

# To Stop or Not to Stop, That's the Question: About Persistence and Mood of Workaholics and Work Engaged Employees

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## Abstract

**Background** Although workaholics and work engaged employees both work long hours, they seem to have a different underlying motivation to do so. The mood as input model might offer an explanation for the difference in work persistence of these employees. This model suggests that the interplay of mood and “persistence rules” (enough and enjoyment rules) may lead to different kinds of persistence mechanisms.

**Purpose** The aims of this study are to present a scale for measuring persistence rules, the Work Persistence rules Checklist (WoPeC), to analyze its psychometric properties and to test the mood as input model in relationship with workaholism and work engagement.

**Method** Structural equation modeling was used to analyze the data.

**Results** Results of a confirmatory factor analysis in study 1 provided support for the hypothesized factor structure of the WoPeC. In study 2, it appeared that the use of an enough and an enjoyment rule for determining when to continue working is related to workaholism and work engagement, respectively. Furthermore, it was hypothesized and found that negative mood is related to workaholism, whereas positive mood is associated with work engagement. The expected interactions between mood and persistence rules on workaholism and work engagement were not demonstrated.

**Conclusion** Mood and persistence rules seem relevant for explaining the difference between workaholism and work engagement.

**Keywords** Workaholism · Work engagement · Mood · Persistence rules

## Introduction

Nowadays, a growing number of employees, mainly knowledge workers, have control over their working hours, indicating that they have the opportunity to decide themselves when to stop working [1]. Additionally, the frequent use of mobile devices such as cell phones and laptop computers makes it possible to work at alternative workplaces, such as at home [2] or in airport lounges [3]. At the same time, restructuring and downsizing have led workers to cope with a higher workload [4, 5]. Consequently, in many occupations work is never completely finished at the end of the day. While many people do not find it difficult to put their work aside after office hours, more and more employees may work longer hours than they actually have to [6].

It can be argued that a distinction can be made between two different types of chronically hardworking employees. One group is labeled as workaholics, whereas the others are referred to as work engaged employees [7]. To date, few studies have looked specifically at the difference in work motivation between workaholics and work engaged employees. It is relevant to distinguish between workaholism and work engagement, since apparently, as we will argue later, similar work behaviors lead to opposite outcomes. A better understanding of the mechanisms underlying workaholism and work engagement might facilitate the implementation of more timely and appropriate interventions for enhancing healthy work behaviors. Therefore, the current study aims to gain insight in the motivational difference between these two types of employees.

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Oates [8] coined the term workaholism to refer to persistent work behavior. Ever since, scholars have started to examine workaholism, which has led to different points of view on its origin and characteristics. For instance, some hold a negative view of workaholism [8, 9], whereas others also emphasize its beneficial elements [10, 11]. Similarly, some suggest that workaholism consists of a compilation of personality traits [12], whereas others think of it as learned addictive behavior [13]. In spite of the disagreement, Scott et al. [11] concluded that the vast majority of scholars commonly define workaholism as consisting of two elements: (1) the tendency to work long hours, whereas at the same time (2) having a strong inner drive to work. In concordance with Schaufeli, Taris, and Bakker [14, p. 219], we therefore define workaholism as “an obsessive, irresistible inner drive to work excessively hard”.

Alternatively, an enthusiastic involvement in work, also called work engagement, could also explain why some employees work persistently. According to Schaufeli, Salanova, González-Romá, and Bakker [15], work engagement refers to a positive, fulfilling, work-related state of mind, which consists of three dimensions. These dimensions are vigor (having high levels of energy), dedication (being strongly involved in one’s work), and absorption (being completely engrossed in one’s work). Empirical investigation [16] has shown that the dimensions vigor and dedication are the opposites of the two central dimensions of burnout, exhaustion, and cynicism, respectively [17]. Also, vigor and dedication are considered the core characteristics of work engagement [18, 19]. Therefore, absorption is not taken into account in the current study. In addition to job resources [20, 21], individual factors such as trait competitiveness [22], proactive behavior [23], and self-efficacy [24] have been found to be significantly associated with work engagement.

It seems difficult to distinguish the concepts of workaholism and work engagement because, at first glance, the work behavior of workaholics and work engaged employees seems to be similar. However, when considering the two concepts more closely, several differences become apparent. Workaholism is related to unfavorable outcomes, such as self-perceived ill-health [7] and poor emotional wellbeing [25], whereas engagement is related to desirable outcomes such as personal initiative [26] and job satisfaction [27]. Hence, we do know *that* workaholics and work-engaged employees differ from one another [7], but we do not know *why* they are different. One plausible explanation for the distinction between “workaholism” and “work engagement” may be a different underlying motivation to work excessively. To date, no theory or model exists that addresses this assumption.

In the present study, we introduce an explanatory paradigm that stems from the field of clinical psychology, called the mood as input (MAI) model [28]. This model has

shown to be relevant in explaining persistence in the area of clinical psychology, for instance depressive rumination [29]. The MAI model assumes that people use personal cognitive rules to estimate how they are doing on a given task with no clear ending. That is to say, on the one hand, individuals may evaluate their progress towards a goal by considering how much they have done and on the other hand they may estimate their progress towards a goal by evaluating their current enjoyment in performing the task. Such rules for deciding on what basis to stop or continue are labeled “stop rules”.

The MAI model also postulates that individuals use their current mood as information for how to act in response to these stop rules. For instance, when evaluating whether one has done enough (i.e., the enough stop rule), a positive mood is interpreted as being satisfied about one’s performance, meaning that it is all right to quit the task. However, a negative mood would convey that one is not yet satisfied, implying that one has to continue in order to feel content. However, when assessing one’s task enjoyment (i.e., the enjoyment stop rule), a negative mood would notify that one no longer enjoys the task, leading one to quit the task. On the other hand, when considering one’s task enjoyment, a positive mood would be interpreted as intensely enjoying the task, resulting in persistence.

To summarize, the information that the specific mood state conveys is dependent upon the stop rule used. Martin et al. [28] successfully conducted several experiments to test this assumption. For example, after a positive or negative mood induction, participants were instructed to read about behaviors of a target person to form an impression of that person. Half of the participants were instructed to continue reading the information until they collected enough information to form an impression of that particular person. The other half of the participants were told to continue reading the information as long as they enjoyed the task. The results showed that when given an enough stop rule instruction, participants in a negative mood continued longer as compared with participants in a positive mood. Conversely, when appointed an enjoyment stop rule instruction, participants in a positive mood continued longer than participants in a negative mood.

Building on these findings, MacDonald and Davey [30] applied the predictions of the MAI model to explain a core characteristic of obsessive–compulsive disorder, which is compulsive checking. Congruent with the MAI hypothesis, MacDonald and Davey found that either a positive or a negative mood can lead participants to stop or continue checking, depending on the interpretation of their mood. Particularly, the combination of a negative mood and the enough stop rule resulted in prolonged persistence. This finding seems to provide a plausible explanation for the compulsive behaviors of obsessive compulsive checkers.

There are several indications that these findings may also be relevant to the study of workaholism. Firstly, workaholism has been associated with obsessive compulsive personality traits [12]. Furthermore, it seems that workaholics continue working by meeting self-imposed deadlines [10, 13]. They have an “endless pursuit of more and more accomplishment” [31, p. 435]. More specifically, it is suggested that compulsive behaviors such as workaholism arise when individuals commit to self-imposed and rigid personal rules [32]. Considering that they are assumed to take pride in the amount of work they have done [8], workaholics seem to use an enough stop rule that drives them to work persistently. It has also been established that workaholics commonly experience negative affective states. Robinson [33] found, for instance, that workaholism is related to anxiety. Likewise, Burke and Matthiesen [34] revealed that workers with a compulsive drive show increased negative affect, whereas Porter [13] argued that workaholics may work to avoid their negative feelings. Building on the MAI hypothesis, we expect that workaholics use their negative mood as input for an enough stop rule, meaning that a negative mood in combination with the enough rule is related to workaholism.

The MAI model appears to be also suitable to provide an explanation for work engagement. Work engaged workers are likely to employ a different internal norm for deciding when to stop working. Schaufeli et al. [15] argue that work engaged employees work long hours because work is satisfying to them. Because engaged employees are intrinsically motivated to work [27], it is likely that these employees continue working as long as they enjoy their work. How long engaged workers find their work enjoyable enough to continue working may be dependent on their level of positive mood. In accordance with this assertion, Schaufeli and Van Rhenen [35] found that positive affect is related to work engagement. Likewise, Burke and Matthiesen [34] observed that work-engaged employees (“work enthusiasts”) showed more positive affect than workaholics (“work addicts”). We therefore expect that work engaged employees use a positive mood as input to an enjoyment stop rule, suggesting that particularly a positive mood in combination with the enjoyment rule is related to work engagement.

The present study was conducted in order to examine to what extent the MAI model can be fruitfully applied to investigate the motivational underpinnings of workaholism and work engagement. Since we are not aware of a scale that assesses stop rules in the work context, the goal of study 1 was to develop and test a scale for the measurement of work stop rules. In study 2 the factorial validity of the scale was further examined. A second aim of study 2 was to investigate if mood, stop rules and the interaction between

mood and stop rules predict workaholism and work engagement.

## Study 1

The previous literature review showed that a distinction can be made between two different cognitive decision rules, the enough rule and enjoyment rule. However, it can be argued that reasons to quit working might be different from reasons to continue working. For instance, one might decide to continue working because one did not do enough yet, but ultimately one may stop working because one does not enjoy one’s work anymore. We therefore also try to distinguish between reasons to stop and to continue working. Therefore hereafter, we will use the label “continuation rules” to refer to reasons to continue working, and the label “termination rules” to indicate reasons to stop working. In addition, we will use the label “persistence rules” to refer to both continuation rules *and* termination rules. Taken together, we expect to find an underlying structure consisting of four factors: (1) enough continuation rules, (2) enjoyment continuation rules, (3) enough termination rules, and (4) enjoyment termination rules.

## Methods

### Item Development

In order to assess various examples of persistence rules, a panel of nine experts in the field of occupational health psychology was requested to list reasons to stop or to continue working. In total, 89 items (46 reasons to stop and 43 reasons to continue working) were generated by the panel. By excluding overlapping items, the total amount was reduced to 54 items. After content analysis by the authors, 16 core items were categorized into four subscales: (1) enough continuation rules, (2) enjoyment continuation rules, (3) enough termination rules, and (4) enjoyment termination rules. Items with an ambiguous formulation and items that did address *external* persistence rules (e.g., to pick up children from day-care) were excluded. Another independent panel of five experts was asked to review the items for content validity. Final modifications were based on the experts’ comments. The enough items emphasize a sufficiency approach to work, meaning that the employee decides to stop or continue working depending upon how much he or she has done. The enjoyment items emphasize a pleasure approach to work, meaning that the employee decides to stop or continue working depending upon the pleasure that is derived from the job. A 5-point Likert scale

was used, ranging from (1) “not at all applicable” to (5) “highly applicable”.

### Participants and Procedure

The sample consisted of 216 employees (122 men and 94 women) with a mean age of 40.7 years ( $SD=12.18$ ). Participants were recruited among relatives and acquaintances of research assistants. All participants were informed about the purpose and procedure of the study and participated voluntarily. Participants gave their consent to participate in the study by virtue of completion of the online questionnaire. The sample was highly educated with 68% of the participants holding a college or university degree. Approximately 20% of the sample worked in education, whereas smaller proportions worked in health care (17%), business (17%) and in public administration. The remaining part (30%) worked in various sectors, for instance construction and transportation. After background information had been obtained, participants completed the 16-item questionnaire. The response rate could not be calculated, since no record was kept of the total number of questionnaires sent.

### Confirmatory Factor Analysis of the Work Persistence Rules Checklist

In order to test the proposed factor structure among the 16 items of our questionnaire to assess persistence rules—dubbed Work Persistence rules Checklist (WoPeC)—a confirmatory factor analysis (CFA) was performed using AMOS 16 [36]. Three models were compared, and it was hypothesized that the four-factor model (M3) (enough and enjoyment continuation and termination rules) provides a better fit to the data compared with a two-factor model (M2; enough and enjoyment rules) or a one-factor model (M1; one general persistence rule factor). The models were fit to the variance–covariance matrix with maximum likelihood estimations.

The goodness-of-fit of the model was assessed using seven different absolute and incremental statistical criteria: (1) the chi-square goodness-of-fit statistic (2) the Goodness

of Fit Index (GFI), (3) the Adjusted Goodness of Fit Index (AGFI), (4) the Root Mean Square Error of Approximation (RMSEA), (5) the Normed Fit Index (NFI), (6) the Non-normed Fit Index (NNFI), and (7) the Comparative Fit Index (CFI). Fit of the models is compared with chi-square difference test. For the GFI, AGFI, NFI, NNFI, and CFI, values higher than 0.90 indicate adequate fit and higher than 0.95 indicate good fit [37, 38]. For the RMSEA, values lower than 0.08 are indicative of adequate fit [39].

Fit statistics for the three models are provided in Table 1. The general model (M1), assuming one common factor showed a poor fit to the data. The model assuming two underlying (enough vs. enjoyment) factors (M2) showed a significant better, but still unsatisfactory fit ( $\Delta\chi^2=418.25$  ( $\Delta df$  1);  $p<0.001$ ). The model assuming four underlying factors (M3) fitted the data reasonably well. The fit of this model was significantly better than the one-factor model ( $\Delta\chi^2=1,045.60$  ( $\Delta df$  6);  $p<0.001$ ) and then the two-factor model ( $\Delta\chi^2=727.35$  ( $\Delta df$  5);  $p<0.001$ ). Modification Indices (MI) showed that adding a covariance between the error terms of two indicators in both the enough termination rule factor and the enjoyment termination rule factor would improve the model fit. Given the conceptual overlap between the items 11 and 12, and the items 13 and 14, we decided to add a covariance between the errors of these items and to further decide upon eliminating items in study 2. By adding the error covariances, the fit indices of the four-factor model (M3°) improved significantly ( $(\Delta\chi^2=47.15$  ( $\Delta df$  2);  $p<0.001$ )).

Factor loadings ranged from 0.41 to 0.92, with a mean of 0.74 and are shown in Table 2. The four factors modeled were: (1) enough continuation rule (three items,  $M=2.40$ ;  $SD=0.89$ ;  $\alpha=0.80$ ), (2) enjoyment continuation rule (five items,  $M=3.60$ ;  $SD=0.85$ ;  $\alpha=0.89$ ), (3) enough termination rule (four items,  $M=3.27$ ;  $SD=0.84$ ;  $\alpha=0.76$ ), and (4) enjoyment termination rule (four items:  $M=2.49$ ,  $SD=0.90$ ,  $\alpha=.86$ ). Correlations between the factors ranged from 0.02 to 0.32. All correlations were significant, with the exception of the correlations of the enjoyment continuation rule with the enough continuation rule and the enjoyment stop rule, respectively.

**Table 1** Confirmatory factor analysis models of the WoPeC (study 1,  $n=216$ )

Model	$\chi^2$ ( $n=270$ )	$df$	$p$	GFI	AGFI	RMSEA	NFI	NNFI	CFI
M1	1,282.74	104	0.00	0.52	0.38	0.23	0.28	0.18	0.29
M2	864.49	103	0.00	0.62	0.50	0.19	0.52	0.47	0.54
M3	237.14	98	0.00	0.88	0.84	0.08	0.87	0.90	0.92
M3°	190.97	96	0.00	0.90	0.86	0.07	0.89	0.93	0.94

GFI Goodness of Fit Index, AGFI Adjusted Goodness of Fit Index,  $M$  type of model based on number and configuration of factors, RMSEA Root Mean Square Error of Approximation, NFI Normed Fit Index, NNFI Non-normed Fit Index, CFI Comparative Fit Index, M1 one-factor model (general dimension), M2 two-dimensional model (enough and enjoyment), M3 four-dimensional model (enough and enjoyment termination and continuation rules), M3° four-dimensional model including a covariance between items 11 and 12 and items 13 and 14

**Table 2** Factor loadings of confirmatory factor analyses (studies 1 and 2) of the WoPeC in two samples

	Study 1				Study 2			
	1	2	3	4	1	2	3	4
I continued working because I...								
1. ... wanted to be sure that I had done enough	0.57				0.37			
2. ... had not been productive enough	0.81				0.87			
3. ... felt that I did not do enough	0.92				0.91			
4. ... found my work interesting		0.83				0.82		
5. ... gained satisfaction from my work		0.86				0.92		
6. ... still felt like doing my work		0.87				0.85		
7. ... still enjoyed doing my work		0.84				0.83		
8. ...was completely immersed in my work		0.56				0.41		
I stopped working because I...								
9. ... reached my goals for that day			0.81				0.53	
10. ... did enough work			0.79				0.85	
11. ... did as much as possible			0.56				0.59	
12. ... had worked for a long enough time			0.41				0.56	
13. ... just did not feel like working anymore				0.70				–
14. ... felt reluctance to continue				0.86				0.60
15. ... did not obtain gratification anymore from work				0.86				0.93
16. ... no longer enjoyed my work				0.65				0.94

1 enough continuation rules, 2 enjoyment continuation rules, 3 enough termination rules, 4 enjoyment termination rules

## Conclusions

As anticipated, the WoPeC, a questionnaire to assess persistence rules, consisted of four factors. The first factor indicates that the employee continues to work until enough work has been done; the second factor indicates that the employee continues to work because it is still pleasant; the third factor indicates that the employee stops working because enough work has been done; and finally the fourth factor indicates that the employees stops working because work is no longer enjoyable.

## Study 2

A first aim of study 2 was to further validate the factorial structure of the WoPeC. It was examined whether the four-factor structure of persistence rules could be replicated in a different sample. A secondary aim was to examine the relationship between the different persistence rules and mood on the one hand and workaholism and work engagement on the other hand. As explained in the general introduction it was expected that workaholism is related to negative affect (hypothesis 1), whereas work engagement is related to positive affect (hypothesis 2). Next, we expected that workaholism is associated with using the enough rules to decide when to stop (hypothesis 3) or when to continue

(hypothesis 4) working. In addition, it is expected that work engagement is related to using enjoyment rules to determine when to stop (hypothesis 5) or when to continue (hypothesis 6) working. Furthermore, in line with the MAI model we anticipate that negative mood in combination with using an enough rule is particularly associated with workaholism (hypothesis 7), whereas a positive mood in combination with using an enjoyment rule is associated with work engagement (hypothesis 8).

## Methods

### Participants and Procedure

Two hundred seventy employees of a Dutch consultancy firm participated in the study (127 men and 143 women) with a mean age of 36.9 years (SD=10.3). All participants were informed of their anonymity if they voluntarily participated and that completion of the online questionnaire implied consent. The response rate was 64%. The sample was highly educated with the majority (85%) holding a university or college degree, compared with 15% with intermediate (or lower) education. Approximately eight out of ten (81%) participants were cohabiting or married. Almost the same percentage (79%) of the sample consisted of dual career couples. Approximately half of the partic-

ipants (45%) reported having children. On average, employees worked officially 35.7 h per week ( $SD=5.9$ ). The actual number of hours they worked was on average 43.2 ( $SD=10.1$ ) per week. On average employees had worked for the company for nearly 6 years ( $SD=5.97$ ), and had been in their current position for 4 years ( $SD=4.84$ ). A minority of the participants (13%) reported having a management position.

## Measures

*Workaholism* was measured with two scales of the Dutch Work Addiction Scale [40]. The first scale is Working Excessively (five items,  $\alpha=0.64$ , an example item is “I seem to be in a hurry and racing against the clock”). The second scale is Working Compulsively (five items,  $\alpha=0.69$ , an example item is “I feel guilty when I take time off work”). Participants responded to each item on a 4-point scale (1=“never” and 4=“always”).

*Work engagement* was measured with the Utrecht Work Engagement Scale (UWES) [15]. Two subscales of the UWES were used to measure the core dimensions of work engagement; Vigor (three items,  $\alpha=0.80$ , an example item is “At my work, I feel bursting with energy”) and Dedication (three items,  $\alpha=0.82$ , an example item is “My job inspires me”). The items were answered using a 7-point response format (0=“never”, 6=“every day”).

The 30-item Dutch version [35] of the Job-Related Affective Well-being Scale (JAWS) [41] was used to assess *positive* and *negative emotions*. The JAWS contains a 15-item positive affect subscale ( $\alpha=0.91$ , example items are “energetic” and “enthusiastic”) and a 15-item negative affect subscale ( $\alpha=0.87$ , example items are “anxious” and “bored”). Items were scored on a 5-point Likert scale ranging from 1 (very slightly or not at all) to 5 (extremely). Participants were instructed to indicate how often they had felt the emotion over the past working day.

*Persistence rules* were measured with the 16-item Work Persistence rules Checklist (WoPeC) from study 1. The first scale measured the Enough Continuation scale (three items,  $\alpha=0.74$ ). The second scale is Enjoyment Continuation scale (five items,  $\alpha=0.87$ ). The third scale is Enough Termination scale (four items,  $\alpha=0.72$ ). The final scale is the Enjoyment Termination scale (four items,  $\alpha=0.85$ ). The same 5-point Likert scale was used as in study 1.

## Results

### Confirmatory Factor Analysis of the WoPeC

In order to test the factorial validity of the WoPeC again, a CFA was conducted. The same analysis procedure was

applied as in study 1. Fit indices for each of the models tested are presented in Table 3.

Again, the four-factor model showed a significantly better fit than the one-factor model ( $\Delta\chi^2=1,287.80$  ( $\Delta df$  6);  $p<0.001$ ) and then the two-factor model ( $\Delta\chi^2=758.07$  ( $\Delta df$  5);  $p<0.001$ ). Modification Indices (MI) again revealed that the model fit could be improved if two error terms of indicators in the enjoyment termination rule factor (items 13 and 14) were allowed to covary. Given the substantial overlap with respect to their content, the item with the lowest factor loading was eliminated from the model (M3°). The parsimonious four-factor model showed a better fit to the data than the comprehensive four-factor model ( $\Delta\chi^2=111.05$  ( $\Delta df$  14);  $p<0.001$ ). As Table 2 shows, loadings on the four factors ranged from 0.37 to 0.94, with a mean of 0.73. In conclusion, the confirmatory factor analysis confirmed the validity of the four-factor model for enough and enjoyment persistence rules.

Means, standard deviations, and correlation coefficients of all the study variables are displayed in Table 4. All significant correlations were in the expected direction, except for the negative correlation between the enjoyment stop rule and work engagement.

### Hypotheses Testing

The hypotheses were tested simultaneously using structural equation modeling with AMOS 16 [36]. The latent construct of workaholism was composed of two indicator variables (working compulsively and working excessively) whereas the latent variable work engagement was assessed by two indicators (vigor and dedication). Four interaction terms were created by multiplying each enough persistence rule with negative affect, and each enjoyment persistence rule with positive affect. In order to reduce the collinearity between the main effect variable and its interaction, all variables were centered on their grand means before creating the product terms.

The results are presented in Table 5 and Fig. 1. Model (M1) provided a reasonable fit to the data. Overall, the model explained 41% of the variance in workaholism and 80% in work engagement. Negative Affect was moderately related to workaholism ( $\beta=0.45$ ;  $p<0.001$ ), whereas Positive Affect was rather strongly related to work engagement ( $\beta=0.66$ ,  $p<0.001$ ). Therefore, hypotheses 1 and 2, which predicted that workaholism was related to negative Affect, whereas work engagement was related to positive affect, respectively, were both supported.<sup>1</sup> No significant relationships were found between the enough

<sup>1</sup> In order to control for possible cross relationships among variables in the model, we also fitted a full model including all cross paths. However, none of these cross relationships were significant.

**Table 3** Confirmatory factor analysis models of the WoPeC (study 2,  $n=270$ )

Model	$\chi^2$ ( $n=270$ )	$df$	$p$	GFI	AGFI	RMSEA	NFI	NNFI	CFI
M1	1,551.09	104	0.00	0.55	0.42	0.23	0.27	0.17	0.28
M2	1,021.36	103	0.00	0.68	0.58	0.18	0.52	0.47	0.54
M3	263.29	98	0.00	0.90	0.86	0.08	0.88	0.90	0.92
M3°	152.24	84	0.00	0.93	0.91	0.06	0.92	0.95	0.96

*GFI* Goodness of Fit Index, *AGFI* Adjusted Goodness of Fit Index, *M* type of model based on number and configuration of factors, *RMSEA* Root Mean Square Error of Approximation, *NFI* Normed Fit Index, *NNFI* Non-normed Fit Index, *CFI* Comparative Fit Index, *M* type of model based on number and configuration of factors, *M1* one-factor model (general dimension), *M2* two-dimensional model (enough and enjoyment), *M3* four-dimensional model (enough and enjoyment termination and continuation rules), *M3°* four-dimensional model excluding item 13

termination rule and workaholism nor between the enjoyment termination rule and work engagement. In other words, no support was found for hypotheses 3 and 5. Furthermore, as expected the enough continuation rule was related to workaholism ( $\beta=0.33$ ;  $p<0.001$ ), whereas the enjoyment continuation rule was associated with work engagement ( $\beta=0.32$ ,  $p<0.001$ ). Hence, hypotheses 4 and 6, which stated that workaholism is associated with using an enough continuation rule, and work engagement is related to using an enjoyment continuation rule to determine when to continue working, respectively, were both supported. Finally, none of the four interaction terms were significant. Therefore, hypothesis 7 and 8 were not confirmed.

#### Modifications to the Structural Model

Modifications to the research model were examined, firstly, by trimming paths that were non-significant to have a more parsimonious model and, secondly, by exploring additional paths. We dropped the non-significant paths between the enough termination rule and workaholism, and between the enjoyment termination rule and work engagement. Furthermore, the four non-significant interaction terms were removed from the model (M1°). The elimination did not significantly improve the overall fit of the model ( $\Delta\chi^2=27.20$ , ( $\Delta df$  18); *ns*). Next, Modification Indices were inspected and they suggested that two additional paths would improve the fit of the model. More specifically, the enough continuation rule and negative affect should load negatively on the work engagement factor. Remarkably, these negative relationships were not found between enjoyment rule and positive affect on the one hand and workaholism on the other hand. However, given the assumption mentioned earlier that work engaged employees, unlike workaholics, do not experience the internal pressure to work persistently, it is not surprising that the enough continuation rule is negatively related to work engagement. Furthermore, because work engagement is accompanied by positive emotions, it is not unexpected that

negative emotions are negatively related to work engagement. Considering that these additional paths between the enough continuation rule and negative affect on the one hand and work engagement on the other hand were theoretically plausible we added them to the model (enough continuation rule  $\rightarrow$  work engagement:  $\beta=-0.10$ ,  $p<0.05$ , and negative affect  $\rightarrow$  work engagement:  $\beta=-0.17$ ,  $p<0.001$ ) (see Fig. 2). This resulted in a significant difference in fit between the two models in favor of the final model (M2;  $\Delta\chi^2=23.93$  ( $\Delta df$  2),  $p<0.001$ ). The RMSEA of 0.10 was above the recommended value of 0.08, but still indicated a “mediocre fit” [39].

#### Conclusions

Confirming the results of study 1, a confirmatory factor analysis of the WoPeC indicated that the hypothesized four-factor model shows the best fit compared with various alternative models. Evidently, there is not only a difference between enough and enjoyment rules, but also between continuation and termination rules. Furthermore, the results of study 2 support the supposed direct effects of negative mood and the enough continuation rules on workaholism as well as the direct effects of positive mood and the enjoyment continuation rule on work engagement. In addition, it was found that negative mood and the enough continuation rule related negatively to work engagement. No evidence was found for the hypotheses that to stop working when having done enough is related to workaholism and that to stop working when no longer enjoying work is related to work engagement. Finally, no support was found for the idea that workaholics use their negative mood as input to the enough rule, nor for the assumption that work engaged employees use their positive mood as information for the enjoyment rule. In conclusion, as an alternative to a multiplicative model, an additive model of mood and persistence rules seems more appropriate to explain the difference between workaholics and work engaged employees.

**Table 4** Means (M), standard deviations (SD), minimum (Min), maximum (Max), and correlation coefficients of the study variables (study 2,  $n=270$ )

	M	SD	Min	Max	1	2	3	4	5	6	7	8	9	10
Working excessively	2.58	0.52	1.20	3.80	–									
Working compulsively	2.11	0.55	1.00	3.80	0.40**	–								
Vigor	3.07	0.97	0.33	5.33	-0.04	-0.15*	–							
Dedication	3.70	1.06	0.67	5.67	0.12*	0.18**	0.63**	–						
Enough continuation rule	3.56	0.68	1.00	5.00	0.09	0.38**	-0.23**	-0.11	–					
Enjoyment continuation rule	2.84	0.89	1.00	5.00	-0.01	-0.19**	0.54**	0.55**	-0.03	–				
Enough stop rule <sup>a</sup>	2.38	0.91	1.00	5.00	0.15*	0.06	0.04	0.10	0.08	-0.01	–			
Enjoyment stop rule	3.49	0.68	1.00	5.00	0.17**	0.14*	-0.20**	-0.19**	0.22**	-0.01	0.06	–		
Positive affect	3.69	0.53	1.87	3.60	-0.11	-0.27**	0.69**	0.66**	-0.12	0.56**	0.11	-0.23**	–	
Negative affect	1.80	0.49	1.00	5.00	0.25**	0.42**	-0.52**	-0.49**	0.25**	-0.38**	0.06	0.35**	-0.55**	–

\* $p<0.05$ ; \*\* $p<0.01$ <sup>a</sup>The mean score is calculated based upon the final three-item scale

## General discussion

This study was firstly aimed at developing and validating a scale to assess personal rules for deciding when to stop or continue working, referred to as persistence rules. The results reveal that, in accordance with our expectations, not only a difference exists between enough and enjoyment rules, but also between rules to stop and rules to continue working. In other words, our findings indicate that to stop working, for instance because one has done enough, is not the opposite of to continue working because one has not yet done enough. For example, an employee who *continues* because he or she enjoys his or her work does not *stop* right away when not enjoying his or her work any longer. Overall, the findings of this study provide support for the WoPeC as a reliable and valid measurement for the different considerations of employees to stop or continue working. In general, the instrument might contribute to more insight into the specific reasons of employees to quit work or to continue with it and enables to distinguish between individuals' considerations regarding persistence at work. For instance, some employees may have unremittingly used an enough persistence rule for an extensive period without evaluating or recognizing it. Feedback based on the results of the WoPeC may contribute to an awareness and re-evaluation of the use of persistence rules by employees.

A second purpose of the current study was to explore the difference in underlying motivation of workaholics versus work engaged employees. It was hypothesized that workaholics evaluate their output (enough persistence rules) whereas work engaged employees assess their enjoyment (enjoyment persistence rules) in order to decide when to stop or continue working. Additionally, it was expected that the workaholics use their negative mood, and work engaged employees use their positive mood as information for evaluating their output versus enjoyment respectively. The results of the structural analyses reveal that negative affect is related to workaholism whereas positive affect is related to work engagement. These findings are in line with earlier reports [34, 35]. It is also demonstrated that continuing because one has not done enough yet is related to workaholism, whereas continuing because one is still enjoying work is related to work engagement. In other words, although on the surface workaholics and work engaged employees do not seem to differ with respect to their work behavior, they do have inherent different reasons to work persistently. Workaholics continue working because they feel that they have not completed enough work; they are driven by the desire to live up to their own and others' expectations, seemingly without considering their enjoyment of work. In contrast, work engaged employees continue to work because they take pleasure from their



**Table 5** Fit indices of the hypothesized model (study 2,  $n=270$ )

Model	$\chi^2$	$df$	$p$	GFI	AGFI	RMSEA	NFI	NNFI	CFI
M1	91.13	31	0.000	0.96	0.86	0.09	0.91	0.80	0.93
M1°	63.93	13	0.001	0.95	0.86	0.12	0.92	0.86	0.94
M2	43.00	11	0.001	0.97	0.89	0.10	0.95	0.90	0.96

*GFI* Goodness of Fit Index, *AGFI* Adjusted Goodness of Fit Index, *M* type of model based on number and configuration of factors, *RMSEA* Root Mean Square Error of Approximation, *NFI* Normed Fit Index, *NNFI* Non-normed Fit Index, *CFI* Comparative Fit Index, *Model* type of model based on number and configuration of factors, *M1* hypothesized model, *M1°* hypothesized model with trimmed paths, *M2* hypothesized model with additional paths

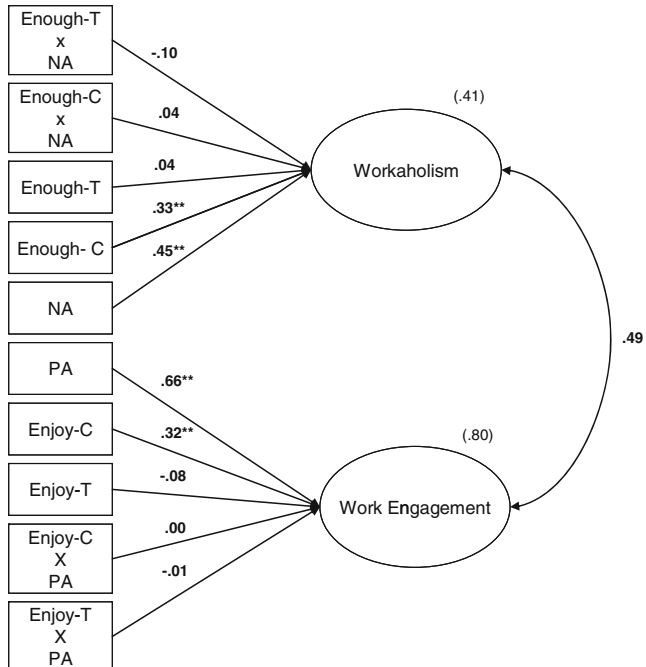
work; they seem to be driven by the joy of working. Additional support for the assumption that the use of the enough continuation rule and experiencing negative affect are typical for workaholics was provided by the finding that the enough continuation rule and negative affect were *negatively* related to work engagement. On this basis, one would also expect a negative relationship between the enjoyment continuation rule and positive affect on the one hand and workaholism on the other hand. However, no such relationship was observed.

Most importantly, there was no evidence of a mood as input process whereby workaholics use their negative mood as an evaluation of how much they have done, and work engaged employees analyze their positive mood to assess to what extent they still enjoy their work. In other words, both

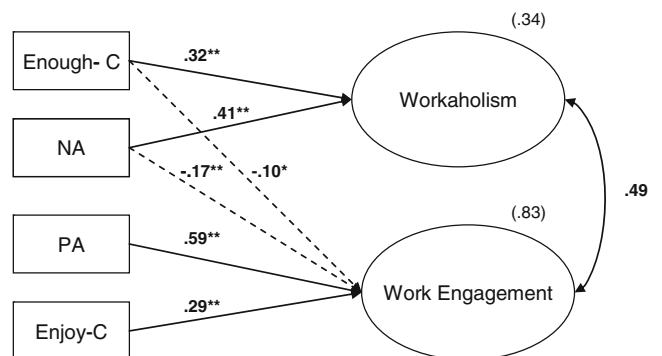
mood and continuation rules seem vital in explaining the difference between workaholics and work engaged employees, but do *not* interact with each other. In a recent experimental study based upon the MAI model wherein patients with work-related pain in the upper limbs performed a physical task, also no interaction between mood and persistence rules (“stop rules”) was found [42]. Instead, the results of this study showed that experimentally induced mood and stop rules were independently related to the number of movements with a painful limb. These findings indicate that the applicability and robustness of the MAI model is still to be tested in a variety of situations.

Limitations

The current study has several limitations that require consideration. Firstly, the majority of the participants were highly educated. This relative homogeneity may limit the ability to generalize the results to a lower educated population. However, one prerequisite for the use of persistence rules is that employees have autonomy to some extent, which is typical for highly educated employees. This may indirectly signify that the use of persistence rules is generally more relevant when people are highly educated.



**Fig. 1** Standardized path coefficients of negative affect (*NA*), the enough continuation rule (*Enough-C*), the enough termination rule (*Enough-T*) and their interaction terms on Workaholism, and of positive affect (*PA*), the enjoyment continuation rule (*Enjoy-C*), the enjoyment termination rule (*Enjoy-T*), and their interaction terms on work engagement



**Fig. 2** Standardized path coefficients of negative affect (*NA*), the enough continuation rule (*Enough-C*) on workaholism, and of positive affect (*PA*), the enjoyment continuation rule (*Enjoy-C*) on work engagement, after elimination of absorption. Inclusion of two additional paths from the enough continuation rule (*Enough-C*), and negative affect (*NA*) to work engagement

Nonetheless, in order to understand the use of persistence rules by employees, future research should not only focus on the use of persistence rules among the lower educated employees but also among other professions.

Furthermore, it is a point of discussion whether mood and persistence rules are as distinct as the MAI model anticipates. Emotions may be reflected in the use of persistence rules; for instance, the enjoyment rule may be only relevant when positive mood is present, whereas the enough rule may be specifically pertinent when an individual is in a negative mood.

In addition, one might argue that there are plenty of other “external” factors that influence when and why employees may stop or continue working (e.g., to stop working to be at home when children return from school or to continue working to meet deadlines). From our point of view, some of these external factors may be derivatives of persistence rules. For instance, an employee might consider continue working until the traffic jam is over, but in fact uses the traffic jam as an excuse to work until he has done enough. However, there are other urgent situations that force employees to stop or continue working at a given time. Yet, in such situations it is questionable whether the employee really has work-time control.

A final limitation of the present study is that its cross-sectional nature precludes causal inferences. In order to gain a better insight into the process underlying workaholism and work engagement, we need to move to longitudinal designs, for instance to a diary approach.

#### Future Research

Given that persistence rules are a rather new concept, it would be interesting to compare persistence rules to other existing concepts. For instance, in order to explain differences in motivation, Deci and Ryan [43] distinguish between *autonomous* and *controlled* motivation. Autonomous motivation involves taking on an activity because it is interesting and enjoyable (integrated regulation) or because the activity is personally valuable and instrumental to outcomes that are detachable from the activity itself (identified regulation). Controlled motivation is both characterized by partially integrated behavior that is initiated to avoid guilt and shame or to gain approval of others (introjected regulation) and behavior that is completely the result of external contingencies, rewards and punishments (external regulation). It would be interesting to examine to what extent autonomous motivation bears resemblance to using an enjoyment continuation rule and to what extent controlled motivation possibly is comparable to using an enough continuation rule. Furthermore, a core component of perfectionism, a characteristic that has been linked to workaholism [44] is having high personal stand-

ards with respect to the quantity of work [45]. Setting high standards may be comparable to using the enough continuation rule. In order to assure that a different construct is measured, it should be tested to what extent core concepts of the self determination theory and perfectionism differ from persistence rules.

Further research may also concentrate on efforts to enhance the reliability of the workaholism subscales. Although the scales are not consistently found to have such low internal consistency in previous studies [27, 46], the low reliabilities in the current study seem to point out the need to further evaluate this measure. In addition, including a larger sample in the study or increasing the heterogeneity of the sample may provide higher estimates of reliability.

Furthermore, future research may focus on examining alternative models of mood and persistence rules in order to gain insight into the mechanisms underlying workaholism and work engagement. It is plausible, for instance, that persistence rules act as a mediator in the relationship between mood and the motivation to work persistently. For instance, negative emotions may evoke a default enough rule which will eventually result in workaholism.

Finally, enough and enjoyment termination rules were neither related to workaholism nor to work engagement. This may indicate that the decision of workaholics and work engaged employees to stop working is influenced by other factors than the two internal rules that were examined in this study. A better understanding of the reasons of workaholics and work engaged employees to stop working may provide insight in the mechanisms that causes and prevents overwork by these employees. Therefore, in future investigations it would be interesting to identify what termination rules workaholics and work engaged use.

#### Implications

The current study contributes to our understanding of the difference between workaholism and work engagement by looking at differences in mood and persistence rules. To our knowledge, this is the first study that focuses on cognitive rules employees use to decide when to stop and to continue working as well as on the role of mood in this process. The strong evidence for the direct relationships between mood and continuation rules on the one hand and the motivation to work persistently on the other hand presents a potential pathway for intervention for workaholics. Modification of the enough persistence rule may be an important target for interventions [47]. However, given the sometimes implicit nature of persistence rules, awareness is equally important as changing the maladaptive rule [48]. Also the negative emotions of workaholics should be targeted for change. In addressing persistence rules and mood, Rational Emotive

Behavior Therapy [49] which is focused on identifying and replacing irrational beliefs may be a helpful technique. Finally, the findings of the present study pave the way for further discussion and research about mood and persistence rules to explain the difference in motivation to work persistently of workaholics and work engaged employees. To stop or not to stop? Or even more pertinent, to continue or not to continue? These interesting questions may guide future research on the motivation to work persistently.

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