement is negatively related to ill-health and job demands. A summary of the expected relations of workaholism and work engagement with outcome variables can be found in table 1.

Table 1
Summary of Expected Relationships of Workaholism and Work Engagement with Other Variables (Hypothesis 1 for workaholism and 2 for work engagement)

	Workaholism	Work Engagement
Psychological distress	+	-
Physical complaints	+	-
Work-life balance	-	+
Life satisfaction	-	+
Job satisfaction	-	+
In-role performance	0	+
Extra-role performance	+	++
Job demands	+	-
Job resources	-	+

Note: + = positive relationship; ++ = stronger positive relationship; - = negative relationship; 0 = no significant relationship.

Furthermore, mediation effects were explored, leading to two additional hypotheses.

Hypothesis 3: Work engagement acts as a mediator between job resources (i.e. work support, family support, job control and novelty) and performance, satisfaction and ill-health.

Hypothesis 4: Job demands act as a mediator between workaholism and ill-health, performance and satisfaction.

A diagram depicting the expected mediation effects can be found in figure 1.

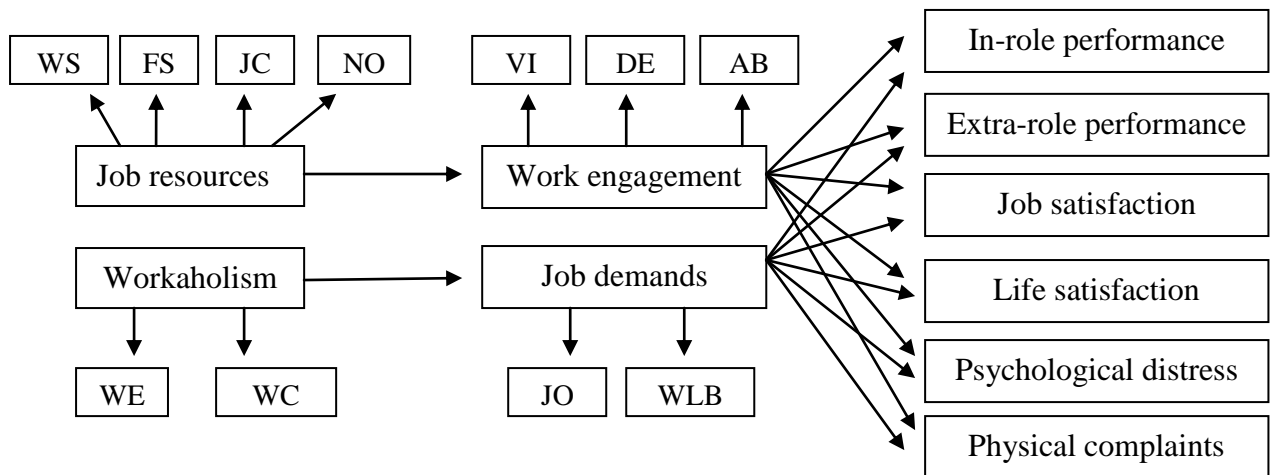


Figure 1. The research model with work engagement and job demands as mediators (hypothesis 3 and 4). WS = Work Support; FS = Family Support; JC = Job Control; NO = Novelty; WE = Working Excessively; WC = Working Compulsively; VI = Vigor; DE = Dedication; AB = Absorption; JO = Job Overload; WLB = Work-life Balance.

Method

Participants

All participants worked at a company that manufactures sewing machines in the east of Japan. The survey was conducted as part of periodical mental health check by the health service department via intranet system. The survey was distributed to all employees ($N = 1,333$) of which 1,325 employees completed the survey (response rate of 99.4%). Of these respondents, 1,110 (83.8%) were males and 215 (16.2%) females with a mean age of 44.2 years ($SD = 10.5$).

Measures

The survey included the following aspects: workaholism, work engagement, job demands, job resources, ill-health, performance and satisfaction. All measures were in Japanese and well-validated.

Workaholism. Workaholism was measured with the 10-item Japanese version of the Dutch Workaholism Scale (DUWAS; Schaufeli et al., 2009). The scale consists of two subscales: Working Excessively (WE; e.g., “I find myself continuing to work after co-workers have called it quits”) and Working Compulsively (WC; e.g., “I feel obligated to work hard, even when it’s not enjoyable”). Each subscale consists of 5 items that were rated on a 4-point Likert scale (1 = (almost) never, 4 = (almost) always).

Work engagement. Work engagement was measured with the 9-item Japanese version of the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2002). The scale consists of three subscales that represent the underlying dimensions of engagement: Vigor (3 items; e.g., “At my work, I feel bursting with energy”), Dedication (3 items; e.g., “I am proud of the work that I do”) and Absorption (3 items; e.g., “I get carried away when I’m working”). All items are scored on a 7-point Likert scale ranging from 0 (‘never’) to 6 (‘always’).

Job demands. Quantitative job overload was assessed by the corresponding 3 items of the Brief Job Stress Questionnaire (BJSQ; Kawakami, Takao, Kobayashi & Tsutsumi, 2006). Examples include “I can handle the job in time” and “I must work hard”. Work-life balance was also used as a job demand and was assessed with 2 items of the ACTIVE (Shimazu et al., 2009; Tsuchiya et al., 2009). Example items include “I can come home cheerfully after a successful day at work, positively affecting the atmosphere at home” and “After spending time with my spouse/family/friends, I go to work in a good mood positively affecting the atmosphere at work”. All items were scored on a 4-point Likert scale ranging from 1 (‘strongly disagree’) to 4 (‘strongly agree’).

Job resources. Job resources were assessed using the corresponding subscales of the BJSQ and ACTIVE. Job resources was measured by work support (6 items representing supervisor and coworker support), family support (3 items), job control (3 items) and novelty (3 items). Example items include “How easy is it to talk to each of the following people? Supervisor/ coworker/ family” and “My job allows me to allocate time for myself”. Job control and novelty were scored on a 4-point Likert scale ranging from 1 (‘strongly disagree’) to 4 (‘strongly agree’). Work and family support were scored on a 4-point Likert scale ranging from 1 (‘very much’) to 4 (‘not at all’). These items were reversely scored, so that a high score indicates agreement.

Ill-health. Psychological distress was assessed using the corresponding subscales of the BJSQ. Psychological distress was measured by 15 items reflecting irritate, exhaustion, anxiety and depression. Example items include “I am tired completely”, “I feel ill at ease” and “I feel depressed”. All items were scored on a 4-point Likert scale ranging from 1 (‘strongly disagree’) to 4 (‘strongly agree’).

Physical complaints was also assessed using the corresponding subscales of BJSQ consisting of 11 items, like “I feel dizzy” and “I have a pain in the back”. Like psychological complaints, all items were scored on a 4-point Likert scale ranging from 1 (‘strongly disagree’) to 4 (‘strongly agree’).

Satisfaction. Two types of satisfaction were assessed, namely job satisfaction and life satisfaction. Both variables were assessed using a single item of the BSJQ. The item measuring job satisfaction asked whether or not the participant was satisfied with his or her job. The item measuring life satisfaction asked whether or not the participant was satisfied with his or her family life. Both items were scored on a 4-point Likert scale ranging from 1 ('satisfied') to 4 ('dissatisfied'). The items were reversely scored so that a high score indicates a high level of satisfaction.

Job performance. Job performance was split into two types of performance: in-role and extra-role performance. In-role performance was assessed using the corresponding subscales of ACTIVE consisting of 2 items: "I accurately accomplish my tasks" and "I perform work that is expected of me". Extra-role performance was assessed using the corresponding subscales of ACTIVE consisting of 6 items, like "I find creative solutions to problems" and "I am inspired to master new things". Both types of performance were scored on a 4-point Likert scale ranging from 1 ('strongly disagree') to 4 ('strongly agree').

Possible confounders. In order to rule out some alternative explanations age and gender were included as possible confounders. Earlier research identified gender as a possible confounder. Schaufeli et al. (2008) found that men score significantly higher on both workaholism scales. T-test analysis in this study confirms this finding. Mean WE-scores for men are $M = 2.16$ ($SD = .68$) and for women $M = 2.00$ ($SD = .67$) ($t_{(1323)} = 3.21$; $p < .01$); mean WC-scores for men are $M = 1.98$ ($SD = .55$) and for women $M = 1.88$ ($SD = .52$) ($t_{(1323)} = 2.39$; $p < .05$). Shimazu et al. (2010) found that age and gender had a weak association with workaholism, ill-health and performance. Age and gender are also previously used as control variables in research on work engagement (Halbesleben & Wheeler, 2008).

Data analysis

Hypothesis 1 and 2 were analyzed using stepwise multiple hierarchical regression analyses based on previous research. To test for mediation effects, Baron and Kenny's (1986) four steps of regression analysis were carried out, because stepwise methods are best avoided for exploratory model building (Field, 2009). Stepwise methods can bring many risks with them, because advantage is taken of random sampling variation and makes decisions based upon slight statistical differences which may contrast dramatically with the theoretical importance of a predictor to the model. There is also the danger of over- and under-fitting. The mediation

method as described by Baron and Kenny was found to have adequate power when the sample size is large (greater than 500) and this is the case in this study (MacKinnon, Lockwood, Hoffman, West & Sheets, 2002).

Results

Descriptive Statistics

The means, standard deviations, internal consistencies (Cronbach's alpha) and correlations between the study variables are displayed in Table 2. As can be seen, all variables have satisfactory reliabilities with Cronbach's alpha coefficients of 0.70 or higher (Nunnally & Bernstein, 1994). Only working compulsively, one of the two subscales of workaholism, shows a slightly lower alpha coefficient of 0.69.

An analysis of the sample showed that 58 out of 1,325 participants can be classified as high in work engagement (overall score on UWES of 4.67 or higher). This is 4,4% of the sample. In addition, 193 out of 1,325 participants in the sample can be classified as high in workaholism (overall score on DUWAS of 2.69 or higher). This is 14,6% of the sample. Dutch norms were used, because Japanese norms are not yet developed.

Based on a median split, participants who scored high or low on Working Excessively (WE) and Working Compulsively (WC), were identified. Next, by combining high and low scores on WE and WC, four types of workers were distinguished: (1) "relaxed workers" ($N = 591$) – who score low on both WE and WC; (2) "compulsive workers" ($N = 109$) – who score low on WE and high on WC; (3) "hard workers" ($N = 242$) – who score high on WE and low on WC; and (4) "workaholics" ($N = 383$) – who score high on both WE and WC. This way 28,9% of the sample was classified as workaholic. This technique was also used by Schaufeli et al. (2008) and Schaufeli et al. (2009).

Table 2

Means, SDs, Internal consistency (Cronbach's Alpha on the Diagonal), and Correlations of the Variables used in the Study (n=1325)

Variable	# items	M	SD	1	2	3	4	5	6	7	8
1. Age	-	44.20	10.5	-	-.22**	.01	-.01	.18**	.18**	.15**	.16**
2. Gender ^a	-	1.16	.37		-	-.09**	-.07**	.00	-.01	.03	-.00
3. Work excessively	5	2.13	.68			.80	.58**	.22**	.13**	.23**	.26**
4. Work compulsively	5	1.97	.55				.69	.19**	.10**	.20**	.23**
5. Work engagement	9	2.84	1.02					.94	.92**	.94**	.92**
6. Vigor	3	2.64	1.10						.88	.82**	.74**
7. Dedication	3	3.11	1.05							.84	.81**
8. Absorption	3	2.77	1.13								.83
9. Psychological distress	15	1.98	.57								
10. Physical complaints	11	1.72	.48								
11. Work-life balance	2	2.88	.69								
12. Job satisfaction	1	2.57	.79								
13. Life satisfaction	1	2.99	.79								
14. In-role performance	2	3.13	.50								
15. Extra-role performance	3	2.64	.64								
16. Work support	6	2.57	.58								
17. Family support	3	3.27	.66								
18. Job overload	3	2.97	.70								
19. Job control	3	2.37	.61								
20. Novelty	3	2.60	.72								

Table 2 Continued

Variable	9	10	11	12	13	14	15	16	17	18	19	20
1. Age	-.10**	-.05	.03	.05*	.09*	.11**	.08**	-.05*	-.05*	.01	-.14**	-.14**
2. Gender ^a	.04	.11**	.05*	.04	.02	-.02	-.15**	-.03	.09**	-.11**	.03	-.14**
3. Work excessively	.35**	.24**	.09**	-.05*	-.04	.12**	.18**	.03	.00	.60**	.14**	.22**
4. Work compulsively	.34**	.28**	.11**	-.11**	-.03	.11**	.10**	-.05*	.00	.32**	.14**	.16**
5. Work engagement	-.28**	-.19**	.41**	.50**	.19**	.39**	.55**	.37**	.20**	.12**	-.30**	.24**
6. Vigor	-.35**	-.25**	.39**	.51**	.20**	.33**	.52**	.41**	.19**	.06*	-.32**	.21**
7. Dedication	-.26**	-.16**	.39**	.49**	.17**	.42**	.53**	.34**	.21**	.14**	-.29**	.23**
8. Absorption	-.18**	-.11**	.36**	.40**	.16**	.34**	.50**	.29**	.15**	.13**	-.23**	.24**
9. Psychological distress	.92	.63**	-.17**	-.48**	-.24**	-.15**	-.21**	-.34**	-.19**	.27**	.32**	.07**
10. Physical complaints		.83	-.11**	-.29**	-.16**	-.06*	-.13**	-.25**	-.13**	.19**	.22**	.04
11. Work-life balance			.76	.27**	.28**	.28**	.33**	.29**	.30**	.05*	-.12**	.16**
12. Job satisfaction				-	.30**	.26**	.35**	.43**	.18**	-.01	-.37**	.11**
13. Life satisfaction					-	.11**	.20**	.18**	.46**	-.03	-.14**	.03
14. In-role performance						.79	.49**	.23**	.17**	.04	-.18**	.06*
15. Extra-role performance							.86	.31**	.19**	.14**	-.32**	.42**
16. Work support								.84	.34**	.04	-.25**	.17**
17. Family support									.84	-.01	-.11**	.08**
18. Job overload										.80	.08**	.22**
19. Job control											.64	-.01
20. Novelty												.83

*p < .05, **p < .01

^aMen=1, Women=2

Test of the Hypothesis: the distinctiveness of workaholism and work engagement

First, both dimensions of workaholism were analyzed separately using hierarchical multiple regression. Both workaholism scales, working excessively and working compulsively, were independently regressed on job demands, job resources and outcomes with age and gender as control variables in the first step. Job demands, job resources and outcomes were entered in the next step using the stepwise entry method. In stepwise regression the computer searches for the predictor that best predicts the outcome variable. If this predictor significantly improves the ability of the model to predict the outcome, then this predictor is retained in the model and the algorithm searches for the next predictor (Field, 2009). Tables 3.1 and 3.2 (first column) provide an overview of the results for WE and WC, respectively.

In contrast to the analyses in the previous section, gender only played a significant part in the separate analysis of job resources and outcomes. It was however in the expected direction; male participants score higher on WE than female participants. All job demands show positive relations with WE. Employees who work excessively hard especially experience quantitative job overload. A surprising result is that work-life balance a weak positive relation has with workaholism, this can also be seen from the correlation matrix (Table 2). It was expected that work-life balance would be negatively associated with workaholism.

Relationships with WE are less strong for job resources as for job demands – 7.1% and 36.4% respectively. Only two out of four entered job resources were included in the regression equation of WE. Another surprising finding is that both job resources are positively related to the working excessively scale of workaholism, indicating that employees who work excessively hard experience more novelty and job control. These findings can also be seen in the correlation matrix (Table 2).

Psychological distress is clearly the outcome that is most strongly related to working excessively. Furthermore, working excessively is related to extra-role performance as expected. A weak relation was also found for in-role performance, where no significant relation was expected. Another weak positive relation for job satisfaction in contrast to the hypothesis. In total 20.3% of the variance in WE is explained by these four outcomes.

Table 3.1
Predicting working excessively (WE): Standardized regression coefficients (β)

	Separate clusters	Simultaneous analysis
<i>Job demands</i>		
Step 1: Gender (1 = male, 2 = female)		
Step 2: Job overload	.60**	.50**
Work-life balance	.06**	
Percentage explained variance	36.40	
<i>Job resources</i>		
Step 1: Gender (1 = male, 2 = female)	-.06*	
Step 2: Novelty	.21**	
Job control	.14**	.09**
Percentage explained variance	7.10	
<i>Outcomes</i>		
Step 1: Gender (1 = male, 2 = female)	-.08**	
Step 2: Psychological distress	.45**	.25**
Extra-role performance	.19**	.10**
Job satisfaction	.08**	
In-role performance	.07*	.08**
Percentage explained variance	20.30	43.70

Notes: * $p < .05$. ** $p < .01$.

Taken together, surprising results of working excessively hard are found in the regression analyses. As hypothesized, WE is strongly positively related to job demands, psychological distress and extra-role performance. WE is also positively related to novelty and job control (two of the job resources), job satisfaction and in-role performance, whereas negative relations were expected. Hypothesis 1 is partly confirmed in terms of the WE component.

In addition, to answer Hypothesis 1 all significant predictors from the previous three separate analyses were included simultaneously into one hierarchical regression analyses. This way overlap was reduced and key variables across the three clusters were identified. Age and gender were used as control variables as before. Job overload remained as the only job demand and stayed the most powerful predictor of WE. The impact of job resources almost disappears. Psychological distress is most strongly associated with WE of the outcomes, followed by extra-role performance. These results correspond better to the expectation that employees who work excessively hard feel that they are overloaded by job demands and don't have the resources to compensate the negative effect on health.

Similar analyses were carried out for WC as can be seen in table 3.2. The relationship between workaholism and job demands is less strong for working compulsively, but still shows a significant impact. Like WE, WC also shows weak positive relations with job

Table 3.2
Predicting working compulsively (WC): Standardized regression coefficients (β)

	Separate clusters	Simultaneous analysis
<i>Job demands</i>		
Step 1: Gender (1 = male, 2 = female)		-.06*
Step 2: Job overload	.31**	.20**
Work-life balance	.10**	.12**
Percentage explained variance	11.10	
<i>Job resources</i>		
Step 1: Gender (1 = male, 2 = female)		
Step 2: Novelty	.16**	
Job control	.14**	.07**
Percentage explained variance	4.70	
<i>Outcomes</i>		
Step 1: Gender (1 = male, 2 = female)	-.07	
Step 2: Psychological distress	.32**	.25**
Extra-role performance	.11**	
In-role performance	.11**	.10**
Physical complaints	.11**	.10**
Percentage explained variance	16.70	22.60

Notes: * $p < .05$. ** $p < .01$.

resources. This is again against expectations. In addition to psychological distress, physical complaints are also positively related to working compulsively. Job outcomes explain the most variance out of the three clusters, namely 16.7% in comparison to job demands (11.1%) and job resources (4.7%). Taken together, it seems that employees who work compulsively experience high job demands, extra-role performance and ill-health as hypothesized. Negative relations between WC and job resources were hypothesized, whereas positive relations were found. Hypothesis 1 is partly confirmed for the WE component of workaholism.

Again, additional hierarchical regression analyses were performed including all significant predictors that emerged from the three previous separate analyses. Job overload and psychological distress remain the most powerful predictors of working compulsively. The impact of job resources almost disappears. As can be seen before, the same results were found for working excessively.

In sum, WE and WC are largely associated with similar job demands, job resources and outcomes. This suggests that WE and WC assess a similar underlying construct: workaholism. Workaholism is strongly positively related to job demands and ill-health and weakly positively related to job control and performance. Furthermore workaholism does not seem to be related to most job resources and satisfaction with job and life. Hereby partially confirming Hypothesis 1.

In order to test Hypothesis 2 stepwise hierarchical multiple regression analysis was carried out for work engagement. Age and gender were included as control variables. Work engagement was tested as one scale, instead of three subscales (vigor, dedication and absorption). In the following step, job demands, job resources and outcomes were entered in order to identify the most important predictors within each of the three clusters. Results can be found in table 4.

Age is a significant factor in predicting work engagement. The older the employee, the more engaged. Gender is not a significant predictor of work engagement. In contrast to the hypothesis, job demands are positively related to work engagement, especially work-life balance. However job demands explain the least amount of variance – 20.2% in comparison to job resources (26.1%) and job outcomes (43.8%). All four job resources show significant relations with work engagement, albeit that job control is in the opposite direction as expected. Only three out of 6 outcomes are found to be significantly related to work engagement. Both psychological and physical ill-health are not related to work engagement. As hypothesized, results indicate that engaged employees score high on job resources, in- and extra-role performance and are satisfied with their job. Positive relations were also found for job demands, whereas negative relations were expected.

Table 4
Predicting work engagement: Standardized regression coefficients (β)

	Separate clusters	Simultaneous analysis
<i>Job demands</i>		
Step 1: Age	.16**	.15**
Step 2: Work-life balance	.40**	.17**
Job overload	.10**	.06**
Percentage explained variance	20.20	
<i>Job resources</i>		
Step 1: Age	.20**	
Step 2: Work support	.27**	.09**
Novelty	.22**	.06**
Job control	-.20**	
Family support	.07**	
Percentage explained variance	26.10**	
<i>Outcomes</i>		
Step 1: Age	.12**	
Step 2: Extra-role performance	.37**	.29**
Job satisfaction	.34**	.27**
In-role performance	.10**	.08**
Percentage explained variance	43.80	48.70

Notes: ** $p < .01$.

Again, a hierarchical regression analysis was performed including all significant predictors from the previous analyses. Extra role performance has the most powerful relation with work engagement, closely followed by job satisfaction. These relations are more powerful than for workaholism. In contrast to expectations, job resources do not play an important role in predicting work engagement and job demands show positive relations. Hereby only partially supporting Hypothesis 2.

Comparing the results from workaholism and work engagement, it can be concluded that job demands play a more powerful role in the relationship with workaholism, job resources play a more powerful role in the relationship with work engagement, ill-health is only related to workaholism and extra-role performance and job satisfaction are more strongly related to work engagement in comparison with workaholism. Life satisfaction is not related to any of the constructs. These different relations with job demands, job resources and job outcomes suggests that workaholism and work engagement both measure different constructs and can be distinguished empirically.

Test of the Hypotheses: mediation effects

Hypothesis 3 and 4 include mediation effects. Mediators establish “how” or “why” one variable predicts or causes an outcome variable (Frazier, Tix & Barron, 2004). More specifically, a mediator is defined as a variable that explains the relation between a predictor and an outcome (Baron & Kenny, 1986). In this study one of the mediators is work engagement in an attempt to explain the relationship between job resources and job outcomes (in-role performance, extra-role performance, job satisfaction, life satisfaction, psychological distress and physical complaints). The other studied mediator is job demands in an attempt to explain the relationship between workaholism and the outcome variables.

Baron and Kenny’s (1986) four conditions for detecting the presence of mediation effects was used. The first step is to show that there is a significant relation between the predictor (e.g. job resources) and the outcome (e.g. in-role performance) (path c’ in Figure 2). The second step is to show that the predictor is related to the mediator (e.g. work engagement) (path a in Figure 2). The third step is to show that the mediator is related to the outcome variable (path b in figure 2). The final step is to show that the strength of the relation between the predictor and the outcome is significantly reduced when the mediator is added to the

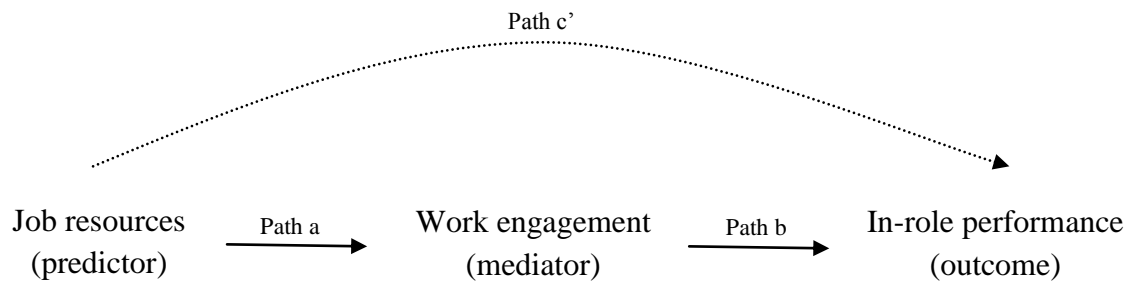


Figure 2. Example of full mediation effect.

model. The relation between the predictor and the outcome disappears when a full mediator is introduced. If the relation gets weaker but still remains significant, a partial mediation effect is found. A diagram of a mediation model can be seen in Figure 2. In total twelve of these mediation effects were studied as can be seen in the research model (Figure 1). Using multiple regression, three equations were carried out for each of the expected mediation effects. In addition, the control variables gender and age were entered before the first step. First, to establish that there is an effect to mediate, the outcome variable is regressed on the predictor (model 2 in Table 5). Second, the mediator is regressed on the predictor. In the final step the outcome variable is regressed on both the predictor and the mediator (model 3 in table 5). A summary of the results for Hypothesis 3 can be found in Table 5.

To clarify Table 5, one example is worked out in the following text for the hypothesized mediation effect of work engagement on the relation between job resources and in-role performance (one of the outcomes). In model 2, the job resources are regressed on in-role performance with age and gender as control variables. As can be seen, the relation between work support ($\beta = .17; p < .01$), family support ($\beta = .10; p < .01$) and job control ($\beta = -.11; p < .01$) with in-role performance is significant. The fourth job resource ‘novelty’ is not reported, because there is no significant relation ($\beta = .04; p > .10$) with in-role performance, indicating that this variable can not be entered into the regression equation. The mediator, work engagement, is added in model 3. The mediator must have a significant relation with both the predictors as the outcome variables ($\beta = .33; p < .01$) in order for mediation testing to be permitted. The results for the predictors are not shown in the model, but are analyzed before the model testing began. As can be seen in Table 5, the introduction of the mediator into the equation weakens the direct relationship between work support ($\beta = .08; p < .01$), family support ($\beta = .08; p < .01$) and in-role performance.

Table 5

Summary of Hierarchical Regression Analyses with Work Engagement as Mediating Variable (β -values)

	In-role performance		Extra-role performance		Job Satisfaction		Life Satisfaction		Psychological Distress		Physical Complaints	
	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3
Work support	.17**	.08**	.15**	.04	.35**	.25**			-.27**	-.23**	-.20**	-.17**
Family support	.10**	.08**	.09**	.07**			.45**	.45**	-.08**	-.07*	-.06*	-.05
Job control	-.11**	-.05	-.26**	-.18**	-.27**	-.20**	-.07**	-.06*	.24**	.21**	.16**	.14**
Novelty			.39**	.30**	.06**	-.02			.13**	.16**	.10**	.12**
Work engagement		.33**		.40**		.36**		.08**		-.15**		-.11**
R ² model 1		.01**		.02**		.01**		.01**		.01**		.01**
Δ R ² model 2		.08**		.31**		.26**		.23**		.19**		.10**
Δ R ² model 3		.08**		.12**		.10**		.00**		.02**		.01**
R ² total		.17		.45		.36		.23		.22**		.12

Notes: * $p < .05$. ** $p < .01$.

Only Model 2 and Model 3 are presented. Model 1 only included the control variables (age and gender) and is discussed in the text.

Only variables making a significant contribution to the explained variance are included in the table.

Tables including all three models, B values and SE B values can be found in the appendix.

This suggests that work engagement acts as a partial mediator. The direct effect of job control on in-role performance disappears ($\beta = -.05; p > .10$), suggesting that work engagement acts as a full mediator. The introduction of the mediator explains an additional 8% of the variance.

Concerning extra-role performance, work engagement acts as a full mediator for work support ($\beta = .04; p > .10$) and as a partial mediator for family support ($\beta = .07; p < .01$), job control ($\beta = -.18; p < .01$) and novelty ($\beta = .30; p < .01$). The introduction of the mediator explains an additional 12% of the variance. For job satisfaction, the mediation effect of work engagement was complete for novelty ($\beta = -.02; p > .10$) and partial for work support ($\beta = .25; p < .01$) and job control ($\beta = -.20; p < .01$). The introduction of the mediator explains an additional 10% of the variance. The impact of work engagement on life satisfaction is very small. No noteworthy mediation effects are found and the additional explained variance is 0%. Similar results are found concerning ill-health, both psychological as physical. Interesting to note is that the relation between novelty and ill-health increases with the introduction of the mediator, suggesting a suppressor effect. The results above partially support Hypothesis 3.

Only three out of six outcome variables could be tested with job demands as a mediator in Hypothesis 4, because no significant relations were found when the mediator was regressed on job satisfaction, life satisfaction and in-role performance. The results for extra-role performance, psychological distress and physical complaints can be found in Table 6.

Table 6
Summary of Hierarchical Regression Analyses with Job Demands as Mediating Variable (β -values)

	Extra-role performance		Psychological Distress		Physical Complaints	
	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3
Working excessively	.17**	.14**	.24**	.18**	.12**	.08
Working compulsively			.21**	.24**	.22**	.24**
Job demands				.11**		.09**
Work-life balance		.33**		-.22**		-.16**
R ² model 1		.02**		.01**		.01**
ΔR^2 model 2		.03**		.16**		.09**
ΔR^2 model 3		.11**		.06**		.03**
R ² total		.16		.22		.13

Notes: * $p < .05$. ** $p < .01$.

Only Model 2 and Model 3 are presented. Model 1 only included the control variables (age and gender) and is discussed in text. Only variables making a significant contribution to the explained variance are included in the table.

Tables including all three models, B values and SE B values can be found in the appendix.

An interesting finding is that only the work excessively component of workaholism is partially mediated by job demands ($\beta = .14; p < .01$) and that only the work-life balance variable of job demands is responsible for this effect. 11% additional variance is explained with the introduction of the mediator. Other surprising findings are that the workaholism components react differently to the introduction of the mediator (partial mediation vs suppressor effects) and that the two variables measuring job demands have opposing effects. Hence, Hypothesis 4 has to be rejected.

In sum, working excessively and working compulsively assess the same underlying construct: workaholism. Workaholism is strongly positively related to job demands and ill-health, and weakly positively related to job control and performance. Furthermore, workaholism does not seem to be related to most job resources, and with job and life satisfaction. Hereby partially confirming Hypothesis 1. Hypothesis 2 was also partially confirmed. Work engagement has powerful relations with extra role performance and job satisfaction. However, job resources do not show a strong relationship with work engagement. A summary of the results of Hypotheses 1 and 2 can be found in Table 7. It can be concluded that workaholism and work engagement can be distinguished empirically, because they show different relations with job demands, job resources and outcomes such as performance, satisfaction and ill-health.

Table 7
Summary of Expected and Found Relationships of Workaholism and Work Engagement with Other Variables (Hypothesis 1 and 2)

	Workaholism		Work Engagement	
	Expected	Found	Expected	Found
Psychological distress	+	+	-	0
Physical complaints	+	+	-	0
Work-life balance	-	+	+	+
Life satisfaction	-	0	+	0
Job satisfaction	-	0	+	+
In-role performance	0	+	+	+
Extra-role performance	+	+	++	++
Job demands	+	+	-	+
Job resources	-	- / 0	+	+

Note: + = positive relationship; ++ = stronger positive relationship; - = negative relationship; 0 = no significant relationship.

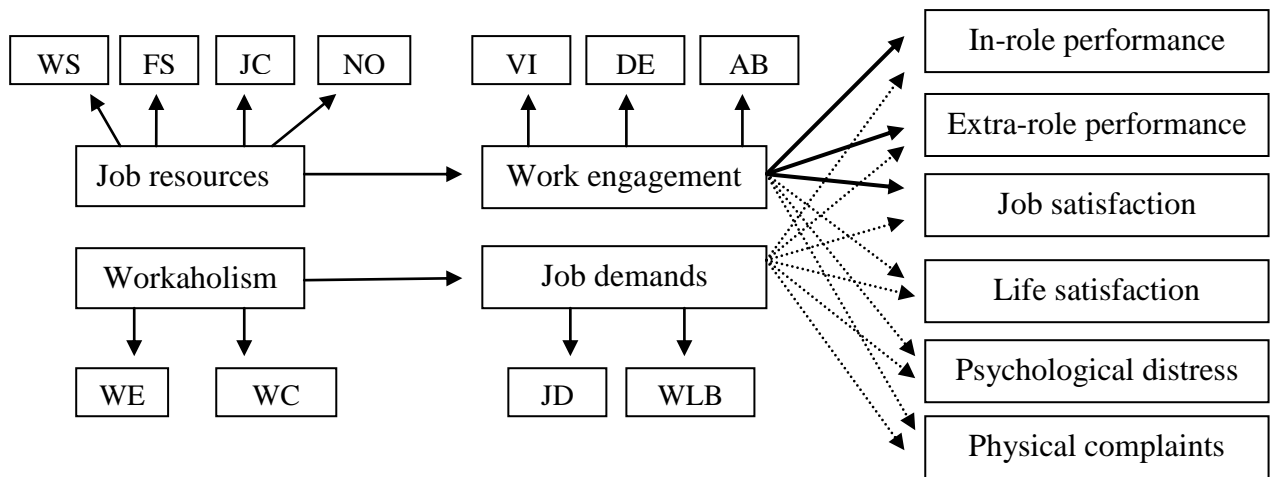


Figure 3. The findings of the research model with work engagement and job demands as mediators (hypothesis 3 and 4). WS = Work Support; FS = Family Support; JC = Job Control; NO = Novelty; WE = Working Excessively; WC = Working Compulsively; VI = Vigor; DE = Dedication; AB = Absorption; JO = Job Overload; WLB = Work-life Balance. Thick lines show a mediation effect. Broken lines indicate no mediation effect.

Moreover, as can be seen in Figure 3, work engagement acts as a mediator between job resources and in-role performance, extra-role performance and job satisfaction, but not for life satisfaction, psychological distress and physical complaints (Hypothesis 3 partially supported). Job demands did not act as a mediator between workaholism and the outcome variables (Hypothesis 4 rejected).

Discussion

This study examined the distinctiveness of workaholism and work engagement in terms of their relationship with job demands, job resources, performance, satisfaction and ill-health among Japanese employees. Furthermore, mediation effects were explored with work engagement as a mediator in the relation between job resources and performance, satisfaction and ill-health and for job demands as a mediator between workaholism and the same outcome variables. Results of multiple regression analyses show that associations with multiple variables are different for workaholism in comparison to work engagement, indicating that the two concepts can be empirically distinguished. Work engagement was found to play a mediating role between several job resources and performance (both in-role and extra-role)

and job satisfaction. Mediating effects of job demands between workaholism and outcome variables were not found.

As formulated in Hypothesis 1, workaholism shows a weak positive relation with extra-role performance. Surprisingly, a weak positive relation with in-role performance was also found. A possible explanation for this finding is that coping acts as a mediator in the relationship between workaholism and performance (Shimazu et al., 2010). Workaholic employees perform slightly better than others through their use of active coping strategies. These favorable performance outcomes are, however, counterbalanced by their cost in terms of ill-health. Workaholic employees may perform better than their non-workaholic colleagues, the group who scores by far the most beneficial relations with performance are the work engaged.

It was expected that job resources would show a negative relationship with workaholism and a positive one with work engagement. Surprisingly, opposite effects were found for job control. Indicating that employees who work excessively hard in a compulsive way experience high perceived job control and engaged employees feel like they have no control over their job in terms of taking breaks and planning their own work activities. These results can be explained by reverse coding, such that high scores on job control reflect low perceived job control, but this is not the case.

Another explanation for the interesting results concerning job control might be found in personality theory. Burke, Matthiesen and Pallesen (2006) examined the relationship of personality factors with the three workaholism components as identified by Spence and Robbins (1992). They found that the 'feeling driven to work' component was positively related to neuroticism, which is in turn associated with instability and personal insecurity. If workaholics have a neurotic personality, it might be the case that they choose a job in which they perceive high job control. These kind of jobs give the workaholic the chance to work very hard and to spend as much time on trying to perfect tasks and other activities. Furthermore, Burke et al. (2006) found that extraversion was positively related to having joy in work, a component that fits better with work engagement. Extravert employees usually experience positive emotions and can effectively work together with coworkers, therefore not necessarily seeking a job with high job control.

Work-life balance is another variable that was found to have different effects than expected. In contrast to expectations, workaholism only shows a weak positive relation with work-life balance, that even disappears for working excessively in the simultaneous analysis

(table 3.1). More surprisingly, work-life balance showed a medium strong positive relation with work engagement. As a job demand, this is contradictory. The results make it seem more plausible that work-life balance should be seen as a job resource, instead of a job demand. A balanced work-family life may reduce job demands and can be functional in achieving work goals and stimulate personal development.

Only the work compulsively (WC) component of workaholism was found to have a significant positive relationship with physical complaints. Working excessively hard and work engagement did not show a relationship with physical complaints. Indicating that it is not the excessive allocated amount of working time that has an impact on physical ill-health, but the obsession with work that is unhealthy.

When using multiple regression analysis to study mediation effects, it is required for the β -value to reduce after the mediating variable is introduced into the equation. Surprisingly, in this study the β -value increased for novelty when work engagement was introduced as a mediator in the relation with ill-health and the β -value increased for work compulsively when job demands were introduced as a mediator in the relation with ill-health. This effect is called a suppressor effect. A suppressor effect can occur when one of the regression coefficients is negative, which causes the relation between the independent variable and dependent variable to increase (Tzelgov & Henik, 1991). In table 5 it can be seen that work engagement has a negative relation with ill-health, both psychological as physical and in table 6 it can be seen that work-life balance has a negative relation with both forms of ill-health.

The main reason for the unexpected results is that (mediation) analyses should be strongly based on theories and past research (Frazier et al., 2004). Unfortunately, there is virtually no past research on the studied variables, because the concepts are relatively new. Findings from past research are sometimes contradictory, because there is no agreement on the definitions of both workaholism and work engagement. This way a variable might have the same name across research, but the underlying measured construct might be different. It is proposed that future research should measure work engagement with the UWES (Schaufeli et al., 2002) and workaholism with the DUWAS (Schaufeli et al., 2009).

As mentioned before, the Japanese work culture is often stereotyped as workaholic, because Japanese employees are known to work hard and make long hours. Workaholism is however more than just that, it is the obsessive inner drive that makes an employee work excessively hard in a compulsive way. It can be argued that this is not the reason for most Japanese employees. Japanese workaholism is associated with the work habit

that emphasizes faithfulness to a given role, intensity of work and devotion to the organization, being reinforced by such ideas of selflessness, lifetime employment and the seniority system (Kanai, Wakabayashi & Fling, 1996). It is simply impossible for an individual employee to go home early and enjoy dinner with the family, although he (or she) would want to. From a Japanese view it may seem that their work culture is the norm and Western people act lazy and are not devoted to their organization, by going home early and changing jobs multiple times.

Limitations and Future Directions

The first main limitation of this study is that all data is based on self-reports, which means that the magnitude of the reported effects may have been biased by social desirability and negative affectivity. Future research should try to replicate the findings in this study with more objective measures, such as actual performance data like number of sales or collecting data from other sources such as coworkers, supervisors and family. This is especially the case for assessing workaholics, who are often unaware that they are completely immersed in their work (Aziz & Zickar, 2006). They might be oblivious to the detrimental effects of their workaholic behavior on both their physical and mental well-being. It is likely that those people with whom the workaholic spends most of his or her time, do notice effects.

The second main limitation is that this study is based on cross-sectional design, meaning that no conclusions can be drawn about causal effects of the study variables. Future research should try to distinguish between workaholism and work engagement in longitudinal research, this way causal relationships can be found. It can be speculated that work engagement might develop into workaholism when it slowly turns into an obsession. The reverse relationship might also be observed, when workaholics “see the light” after an intervention and decide to spend more time with friends and their family. It is also likely that workaholic behavior is the cause of mental and physical (perceived) ill-health. Workaholics eat less healthy and later in the evening, when metabolism is lower (Nakamura et al., 1998) and spend less time on leisure and recuperation (Dahlgren, Kecklund & Akerstedt, 2006). In addition to the self-reports on perceived health, objective health measures should be taken in future research.

This study was conducted in a sample of Japanese employees from a production company. It is unclear if the results can be generalized to other occupations or even other

countries. However, since Japan is the only non-Western, highly industrialized and educationally advantaged nation, its usefulness in comparative studies has previously been acknowledged as well (Lallukka et al., 2008).

This study is conducted among a sample of Japanese employees. The questionnaires were available in Japanese and were all reliable and well validated. There are however no Japanese norms available of the DUWAS and the UWES to compare the results and to classify to which group the participant belongs. Dutch norms were used in this study, although it is likely that Dutch norms can't be generalized to Japanese employees. Future research should develop Japanese norms for workaholism and work engagement.

Another major limitation of this study is the type of statistical analyses used, namely regression analyses using SPSS. Structural Equation Modelling (SEM) is to be preferred as data analysis strategy when a mediation model involves latent constructs (Baron & Kenny, 1986; Judd & Kenny, 1981). Some of the advantages of SEM are that it can control for measurement error, provides information on the degree of fit of the entire model, and is much more flexible than regression. For example, one can include multiple predictor variables, multiple outcome variables, and multiple mediators¹⁵ in the model as well as other potential causes of the mediator and outcome, including longitudinal data (Frazier, Tix & Barron, 2004). It should be taken into account that the sample size should be at least 200 to perform SEM analyses.

Economic activity is increasing on a global scale, leading individuals to encounter people of different nations and cultures (Snir & Harpaz, 2009). Therefore, it is important for future research to develop an understanding of cross-cultural differences and similarities in organizational behaviors. The underlying cultural values of organizational behavior are fundamentally different between the East and the West. The organization who understands the differences and similarities across cultures (even within a country) can have a monetary economic advantage as well as beneficial outcomes for individual employees.

Practical Implications

Workaholic behaviors are often rewarded by organizations, while the effects can be negative for both the organization as the individual. Workaholism is only weakly positively related to performance, whereas work engagement shows a strong positive relation. Moreover,

workaholism is related to ill-health, which is an undesirable state for the employee as well as expensive for the organization. Therefore a number of organizational interventions are proposed:

- Managers can play a vital role in reestablishing work priorities, altering job schedules and assure that employees leave work at designated times.
- Training programs, such as time management and problem solving training.
- Changing the organizational culture to discourage workaholic behaviors.
- Offer incentives for behaviors that promote work engagement.
- Assessing workaholic behaviors during the recruitment process.

Conclusion

Workaholism and work engagement are empirically distinctive constructs, with workaholism being more related to negative outcomes such as ill-health and high job demands and work engagement being more positively related to performance and job satisfaction. As a mediator, work engagement shows positive relations between job resources, especially support from coworkers and supervisors, and positive job outcomes such as job satisfaction and in-role and extra-role performance. Interventions are needed to change workaholic behaviors, preferably into work engaged behaviors.

References

- Andreassen, C.S., Ursin, H., & Eriksen, H.R. (2007). The relationship between strong motivation to work, “workaholism”, and health. *Psychology and Health, 22*, 615-629.
- Aziz, S., & Zickar, M.J. (2006). A cluster analysis investigation of workaholism as a syndrome. *Journal of Occupational Health Psychology, 11*, 52-62.
- Bakker, A.B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resource Management, 43*, 83-104.
- Bakker, A.B., Schaufeli, W.B., Leiter, M.P., & Taris, T.W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & Stress, 22*, 187-200.

- Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182.
- Bates, S. (2004). Getting engaged. *HR Magazine*, *49*, 44-51.
- Brady, B.R., Vodanovich, S.J., & Rotunda, R. (2008). The impact of workaholism on work-family conflict, job satisfaction, and perception of leisure activities. *The Psychologist-Manager Journal*, *11*, 241-263.
- Burke, R.J. (2001). Workaholism components, job satisfaction, and career progress. *Journal of Applied Social Psychology*, *31*, 2339-2356.
- Burke, R.J., Matthiesen, S.B., & Pallesen, S. (2006). Personality correlates of workaholism. *Personality and Individual Differences*, *40*, 1223-1233.
- Chen, Z., Eisenberger, R., Johnson, K.M., Sucharski, I.L., & Aselage, J. (2009). Perceived organizational support and extra-role performance: which leads to which? *The Journal of Social Psychology*, *149*, 119-124.
- Dahlgren, A., Kecklund, G., & Akerstedt, T. (2006). Overtime work and its effects on sleep, sleepiness, cortisol and blood pressure in an experimental field study. *Scandinavian Journal of Work Environment and Health*, *32*, 318-327.
- Disney, W. (Producer), & Hand, D. (Director). (1937). *Snow White and the Seven Dwarfs* [Motion picture]. United States: Walt Disney Productions.
- Field, A. (2009). *Discovering statistics using SPSS*. London: Sage.
- Frazier, P.A., Tix, A.P., & Barron, K.E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, *51*, 115-134.
- Gorgievski, M.J., Bakker, A.B., & Schaufeli, W.B. (2010). Work engagement and workaholism: comparing the self-employed and salaried employees. *The Journal of Positive Psychology*, *5*, 83-96.
- Griffiths, M. (2005). Workaholism is still a useful construct. *Addiction Research and Theory*, *13*, 97-100.
- Hakanen, J.J., Schaufeli, W.B., & Ahola, K. (2008). The job demands-resources model: A three-year cross-lagged study of burnout, depression, commitment, and work engagement. *Work & Stress*, *22*, 224-214.
- Halbesleben, J.R.B., & Wheeler, A.R. (2008). The relative roles of engagement and embeddedness in predicting job performance and intention to leave. *Work & Stress*, *22*, 242-256.

- Harter, J.K., Schmidt, F.L., & Hayes, T.L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology, 87*, 268-279.
- Hiyama, T., & Yoshihara, M. (2008). New occupational threats to Japanese physicians: karoshi (death due to overwork) and karojisatsu (suicide due to overwork). *Occupational Environmental Medicine, 65*, 428-429.
- Judd, C.M., & Kenny, D.A. (1981). Process analysis: Estimating mediation in treatment evaluations. *Evaluation Review, 5*, 602-619.
- Kanai, A. (2006). Economic and employment conditions, Karoshi (work to death) and the trend of studies on workaholism in Japan. In R. Burke (Ed.), *Research companion to working time and work addiction* (pp. 158-172). Cheltenham, UK; Edward Elgar.
- Kanai, A. (2009). "Karoshi (work to death)" in Japan. *Journal of Business Ethics, 84*, 209-216.
- Kanai, A., & Wakabayashi, M. (2004). Effects of economic environmental changes on job demands and workaholism in Japan. *Journal of Occupational Change Management, 17*, 537-548.
- Kanai, A., Wakabayashi, M., & Fling, S. (1996). Workaholism among employees in Japanese corporations: An examination based on the Japanese version of the Workaholism Scales. *Japanese Psychological Research, 38*, 192-203.
- Kawakami, N., Takao, S., Kobayashi, Y., & Tsutsumi, A. (2006). Effects of web-based supervisor training on job stressors and psychological distress among workers: A workplace-based randomized controlled trial. *Journal of Occupational Health, 48*, 28-34.
- Korn, E.R., Pratt, G.J., & Lambrou, P.T. (1987). *Hyper-performance: The A.I.M. strategy for releasing your business potential*. New York: John Wiley.
- Lallukka, T., Lahelma, E., Rahkonen, O., Roos, E., Laaksonen, E., Martikainen, P., Head, J., Brunner, E., Mosdol, A., Marmot, M., Sekine, M., Nasermoaddeli, A., & Kagamimori, S. (2008). Associations of job strain and working overtime with adverse health behaviors and obesity: Evidence from the Whitehall II Study, Helsinki Health Study, and the Japanese Civil Servants Study. *Social Science & Medicine, 66*, 1681-1698.
- MacKinnon, D.P., Lockwood, C.M., Hoffman, J.M., West, S.G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7*, 83-104.

- Maslach, C., & Leiter, M.P. (1997). *The truth about burnout: How organizations cause personal stress and what to do about it*. San Francisco, CA: Jossey-Bass.
- McMillan, L.H.W., & O'Driscoll, M.P. (2006). Exploring new frontiers to generate an integrated definition of workaholism. In: R.J. Burke (Ed.), *Research companion to working time and work addiction* (pp.89-107). Northampton, MA: Edward Elgar.
- Mudrack, P.E., & Naughton, T.J. (2001). The assessment of workaholism as behavioral tendencies: Scale development and preliminary empirical testing. *International Journal of Stress Management*, 8, 93-111.
- Nakamura, K., Shimai, S., Kikuchi, S., Takahashi, H., Tanaka, M., Nakano, S., Motohashi, Y., Nakadaira, H., & Yamamoto M. (1998). Increases in body mass index and waist circumference as outcomes of working overtime. *Occupational medicine*, 48, 169-173.
- Ng, T.W.H, Sorensen, K.L., & Feldman, D.C. (2007). Dimensions, antecedents, and consequences of workaholism: a conceptual integration and extension. *Journal of Organizational Behavior*, 28, 11-136.
- Nunnally, J.C., & Bernstein, I.H. (1994). *Psychometric theory*. New York: McGraw-Hill.
- Oates, W. (1971). *Confessions of a workaholic: The facts about work addiction*. New York: World.
- Piotrowski, C., & Vodanovich, S.J. (2008). The workaholism syndrome: An emerging issue in the psychological literature. *Journal of Instructional Psychology*, 35, 103-105.
- Saks, A.M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*, 21, 600-619.
- Salanova, M., Agut, S., & Peiró, J.M. (2005). Linking organizational resources and work engagement to employee performance and customer loyalty: The mediation of service climate. *Journal of Applied Psychology*, 90, 1217-1227.
- Salanova, M., Bresó, E., & Schaufeli, W.B. (2005). Towards a spiral model of self-efficacy in burnout and engagement research. *Estress y Ansiedad*, 11, 215-231.
- Salanova, M., & Schaufeli, W.B. (2008). A cross-national study of work engagement as a mediator between job resources and proactive behaviour. *The International Journal of Human Resource Management*, 19, 116-131.
- Schaufeli, W.B., & Bakker, A.B. (2004). Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *Journal of Organizational Behavior*, 25, 293-315.

- Schaufeli, W.B., Bakker, A.B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational Behavior*, 30, 893-917.
- Schaufeli, W.B., Martinez, I., Marques Pinto, A., Salanova, M., & Bakker, A.B. (2002). Burnout and engagement in university students: a cross national study. *Journal of Cross-Cultural Psychology*, 33, 464-481.
- Schaufeli, W.B., Salanova, M., González-Romá, V., & Bakker, A.B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3, 71-92.
- Schaufeli, W.B., Shimazu, A., & Taris, T.W. (2009). Being driven to work excessively hard: The evaluation of a two-factor measure of workaholism in The Netherlands and Japan.
- Schaufeli, W.B., Taris, T.W., & Bakker, A.B. (2006). Dr Jekyll or Mr Hyde? On the differences between work engagement and workaholism. In Burke, R.J. (Ed.), *Research companion to working time and work addiction* (pp. 193-217). Cheltenham, UK: Edward Elgar.
- Schaufeli, W.B., Taris, T.W., & Bakker, A.B. (2008). It takes two to tango: Workaholism is working excessively and working compulsively. In R.J. Burke & C.L. Cooper, *The long work hours culture. Causes, consequences and choices* (pp. 203-226). Bingley, UK: Emerald.
- Schaufeli, W.B., Taris, T.W., Le Blanc, P., Peeters, M., Bakker, A.B. and De Jonge, J. (2001). Maakt arbeid gezond? Op zoek naar de bevlogen werknemer. *De Psycholoog*, 36, 422-428.
- Schaufeli, W.B., Taris, T.W., & Van Rhenen, W. (2008). Workaholism, burnout, and work engagement: Three of a kind or three different kinds of employee well-being? *Applied psychology: an international review*, 57, 173-203.
- Scott, K.S., Moore, K.S., & Miceli, M.P. (1997). An exploration of the meaning and consequences of workaholism. *Human Relations*, 50, 287-314.
- Shimazu, A., & Schaufeli, W.B. (2009). Is workaholism good or bad for employee well-being? The distinctiveness of workaholism and work engagement among Japanese employees. *Industrial Health*, 47, 495-502.
- Shimazu, A., Schaufeli, W.B., & Taris, T.W. (2010). How does workaholism affect worker health and performance? The mediating role of coping. *International Journal of Behavioral Medicine*, 17, 154-160.

- Shimazu, A., Tsuchiya, M., Inoue, A., Shimada, K., Umanodan, R., Akiyama, M., & Kawakami, N. (2009). Development of organizational wellness questionnaire (1): Reliability of job resource and job performance scales. *Abstract book of the 82nd annual meeting of Japan society for occupational health*, 51, 548.
- Simpson, M.R. (2009). Engagement at work: A review of the literature. *International Journal of Nursing Studies*, 46, 1012-1024.
- Snir, R., & Harpaz, I. (2006). The workaholism phenomenon: A cross-national perspective. *Career Development International*, 11, 374-393.
- Snir, R., & Harpaz, I. (2009). Workaholism from a cross-cultural perspective. *Cross-Cultural Research*, 43, 303-308.
- Spence, J.T., & Robbins, A.S. (1992). Workaholism: Definition, measurement, and preliminary results. *Journal of Personality Assessment*, 58, 160-178.
- Taris, T.W., Geurts, S.A.E., Schaufeli, W.B., Blonk, R.W.B., & Lagerveld, S. (2008). All day and all of the night: The relative contribution of two dimensions of workaholism to well-being in self-employed workers. *Work & Stress*, 22, 153-165.
- Taris, T.W., & Schaufeli, W.B. (2003). Werk, werk en nog eens werk: De conceptualisering, oorzaken en gevolgen van werkverslaving. *De psycholoog*, 506-512.
- Taris, T.W., & Schaufeli, W.B. (2007). Workaholisme. In W.B. Schaufeli & A.B. Bakker (Red.). *De psychologie van arbeid en gezondheid* (pp. 359-372). Houten: Bohn Stafleu van Loghum.
- Taris, T.W., Schaufeli, W.B., & Shimazu, A. (2010). The push and pull of work: About the differences between workaholism and work engagement. In A.B. Bakker & M.P. Leiter, *Work engagement: A handbook of essential theory and research* (pp. 39-53). New York: Psychology Press.
- Taris, T.W., Schaufeli, W.B., & Verhoeven, L.C. (2005). Workaholism in the Netherlands: Measurement and implications for job strain and work-nonwork conflict. *Applied Psychology: an International review*, 54, 37-60.
- Tsuchiya, M., Shimazu, A., Inoue, A., Shimada, K., Umanodan, R., Akiyama, M., & Kawakami, N. (2009). Development of organizational wellness questionnaire (2): Validity of job resource and job performance scales. *Abstract book of the 82nd annual meeting of Japan society for occupational health*, 51, 549.
- Tzelgov, J., & Henik, A. (1991). Suppression situations in psychological research: Definitions, implications, and applications. *Psychological Bulletin*, 109, 524-536.

Xanthopoulou, D., Bakker, A.B., Demerouti, E., & Schaufeli, W.B. (2009). *Journal of Vocational Behavior*, 74, 235-244.

Appendix

Table 8

Hierarchical Regression Analysis for Variables Predicting In-role Performance (N = 1325)

Variable	<i>B</i>	<i>SE B</i>	β	ΔR^2
<i>Model 1 (control)</i>				.01**
Age	.01	.00	.11**	
<i>Model 2 (job resources)</i>				.08**
Age	.01	.00	.11**	
Work support	.15	.03	.17**	
Family support	.07	.02	.10**	
Job control	-.09	.02	-.11**	
<i>Model 3 (mediator)</i>				.08**
Age	.00	.00	.04	
Work support	.07	.03	.08**	
Family support	.06	.02	.08**	
Job control	-.04	.02	-.05	
Work engagement	.16	.01	.33**	

Note. Only variables making a significant contribution to the explained variance are included in the table.

R^2 total = .17.

** $p < .01$.

Table 9

Hierarchical Regression Analysis for Variables Predicting Extra-role Performance (N=1325)

Variable	<i>B</i>	<i>SE B</i>	β	ΔR^2
<i>Model 1 (control)</i>				.02**
Gender	-.20	.04	-.14**	
<i>Model 2 (job resources)</i>				.31**
Gender	-.10	.04	-.07**	
Work support	.14	.02	.15**	
Family support	.08	.02	.09**	
Job control	-.23	.02	-.26**	
Novelty	.30	.02	.39**	
<i>Model 3 (mediator)</i>				.12**
Gender	-.15	.03	-.10**	
Work support	.04	.02	.04	
Family support	.06	.02	.07**	
Job control	-.16	.02	-.18**	
Novelty	.23	.02	.30**	
Work engagement	.21	.01	.40**	

Note. Only variables making a significant contribution to the explained variance are included in the table.

R^2 total = .45.

** $p < .01$.

Table 10

Hierarchical Regression Analysis for Variables Predicting Job Satisfaction (N = 1325)

Variable	<i>B</i>	<i>SE B</i>	β	ΔR^2
<i>Model 1 (control)</i>				.01
Age	.00	.00	.06*	
<i>Model 2 (job resources)</i>				.26**
Age	.00	.00	.05*	
Work support	.48	.04	.35**	
Job control	-.35	.03	-.27**	
Novelty	.07	.03	.06**	
<i>Model 3 (mediator)</i>				.10**
Age	-.00	.00	-.03	
Work support	.34	.04	.25**	
Job control	-.26	.03	-.20**	
Novelty	-.02	.03	-.02	
Work engagement	.28	.02	.36**	

Note. Only variables making a significant contribution to the explained variance are included in the table.

R^2 total = .36.

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

Table 11

Hierarchical Regression Analysis for Variables Predicting Life Satisfaction (N = 1325)

Variable	<i>B</i>	<i>SE B</i>	β	ΔR^2
<i>Model 1 (control)</i>				.01**
Age	.01	.00	.10**	
<i>Model 2 (job resources)</i>				.22**
Age	.01	.00	.11**	
Family support	.55	.03	.45**	
Job control	-.09	.03	-.07**	
<i>Model 3 (mediator)</i>				.00**
Age	.01	.00	.09**	
Family support	.54	.03	.45**	
Job control	-.07	.03	-.06*	
Work engagement	.06	.02	.08**	

Note. Only variables making a significant contribution to the explained variance are included in the table.

R^2 total = .23.

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

Table 12

Hierarchical Regression Analysis for Variables Predicting Psychological Distress (N = 1325)

Variable	<i>B</i>	<i>SE B</i>	β	ΔR^2
<i>Model 1 (control)</i>				.01**
Age	-.01	.00	-.10**	
<i>Model 2 (job resources)</i>				.19**
Age	-.00	.00	-.06*	
Work support	-.27	.03	-.27**	
Family support	-.07	.02	-.08**	
Job control	.23	.02	.24**	
Novelty	.10	.02	.13**	
<i>Model 3 (mediator)</i>				.02**
Age	-.00	.00	-.03	
Work support	-.23	.03	-.23**	
Family support	-.06	.02	-.07**	
Job control	.20	.03	.21**	
Novelty	.13	.02	.16**	
Work engagement	-.09	.02	-.15**	

Note. Only variables making a significant contribution to the explained variance are included in the table.

R^2 total = .22.

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

Table 13

Hierarchical Regression Analysis for Variables Predicting Physical Complaints (N = 1325)

Variable	<i>B</i>	<i>SE B</i>	β	ΔR^2
<i>Model 1 (control)</i>				.01**
Gender	.14	.04	.10**	
<i>Model 2 (job resources)</i>				.10**
Gender	.15	.04	.12**	
Work support	-.17	.02	-.20**	
Family support	-.04	.02	-.06*	
Job control	.13	.02	.16**	
Novelty	.07	.02	.10**	
<i>Model 3 (mediator)</i>				.01**
Gender	.17	.04	.13**	
Work support	-.14	.03	-.17**	
Family support	-.04	.02	-.05	
Job control	.11	.02	.14**	
Novelty	.08	.02	.12**	
Work engagement	-.05	.01	-.11**	

Note. Only variables making a significant contribution to the explained variance are included in the table.

R^2 total = .12.

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

Table 14

Hierarchical Regression Analysis for Variables Predicting Extra-role Performance (N=1325)

Variable	<i>B</i>	<i>SE B</i>	β	ΔR^2
<i>Model 1 (control)</i>				.02**
Gender	-.20	.04	-.14**	
<i>Model 2 (workaholism)</i>				.03**
Gender	-.18	.04	-.12**	
Working excessively	.14	.03	.17**	
<i>Model 3 (mediator)</i>				.11**
Gender	-.22	.04	-.15**	
Working excessively	.11	.03	.14**	
Work-life balance	.26	.02	.33**	

Note. Only variables making a significant contribution to the explained variance are included in the table.

R^2 total = .16.

** $p < .01$.

Table 15

Hierarchical Regression Analysis for Variables Predicting Psychological Distress (N=1325)

Variable	<i>B</i>	<i>SE B</i>	β	ΔR^2
<i>Model 1 (control)</i>				.01**
Age	-.01	.00	-.10**	
<i>Model 2 (workaholism)</i>				.16**
Age	-.01	.00	-.09**	
Working excessively	.20	.03	.24**	
Working compulsively	.22	.03	.21**	
<i>Model 3 (mediator)</i>				.06**
Age	-.00	.00	-.08**	
Working excessively	.15	.03	.18**	
Working compulsively	.25	.03	.24**	
Job demands	.09	.03	.11**	
Work-life balance	-.18	.02	-.22**	

Note. Only variables making a significant contribution to the explained variance are included in the table.

R^2 total = .22.

** $p < .01$.

Table 16

Hierarchical Regression Analysis for Variables Predicting Psychological Distress (N=1325)

Variable	<i>B</i>	<i>SE B</i>	β	ΔR^2
<i>Model 1 (control)</i>				.01**
Gender	.14	.04	.10**	
<i>Model 2 (workaholism)</i>				.09**
Gender	.17	.04	.13**	
Working excessively	.09	.02	.12**	
Working compulsively	.19	.03	.22**	
<i>Model 3 (mediator)</i>				.03**
Gender	.19	.04	.15**	
Working excessively	.05	.03	.07	
Working compulsively	.21	.03	.24**	
Job demands	.06	.02	.09**	
Work-life balance	-.11	.02	-.16**	

Note. Only variables making a significant contribution to the explained variance are included in the table.

R^2 total = .13.

** $p < .01$.