

## **Development and Validation of the Entrepreneurial Job Demands Scale**

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**ABSTRACT** The purpose of this study was to develop and validate a scale for measuring specific entrepreneurial job demands, over and above regular job demands. Scale content was based on extant literature search and interviews with ten entrepreneurs. Based on this information 14 items were developed. The factor structure, reliability and construct validity of the scale were examined in a sample of 291 entrepreneurs in The Netherlands. Findings demonstrate that the scale captured three dimensions of entrepreneurial job demands: ‘time demands’ (5 items), ‘uncertainty & risk’ (6 items), and ‘responsibility’ (3 items). The Entrepreneurial Job Demands Scale (EJDS) showed criterion validity in explaining work-related strain (positive relationship), and well-being (negative relationship) in a sample of 277 entrepreneurs over and above regular measures of job demands, e.g. emotional load, quantitative workload and task complexity. The conclusion is that including specific demands does seem to add to the explanation of work-related strain and well-being in entrepreneurs. The EJDS can be used as a tool for entrepreneurs, job coaches, and government institutions that want to monitor potential risk factors for strain, well-being and business success in entrepreneurs.

*Keywords:* Entrepreneurship, Entrepreneurial job demands, Entrepreneurial stress, Entrepreneurial well-being, Entrepreneurial strain

## Introduction

Entrepreneurship is a very important societal topic. The government, educational institutions, and trade organisations actively try to stimulate economic development through providing positive information on entrepreneurship. Indeed, successful entrepreneurship is of major importance in driving economic development through employment creation, innovation, and growth (Carree & Thurik, 2003; Praag & Versloot, 2007a). The importance of entrepreneurs in the economy is undisputed (see for example, Carree & Thurik, 2003; Praag & Versloot, 2007a; 2007b; 2008), which makes it very important to find the causes of entrepreneurial work-related strain, as strain may impede work productivity. The demands of entrepreneurship are the primary candidate when causes of such strain are concerned (i.e. Boyd & Begley, 1987). By developing a measurement scale, the level of entrepreneurial job demands can be assessed and intervention programs developed that might assist entrepreneurs and policy makers in signaling risks for and reducing negative effects of work-related strain. The word ‘demands’ in this context refer to “those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort and are therefore associated with certain physiological and/or psychological costs” (Schaufeli & Bakker, 2004, p. 296). Such a measure is developed in this paper.

Regarding the causes of work-related strain, there are general job demands in many occupations. However, there are also job demands that are specific to certain occupations (Hurrell et al., 1998; Sparks & Cooper, 1999). For example, Hakanen et al. (2006) identified in a study among 2,000 Finnish teachers specific job demands such as ‘disruptive pupil behaviors’. For the occupation of nurses specific demands were also found, like emotional demands with regard to death, illness and aggressive patients (Van der Heijden et al., 2008). As entrepreneurs have a job with specific tasks and responsibilities, such as searching and recognizing business opportunities, acquiring resources, and creating new products or services (i.e. Douglas & Shepherd, 2000; Shane & Venkataraman, 2000; Patzelt & Shepherd, 2011; Shane, 2012) we assume that specific job demands exist for entrepreneurs. For example, we expect entrepreneurship to be characterised by high levels of uncertainty, change, responsibility and income uncertainty (i.e. Boyd & Gumpert, 1983; Boyd & Begley, 1987; Covin & Slevin, 1991; Douglas & Shepherd, 2000). Being an entrepreneur encompasses demands which are different from demands associated with having a paid job. We aim to contribute to knowledge in this field by studying the impacts of both regular job demands and more specific entrepreneurial job demands.

Regular employee job demands include for example work pressure, task complexity, task conflicts, physical demands, cognitive demands, and emotionally demanding interactions with clients (Schaufeli & Bakker, 2004; Bakker & Demerouti, 2008). The difference between entrepreneurs and employees is that entrepreneurs own a private business (with or without employees) and carry the full responsibility for success and failure of their enterprise. Running a business is demanding and possibly stressful because of the uncertainty and risk involved (e.g., Boyd & Begley, 1987).

Entrepreneurs share certain job demands with employees, but they may also be faced with specific job demands. This study compares the impact of regular employee job demands and specific entrepreneurial job demands on work-related strain and well-being. Few empirical studies have previously focused specifically on entrepreneurial job demands (Boyd & Begley, 1987; Rahim, 1996; Harris et al., 1999; Tetrick et al., 2000). Some studies examined the differences between entrepreneurs and managers (Buttner, 1992; Rahim, 1996; Tetrick, et al., 2000), others the moderators of stress and strain (Rahim, 1996; Tetrick et al., 2000) on entrepreneurs and managers or causes of stress in entrepreneurs (Boyd & Gumpert, 1983; Harris et al., 1999; Wincent & Örtqvist, 2009). In these studies job demands were often assessed by instruments that were originally developed for employees. A specific measure of entrepreneurial job demands is lacking. In order to determine the scope of specific entrepreneurial job demands important literature sources were scanned (Boyd & Begley, 1987; Rahim, 1996; Harris et al., 1999) and a series of interviews was completed with ten entrepreneurs different in company size, age, gender and sector. The information from this preparation stage is used as the base for developing a questionnaire measure of specific entrepreneurial job demands.

The contribution of the scale developed in this paper is that it identifies specific job demands for entrepreneurs, measures these in a reliable and valid way, and adds to explaining variance in work-related strain and well-being for entrepreneurs, over and above what is known based on standard measures of job demands as derived from research in paid jobs.

The paper is structured according to three stages. Stage 1 is a preparation phase, designed to determine the scope of specific entrepreneurial job demands that needs covering in the measurement scale to be constructed. Stage 2 was aimed at developing and testing the actual Entrepreneurial Job Demands Scale. The sample of 291 respondents used for this purpose included individuals who founded or owned a private company (older than one year) employing less than 250 people in The Netherlands. The aim of Stage 3 was to assess the criterion validity of the Entrepreneurial Job Demands Scale in relation to work-related strain and well-being, controlling for standard job demands measures like emotional load, quantitative workload, and task complexity. Of the 291 respondents in Stage 2 a total of 277 entrepreneurs also completed all the scales necessary for this analysis. A general discussion concludes the paper.

### **STAGE 1: Preparation phase**

*In this stage the aim was to determine the scope of specific entrepreneurial job demands to be measured.*

### **Procedure**

In addition to exploring literature on entrepreneurial job demands (i.e. Boyd & Begley, 1987; Rahim, 1996; Harris et al., 1999; Wincent & Örtqvist, 2009) conversations were held with ten Dutch entrepreneurs. Questions were asked on how employee

demands differed from entrepreneurial demands. All respondents had been employed as a regular employee before becoming an entrepreneur and were therefore able to compare employee versus entrepreneurial job demands. The sample of entrepreneurs reflected variations in company size, gender of the entrepreneur, enterprise with/without business partners, and branche of industry. The purpose of the preparation phase was to identify specific job demand types and to use this information to develop items for the questionnaire.

## **Results and discussion**

Specific entrepreneurial demands different from regular employee job demands were mainly associated with the following areas: '(feelings of) 24/7 availability', '(feelings of) 100 percent commitment', 'broader and larger responsibility', 'tolerance of and coping with uncertainty', as well as 'risk-bearing and courage'. Other demands mentioned were: 'work-life imbalance' (work overload), 'multitude of tasks and roles' (role ambiguity), 'discipline and self-management', and 'development of vision and market orientation'. From these conversations a picture emerged of which demands were distinctive for entrepreneurship, with most demands mentioned boiling down to quantitative and emotional job demands types, and less so to mental and/or physical job demands. This is in line with the results of Andersson (2008) and Stephan and Roesler (2010). Andersson (2008) found that self-employed were less likely to perceive their jobs as mentally straining. Stephan and Roesler (2010) concluded that entrepreneurs showed lower overall physical problems.

Based on the literature and conversations, four dimensions of specific entrepreneurial demands emerged: (feelings) of 24/7 availability and total commitment, broader and larger responsibility, tolerance of and coping with uncertainty, and risk-bearing and courage.

## **STAGE 2: Scale construction and psychometric test**

Based on the information from the preparation stage, 15 items were formulated in Dutch which reflected these four dimensions. A 4-point answering scale was used for all items (0=*never*, 1=*sometimes*, 2=*often*, 3=*always*) in line with van Veldhoven et al. (2002), a commonly used scale for measuring job demands in The Netherlands. Using a frequency-related 4-point response format is common when measuring job demands. The idea behind this response format is that it allows respondents to assess exposure to demands levels better than for example an agreement/disagreement scale (Dewe, 1991).

Next, the draft list of items was critically reviewed by four entrepreneurs (not previously interviewed) with regard to item clarity. This led to small adaptations of some of the items. The final draft of the scale is presented in Table 1 (in the appendices on page 86). The next aim of Stage 2 was to test the psychometric quality of the drafted Entrepreneurial Job Demands Scale. Details on the sample are presented first and next results on the factorial structure and reliability are reported.

### Procedure and participants

Respondents filled in an online, structured questionnaire in Dutch. The sample included individuals who founded or owned a private company (older than one year) employing less than 250 people in The Netherlands. This follows the definition of Van Praag & Versloot (2007a, 2007b) of entrepreneurs, and the definition of the European Commission on small and medium sized enterprises. The questionnaires were filled in between January and March 2012. As entrepreneurs have high self-awareness, self-report is a good method for data collection in this context (Rhee & White, 2007). To get a large amount of respondents, the first authors' own network of entrepreneurs was invited directly by mail to participate. This network consists of business partners all over the country, in various branches of industry. Additionally, the url of the questionnaire was sent to trade magazines, several organizations targeted at entrepreneurs (like a regional office of the Chamber of Commerce), and LinkedIn Groups. On 31 March 2012 a total of 850 initial respondents were registered of which 446 opened the questionnaire without answering a single question. A total of 404 respondents filled in questions about background information, and out of this number 83 respondents stopped after this set of questions. It took around 20 to 30 minutes to complete the full survey.

The main reason for people to stop filling in questions is that it was considered time consuming, as our questionnaire contained many other scales besides the one measuring entrepreneurial job demands. Of the 321 remaining respondents, 291 entrepreneurs filled in all the questions about entrepreneurial job demands. These are used for further analyses. This number amounts to 72 percent of those actually responding to the invitation to fill in the survey. Since data was gathered in two ways, it was first examined at the item level whether there were differences in background and company information, and in the means of the scores on the items between respondents from the personal network and respondents acquired through announcements by the Chamber of Commerce, et cetera. Since differences were found to be negligible, it was decided that the groups could be merged.

The sample of 291 entrepreneurs was representative for the total population of Dutch entrepreneurs, except for gender. Contrary to the total Dutch population of entrepreneurs (67-70% male, 30-33% female; <http://statline.cbs.nl/>) the sample had a more equal representation of male and female entrepreneurs (46% male, 54% female). Participants were on average 47 years old ( $SD=9.83$ ) which is comparable to 45 years in the total Dutch population of entrepreneurs. Around 32% is having the company for more than 10 years, 20% less than 3 years, 23% between 3 and 5 years, and 25% between 6 and 10 years. 63% of the respondents was self-employed (without employees), slightly lower than the 68% in the total Dutch population of entrepreneurs. More than 81% holds at least a bachelor's degree, and the scope of activities is 5% local, 30% regional, 42% national, and 23% international. The entrepreneurs in this research were largely active in the secondary sector (69%), 23% were in the tertiary sector and only 8% in the primary sector. This is less representative for the Dutch situation with 55% in the secondary sector (trade, transport, services, et

cetera), 15% in the tertiary sector (education, sports, recreation, et cetera), and 28% in the primary sector (industry, agriculture, building, et cetera). Further descriptive information without reference data is that 94% of the respondents the (co-)founder of the company is, and 76% is the only shareholder or owner. Out of the total sample 40% had a parent who was an entrepreneur. We can conclude that the sample is representative for the Dutch entrepreneurial population.

## Results and discussion

### *Exploratory factor analysis*

Principal component factor analysis with Varimax rotation was used to examine the factor structure. Three factors with an Eigenvalue larger than 1 emerged. Loadings  $>.40$  are shown in Table 1 (appendices, page 86). Four dimensions were expected based on Stage 1, but factor analysis made clear that 'uncertainty' and 'risk' should be taken together as one dimension. All items except one ('Do you find it hard to delegate or outsource activities concerning your company?'), had high factor loadings on one of the three dimensions of entrepreneurial job demands, but not on the other factors. Together the three factors explain 58.44% of the variance in the 14 remaining items. The Kaiser-Meyer-Olkin values for the 14 items together is .76, exceeding the recommended value of .60.

The first factor, 'time demands', with an Eigenvalue of 3.99 explains 28.47% of the variance. The second factor, 'uncertainty & risk', has an Eigenvalue of 2.56 and explains another 18.29% of the variance. 'Responsibility' explains an additional 11.68% with Eigenvalue of 1.64. Factors 'time demands' and 'uncertainty & risk' have good reliability with Cronbach's alpha reaching .86 and .76 respectively, but a lower value ( $<.70$ ) was found for 'responsibility' (.67).

Intercorrelations of the three factors are low (on average they display a correlation of .20), confirming the distinctiveness of the three dimensions in entrepreneurial job demands (see Table 2, page 87).

Stage 1 and 2 have contributed to developing a simple scale for measuring specific entrepreneurial job demands. But is measuring such specific demands worthwhile? The aim of Stage 3 is to investigate the criterion validity of the measure developed, specifically in relation to work-related strain and well-being measures, over and above the impact of regular job demands measures as used in employee-based research.

### **STAGE 3: Testing criterion validity**

The aim of this stage is to assess the criterion validity of entrepreneurial job demands in relation to work-related strain and well-being at work while controlling for standard job demands like emotional load, quantitative workload, and task complexity that entrepreneurs are also likely to encounter, and which they share with paid employees. These variables are chosen to cover a broad range of job demands as are normally assessed in paid employees. 'Emotional load' is taken into account as many regular paid jobs also include elements of dealing with difficult customers, patients, pupils, clients,

et cetera. As a measure of mental job demands a scale on ‘task complexity’ is used. The third variable is ‘quantitative workload’. Many previous studies have shown these variables to be experienced as job demands by regular paid workers (e.g., Bakker et al., 2004; Demerouti et al., 2001a). It is assumed that these factors also impact the work-related strain and well-being of entrepreneurs.

The way job demands impact strain and well-being is theorized in the Job Demands-Resources Model (Bakker & Demerouti, 2007). Job demands refer to “those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort and are therefore associated with certain physiological and/or psychological costs” (Schaufeli & Bakker, 2004, p. 296). Examples of job demands for employees that can also be found in entrepreneurship are high work pressure, cognitively difficult tasks, and emotionally demanding interactions with clients (Bakker & Demerouti, 2008; Schaufeli & Bakker, 2004). Job demands are the main predictors of negative job strain (Bakker et al., 2003; Bakker et al., 2004) undermining well-being.

- *Hypothesis 1:* Regular job demands (i.e., emotional load, quantitative workload, and task complexity) are positively related to work-related strain (i.e., work-home interference, recovery after work, and detachment from work).
- *Hypothesis 2:* Regular job demands (i.e., emotional load, quantitative workload, and task complexity) are negatively related to well-being (i.e., satisfaction with life, satisfaction with entrepreneurship, and work engagement).

Central element in the Job Demands-Resources Model (Bakker & Demerouti, 2007) is the notion that every occupation will have its own specific working conditions and risk factors associated with work-related strain. In previous studies, specific job demands were identified for employees in different occupations. It is therefore assumed that there are specific job demands for entrepreneurs. According to the Job Demands-Resources Model (Bakker & Demerouti, 2007) these entrepreneurial job demands will positively relate to work-related strain and negatively to well-being, over and above the impact of known, regular job demands.

- *Hypothesis 3:* Entrepreneurial job demands (i.e., time demands, uncertainty & risk, and responsibility) have an additional positive relation with work-related strain (i.e., work-home interference, recovery after work, and detachment from work) over and above regular job demands (i.e., emotional load, quantitative workload, and task complexity).
- *Hypothesis 4:* Entrepreneurial job demands (i.e., time demands, uncertainty & risk, and responsibility) have an additional negative relation with well-being (i.e., satisfaction with life, satisfaction with entrepreneurship, and work engagement) over and above regular job demands (i.e., emotional load, quantitative workload, and task complexity).

### **Procedure and participants**

Of the 291 respondents in Stage 2 a total of 277 entrepreneurs filled in all the scales necessary for Stage 3, hence these constitute the N in the subsequent analysis. Given

that this subsample is largely similar to the one in Stage 2, the descriptive information is not repeated here.

### Measures

All scales used, except those measuring entrepreneurial job demands, are internationally acknowledged scales for assessing the constructs of job demands, work-related strain and well-being. Given that entrepreneurs do not appreciate long survey measures, abbreviated versions of the scales were used. For the regular job demands three scales are used. *Emotional load* (e.g. “Do you have contacts with difficult customers in your work?”; 5 items), *quantitative workload* (e.g. “Do you have a lot of work to do?”; 6 items), and *task complexity* (e.g. “Do you find your work as an entrepreneur complicated?” 3 items) were measured by scales developed by Van Veldhoven et al. (2002). All items were answered on a 4-point scale with 0=*never*, 1=*sometimes*, 2=*often*, 3=*always*. Previous research demonstrated the validity of these scales (e.g., Sluiter et al., 2003; Van Veldhoven & Broersen, 2003; De Croon et al., 2004; Van Veldhoven et al., 2005). In this study Cronbach’s alpha for these scales was found to be .63, .82, and .64 respectively for the three scales. The relatively low reliability of the scales ‘emotional load’ and ‘task complexity’ can be explained by the use of the shortened version of these scales.

*Strain* was measured by three existing scales. For measuring the balance between work and private life a 3-item scale for measuring ‘work-home interference’ of Geurts et al. (2005) was used. Validity of this scale is examined in several studies (Wagena & Geurts, 2000; Geurts et al. 2005). In this study Cronbach’s alpha of .67 was found for this shortened version of the scale. Responses were given on a 4-point scale with 0=*never*, 1=*sometimes*, 2=*often*, 3=*always*. An example question was: “How often does it happen that you are irritable at home because your work is demanding?” For measuring ‘recovery after work’ a 6-item scale based on van Veldhoven et al. (2002) is used (Van Veldhoven et al., 2002; Sluiter et al., 2003). The items were answered on a 4-point scale with 0=*never*, 1=*sometimes*, 2=*often*, 3=*always* as response options. One of the questions was: “At the end of a working day I am really exhausted.” The Cronbach’s alpha for this scale was .84.

The third scale is ‘detachment from work’ a Dutch translation (Geurts et al., 2009; 2011) of the Recovery Experience Questionnaire (9 items) by Sonnentag & Fritz (2007; Sonnentag & Bayer, 2005). Responses were indicated on a 5-point scale ranging from 1=*totally disagree* to 5=*totally agree*. “During the time after work I don’t think about work at all” was one of the questions. The Cronbach’s alpha was .86. *Well-being* was measured by two existing scales. The Satisfaction With Life Scale (Diener et al., 1985; Pavot & Diener, 1993; Diener & Biswas-Diener, 2002; Diener et al., 2003) was used for measuring global life satisfaction. This is a 5-point scale with 1=*totally disagree* to 5=*totally agree* with e.g. the question “I am satisfied with my life”. The scale was adapted to generate in parallel a ‘satisfaction with entrepreneurship’ scale, using the same 5-point scale. This led to the adaptation of the previous question into “I am satisfied with my entrepreneurship”. Both scales had the same Cronbach’s alpha (.86). Finally, the Utrecht Work Engagement Scale (Schaufeli & Bakker, 2004; 2003) was

used (7-point scale, 1=*never* to 7=*daily*) to measure work engagement. An example question was “At my work, I feel bursting with energy”. The Cronbach’s alpha was .90.

## Results and discussion

Descriptive information and correlations between all scales are reported in Table 2 (appendices, page 87). Significant positive correlations were found between the three dimensions of entrepreneurial job demands and the measures of work-related strain. This is in line with previous studies on the relation between job demands and emotional exhaustion (e.g. Demerouti, et al., 2001b; Lee & Ashforth, 1996; Schaufeli & Bakker, 2004). Especially ‘time demands’, and ‘uncertainty & risk’ (Table 2) showed moderately high correlations with work-related strain, values ranging between .28 and .42 on the different dimensions of work-related strain (work-home interference, recovery after work, and detachment). ‘Responsibility’ is unexpectedly scoring considerably lower which may be due the low number of items. From the regular job demands, ‘quantitative workload’ and ‘task complexity’ showed positive correlations with all three dimensions of work-related strain. This is in line with a study of Bakker, Demerouti, and Verbeke (2004) who found that job demands (e.g., work pressure and emotional load) were correlating on the exhaustion component of burnout. In the study by Harris et al. (1999) entrepreneurs scored high on work-related strain associated with workload which is confirmed in this study. To a lesser extent ‘emotional load’ was correlating with two of the three dimensions of work-related strain, namely on ‘work-home interference’ and ‘recovery after work’. According to Bakker & Demerouti (2007) certain job demands, like emotional demands, are prevailing in certain job positions but not in others. For the occupational group of entrepreneurs emotional load is less influencing work-related strain than quantitative workload and task complexity. Hypothesis 1 is therefore confirmed. Among the constructs of work-related strain, the strongest relations are found for the dimensions ‘work-home interference’ and ‘recovery after work’.

The relationship between entrepreneurial job demands and the well-being constructs was found to be mainly negative, especially for the dimension ‘uncertainty & risk’. Correlation values of ‘uncertainty & risk’ range from -.31 with ‘satisfaction with life’ to -.40 with ‘satisfaction with entrepreneurship’ and -.37 with ‘work engagement’. The consistency of correlations between entrepreneurial job demands and outcomes is higher for work-related strain than for well-being, with the exception of the ‘uncertainty & risk’ scale. As regards the regular job demands ‘quantitative workload’ and ‘task complexity’ show significant negative correlations for well-being, thus confirming hypothesis 2.

To investigate the importance of the three specific entrepreneurial job demands over and above regular job demands as used in research in paid employees, multiple linear regression was performed (Table 3, page 88) for work-related strain and Table 4 (appendices, page 89, on well-being). The three regular job demands (Table 3, page 88) together explain 23%, 21% and 12% of the variance in the strain-related scales ‘work-home interference’, ‘recovery after work’, and ‘detachment from work’

respectively. The regular job demands scale ‘quantitative workload’ contributes most to the explanation of variance in the work-related strain dimension in step 1.

Adding the entrepreneurial job demands to the multiple linear regression equation in step 2 increases variance explained by 8%, 12%, and 13% for the work-related strain constructs respectively. This change is considerable and significant. The most influential variable (by far) of the entrepreneurial job demands is ‘time demands’ for ‘work-home interference’ and ‘detachment from work’. For ‘recovery after work’ the most important variable is ‘uncertainty & risk’. After the introduction of the specific entrepreneurial job demands in the model the  $\beta$  scores of the regular job demands decrease. After step 2 the most important predictors of work-related strain are ‘quantitative workload’ for ‘work-home interference’ and ‘recovery after work’ with only a slightly smaller effect for ‘uncertainty & risk’. For ‘detachment from work’ the most important predictor is ‘time demands’. These results confirm hypothesis 3.

Table 4 (page 89) shows that the three regular job demands explain 7%, 11%, and 6% of the variance in the scales ‘satisfaction with life’, ‘satisfaction with entrepreneurship’, and ‘work engagement’ respectively. These amounts of variance explained are smaller than those for work-related strain (Table 3, page 88). The differences in variance explained between the three indicators of well-being are small. The regular job scale ‘task complexity’ contributes most to the variance explained in the different well-being constructs in step 1. Adding the entrepreneurial job demands to the models increases the variance explained by 10%, 12%, and 13% respectively for the three different indicators of well-being.

The specific entrepreneurial job demands have the highest  $\beta$  scores for the different well-being constructs. The strongest relation, with  $\beta$  of  $-.37$ , is found between ‘uncertainty & risk’ and ‘work engagement’. It is clear that entrepreneurial engagement and uncertainty are very much connected. After step 2 the most important predictors of well-being is ‘uncertainty & risk’ on all three scales of well-being. Hypothesis 4 is therefore accepted.

## Discussion

### *Entrepreneurial Job Demands Scale*

Our results show that three brief measurement scales can capture the specific demands in entrepreneurial jobs, measuring these with acceptable reliability and validity. Including specific demands does seem to add to the explanation of work-related strain and well-being in entrepreneurs when compared to standard (paid employee-based) measures of job demands. Three factors with an Eigenvalue larger than 1 emerged from our analysis. Intercorrelations of the three factors are low, confirming the distinctiveness of the dimensions postulated. Our results provide support for the existence of specific demands for entrepreneurs and their measurement. The criterion validity of the three scales was investigated, specifically in relation to work-related strain and well-being, over and above the impact of regular job demands (‘emotional load’, ‘quantitative workload’, and ‘task complexity’). Positive correlations were found between the three dimensions of entrepreneurial job demands and the measures

of work-related strain. The relationship between entrepreneurial job demands and the well-being constructs showed negative correlations, especially for the dimension 'uncertainty & risk'. Multiple linear regression analyses confirmed the strong relations of entrepreneurial job demands with work-related strain and well-being. It is clear from these analyses that the entrepreneurial job demands scales provide additional power for predicting work-related strain and well-being over and above regular job demands measures.

### **Limitations**

There are several limitations to this study. In the preparation stage the sample ten entrepreneurs interviewed is adequate for the purpose but on the small side. For Stage 3, a subsample of the participants in Stage 2 is used. For validity reasons an independent sample would have been a better choice to develop the scales. The 'responsibility' dimension with only three items shows low Cronbach's alpha. Adding more items to the scale is recommended for future research. In this study entrepreneurs in one single country were investigated, The Netherlands. It is to be recommended to test and analyze the Entrepreneurial Job Demands Scale in other countries, in order to study the generalizability of the findings reported here on the reliability and validity of the scale, and to examine its cross-cultural stability. Furthermore, convergent validity between the Entrepreneurial Job Demands Scale and other scales examining entrepreneurial content could be examined. For example, the link with business success (both objective and subjectively measured) would appear to be a relevant criterion measure for such validation.

### **Conclusions**

In this study we determined the scope for specific entrepreneurial job demands that are important alongside regular job demands in explaining work-related strain and well-being in entrepreneurs. These specific entrepreneurial job demands were used to develop a simple, short questionnaire in which entrepreneurs recognize themselves. This is important for response levels in this type of research. The questionnaire is tested as to its psychometric characteristics. Our findings imply that it is advisable in studies of entrepreneurial business success and/or entrepreneurial health and well-being to use our specific scales alongside standard measures of job demands as used in research among paid employees. For future research, it is interesting to further compare entrepreneurial job demands between different types of entrepreneurs: for instance between self-employed professionals versus entrepreneurs with personnel, or between those working with versus without business partners. Further research is also needed in relation to the association found between 'uncertainty & risk' and 'work engagement'. It is concluded based on these results that entrepreneurs may lose engagement through uncertainty and risk. It would also be interesting to learn more about how entrepreneurial job demands interact with resources in the job and the environment (both business-related and private) in their effects on work-related strain, well-being and business success. Policy makers can build on such knowledge by creating or

stimulating necessary resources to let entrepreneurs and their business prosper and thus raise economic growth.

In practice, for The Netherlands, we can now use the Entrepreneurial Job Demands Scale as a tool for entrepreneurs themselves, for job coaches, and for government institutions to trace potential risk factors for strain, well-being and business success in entrepreneurs. Based on such results special coaching programs (e.g. on how to deal with uncertainty), training programs (e.g. on time management) and workshops (e.g. on tools for risk analyses) can be developed to help entrepreneurs deal with the specific entrepreneurial demands of 'time demands', 'uncertainty', 'responsibility & risk'. If entrepreneurs are better able to deal with the specific entrepreneurial job demands they have more chances of survival or even business growth.

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## References

- Andersson, P. (2008) Happiness and health: Well-being among the self-employed, *Journal of Socio-Economics*, 37, pp. 213–236.
- Bakker, A.B., & Demerouti, E. (2008) Towards a model of work engagement. *Career Development International*, 13, pp. 209-223.
- Bakker, A.B., & Demerouti, E. (2007) The Job Demands-Resources model: state of the art. *Journal of Managerial Psychology*, 22, pp. 309-328.
- Bakker, A.B., Demerouti, E., & Verbeke, W. (2004) Using the job demands-resources model to predict burnout and performance. *Human Resource Management*, 43, pp. 83-104.
- Bakker, A.B., Demerouti, E., Taris, T.W., Schaufeli, W.B., & Schreurs, P.J.G. (2003) A multigroup analysis of the job demands-resources model in four home care organizations. *International Journal of Stress Management*, 10, pp. 16-38.
- Boyd, D.P., & Begley, T.M. (1987) Stress, health, and financial performance in entrepreneurial firms. pp. 291-306.
- Boyd, D.P., & Gumpert, D.E. (1983) Coping with entrepreneurial stress. *Harvard Business Review*, March-April, pp. 44-64.
- Buttner, E.H. (1992) Entrepreneurial stress: is it hazardous to your health. *Journal of Managerial Issues*, 4, pp. 223-240.
- Carree, M.A., & Thurik, R. (2003) The impact of entrepreneurship on economic growth, In Z.J. Acs, & D.B. Audretsch (Eds.), *Handbook of Entrepreneurship Research* (pp. 437-471). Kluwer Academic Publishers.
- Covin, J.G., & Slevin, D.P. (1991) A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship Theory and Practice*, 16, pp. 7-25.
- Croon, E. M. de, Sluiter, J. K., Blonk, R. W. B., Broersen, J. P. J., & Frings-Dresen, M. H. W. (2004) Stressful work, psychological job strain, and turnover: A 2-year prospective cohort study of truck drivers. *Journal of Applied Psychology*, 89, pp. 442–454.
- Demerouti, E., Bakker, A.B., de Jonge, J., Janssen, P.P.M., & Schaufeli, W.B. (2001a) Burnout and engagement at work as a function of demands and control. *Scandinavian Journal of Work, Environment & Health*, 27, 4, pp. 279-286.
- Demerouti, E., Bakker, A.B., Nachreiner, F., & Schaufeli, W.B. (2001b) The job demands-resources model of burnout. *Journal of Applied Psychology*, 86, 3, pp. 499-512.
- Dewe, P. (1991) Measuring work stressors: the role of frequency, duration, and demand. *Work & Stress: an international journal of work, health & organisations*, 5, pp. 77-91.

Diener, E., & R. Biswas-Diener (2002) Will money increase subjective well-being? A literature review and guide to needed research. *Social Indicators Research*, 57, pp. 119-169.

Diener, E., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985) The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49, pp. 71-75.

Diener, E., Oishi, S., & Lucas, R.E. (2003) Personality, culture, and subjective well-being: emotional and cognitive evaluations of life. *Annual Review Psychology*, 54, pp. 403-425.

Douglas, E.J., & Shepherd, D.A. (2000) Entrepreneurship as a utility-maximizing response. *Journal of Business Venturing*, 15, pp. 231-251.

Geurts, S., De Bloom, J., Kompier, M., & Sonnentag, S. (2011) De herstelervaringen vragenlijst: Nederlandse vertaling van de Recovery Experience Questionnaire. Internal report. Nijmegen: Radboud Universiteit Nijmegen.

Geurts, S., De Bloom, J., Kompier, M., & Sonnentag, S. (2009) De herstelervaringen vragenlijst: Nederlandse vertaling van de Recovery Experience Questionnaire. Internal report. Nijmegen: Radboud Universiteit Nijmegen.

Geurts, S., Taris, T., Kompier, M., Dikkers, J., Van Hooff, M., & Kinnunen, U. (2005) Work-home interaction from a work-psychological perspective: development and validation of a new questionnaire, the SWING. *Work & Stress*, 19, pp. 319-339.

Hakanen, J.J., Bakker, A.B., & Schaufeli, W.B. (2006) Burnout and work engagement among teachers. *Journal of School Psychology*, 43, pp. 495-513.

Harris, J.A., Saltstone, R., & Fraboni, M. (1999) An evaluation of the job stress questionnaire with a sample of entrepreneurs. *Journal of Business and Psychology*, 13, pp. 447-455.

Heijden, B.I.J.M. van der, Demerouti, E., Bakker, A.B., & The NEXT Study Group (2008) Work-home interference among nurses: reciprocal relationships with job demands and health. *Journal of Advanced Nursing*, 62, pp. 572-584. <http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=80150NED&D1=a&D2=0-7&D3=%281-3%29-l&HDR=T&STB=G2,G1&VW=T>

Hurrell, J.J., Nelson, D.L., & Simmons, B.L. (1998) Measuring job stressors and strains: where we have been, where we are, and where we need to go. *Journal of Occupational Health Psychology*, 3, pp. 368-389.

Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81, pp. 123-133.

Patzelt, H., & Shepherd, D.A. (2011) Negative emotions of an entrepreneurial career: self-employment and regulatory coping behaviors. *Journal of Business Venturing*, 26, pp. 226-238.

Pavot, W., & Diener, E. (1993) Review of the Satisfaction With Life Scale. *Psychological Assessment*, 5, pp. 164-172.

- Praag, C.M., van, & Versloot, P.H. (2008) The economic benefits and costs of entrepreneurship: a review of the research. *Foundations and Trends in Entrepreneurship*, 4, pp. 65-154.
- Praag, C.M., van, & Versloot, P.H. (2007a) What is the value of entrepreneurship? A review of recent research, Discussion Paper No. 3014. The Institute for the Study of Labor.
- Praag, C.M., van, & Versloot, P.H. (2007b) What is the value of entrepreneurship? A review of recent research. *Small Business Economics*, 29, pp. 351-382.
- Rahim, M.A. (1996) Stress, strain, and their moderators: an empirical comparison of entrepreneurs and managers. *Journal of Small Business Management*, 34, pp. 46-58.
- Rhee, K.S., & White, R.J. (2007) The emotional intelligence of entrepreneurs. *Journal of Small Business and Entrepreneurship*, 20, pp. 409-426.
- Schaufeli, W., & Bakker, A.B. (2004) Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *Journal of Organizational Behavior*, 25, pp. 293-315.
- Schaufeli, W., & Bakker, A.B. (2003) De Utrechtse Bevlogenheid Schaal: handleiding, Occupational Health Psychology Unit. Utrecht University.
- Shane, S. (2012) Reflections on the 2010 AMR decade award: delivering on the promise of entrepreneurship as a field of research. *Academy of Management Review*, 37, pp. 10-20.
- Shane, S., & Venkataraman, S. (2000) The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25, pp. 217-226.
- Sluiter, J. K., Croon, E. M. de, Meijman, T. F., & Frings-Dresen, M. H. W. (2003) Need for recovery from work related fatigue and its role in the development and prediction of subjective health complaints. *Occupational and Environmental Medicine*, 60, pp. i62-i70.
- Sonnentag, S., & Bayer, U. (2005) Switching off mentally: predictors and consequences of psychological detachment from work during off-job time. *Journal of Occupational Health Psychology*, 10, pp. 393-414.
- Sonnentag, S., & Fritz, C. (2007) The Recovery Experience Questionnaire: development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology*, 12, pp. 204-221.
- Sparks, K. & Cooper, C.L. (1999) Occupational differences in the work-strain relationship: towards the use of situation-specific models. *Journal of Occupational and Organizational Psychology*, 72, pp. 219-229.
- Stephan, U., & Roesler, U. (2010) Health of entrepreneurs versus employees in a national representative sample. *Journal of Occupational and Organizational Psychology*, 83, pp. 717-738.

Tetrick, L.E., Slack, K.J., Da Silva, N., & Sinclair, R.R. (2000) A comparison of the stress-strain process for business owners and nonowners: differences in job demands, emotional exhaustion, satisfaction, and social support. *Journal of Occupational Health Psychology*, 5, pp. 464-476.

Veldhoven, M. van, & Broersen, J. P. J. (2003) Measurement quality and validity of the “need for recovery scale.” *Occupational and Environmental Medicine*, 60, pp. i3-i9.

Veldhoven, M. van, Meijman, T.F., Broersen, J.P.J., & Fortuin, R.J. (2002) Handleiding VBBA.

Veldhoven, M. van, Taris, T.W., Jonge, J. de, & Broersen, S. (2005) The relationship between work characteristics and employee health and well-being: how much complexity do we really need? *International Journal of Stress Management*, 12, pp. 3-28.

Wagena, E., & Geurts, S. (2000) SWING, Ontwikkeling en validering van de ‘Survey Werk-Thuis Interferentie-Nijmegen’. *Gedrag en Gezondheid*, 28, pp. 138-158.

Wincent, J., & Örtqvist, D. (2009) A comprehensive model of entrepreneur role stress antecedents and consequences. *Journal of Business and Psychology*, 24, pp. 225-243.

APPENDICES - covering tables 1 to 4.

Item wording	M	SD	$\alpha$	1	2	3
<i>Entrepreneurial job demands</i>						
<i>Time demands</i>						
			.86			
1. Does it feel as if you have to be within reach for your company 24 hours a day?	1.08	.992		.850		
2. Does it feel as if you have to be available for your company 24 hours a day?	1.01	.965		.869		
3. Is it as if your company is in your mind 24 hours a day?	1.42	.959		.838		
4. Is it as if you are busy with your company 24 hours a day?	1.32	.927		.842		
5. Does it feel as if you can only be successful if you dedicate yourself to your company for 100%?	1.52	.977		.541		
<i>Uncertainty &amp; risk</i>						
			.76			
6. Do you find it difficult to cope with uncertainty about the functioning of the company?	1.02	.656		.724		
7. Do you find it difficult to cope with uncertainty about the functioning of yourself as entrepreneur?	0.95	.633		.775		
8. Do you find it hard to take the initiative to lead your company on the right track?	0.65	.616		.714		
9. Do you find it hard to make decisions for your company?	0.60	.562		.665		
10. Do you find it hard to handle risks concerning your company?	0.90	.605		.559		
11. Do you find it hard to go for 100% for your company?	0.72	.702		.561		
<i>Responsibility</i>						
			.67			
12. Do you feel yourself 100% responsible for the functioning of your company?	2.50	.666			.848	
13. Do you feel yourself 100% responsible for the satisfaction of the customers of your company?	2.48	.656			.850	
14. Does the failure of your company feel like your personal failure?	1.73	.931			.609	

Note: Factor loadings >.40 are shown. Items were translated in English.

TABLE 1: Items, means, standard deviations, cronbach's alphas, and factor loading of the entrepreneurial job demands Scale (N=291)

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
<i>Entrepreneurial job demands</i>														
1 Time demands	1.26	0.78	(.86)											
2 Uncertainty & risk	0.82	0.42	.22**	(.76)										
3 Responsibility	2.24	0.59	.30**	.04	(.67)									
<i>Regular job demands</i>														
4 Emotional load	1.35	0.50	.28**	.18**	.18**	(.63)								
5 Quantitative workload	1.05	0.48	.37**	.22**	.11	.27**	(.82)							
6 Task complexity	0.67	0.46	.31**	.37**	-.09	.23**	.34**	(.64)						
<i>Work-related strain</i>														
7 Work-home interference	0.89	0.48	.42**	.29**	.17**	.17**	.46**	.28**	(.67)					
8 Recovery after work	0.81	0.52	.37**	.39**	.22**	.21**	.44**	.24**	.65**	(.84)				
9 Detachment from work	2.59	0.65	.40**	.28**	.03	.08	.35**	.17**	.42**	.50**	(.86)			
<i>Well-being</i>														
10 Satisfaction with Life	3.76	0.77	-.24**	-.31**	-.14*	-.08	-.19**	-.24**	-.30**	-.37**	-.33**	(.86)		
11 Satisfaction with Entrepreneurship	3.51	0.78	-.24**	-.40**	-.03	-.03	-.16**	-.33**	-.15*	-.24**	-.32**	.66**	(.86)	
12 Work engagement	6.28	0.73	.02	-.37**	.04	.06	-.11	-.20**	-.22**	-.28**	-.26**	.27**	.32**	(.90)

\* Correlation is significant at the 0.05 level (2-tailed)

\*\* Correlation is significant at 0.01 level (2-tailed)

TABLE 2: Correlations and cronbach's alphas (between brackets on the diagonal) among the entrepreneurial job demands, strain and motivation (N=277)

Variables	Work-home interference		Recovery after work		Detachment from work	
	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$
<i>Regular job demands</i>						
Emotional load	.03	-.04***	.09	.01	-.02	-.07
Quantitative workload	.41***	.33**	.39***	.30***	.33***	.24***
Task complexity	.14*	.06	.09	-.01	.07	-.08
<i>Entrepreneurial job demands</i>						
Time		.24***		.16**		.35***
Uncertainty & risk		.15**		.29***		.20**
Responsibility		.07		.13*		-.11
R2	.23	.31	.21	.33	.12	.25
$\Delta$ R2	.23***	.08***	.21***	.13***	.12***	.13***

\* p < .05  
\*\* p < .01  
\*\*\* p < .001

TABLE 3: Linear regression analytics on work-related strain

Variables	Satisfaction with life		Satisfaction with entrepr.		Work engagement	
	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$
<i>Regular job demands</i>						
Emotional load	-.01	.05	.06	.11	.13*	.14*
Quantitative workload	-.12	-.06	-.07	-.01	-.08	-.08
Task complexity	-.20**	-.12	-.32***	-.20**	-.20**	-.11
<i>Entrepreneurial job demands</i>						
Time		-.12		-.13*		.12
Uncertainty & risk		-.24**		-.31***		-.37***
Responsibility		-.11		-.01		-.01
R2	.07	.15	.11	.22	.06	.18
$\Delta R^2$	.07***	.08***	.11***	.10***	.06**	.12***
* p < .05						
** p < .01						
*** p < .001						

TABLE 4: Linear regression analysis on well-being