UNDERSTANDING THE RELATIONSHIP BETWEEN ANTECEDENTS OF HEAVY WORK INVESTMENT (HWI) AND BURNOUT

Aharon Tziner[1*], Carmen Buzea[2], Edna Rabenu[3], Or Shkoler[4] and Camelia Truța[5]

[1)3)4)] Netanya Academic College, Netanya, Israel
[2)5)] Transilvania University of Brașov, Romania

Please cite this article as:
Tziner, A., Buzea, C., Rabenu, E., Shkoler, O. and Truța, C., 2019. Understanding the Relationship Between Antecedents of Heavy Work Investment (HWI) and Burnout. *Amfiteatru Economic*, 21(50), pp. 153-176.

DOI: 10.24818/EA/2019/50/153

Article History
Received: 6 September 2018
Revised: 12 November 2018
Accepted: 4 December 2018

Abstract
Following Snir and Harpaz's (2012) model of Heavy Work Investment (HWI), we propose a model that clarifies the relationship of antecedents of HWI to burnout. The model consists of several components: (a) external/situational antecedents, 'income' and 'workload' and internal/dispositional antecedents, 'job engagement' and 'workaholism'; (b) a mediator variable, HWI (divided into 'time' and 'effort'); and (c) 'burnout' as the outcome variable. Data was obtained by social science students who surveyed 388 Romanian employees, ages 19 to 66, on two consecutive occasions with a six-week interval (times T1 and T2). Using structural equation modelling, the mediation has an excellent fit at both T1 and T2. The mediation role of HWI is confirmed for T2, with respect to three factors – job engagement, workaholism and workload – but not for T1. The findings are discussed, as are their contribution to the theoretical literature and new directions for further research and organizational practice.

Keywords: heavy work investment, job engagement, workaholism, burnout, workload, mediation analysis.

JEL Classification: O15

[*]Corresponding author, **Aharon Tziner** – atziner@netanya.ac.il

Introduction

With rapid changes extant in the workplace, such as increasing global competition and work that is ever more based on digital communication (Lee, McCann and Messenger, 2007), it appears that employees are being stimulated to work harder than ever. Notably, the ensuing pressures, hefty workloads, and greater time invested by workers tend to blur the traditional boundaries between work and home life (van Beek et al., 2012). Lee et al. (2007), for instance, noted that an estimated 22% of the global workforce work more than 48 hours per week, while Hewlett and Luce (2006) recorded that 62% of high-earning individuals work more than 50 hours a week, 35% more than 60 hours a week, and 10% a back-breaking 80 hours a week or more.

In the light of such statistics, Snir and Harpaz (2012, p. 6) introduced the important concept of Heavy Work Investment (HWI), which encompasses both employees' long hours (time) and the physical and mental exertion (effort) they invest at work. Moreover, Harpaz and Snir (2015) proposed that on an individual level, HWI operates as a mediator between various predictors of HWI (e.g., work addiction, financial needs and employers' demands) and outcomes (e.g., health issues and work satisfaction) Accordingly, in the current study, we investigate the association between several predictors of HWI (broken over 'time' and 'effort') and 'burnout' – specifically with the intent of gauging HWI's role as a mediator between the predictors and this particularly negative and significant outcome.

1. Theoretical Background

1.1. Predictors of HWI

Further to their introduction of the construct HWI, and based on Weiner's (1985) attributional framework, Snir and Harpaz (2012) distinguished between two types of antecedents of HWI, namely, those that are external/situational and those that are internal/dispositional.

External/Situational Predictors of HWI

Ordinarily, employees work long hours because of personal economic constraints (financial needs) and/or excessive assignments and customer demands (workload) (Barnard, Deakin and Hobbs, 2004). Both these factors can be considered external/situational predictors of HWI. Indeed, it is not uncommon, in certain industries, to find a dominant "HWI culture", whereby it is normative for employees to work overtime, specifically to keep up with the workload, if not to reach personal financial goals. It appears that the employees have little choice in this respect and because of their (long-term) tenure they are unlikely to seek a remedy by seeking alternative employment (Barnard et al., 2004; Snir and Harpaz, 2012). Thus, in the current study, we tapped as the dependent variable and indicator of financial need, "income" (assuming that in most cases, the higher the income, the less the financial stress) and as the independent variable, "workload", that sets apart economic need from excessive volume of work and customer demands (Harpaz and Snir, 2015, pp. 8-10).

Internal/Dispositional Predictors of HWI

Among potential internal/dispositional predictors of HWI, we can identify work engagement (Taris, Van Beek and Schaufeli, 2015), which has been defined as "a positive,

fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli, Salanova, González-Romá and Bakker, 2002, p. 74). An additional and somewhat related predictor is workaholism. Notably, we should distinguish clearly between job engagement and workaholism. Engaged workers are vigorous, dedicated, and absorbed in their activity and are driven by an intrinsic motivation yielding positive attitudes to work (Snir and Harpaz, 2012). In contradistinction, workaholics are driven by an obsessive internal urge or addiction that they are incapable of controlling or suppressing (Rabenu, Shkoler and Tziner, in press; Taris, van Beek and Schaufeli, 2015; for further reading, see: Harpaz and Snir, 2015, pp. 8-10). Accordingly, in the current study (see below), we chose to investigate both of these dimensions of heavy work investment – job engagement and workaholism – as inner/dispositional predictors of HWI.

1.2. The Outcome: Burnout

Following Maslach (1982, 2003), burnout can be considered to be a progressive psychological response to chronic work stress and a common and serious ailment among drained and worn-out employees. This psychological state can be construed as a multidimensional construct that involves three distinct, but related, subjective conditions. These are:

- Emotional exhaustion. Individuals feel drained and used up, with no energy to face another day;
- Depersonalization. Generally following emotional exhaustion, employees develop a state of mind that serves as a defense mechanism that nurtures negative or cynical attitudes about their organization; and
- Decline in personal accomplishment. In practice, and in their subjective consciousness, individuals' levels of performance decline.

Beyond the phenomena described above, burnout has several additional negative implications for employee health, including cardiovascular diseases (Toker, Melamed, Berliner, Zeltser and Shapira, 2012), hyperlipidaemia (Shirom, Toker, Melamed, Berliner and Shapira, 2013), and risk of diabetes (Melamed, Shirom, Toker and Shapira, 2006). Burnout is also related to depression (Toker and Biron, 2012) and, as indicated, clearly has a negative effect on attitudes toward the organization and employee performance (Tourigny, Baba, Han and Wang, 2013). Moreover, burned-out employees may have a negative, crossover influence on colleagues (Bakker, Le Blanc and Schaufeli, 2005).

1.3. HWI and Burnout

With regard to the distinction made above between "time spent at work" and the "effort" expended, we turn to a discussion as to the possible independent contributions of these two constructs to HWI and its outcomes.

HWI of time and burnout. Extensive time spent at work ("HWI of time") clearly appears to account for a number of negative consequences to employees, including burnout. By way of illustration, nurses working shifts of ten hours or longer are up to two and a half times more likely to experience burnout than nurses working shorter shifts (Stimpfel, Sloane and

Aiken, 2012). Additional negative outcomes of "HWI of time" include complaints associated with health and even illness, mistakes at work, occupational injuries, and workplace accidents, among a variety of additional debilitating factors described in the literature (see for example: Caruso, 2006; 2014; Snir and Harpaz, 2013). Moreover, increased hours spent on the job means a corresponding longer exposure to workplace hazards; in turn, that leads to less time available to attend to non-work responsibilities (Caruso, 2006) and shortened time for recovery from work stress (Van Der Hulst and Geurts, 2001).

Despite these hazards, 'HWI of time' may actually have some positive results. For example, Shamai, Harpaz and Snir (2012) observed that average "life satisfaction" was higher among employees working more than 50 hours a week than among employees working 36-50 hours a week. Apparently, the former group of employees, experience "flow" more beneficially than the latter group and, consequently, could be expected to report greater levels of positive affect (Shamai, 2015).

Notwithstanding the possibilities embedded in Shamai's (2015) observation, following the Job Demands-Resources (JD-R) model (Bakker and Demerouti, 2007), and the indication of negative outcomes of HWI outlined above, we would expect that high job demands eventually exhaust employees' resources (Hobfoll, 1989) and lead to burnout. Crawford, LePine and Rich (2010) posited that, in such a case, effected individuals failed to utilize alternative resources to offset the net loss. In this respect, Peterson et al.'s (2008) observations are germane. The researchers observed that burned-out employees reported a higher frequency of overtime than did non-burned-out and disengaged workers, indicating that the burnout was related not only to the high job demands but also, more likely, to poor access to job resources.

However, research findings in this area are neither conclusive nor consistent. Richter, Kostova, Baur and Wegner (2014), for example, found that reduction of working time among hospital physicians was not, in itself, associated with a reduced risk of burnout. Furthermore, Shirom, Nirel and Vinokur (2010) found no direct correlation between physician's work hours and burnout, a finding corroborated by Schaufeli, Taris, and van Rhenen (2008), among others, who found no relationship between overtime and burnout. It appears, therefore, that if we follow the JD-R model (Bakker and Demerouti, 2007), these employees did, in fact, have high alternative means with which to offset any loss of resources due to the long hours expended on the job.

HWI of effort and burnout. Work effort refers to "the intensity of mental and/or physical exertion during working time, thus distinguishing the concept from working time itself" (Green, 2008, p. 116). Notably, with respect to "HWI of effort" (work investment), Rabenu and Aharoni-Goldenberg (in press) postulated that one of the explanations that can shed light on the contradictory findings concerning the relationship between overtime and burnout is the degree of effort invested, which can be broken down to three basic levels, excessive work investment (EWI), moderate work investment (MWI), and low work investment (LWI).

While we may locate a number of studies dealing with the implications of working overtime (e.g., Caruso, 2014; Stimpfel et al., 2012), there are relatively few references to empirical studies that treat of considerable or excessive investment of effort in work. However, Meijman and Mulder (1998) observed that, over time, investment of considerable

effort in work led to impaired well-being and health, a finding supported by Green's (2008) finding that, throughout a range of jobs, the association between (excessive) effort at work and well-being was negative. Unfortunately, we are not familiar with studies examining the relationship of "HWI of effort" and burnout, specifically. We would expect, however, following the JD-R model (Bakker and Demerouti, 2007), that exceedingly high investment of effort would eventually exhaust employees' resources and lead to burnout.

1.4. The Mediating Role of HWI ("Time" and "Effort") to Burnout

As mentioned, Harpaz and Snir (2015, p. 6) proposed that HWI mediates between a number of different predictors of HWI, such as work addiction, passion for work, financial needs and employers' demands, on the one hand, and outcomes to the individual, such as health issues and work satisfaction, on the other.

Building on that supposition and our discussion so far, and specifically germane to this study, we could consider a paradigm where the predictors of HWI are "workaholism" and "job engagement", the mediator is HWI (broken down to "time" and "effort" invested in work) and the outcome of HWI is burnout. Support for such a model, with specific attention to burnout, can be found in Oren and Littman-Ovadia's (2013) study that revealed that when employees' over-commitment increases, so does their burnout.

Notably, however, different predictors of HWI may associate differently with burnout and this holds true, presumably, for job engagement and workaholism, respectively. Thus, while workaholism has been found to be positively correlated to burnout (e.g., Burke and Matthiesen, 2004; Schaufeli, Taris and van Rhenen, 2008), job engagement was found to have a negative correlation to burnout (Crawford, LePine and Rich, 2010; Schaufeli et al., 2002). Harpaz and Snir (2015) suggested a possible explanation of this dichotomy that lies in employees' control over their HWI. They proposed that employees who fall into both the category of high situational HWI ("needy" heavy work investors) and the category of high dispositional HWI (e.g., workaholics) suffer from an excessive lack of control over their HWI (Weiner, 1985). Therefore, these individuals would exhibit lower levels of well-being and higher levels of burnout than work-devoted investors associated with a more positive dispositional HWI, such as job engagement.

In their recent research on Israeli employees, Harpaz and Snir (2016) studied four types of HWI and their relation to health conditions (e.g., physical pain, health problems, body mass and sleeping problems) and life and job satisfaction (e.g., perceived stress, positive emotions). The researchers compared four types of employees according to the two types of antecedents of HWI they had discerned (Harpaz and Snir, 2012), namely, (a) situational types of HWI: (1) "financial-needs-based" and (2) "overworked" and (b) dispositional types of HWI: (3) "workaholics" and (4) [employees who exhibited] "high enjoyment from work". They found that, in general, high-enjoyment heavy work investors showed the best psychological and health results, while the financial-needs-based showed the worst results. The other two types, overworked and workaholics, fell in between. According to Harpaz and Snir (2016), their study was the first empirical research to have treated a comparison between the sub-types of HWI, namely, the dispositional and situational categories.

In summary, and consequent to this discussion and the various research findings, we see a need to study further the relationship between different predictors of HWI, HWI itself, and

its outcomes. Specific to this investigation, and as the guiding framework of the present investigation, we propose a model (see Figure no. 1), consisting of six main components, comprising, (a) antecedents: income, job engagement, workload, and workaholism; (b) mediator variables: "time" and "effort" investment (of HWI); and (c) an outcome variable: burnout. Based on the literature review, we hypothesize a positive relationship between the "high pressure-low control" predictors of HWI (workaholism, workload and income) and burnout, and a negative relationship between the "lower pressure-higher control" predictor job engagement and burnout – all with the mediation of "time" and "effort" investment, respectively.

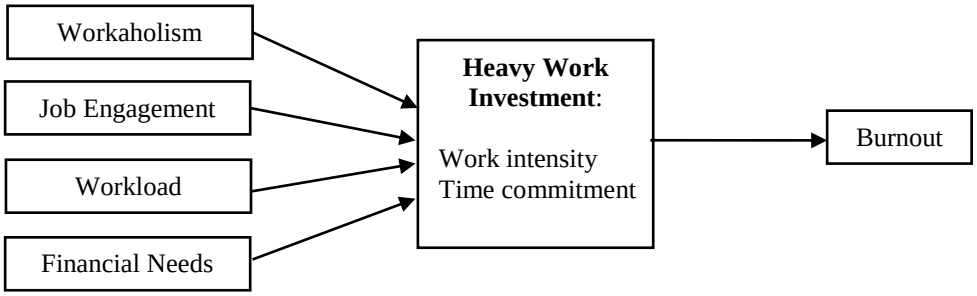


Figure no. 1. Research model

1.5. About the Current Study

We believe that our current investigation may incorporate several significant features and potential outcomes. First, unlike most existing literature, this study relates to the investment of both time and effort at work. Second, there are almost no studies (to the best of our knowledge) that treat heavy work investors from the perspective of both situational and dispositional constraints. Third, Harpaz and Snir (2016) examined several outcomes (both positive and negative) but, unlike this investigation, they did not single out burnout as an outcome. Furthermore, the inconsistent relationships between 'HWI of time' and burnout, coupled with the apparent lack of research on the association between 'HWI of effort' and burnout, lay a strong case for further study of the mediation of HWI between its predictors and burnout.

Fourth, capitalizing on the JD-R model (Bakker and Demerouti, 2007) – that indicates that high investment of effort over time will eventually exhaust employees' resources and lead to burnout (see above) – we, too, posit that HWI of both 'time' and 'effort' will lead to increased burnout as time progresses. Thus, our study is longitudinal, conducted at two time periods (T1 and T2), which enables us to examine burnout levels or variability over time.

Fifth, the data regarding Snir and Harpaz's (2012) HWI model is derived only from Israeli subjects. Notably, Israel has a culture of HWI – almost 18% of workers in Israel work very long hours (more than the OECD's average of 9%; OECD, 2014). Therefore, Israel is a good place to research HWI. However, we were interested to find an appropriate alternate setting to replicate Harpaz and Snir's (2015) theoretical model of HWI (following on from the principle that replication is consistent with the contention of eminent scholars that the ultimate test for validity of findings is their recurrence in numerous replications. James, Mulaik and Brett, 1982).

We found Romania to be a good fit for our research objectives, since working overtime is common in Romania. Data gleaned from The European Commission (Eurostat, 2016) revealed that for Romanian employees, the average number of weekly hours of work in a main job is 40.4. Although Romania was not included in the OECD (2014) survey, a more recent review (Epson, 2017) revealed that 65% of Romanian employees worked overtime and that, on average, they spend 6.2 hours per week doing so. (For further information about Romania and HWI, see Appendix A.)

2. Method

2.1. Participants

The sample consisted of 388 employees in Romania, between the ages of 19 and 66 (M = 34.92, SD = 11.81). As indicated, a repeated measure design was employed in surveying the employees such that the same participants were sampled at two different periods, namely, Time-1 (T1), and 6 weeks later at Time-2 (T2). The sample consisted of 42.71% male participants and 57.26% females, of whom 47.42% were married and 52.58% were not married. Most of the participants (77.12%) had a non-academic education, while 22.88% held an academic degree. The tenure of the participants in their current jobs ranged between 1 and 40 years (M = 5.93, SD = 7.19) and, in their overall working life, between 1 and 55 years (M = 13.96, SD = 11.60). While their contracts dictated between 4 and 80 weekly working hours (M = 36.92, SD = 11.38), in actuality, participants worked anywhere between 1 and 120 weekly hours (M = 44.66, SD = 13.24).

2.2. Measures and Procedures

Data collection was conducted by students enrolled in psychology and sociology courses. The students distributed questionnaires to employees with at least one year of work experience. The students' received no credits for distributing and collecting the questionnaires. Employing students to recruit work populations with diverse backgrounds has been used in previous studies, with very satisfactory results regarding the variability of responses and the minimization of low variance, often encountered in organizational research (Fischer, 2008).

Workload. Perceived amount of work, in terms of pace and volume, was assessed using The Quantitative Workload Inventory (QWI; Spector/and Jex 1998), employing 5 Likert-type items ranging between 1 (“less than once a month or never”) and 6 (“several times a day”). Meta-analytic findings show that the QWI yields an averaged alpha coefficient of .82 across 15 samples, with a possible range of 5-25 (Byrne, 2010). In the current research, for T1, M = 3.21 and SD = 0.94, and for T2 the M = 3.15 and SD = 0.90.

Work-Job Engagement. Work-Job Engagement was assessed by employing the Utrecht Work Engagement Scale – Italian Version (UWES-9; Balducci et al., 2010). The UWES-9 contains nine items within three subscales: Vigor, Dedication, and Absorption. Responses to items are given on a frequency scale varying from 0 (never) to 6 (always). In the current research, for T1, M = 3.75 and SD = 1.29, and for T2, M = 3.74 and SD = 1.23.

Workaholism. Workaholism was measured with the 10-item Dutch Workaholism Scale (DUWAS; Schaufeli, Shimazu and Taris, 2009) that includes two independent scales:

Working Excessively (5 items, α = . 67) and Working Compulsively (5 items, α = .77). Both scales were scored on a 5-point rating scale, ranging from 1 (never) to 5 (always). In the current research, for T1, M = 2.40 and SD = 0.54, and for T2 M, = 2.39 and SD = 0.55.

Heavy Work Investment ("Time" and "Effort"). An extensive search of the literature (Naylor, Pritchard and Ilgen, 1980), indicated the lack of a generally accepted measure of effort that assessed dimensions of effort in terms of both time commitment (persistence) and work intensity (energy exerted per unit of time). Hence, consistent with a conceptual definition engendered by Naylor et al. (1980), Snir and Harpaz (2012) developed tools that measure employees' characteristic tendencies to work long ("time") and hard ("effort"), notably as a means of achieving success, rather than measuring employees' activity, per se, during a specific time period. Utilizing those tools in this study, time commitment and work intensity were assessed employing five items for each variable (Brown and Leigh, 1996) (coefficient alpha ≥ .82). The response format was a 7-point Likert-type scale (anchored by strongly agree and strongly disagree). In the current research, for T1, M = 4.60 and SD = 1.11, and for T2, M = 4.47 and SD = 1.13.

Burnout. Burnout was measured using the Maslach Burnout Inventory-General Survey (Schaufeli, Leiter, Maslach and Jackson, 1996), which includes 16 items. With reference to employees' work, this questionnaire covers three dimensions of work burnout – exhaustion, cynicism, and efficacy – on a Likert-type scale from 1 (never) to 7 (always). Exhaustion was measured using five items (e.g., "I feel emotionally drained by my job."). Cynicism was measured using five items (e.g., "I have become less interested in my work since I started this job."). Efficacy was measured using six items (e.g., "I can effectively solve the problems that emerge in my job."). The Cronbach's alphas were 0.83, 0.80, and 0.81, respectively. In the current research, for T1, M = 2.26 and SD = 0.84, and for T2, M = 2.29 and SD = 0.82.

Income. Level of income was measured using a 5-point Likert-type scale (anchored by very low and very high). 15.35% respondents reported a low or very low income, 72.62% a medium income, and 12.02% a high or very high income.

Confirmatory factor analyses (CFAs) and validity estimates. In order to test the validity and further reliability of the measures, we employed CFAs in AMOS software (v. 22) and calculated validity estimates. The findings are depicted in Appendix B. As can be seen in the appendix, the fit for the CFA model is absolute (Byrne 2010). In addition, the validity estimates were above satisfactory (Hu and Bentler, 1999), with the exception of the AVE statistic in the Workaholism measure, for both T1 and T2, which was below .35. (Note: The AVE is often considered too strict (Malhotra and Dash, 2011); nevertheless, while the validity estimates are good, we feel the necessity to point out the possibility of a methodological limitation.)

3. Results

First, we employed Harman's Single-Factor Test in order to account for common-method bias (Podsakoff, MacKenzie and Podsakoff, 2003). The single-factor explained only 18.12% (in T1) and 20.01% (in T2) of the variance, and thus common-method bias was ruled out and was of no methodological concern.

In order to test the research model, we employed mainly SEM analyses with AMOS software package (v. 22). Bivariate Pearson correlations were also calculated, as seen in Table 1. The path diagrams for T1 and T2 are presented in Figures 2 and 3, accordingly, and the models' fit indices are depicted in Table 2. In addition, the coefficients of the SEM analyses are depicted in Table 3.

Table no. 1. Correlation matrix showing T1 correlations below the diagonal and T2 above the diagonal, and reliabilities are bold (in parenthesis on the diagonal [T1/T2])

	Work load	WE	Workaholism	HWI-TC	HWI-WI	Burnout
Work load	**(.87/.87)**	.06	.54**	.42**	.20**	.30**
WE	.05	**(.88/.89)**	.22**	.27**	.54**	-.53**
Workaholism	.51**	.23**	**(.80/.82)**	.54**	.37**	.17**
HWI-TC	.34**	.27**	.42**	**(.82/.87)**	.35**	.04
HWI-WI	.24**	.45**	.36**	.37**	**(.91/.92)**	-.36**
Burnout	.27**	-.56**	.11*	-.02	-.28**	**(.82/.84)**

Notes: $N = 388$. $^{*}p < .05$, $^{**}p < .01$. WE = Work Engagement. HWI-TC = Time Commitment of the Heavy Work Investment scale. HWI-WI = Work Intensity of the Heavy Work Investment scale.

As can be seen in Table no 1, most of the correlations are statistically significant and of adequate strength. However, two peculiar correlations emerged (a) between WE and burnout and (b) between HWI-WI and burnout, as they are both negative. That would leave us to conclude that the more a worker is intensely engaged and invests heavily in work (that is with respect to effort, rather than time), the less burnout the worker would experience. We address this issue in the discussion section.

Regardless, we proceeded with SEM as shown in Figures 2 and 3, and Tables 2 and 3. In addition, we also controlled for the effects of: (1) general work tenure, (2) managerial levels, (3) de-facto weekly working hours, and (4) the frequency to which the subject can "relax and wind down" (i.e., recovery time). The uncontrolled and controlled coefficients are presented in Table 3.

Table no. 2. Fit indices for models at T1 and T2, with and without control variables

Model	χ^2 (df)	χ^2/df	SRMR	CFI	GFI	NFI	ECVI	RMSEA (90% CI)
T1-no	0.26 (2)[1]	0.31	.01	1.00	1.00	1.00	0.13	.00 (.00-.05)[2]
T1-yes	0.26 (2)[1]	0.13	.01	1.00	1.00	1.00	0.13	.00 (.00-.05)[2]
T2-no	0.62 (2)[3]	0.13	.01	1.00	1.00	1.00	0.14	.00 (.00-.07)[4]
T2-yes	0.62 (2)[5]	0.13	.01	1.00	1.00	1.00	0.14	.00 (.00-.07)[6]

Notes: no = model *not* controlling for variables effects. Yes = model controlling for variables effects. (1) $p = .879$, (2) *p-close* = .951, (3) $p = .620$, (4) *p-close* = .884.

Table no. 3. SEM standardized coefficients for TI and T2, both for uncontrolled and controlled

IV	*MV* – HWI.TC		*MV* – HWI.WI		*DV* – burnout	
	No	***Yes***	***No***	***Yes***	***No***	***Yes***
T1						
Workaholism	.29**	.20**	.22**	.19**	.14**	.10*
WE	.18**	.17**	.40**	.35**	-.53**	-.46**
Work load	.18*	.12*	.10*	.06	.25**	.28**
Income	.06	.14	.001	.00	-.11**	-.12**
***MV* – HWI.TC**	-	-	-	-	.04	.06
***MV* – HWI.WI**	-	-	-	-	-.16**	-.14**
T2						
Workaholism	.40**	.38**	.22**	.23**	.20**	.16**
WE	.16**	.12**	.50**	.45**	-.45**	-.43**
Work load	.20**	.12*	.05	.01	.24**	.22**
Income	.04	.01	-.06	.07	-.10*	-.08*
***MV* – HWI.TC**	-	-	-	-	.04	.07
***MV* – HWI.WI**	-	-	-	-	-.25**	-.23**

Notes: $N = 388$. $^{*}p < .05$, $^{**}p < .01$. IV = independent variable. MV = mediator variable. DV = dependent variable. WE = Work Engagement. HWI-TC = Time Commitment of the Heavy Work Investment scale. HWI-WI = Work Intensity of the Heavy Work Investment scale. No = model *not* controlling for variables effects. Yes = model controlling for variables effects.

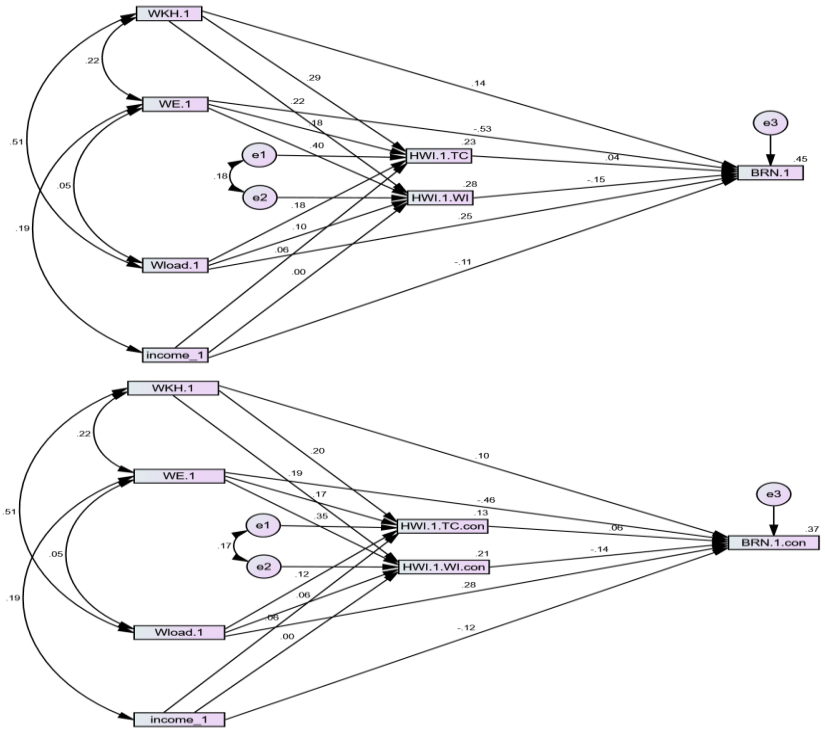


Figure no. 2. Mediation model at T1 (upper model is uncontrolled for confounding effects)

Table no. 4. SEM bootstrapping confidence intervals (95% CI, 5,000 resamples) for the standardized indirect effects for uncontrolled and (controlled) confounding effects

Path	Lower bound	Upper bound	Sig.
T1			
Workaholism → HWI-WI → Burnout	-.05 (-.04)	.01 (.01)	.193 (.283)
Work Engagement → HWI-WI → Burnout[1]	-.09 (-.07)	-.02 (-.01)	.005 (.028)
Work load → HWI-WI → Burnout	-.03 (-.02)	.01 (.02)	.437 (.850)
T2			
Workaholism → HWI-WI → Burnout	-.09 (-.07)	.01 (.02)	.146 (.302)
Work Engagement → HWI-WI → Burnout[2]	-.17 (-.14)	-.07 (-.05)	.000 (.000)

Notes: $^{*}p < .05$, $^{**}p < .01$. (1) κ^2 (95% CI bootstrapping, 5,000 resamples) = .01 (.00-.05), (2) κ^2 (95% CI bootstrapping, 5,000 resamples) = .06 (.00-.11).

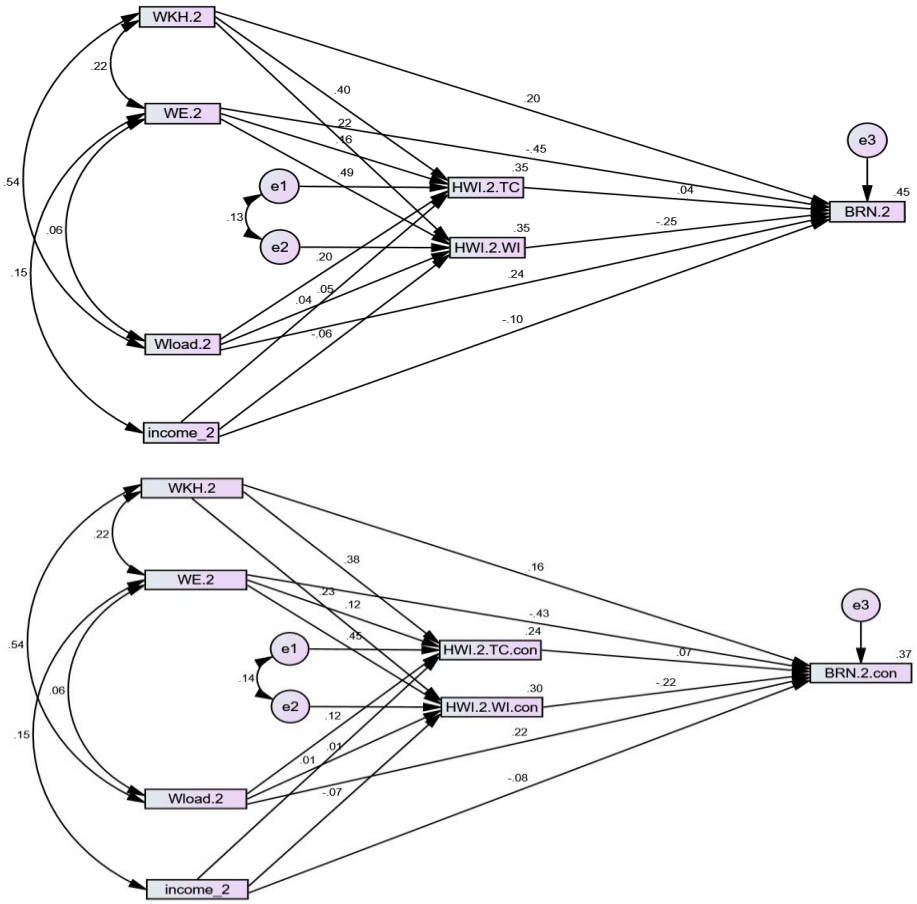


Figure no. 3. Mediation model at T2 (upper model is uncontrolled for confounding effects)

As can be seen in Table 2, the models have absolute fit (Byrne, 2010) at both T1 and T2, uncontrolled and controlled, and also no changes are found between the controlled/uncontrolled models. Furthermore, as can be seen in Table 3, the differences between controlled/uncontrolled models are very minor and do not confound the findings in any capacity.

However, in terms of mediation effects, not all the mediation conditions were met in each model. These were, respectively: (1) significant effect of the predictor on the criterion, (2) significant effect of the predictor on the mediator, (3) significant effect of the mediator on the criterion, and (4) the direct effect (path c') should be less than the total effect (path c) (for further reading see: Baron and Kenny, 1986; Frazier, Tix and Barron, 2004; Hayes, 2013). Therefore, when testing for the significance of the mediation effect via bootstrapping (see: Preacher and Hayes, 2008), we chose only the paths which did, in fact, meet all of the aforementioned mediation conditions.

We also employed Preacher and Kelly's (2011) relatively new method for gauging the effect size (kappa-squared = κ^2; Preacher and Kelly, 2011) of the indirect mediation effect, with a confidence interval bootstrapping, using the R software package (v. 3.4.1). The findings are presented in Table 4. Although the effect sizes are relatively small, they are statistically significant. However, as can be seen in this table, the only significant mediation effect is via the path: work engagement → work intensity (as a part of heavy work investment) → burnout. This means that the relationship between work engagement and burnout is partially mediated by the work intensity.

Further analyses

As the surveys employed in this study were delivered at two separate times (T1 and T2), we also performed a "delta" model test to gauge if there was any difference in the models between the two-time stamps. This strategy was also adopted in order to check the possibility of encompassing the totality of all the variables from the two independent assessments (T1 and T2) into one comprehensive model, while preserving a parsimonious approach. The delta (Δ) model was achieved by subtracting T1 data from T2 data (Δ = T2 – T1). Then, we conducted SEM again with the Δ-data. The findings are presented in Appendix C.

An inspection of the results of this procedure indicated that there was no statistical need to control for confounding effects, as we did initially for the Results section; thus the model, in effect, was not controlling for the demographic variables mentioned earlier. As can be seen in, and deduced from, the appendix, besides one instance, there are actually no meaningful differences between the T1, T2, and the Δ models. The one exception is that in the delta models, the mediation effect via the path: workload → work intensity (as a part of heavy work investment) → burnout is significant, as opposed to the T1 and T2 models. This can thus be interpreted to mean that the effects of work engagement and workload on burnout are partially mediated by the work intensity.

Discussion

In the current paper, we proposed and tested a model in which the two dimensions of Heavy Work Investment, time commitment and work effort, acted as mediators between internal/ situational antecedents (workaholism, work engagement, workload, and income) and burnout, as the outcome. To this end, 388 Romanian employees were surveyed at two

time periods (T1 and T2), with a time gap of six-weeks between the two data collections. Furthermore, we employed a repeated measure design to test if the effect of these HWI antecedents on burnout – as mediated by time commitment or work intensity – was stable over time.

Work intensity (effort) and burnout. Structural equation modelling analysis revealed, somewhat unexpectedly, that at both T1 and T2, the work intensity dimension of HWI (effort) partially mediates the relationship between work engagement and burnout. For it appears counterintuitive that higher investment of effort was associated with decreased levels of burnout, since the theoretical discussion (above) would lead us to believe that heavy investment of effort may deplete resources and lead to eventual burnout (Hobfoll, 1989, 2001; Leiter and Maslach, 2003). However, following Shamai (2015), one plausible and alternative approach to account for this inverse relationship between work investment and burnout might be that investment of effort fills employees with flow as well as meaning, positive feelings and significant experiences (e.g. Dweck, 2000) that counteract the lack of resources and the subjective tendencies to burnout.

Work engagement and workload. Of all the tested antecedents, only work engagement and workload proved to have significant effects on burnout. Income did not have a direct effect on heavy work investment, nor did it have an indirect effect on burnout. Workaholism, although significantly correlated with burnout, did not have significant effects on burnout in SEM analysis.

Work engagement. Work engagement was previously identified as a global internal antecedent of HWI (Schaufeli et al., 2002; Taris, Van Beek and Schaufeli, 2015). However, our results, indicating that the work intensity dimension of HWI (effort) partially mediates the relationship between work engagement and burnout, suggest that its effect on burnout is better understood when employees' investment in their work is broken down into the two constructs of work intensity (effort) and time commitment (time), especially when employees view their efforts as means of achieving success and advancement (Naylor, et al., 1980; Snir and Harpaz (2012).

Workload. The effects of workload on burnout are also partially mediated by work intensity, which means that heavy investment in work could act as a buffer between employees' adverse perceptions of workload and the negative consequences of job demands, such as emotional exhaustion or depersonalization.

The Romanian context. These results, as they refer to HWI, align with the findings of previous studies and surveys on work investment undertaken in Romania and other Central and East European countries. Despite the scarcity of literature in this particular area, several studies in CEE countries indicate that employees (in these countries) tend to invest heavily at work. The widespread incidence of high workload in CEE countries is supported by Taipale and colleagues' (2011) comparison of job demands in eight European countries. Incidence was particularly high in Bulgaria and Hungary (on par with Germany, Sweden and the UK) and the high workload proved to be a strong predictor of burnout (Schaufeli and Bakker 2004). Similarly, in a localized study of Romanian medical professionals, Bria and colleagues (2013) found that high workload (operationalized as high cognitive and high emotional job demands and more than 43 working hours a week) is an antecedent of burnout. Notably, whereas Bria et al. (2013) tested workload as a direct predictor of burnout, in our study workload effects on burnout are partially mediated by heavy work investment.

One possible explanation of the significant effect of workload on burnout in Romania can be adduced to the continuously growing intensity of work in CEE countries (Eurofound Survey, 2016) which affects employees' perception of their time and work investment at work. Of interest, the high level of overtime that Romanian employees contribute to their jobs, as revealed by the Epson survey (2017), is justified by the insufficient official time allocated to employees to enable them to perform all their assigned tasks, as well as by the time and energy workers have to put in to additional administrative tasks. This line of explanation tallies with the Job Demands – Resource model (Bakker and Demerouti, 2007).

Within the Romanian context, previous studies relating to high levels of workaholism as an antecedent of burnout have indicated that workaholic Romanian employees exhibit several, specific socio-demographic characteristics (Butucescu and Uscătescu, 2013). For instance, based on data collected with the Romanian version of DUWAS (Dutch Work Addiction Scale), the authors found that employees in the private sector are more likely to be workaholics than those working in the public sector. In addition, employees with low incomes were also prone to workaholism, as were those with dysfunctional families. Notably, in our study, neither workaholism nor income showed indirect significant effects on burnout.

Time Interval. There were no meaningful differences between the tested models T1 and T2, or between these two models and the delta model; that is to say that the mediation effect of work intensity between work engagement and burnout did not change significantly over time. Nonetheless, in T2, the mediation effect on burnout, via the work intensity path (as a part of heavy work investment), is significant. One possible explanation might rest in the fact that at T2 there were more people who worked in order to satisfy basic financial needs (40.8%) than at T1 (36.9%) even when there were no more demands via contracts at T2 (44.3%) than at T1 (44.8%). One could then posit once again that the combination of a dispositional antecedent (stressful financial needs) and a situational antecedent, (heavy, time-based job requirements/workload), are together sufficiently demanding as to deplete the employees' resources and their control of HWI, thus to tip the employees' reserves of strength and resolve. These circumstances are substantially "real and clear" and "in the faces" of the employees; they are objective dimensions of reality, neither subjective perceptions nor the objects of random or arbitrary demands. Thus the employees invest much effort to fulfill these demands, which eventually drains their energy and their resources.

Another possible explanation of the differential results at T1 and T2 is that between T1 and T2 a "learning effect" occurred, such that respondents at T2, now familiar with the survey, have learned to "trust" the procedure and are therefore more prone to answer honestly regarding personal issues, especially with respect to divulging their financial needs and degree of debt.

Notwithstanding the above comment and Harpaz and Snir's (2012) observations on the deleterious effects of financial needs on employees' health (see above), the overall lack of correlation between income (financial need) and heavy work investment or burnout is convergent with previous findings of which Snir's (2018) longitudinal research is perhaps the most significant and recent instance. However, when the level of financial need is indeed excessive (as above) and employees are subject to a large number of debts, then a positive association does exist between HWI and burnout (Snir and Zohar, 2008). We might then also posit that at T2 in our study, the financial stresses were such that even

within a time interval of six weeks, a significantly larger number of our respondents were beginning to feel the weight of their financial pressures and debts and the heavy requirements of their jobs.

These observations might thus lead us to consider with much weight Rabenu and Aharoni-Goldenberg's recent suggestion (in press) that HWI, in terms of degree of effort invested, be investigated more rigorously at three basic levels, namely, excessive work investment (EWI), moderate work investment (MWI), and low work investment (LWI) (see above). In tandem, one might similarly argue for the breaking down of the constructs financial need and workload into excessive, moderate and low (levels), so that the relationships between workload, financial need and effort (and their associations with burnout and other outcomes), be better teased out.

Certainly, we have given weight to the effects of excessive financial stresses in combination with high workload, even though our results and the literature indicated no specific relationship of finance to burnout. Presumably, these finer distinctions would more readily facilitate the validation of the suggestion that excessive financial needs in combination with heavy workload is what pushes the employee to invest more intensely in the job and to eventual burnout.

Contribution to the Literature

The findings of this study add to the literature in several ways. First, a new theoretical model – Snir and Harpaz (2012) that links relevant new factors in organizational research – has been developed and tested. Second, the mediation role on burnout of a relatively new and under-investigated construct – heavy work investment (HWI) – has been found in relation to two very specific factors (work engagement and workload), thus opening new directions for further research and providing important outputs for organizational practice.

The findings are consistent with previous theoretical developments. As Snir and Harpaz (2012) noted, burnout tends to be somewhat attenuated among heavy work investors of the work-devoted subtype. Reviewing the current discussion, however, we have been able to discern that the relationship between HWI and burnout becomes consistent and more clearly delineated when the subtypes of HWI (time and effort) are differentiated, as our findings suggest.

Limitations

Our study is not without its limitations. The most important methodological question relates to the limited number of antecedent variables of heavy work investment that proved to have significant effects. If previous studies discovered multiple internal and external predictors of HWI, as presented in Snir and Harpaz's review (2012), notably, in the current study, workaholism, working hours and income (notwithstanding our comments regarding excessive financial stress) did not have significant effects on HWI.

Suggestions for future research

As previous studies have shown, various types of HWI lead to diverse individual and organizational outcomes (Houlfort et al., 2013). Future research might thus further investigate shifts in respondents' work habits, in order to develop and improve the current model. We therefore align with Snir and Harpaz's (2012) recommendation to conduct further studies on heavy work investment that include various, additional types of

antecedents and work outcomes, beyond those already studied. Thus, regarding external predictors, clearly the model would benefit from increased attention as to how HWI acts in various organizational settings (based on variables such as type of work, type of demands, and resources balance), as well as work settings that reflect variations in work culture and management, such as type of industry, public vs. private organization, team-work vs. authoritarian management, and so on.

Alternative internal predictors might include individual attributes or work habits such as avoidance of intimacy or job satisfaction. And to reiterate, the research will continue to benefit from a clear distinction being drawn between heavy work investors in terms of time and effort – and possibly other sub-types of psychological investment, such as emotional or competence investment.

We drew attention to the possible advantages (in future investigations) of delineating more specifically between levels of work intensity, financial stress and workload and of factoring in combinations with factors or clusters of antecedents at appropriate levels, in order to better identify the critical levels that lead to employees' lack of control of their HWI and that mark the tipping of the scales of their endurance towards eventual burnout.

We also suggest examining our model in additional cultures that demonstrate different levels or degrees of HWI. Besides providing a platform for further attempts to replicate the model, cross-cultural research will also provide useful data on cultural differences between nations with respect to the model that are particularly germane for multi-cultural organizations that work overseas and workplaces that employ workers from various national and cultural backgrounds.

Additionally, the time gap between T1 and T2 could be better extended to one year in order to enable researchers to examine burnout effects more extensively, especially with respect to the cumulative effects of financial burdens and the consequent stress perceived by employees. This particular direction of inquiry might, indeed, better tease out the dichotomy of the effects of HWI investment of effort on burnout (positive – enjoyment, increased "flow", significance and meaning vs. negative – over-commitment, insufficient resources and control).

In passing, we have observed the role of "type of work" (contractual, time-bound vs. ongoing, non-time bound) and availability of alternative resources as possible variables that would also benefit from a deeper investigation.

Practical implications

The results of the current study could be useful for managers and professionals interested in designing programs to attenuate burnout among employees (see: Awa, Plaumann and Walter, 2010 for a review on burnout prevention programs). Specifically, we observed that organizations tend to treat long work hours, per se, as an indication of investment, but our observations would demonstrate that the more obvious cause of burnout is the overall low level of effort expended by the employees. Certainly, it is easier to examine time expended than effort invested (there is a timeclock, but no "effort-clock"). A recent paper by Snir (2018) annunciates this point very convincingly by drawing attention to the relative failure of managerial interventions based on working time. In the most general terms we would conclude that management pay more attention to effort in the future, since HWI is a key reason for depleted resources and eventual burnout.

References

Awa, W.L., Plaumann, M. and Walter, U., 2010. Burnout prevention: A review of intervention programs. *Patient Education and Counselling*, 78, pp. 184-190.

Bakker, A.B. and Demerouti, E., 2007. The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology*, 22(3), pp. 309-328.

Bakker, A.B., Le Blanc, P.M.and Schaufeli, W.B., 2005. Burnout contagion among intensive care nurses. *Journal of Advanced Nursing*, 51(3), pp. 276-287.

Barnard, C., Deakin, S. and Hobbs, R., 2004. Opting out of the 48-hour week – employer necessity or individual choice? An empirical study of the operation of article 18 (1) (B) of the Working Time Directive in the UK. *Industrial Law Journal*, 32(4), pp. 223-252.

Baron, R.M. and 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, pp. 1173-1182.

Borgulya, A. and Hahn, J., 2008. Work related values and attitudes in Central and Eastern Europe. *Journal for East European Management Studies*, 13(3), pp. 216-238.

Brown, S.P. and Leigh, T.W., 1996. A new look at psychological climate and its relationship to job involvement, effort, and performance. *Journal of Applied Psychology*, 81(4), pp. 358-368.

Burke, R.J. and Matthiesen, S., 2004. Workaholism among Norwegian journalists: Antecedents and consequences. *Stress and Health*, 20(5), pp. 301-308.

Butucescu, A. and Uscătescu, L., 2013. What does the Romanian workaholic look like? A first glimpse into the links between workaholism and employee characteristics; a validation attempt of DUWAS scale. *Human Resources Psychology/Psihologia Resurselor Umane*, 11(1), pp. 17-32.

Byrne, B.M., 2010. *Structural equation modelling with Amos: Basic concepts, applications, and programming. 2nd edition*. New York, NY: Taylor & Francis Group.

Caruso, C.C., 2006. Possible broad impacts of long work hours. *Industrial Health*, 44(4), pp. 531-536.

Caruso, C.C., 2014. Negative impacts of shiftwork and long work hours. *Rehabilitation Nursing*, 39(1), pp. 16-25.

Crawford, E.R., LePine, J.A. and Rich, B.L., 2010. Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *Journal of Applied Psychology*, 95, pp. 834-848.

Dweck, C., 2000. *Self-theories: Their role in motivation, personality, and development*. New-York, NY: Psychology Press (Taylor & Francis Group).

Epson, 2017. *Six out of ten Romanian employees working overtime*, [online] Available at: <https://www.epson.ro/insights/article/studiu-sase-din-zece-angajati-din-companiile-romanesti-lucreaza-peste-program> [Accessed 15 September 2018].

Eurofound, 2016. *Sixth European Working Conditions Survey – Overview report*. Luxembourg: Publications Office of the European Union.

Eurostat, 2016. *Average number of usual weekly hours of work in main job*. Available at: <http://ec.europa.eu/eurostat/web/gdp-and-beyond/quality-of-life/average-number-of-usual-weekly-hours-of-work-in-main-job> [Accessed 12 July 2018].

Festing, M. and Sahakiants, I., 2010. Compensation practices in Central and Eastern European EU member states – an analytical framework based on institutional perspectives, path dependencies, and efficiency considerations. *Thunderbird International Business Review*, 52, pp. 203-216.

Fischer, R., 2008. Rewarding seniority: Exploring cultural and organizational predictors of seniority allocations. *Journal of Social Psychology*, 148, pp. 167-186.

Frazier, P.A., Tix, A.P. and Barron, K.E., 2004. Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, 51, pp. 115-134.

Green, F., 2008. Work effort and worker well-being in the age of affluence. In: Burke, Cooper, (Eds.): *The long work hours culture: Causes, consequences and choices*, UK: Emerald Group Publishing, pp. 115-135.

Harpaz, I. and Snir, R., 2015. *Heavy work investment, its nature, sources and future direction. Applied Psychology Series*. New York: Routledge.

Harpaz, I. and Snir, R., 2016. Heavy-work investment and its impact on well-being and health: Preliminary results. *The Study of Organizations and Human Resource Management Quarterly*, 1, pp. 6-24.

Hayes, A.F., 2013. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.

Hewlett, S.A. and Luce, C.B., 2006. Extreme jobs –The dangerous allure of the 70-hour workweek. *Harvard Business Review*, 84(12), pp. 49-59.

Hobfoll, S.E., 1989. Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, pp. 513-524.

Hu, L.T. and Bentler, P.M., 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6, pp. 1-55.

James, L.R., Mulaik, S.A. and Brett, J.M., 1982. *Conditions for confirmatory analysis and causal inference*. San Francisco: Sage.

Kalicińska, M., Chylińska, J. and Wilczek-Różyczka, E., 2012. Professional burnout and social support in the workplace among hospice nurses and midwives in Poland. *International Journal of Nursing Practice*, 18(6), pp. 595-603.

Kazlauskaite, R., Bučiuniene, I., Poor, J., Karoly, Z., Alas, R., Kohont, A. and Slavitz, A., 2013. Human resource management in the Central and Eastern European Region. In: Parry, E., Stavrou, E. and Lazarova, M. (eds.): *Global Trends in Human Resource Management*, Hampshire: Palgrave Macmillan, pp. 103-121.

Kriauciunas, A. and Kale, P., 2006. The impact of socialist imprinting and search on resource change: A study of firms in Lithuania. *Strategic Management Journal*, 27, pp. 659-679.

Lee, S., McCann, D. and Messenger, J.C., 2007. *Working time around the world: Trends in working hours, laws, and policies in a global comparative perspective*. London: Routledge.

Malhotra, N.K. and Dash, S., 2011. *Marketing research: An applied orientation*. London, UK: Pearson Publishing.

Maslach, C., 1982. *Burnout: The Cost of Caring*. New York: Prentice Hall.

Maslach, C., 2003. Job burnout: New directions in research and intervention. *Current Directions in Psychological Science*, 12, pp. 189-192.

Meijman, T.F. and Mulder, G., 1998. Psychological aspects of workload. In: Drenth, P.J.D., Thierry, H., de Wolff, C.J. (Eds.), *Handbook of work and Organizational Psychology*, 2nd edition, volume 2, UK: Psychology Press., pp. 5-33.

Melamed, S., Shirom, A., Toker, S. and Shapira, I., 2006. Burnout and risk of type 2 diabetes: A prospective study of apparently healthy employed persons. *Psychosomatic Medicine*, 68(6), pp. 863-869.

Naylor, J.C., Pritchard, R.D. and Ilgen, D.R., 1980. *A theory of behavior in organizations*. New York: Academic Press.

OECD, 2014. *Organisation for Economic Co-Operation and Development: Better Life Index*, [online] Available at: <http://www.oecdbetterlifeindex.org/countries/Israel/> [Accessed 18 June 2018].

Ogresta, J., Rusac, S. and Zorec, L., 2008. Relation between burnout syndrome and job satisfaction among mental health workers. *Croatian Medical Journal*, 49, pp. 364-374.

Oren, L. and Littman-Ovadia, H., 2013. Does equity sensitivity moderate the relationship between effort-reward imbalance and burnout? *Anxiety, Stress & Coping*, 26(6), pp. 643-658.

Peterson, U., Demerouti, E., Bergstrom, G., Asberg, M. and Nygren A., 2008. Work characteristics and sickness absence in burnout and non-burnout groups: A study of Swedish health care workers. *International Journal of Stress Management*, 15(2), pp. 153-172.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P., 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88, pp. 879-903.

Preacher, K.J. and Hayes, A.F., 2008. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, pp. 879-891.

Preacher, K.J. and Kelley, K., 2011. Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods*, 16, pp. 93-115.

Rabenu, E. and Aharoni-Goldenberg, S., in press. Understanding the relationship between overtime and burnout. *International Studies of Management and Organization* (ISMO), 47(4), WINTER 2017.

Rabenu, E., Shkoler, O. and Tziner, A., in press. The dimensionality of workaholism and its relations with internal and external factors. *Journal of Work and Organizational Psychology*.

Richter, A., Kostova, P., Baur, X. and Wegner, R., 2014. Less Work: More Burnout? A comparison of working conditions and the risk of burnout by German physicians before and after the implementation of the EU working time directive. *International Archives of Occupational and Environmental Health*, 87, pp. 205–215.

Schaufeli, W.B., Leiter, M.P. and Maslach, C., 2009. Burnout: 35 years of research and practice. *Career Development International*, 14(3), pp. 204-220.

Schaufeli, W.B., Leiter, M. P., Maslach, C. and Jackson, S.E., 1996. The Maslach Burnout Inventory-General Survey, in: Maslac, C., Jackson, S.E. and Leiter, M.P. (Eds.): *Maslach Burnout Inventory*, Palo Alto: Consulting Psychologists Press.

Schaufeli, W.B., Salanova, M., González-Romá, V. and Bakker, A.B., 2002. The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), pp. 71-92.

Schaufeli, W.B., Shimazu, A. and Taris, T.W., 2009. Being driven to work excessively hard: The evaluation of a two-factor measures of workaholism in the Netherlands and Japan. *Cross-Cultural Research*, 43(4), pp. 320-348.

Schaufeli, W.B., Taris, T.W and van Rhenen, W., 2008. Workaholism, burnout and engagement: Three of a kind or three different kinds of employee well-being. *Applied Psychology: An International Review*, 57(2), pp. 173-203.

Shamai, O., 2015. The relationship between heavy work investment and employees' happiness. In: Harpaz, I. and Snir, R. (Eds.): *Heavy Work Investment: Its nature, sources, outcomes, and future directions*, New York: Taylor & Francis/Routledge, pp. 204-222.

Shamai, O., Harpaz, I. and Snir, R., 2012. Would you be happier if you worked harder? A comparison of life satisfaction in workers' types. In: *Academy of Management Meeting*, Boston, Massachusetts, USA, 6-7 August.

Shirom, A., Nirel, N. and Vinokur, A.D., 2010. Work hours and caseload as predictors of physician burnout: The mediating effects by perceived workload and by autonomy. *Applied Psychology*, 59(4), pp. 539-565.

Shirom, A., Toker, S., Melamed, S., Berliner, S. and Shapira, I., 2013. Burnout and vigour as predictors of the incidence of hyperlipidaemia among healthy employees. *Applied Psychology: Health and Well-Being*, 5(1), pp. 79-98.

Snir, R., 2018. A longitudinal study of heavy time investment in work. *International Journal of Organizational Analysis*, 26(1), pp. 153-170.

Snir, R. and Harpaz, I., 2012. Beyond workaholism: Towards a general model of heavy work investment. *Human Resource Management Review*, 22(3), pp. 232-243.

Snir, R. and Harpaz, I., 2013. The challenge of heavy work investment. In: Burke, R., Fox, S. and Cooper, C. (Eds.): *Human Frailties: Wrong Turns on the Road to Success*, Farnham: Gower Publishing, pp. 165-179.

Snir, R. and Zohar, D., 2008. Workaholism as discretionary time investment at work: An experience-sampling study. *Applied Psychology: An International Review*, 57(1), pp. 109-127.

Spector, P.E. and Jex, S.M., 1998. Development of four self-report measures of job stressors and strain: interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology*, 3(4), pp. 356-367.

Stimpfel, A.W., Sloane, D.M. and Aiken, L.H., 2012. The longer the shifts for hospital nurses, the higher the levels of burnout and patient dissatisfaction. *Health Affairs*, 31(11), pp. 2501-2509.

Taipale, S., Selander, K., Anttila, T. and Nätti, J., 2011. Work engagement in eight European countries: The role of job demands, autonomy, and social support. *International Journal of Sociology and Social Policy*, 31(7/8), pp. 486-504.

Taris, T.W., Van Beek, I. and Schaufeli, W.B., 2015. The Beauty versus the Beast: On the motives of engaged and workaholic employees. In Harpaz, I. and Snir, R. (Eds.): *Heavy Work Investment: Its Nature, Sources, Outcomes, and Future Directions*, New York: Taylor and Francis/Routledge, pp. 121-138.

Toker, S. and Biron, M., 2012. Job burnout and depression: Unraveling their temporal relationship and considering the role of physical activity. *Journal of Applied Psychology*, 97(3), pp. 699-710.

Toker, S., Melamed, S., Berliner, S., Zeltser, D. and Shapira, I., 2012. Burnout and risk of coronary heart disease: A prospective study of 8838 employees. *Psychosomatic Medicine*, 74(8), pp. 840-847.

Tourigny, L., Baba, V.V., Han, J. and Wang, X., 2013. Emotional exhaustion and job performance: The mediating role of organizational commitment. *The International Journal of Human Resource Management*, 24(3), pp. 514-532.

Van Beek, I., Hu, Q., Schaufeli, W.B., Taris, T.W. and Schreurs, B.H., 2012. For fun, love, or money: What drives workaholic, engaged, and burned-out employees at work? *Applied Psychology*, 61(1), pp. 30-55.

Van Der Hulst, M. and Geurts, S., 2001. Associations between overtime and psychological health in high and low reward jobs. *Work and Stress*, 15(3), pp. 227-240.

Weiner, B., 1985. An attributional theory of achievement motivation and motion. *Psychological Review*, 92, pp. 548-573.

Appendix A: Heavy Work Investment and Burnout in Central and Eastern Europe

The thrust of this study was focused on subjects in Central and Eastern Europe. In order to better understand that context, we shall describe some of the pivotal factors extant and operating in the workplace in those regions in the current era during which this research study took place.

Perhaps one of the greatest changes to occur in recent times in Central and Eastern European (CEE) countries has been the transition from centrally planned to market

economies; correspondingly, in the workplace, there have been significant changes in work behaviour and work values (Borgulya and Hahn, 2008). Most companies, whether multinational concerns or small domestic firms, have found themselves facing an ever-growing dependency on international operations, as well as increased transferability of organizational practices, with respect to human resources management, leadership, and attitude towards work (Kazlauskaite et al., 2013). Nevertheless, very possibly because of the effects of "socialist imprinting", there still exist significant and large disparities between ex-communist and Western countries across Europe (Kriauciunas and Kale, 2006). This manifests itself in the convergence-divergence outcome of globalization (Kazlauskaite et al., 2013) and in path-dependency, drawn upon the country-specific history of management and work behaviour (Festing and Sahakiants, 2010).

As noted, there is much recent and comprehensive literature in the field of CEE management and organizational studies, yet little insight has been proffered in the area of the association between heavy work investment predictors and burnout. However, taking a look at the European Union statistics related to workloads in industry, Eurofound (2016) noted disparities in terms of income, working time and workload. In addition, a work-intensity index was composed to measure work demands in EU countries, based on various indicators, namely, working at speed and tight deadlines, time pressure to do the job, disruptive interruptions, pace determinants, interdependency, and emotional demands.

Based on this data, Eurofound (2016) brought to light that there has been a slight re-intensification of work since 2010, with various CEE countries scoring both under and above the EU-28 average. The same study indicated that employees in most CEE countries reported high working hours, with Latvians and Estonians, however, scoring below the European average.

Some data on external predictors of HWI could be found in the surveys (provided mainly by the European Commission), yet few studies addressed this topic from an organizational perspective. Furthermore, regarding internal predictors of HWI, such as work engagement and workaholism, the literature is also rather scarce. Nevertheless, in an overall study in the service industry, conducted by Taipale, Selander and Anttila (2011), the researchers found that the CEE countries included in the investigation, namely Bulgaria and Hungary, recorded a lower level of work engagement compared to the Nordic countries (Sweden and Finland), but a higher level of work engagement than in the UK. Regarding studies of burnout, Schaufeli, Leiter and Maslach's (2009) review (covering North America, Western Europe, Asia, the Middle East, Latin America, Australia, Africa, China, and the Indian subcontinent) indicated that interest in the topic tends to correspond with the economic development of the countries. However, few studies have addressed the topic in CEE countries; of these the majority focused on healthcare professionals (e.g., Ogresta, Rusac and Zorec, 2008; Kalicińska, Chylińska and Wilczek-Różyczka, 2012). Finally, regarding Romania, the country involved in the current study, the few studies that have touched on the relationship between HWI and burnout focused mainly on assessing psychometric properties of various scales (see, for example, Butucescu and Uscățescu, 2013, validation of DUWAS – Dutch Workaholism Scale). Consequent to this relative dearth of studies and given the dramatic political, economic, and social transformation in the CEE region over the last 25 years, there is clearly a need to pay special attention to factors presaging and predicting burnout in a changing organizational environment.

Appendix B: CFA analyses and validity statistics for the research's measures

Table no. I: **Model fit indices for the measures used in the research, at TI and T2**

Model	χ^2(df)	χ^2/df	SRMR	CFI	GFI	NFI	ECVI	RMSEA (90% CI)
W.load.1	9.97 (7)[1]	1.43	.01	.99	.99	.99	0.10	.03 (.00-.08)[2]
W.load.2	3.83 (5)[3]	0.78	.02	..00	.99	.99	0.09	.00 (.00-.06)[4]
WE.1	11.01 (11)[5]	0.14	.02	..00	.99	.99	0.12	.00 (.00-.05)[6]
WE.2	15.28 (8)[7]	1.91	.02	.99	.99	.99	0.14	.05 (.00-.09)[8]
WRKH.1	11.04 (8)[9]	1.38	.02	.99	.99	.98	0.13	.03 (.00-.07)[10]
WRKH.2	11.80 (10)[11]	1.18	.02	.99	.99	.98	0.12	.02 (.00-.06)[12]
HWI.1	33.13 (23)[13]	1.44	.03	.99	.98	.98	0.20	.03 (.00-.06)[14]
HWI.2	27.47 (24)[15]	1.15	.02	.99	.98	.98	0.18	.02 (.00-.05)[16]
Burnout.1	6.34 (6)[17]	1.06	.01	..00	.99	.99	0.09	.01 (.00-.07)[18]
Burnout.2	12.96 (7)[19]	0.14	.02	.99	.98	.98	0.11	.05 (.00-.09)[20]

Notes: W.load = workload. WE = work engagement. WRKH = workaholism. HWI = heavy-work investment (work intensity + time commitment). The number '1' = Time 1. The number '2' = Time 2. (1) p = .190, (2) *p-close* = .695, (3) p = .574, (4) *p-close* = .893, (5) p = .443, (6) *p-close* = .931, (7) p = .054, (8) *p-close* = .478, (9) p = .200, (10) *p-close* = .735. (11) p = .298, (12) *p-close* = .857, (13) p = .079, (14) *p-close* = .859, (15) p = .283, (16) *p-close* = .969, (17) p = .386, (18) *p-close* = .825, (19) p = .073, (20) *p-close* = .498.

Table no. II: **Validity indices for the measures used in the research, at T1 and T2**

Measure	CR	AVE	MaxR(H)	MSV
Workload.1	.87	.53	.88	-
Workload.2	.87	.53	.88	-
WE.1	.89	.55	.90	-
WE.2	.90	.58	.91	-
WRKH.1	.79	**.35**	.80	-
WRKH.2	.79	**.35**	.80	-
HWI-TC.1	.83	.55	.83	.16[1]
HWI-TC.2	.87	.62	.89	.15[2]
HWI-WI.1	.91	.68	.92	.16[1]
HWI-WI.2	.92	.70	.93	.15[2]
Burnout.1	.87	.53	.88	-
Burnout.2	.87	.54	.88	-

Notes: CR = composite reliability. AVE = average variance extracted. MaxR(H) = maximum reliability. MSV = maximum shared variance. HWI-TC = heavy-work investment (time commitment). HWI-WI = heavy-work investment (work intensity). Indication of the number '1' = data in Time 1. Indication of the number '2' = data in Time 2. (1) MSV for two factors (HWI-TC and HWI-WI) in CFA at T1. (2) MSV for two factors (HWI-TC and HWI-WI) in CFA in T2.

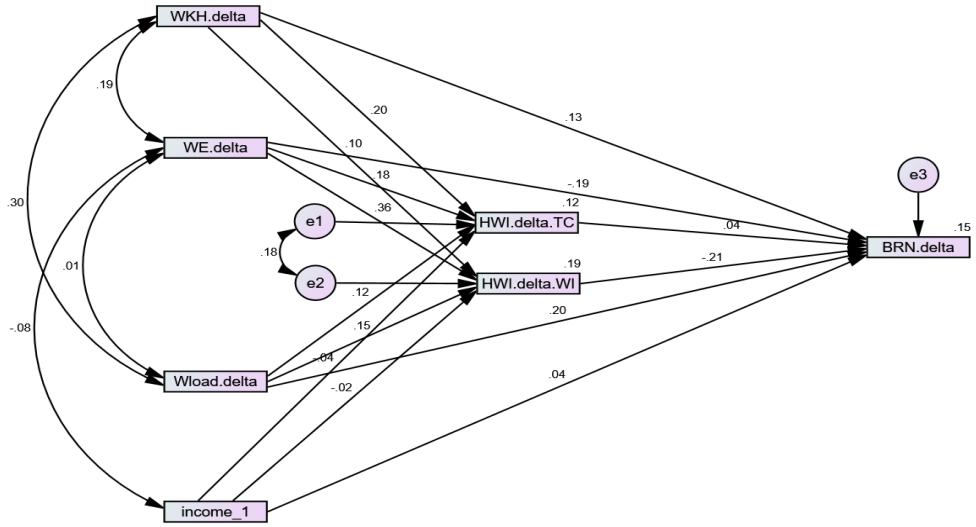
Appendix C: Δ model

Δ model correlation matrix table

	Work load	WE	Workaholism	HWI-TC	HWI-WI	Burnout
Work load						
WE	.05					
Workaholism	.51**	.23**				
HWI-TC	.34**	.27**	.42**			
HWI-WI	.24**	.45**	.36**	.37**		
Burnout	.27**	-.56**	.11*	-.02	-.28**	

Notes: N = 388. *p < .05, **p < .01. WE = Work Engagement. HWI-TC = Time Commitment of the Heavy Work Investment scale. HWI-WI = Work Intensity of the Heavy Work Investment scale.

Δ model path diagram



Δ model fit indices table

Model	χ^2(df)	χ^2/df	SRMR	CFI	GFI	NFI	ECVI	RMSEA (90% CI)
Δ model	0.28 (2)[1]	0.14	.00	1.00	1.00	1.00	0.13	.00 (.00-.05)[2]

Notes: (1) p = .871, (2) *p-close* = .948.

Δ model SEM standardized coefficients table

IV	***MV* – HWI.TC**	***MV* – HWI.WI**	***DV* – burnout**
Δ			
Workaholism	.20**	.10*	.13**
WE	.18**	.36**	-.19**
Work load	.12*	.15**	.20**
Income	-.04	-.02	.04
MV – HWI.TC	-	-	.04
MV – HWI.WI	-	-	-.21**

Notes: N = 388. *p < .05, **p < .01. IV = independent variable. MV = mediator variable. DV = dependent variable. WE = Work Engagement. HWI-TC = Time Commitment of the Heavy Work Investment scale. HWI-WI = Work Intensity of the Heavy Work Investment scale.

Δ model SEM bootstrapping confidence intervals (95% CI, 5,000 resamples) for the standardized indirect effects table.

Path	**Lower bound**	**Upper bound**	**Sig.**
Δ			
Workaholism → HWI-WI → Burnout	-.04	.01	.350
Work Engagement → HWI-WI → Burnout[1]	-.11	-.04	.001
Work load → HWI-WI → Burnout[2]	-.06	-.01	.033

Notes: *p < .05, **p < .01. (1) κ^2 (95% CI bootstrapping, 5,000 resamples) = .05 (.01-.09). (2) κ^2 (95% CI bootstrapping, 5,000 resamples) = .05 (.02-.09).