

**Does Depression Moderate the Relationship Between Work Conditions, Meaning at
Work and Maintaining Employment?**

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Abstract

The aim of this research project was to identify the relations of job demands and job control to meaning at work and the probability of maintaining employment, with a focus on people diagnosed with depression. According to the Job Demand-Control model, a job characterized by high job demands and high job control (active job) is a good fit for a healthy person; however the same might not be true for people with depression. Based on the Reconceptualised Uncertainty in Illness Theory, cognitive limitations and maladaptive emotion regulation strategies we argue that work conditions might relate differently to work outcomes for people with depression. The study used clinical assessment and questionnaire data from the Dutch longitudinal population-based Lifelines cohort study matched with Register data of employment status from Statistics Netherlands (N = 55,950) and was analysed with a structural equation modelling approach. Job demands positively influenced maintaining employment and were negatively related to meaning at work. Job control was positively related to both outcomes; for people diagnosed with depression the positive relation between job control and meaning at work was amplified. People without depression profited most from an active job while people with depression showed better probability to maintain employment in a low strain job. The present study clarified that a combination of low job demands and high job control can help vulnerable individuals stay employed; and therewith tests the generalisability of the job demands-control model to vulnerable subgroups.

Keywords: job demands, job control, Job Demand-Control model, meaning at work, employment, depression

Does Depression Moderate the Relationship Between Work Conditions, Meaning at Work and Maintaining Employment?

In many industrialized countries chronic mental disorders are on the rise, with depression being one of the most common mental disorders in the general population and more specifically in the workforce (Knudsen et al., 2013; Modini et al., 2016). Depression is known to have a high rate of recurrence and entails symptoms such as feelings of tiredness, poor concentration and overall sadness which can negatively impact daily living (Han & Kim, 2019; World Health Organization [WHO], 2020).

Work is a fundamental part of our adult life. Having paid employment has the primary benefit of financial stability, but also brings about social contact, time structure, collective purpose, status and activity (latent functions of work; Jahoda, 1982, 1997). However, having depression can negatively impact employment status, causing problems for the individual, employers and society as a whole. First, depression besides other common mental disorders is a predictor of reduced productivity at work as well as an indication of onset, length and recurrence of sickness absence (Ahola et al, 2011; Knudsen et al., 2013; Wittchen et al., 2011). Furthermore, studies have shown that depressed people have a higher chance of exiting employment prematurely through disability pension, unemployment or early retirement compared to healthy individuals (Knudsen et al., 2010; Thielen et al., 2014). As a consequence, reduced capacity to work or premature exit of the labour market can negatively influence the depressed individual, for example intensify depressive symptoms (Dooley et al., 2000). Depression also negatively influences the society; the WHO (2020) estimates the economic costs due to lost productivity in the European Union to be over 70€ billion per year.

Depression might not only increase the probability of absenteeism and premature exit from employment but also influence how a person experiences their work. Nowadays, people want to think of their job as more than just a way to gain financial stability. One variable to look at is meaning at work. Having a sense of meaning in life is a central aspect of well-being

and well established in research and models (Ryff & Singer, 1998; Zika & Chamberlain, 1992). Nevertheless, the concept meaning at work has only recently started to get more recognition in the scientific literature. Meaning at work is a subjective feeling of having important and meaningful work and can be positively related to desirable outcomes such as job satisfaction and overall well-being (Arnold et al., 2007; Kamdron, 2005). In addition, it can relate negatively to work variables like withdrawal intentions and days reported absent (Steger et al., 2012). However, having depression might decrease the sense of meaning at work (Allan et al., 2016). For example, depressive symptoms such as rumination and prolonged negative emotions can bias perceptions and thoughts (Visted et al., 2018), which might make feeling meaning at work difficult.

Considerable amounts of research have investigated individual factors beneficial for satisfactory employment when struggling with depression, such as high conscientiousness and motivation to work (Hees et al., 2012). Protective factors like motivation to work do not only depend on the individual but also on the work environment. Over the years many models have investigated the work environment, its conditions and effects on the individual (Asif et al., 2018; Sonnentag, 1996). One of these is the Job Demand-Control (JDC) model proposed by Karasek (1979); it examines the amount of job demands and job control to predict work and well-being outcomes. In a healthy population a job characterised by high demands and high control (active job) is positively related to meaning at work and maintaining employment (Clausen & Borg, 2011; Kim & Beehr, 2019). However, in a depressed population we might expect these job characteristics to show different effects. Symptoms of depression might make dealing with job demands more challenging and having a chronic disease like depression might increase the need for job control, as the individual feels that they are lacking control in other domains of life. Consequential, studies testing different levels of job demands and control while also incorporating depression to predict work outcomes are needed.

In western societies, the aging population is causing a financial burden that asks for a sustainable solution. One adaptation is to integrate as many people as possible in the workforce. The present research project contributes to the field of work and mental health by identifying how depression moderates the relationship between different levels of job demands and job control on maintaining employment and feeling meaning at work. Two points are of importance here and signify an enrichment of the research field. First, literature on meaning at work as a work outcome is still limited and this study will further enhance knowledge on the topic especially in combination with depression. Second, by including depression as a moderator this paper looks at how vulnerable people experience work and which attributes of the work environment are most relevant for them to maintain employment and feel meaning at work. To conclude, having employment is a big part of adult life, it brings about financial benefits as well as other more indirect benefits and it is important to make it achievable for as many people as possible.

Work outcomes

For a long time work has been studied with a focus on compensation and negative health related outcomes. Therefore, many studies have investigated outcomes such as burnout (Alarcon, 2011), sickness absence (Ahola et al, 2011) and leaving employment prematurely (Thielen et al., 2014). Nowadays the focus is shifting towards participation. Researchers want to find out what helps people stay employed by focusing on positive individual characteristics and work aspects. For example, Boot et al. (2014) found that in a sample of workers aged 55+ personal factors like younger age, fewer depressive symptoms, low scores on neuroticism, no functional limitations and high scores of mastery increased the probability of having paid work 2 years follow-up. Moreover, new models have been focusing on what increases maintaining employment. The model of sustainable employability proposed by van der Klink et al. (2016) is an important example. It is based on the capability approach (Sen, 1993) and emphasizes the link between an individual and its work environment. In this approach the

individual is able, motivated to perform the work tasks and the work context enables development and realization of goals. Therefore, this study looked at the work environment in form of job demands and control in combination with depression to predict the probability of maintaining employment.

Additionally, next to tracking employment statuses of workers it is important to research situational work outcomes as they can relate to overall work and life satisfaction and increase the probability of maintaining employment in the long run. An important situational outcome that has started to receive more attention in the literature is meaning at work. It is a subjective feeling that the job facilitates personal growth, is significant and contributes to more than the self and the employer (Steger et al., 2012). Nowadays more people want their work to be meaningful and studies have shown that meaning at work can be influenced by work conditions. A person might react to different levels of job demands and control in a way that it leads them to experience more or less meaning at work. Therefore, this study investigated both: maintaining employment and meaning at work. We predict that different levels of work conditions increase or decrease the probability of maintaining employment and influence how much meaning people feel at work; and that depression moderates the relation between work conditions and work outcomes.

Work conditions

Karasek (1979) developed the JDC model, where he hypothesized that job demands and job control can be either low or high and combined create four theoretical job profiles: a passive job (low demands / low control), a low strain job (low demands / high control), an active job (high demands / high control) and a high strain job (high demands / low control). According to the JDC model job demands are psychological demands/strains of the work environment like high workload (Karasek, 1979). Job demands can increase stress but also learning. As work demands entail psychological strain they can have negative effects on the probability of maintaining employment. For example, Alarcon (2011) found in a meta-

analysis that job demands are positively related to emotional exhaustion, reduced personal accomplishment and cynicism. All of which are factors that can lead to burnout. Being confronted with high job demands can increase stress and stress responses and therefore decrease the probability of staying employed.

In contrast to these negative long-term outcomes, a study by Clausen and Borg (2011) found an unexpected positive effect of job demands on meaning at work, implying that to a certain degree job demands such as workload could be positively related to meaning at work. Having a high workload can give a feeling of performing an important task and positively contributing to the workplace. Additionally, a worker might feel that an employer that assigned a lot of tasks to them is confident in their ability to handle those. Both of those points might lead to feeling more meaning at work when having high job demands.

The findings of job demands possibly decreasing the probability to maintain employment while increasing meaning at work could be related to the notion that some job demands can be perceived as challenge related stressors which are then related to positive work outcomes; while others or too many job demands can be experienced as hindrance-related stressors leading to negative work outcomes (Podsakoff et al., 2007).

Hypothesis 1: Job demands (a) relate negatively to maintaining employment and (b) positively to meaning at work.

Job control on the other hand describes how much influence a person can exert over their work and throughout the working day. It reduces an employee's stress and increases learning (Karasek, 1979) and can be viewed as a job resource or positive aspect of a job that can improve an employee's capability to for example deal with job demands (Bakker & Demerouti, 2007). High job control can have positive effects on maintaining employment in the long run. In a study sample of workers aged 50-74, low job control was related to premature exit from the labour market (Hintsä et al., 2015). Clausen and Borg (2011) found that job resources, of which job control is a part, are positively related to meaning at work.

Having the possibility to influence tasks and decisions can give a feeling of importance, freedom and ownership (Pierce et al., 2004); which might facilitate the amount of meaning a person feels at work.

Hypothesis 2: Job control positively relates to (a) maintaining employment and (b) meaning at work.

The JDC model combines these work conditions and points to two hypotheses, namely the strain and learning hypotheses. According to the strain hypothesis a job characterized by high demands and low control (i.e. high strain job) will have the most severe negative effects on the individual's health and work behaviour (van der Doef & Maes, 1998.). In this case, the individual does not have enough job control to alleviate the strains of high work demands and as a result experiences high amounts of stress. A job characterized by low control and high demands is related to negative outcomes such as lower job satisfaction and higher job-related anxiety (Asif et al., 2018). Additionally, Laine et al., (2009) characterized a job with low control and high demands as an independent risk factor for disability pension later on.

The learning hypothesis on the other hand states that a combination of high demands and high control increases learning and motivation (Karasek & Theorell, 1990; van der Doef & Maes, 1998). Here the high job control serves as a balance to the high demands, decreasing the stress that is induced by the latter and together both increase the experience of learning and motivation. Therefore, in a healthy sample a job with both high demands and high control is related to maintaining employment. Job control reduces stress and can buffer the more negative sides of a job, which increases the probability of maintaining employment. The job is engaging, challenging and at the same time the worker feels capable through enough decision latitude (job control) to deal with the demands. Furthermore, considering the aforementioned findings in regard to meaning at work, the interaction of the two work conditions could have a positive effect on meaning at work (Clausen & Borg, 2011; van der Doef & Maes, 1998).

Hypothesis 3: (a) The negative relation between job demands and maintaining employment is buffered by job control. (b) The positive relation between job demands and meaning at work is amplified by job control.

Depression

Depressive syndromes belong to the category of mood disorders and are often disruptive and cause significant psychosocial impairment (Cuijpers & Smit, 2008; Lasserre et al., 2016). It is a common mental disorder characterized by loss of interest or pleasure, sadness, feelings of low self-worth or guilt, disturbed appetite and/or sleep, poor concentration and feelings of tiredness (WHO, 2020). There are differences in duration and severity between depressive syndromes such as persistent depressive disorders, a major depressive episode and dysthymic disorder (DSM-V; American Psychiatric Association, 2013). Depression is a disorder with high recurrence rates. The Netherlands Study of Depression and Anxiety showed that in a primary care sample people with a major depressive disorder (MMD) diagnosis, 26.8% had a recurrence of MMD within two-year follow-up after being in remission for at least three months (Hardeveld et al, 2013). In Europe 40 million people are affected by depression (WHO, 2020). People are at risk of developing depression when they have a genetic predisposition for the disease and/or experience prolonged stress in form of persistent daily stressors or major life stressors like losing a loved one (Gazzaniga et al., 2016; Stuke & Bermpohl, 2016).

Work can play a negative as well as a positive role in depression. First of all, having paid work is beneficial for people with a depressive disorder; it is related to increases in self-esteem, personal growth, a sense of purpose, and contributes to self-reported increased recovery (Auerbach & Richardson, 2005; Fossey & Harvey, 2010; Provencher et al., 2002; Repper & Carter, 2011; Salzer & Shear, 2002; van Dongen, 1996). These positive effects can be in part attributed to the latent functions of work (Jahoda, 1982, 1997). However, as stated in the beginning depressed people are more prone to negative work outcomes like prolonged

sickness absence, disability pension and unemployment (Ahola et al, 2011; Knudsen et al., 2013; Thielen et al., 2014; Wittchen et al., 2011).

A study investigating what employees with a chronic disease value in their job, found that next to financial stability and social contact, being able to contribute to society and therefore feeling that one's work is meaningful was an important factor (Vooijs et al., 2018). The article focused on physical diseases but we assume the same holds for people suffering from a common mental disorder like depression. However, studies have found negative relations between depression and meaning at work, indicating that having depression might decrease the ability to feel meaning at work (Allan et al., 2016).

Hypothesis 4: Depression negatively influences (a) the probability of maintaining employment and (b) meaning at work.

Having discussed the possible general influences of depression on maintaining employment and meaning at work we will now move on to discuss how job demands can influence this relationship. De Vries et al. (2018) found high job demands, besides other factors, to be a predictor of sickness absence in people with a common mental disorder such as depression. High job demands can increase stress and having depression might decrease the capacity to effectively deal with stress like time pressures, which may result in a reduced probability to maintain employment and also negatively influence meaning at work. There are two prominent factors in depression that might hinder dealing with high work demands. First, cognitive difficulties, common in depression and can entail a lack of attention, deficits in executive functions and memory. In a study by Afridi et al. (2011) 63.3% of a depressed outpatient sample had cognitive impairments compared to only 3.3% of a healthy control group. Additionally, Rock et al. (2014) showed in a systematic review and meta-analysis that limitations in cognitive functions not only occur in currently depressed individuals but can also persist in remitted patients. Having a lower cognitive capacity might hinder successfully dealing with high job demands.

The second factor is the use of maladaptive emotion regulation strategies often employed by people in a current or remitted depression. People with a depressive disorder compared to people without one more often use rumination, avoidance and suppression when confronted with difficult internal or external situations (Visted et al., 2018). These strategies are labelled maladaptive, because they are often less effective in reducing the negative emotion than more adaptive strategies such as acceptance, reappraisal and problem solving (Visted et al., 2018). Maladaptive emotion regulation strategies may decrease effective dealing with high job demands as they often do not solve the situation and are less effective in reducing the negative emotions evoked by the situation. Additionally, using rumination can not only induce negative emotions but also reduce executive functioning by limiting working memory, attention and cognitive control (Donaldson et al., 2007; Joormann et al., 2011; Koster et al., 2011; Meiran et al., 2011; Watkins & Brown, 2002). In that way, maladaptive emotion regulation strategies and cognitive impairments might even strengthen one another and further limit a person's capacity to deal with job demands.

Taking together the findings of cognitive impairments and increased use of maladaptive emotion regulation, depression might increase the negative effect of job demands on maintaining employment. Having laid out the possible effects on maintaining employment we believe that these two processes will also influence the effect of job demands on meaning at work. Even though job demands have the potential to increase learning alongside stress, we expect when suffering from depression the stress aspect of job demands to be emphasised. Hence, a high workload is detrimental to meaning at work, because the person might feel overwhelmed with the tasks and incapable to perform a potential meaningful job.

Hypothesis 5: (a) When having depression the negative relation between job demands and maintaining employment is amplified. (b) When having depression the positive relation between job demands and meaning at work is buffered.

The second work condition under investigation is job control. Longitudinal studies have found evidence that having job control is an important factor for people with depression. Markkula et al. (2017) tracked the employment status of people with a depressive disorder after 11 years. From 263 participants about 15.7% had been granted disability pension. The researchers found that having high job control was the only significant factor associated with a lower probability of entering disability pension. They also investigated job demands and surprisingly found that higher job demands were not indicative of an increased risk of disability pension (Markkula et al., 2017). However, they only looked at disability pension and not at other forms of losing or leaving employment. Nevertheless, interesting is the long-term effect of job control, the study looked at people with depression at baseline and lower job control was still an important predictor of entering disability pension 11 years later. In comparison, low job control was not a predictive factor of job loss for people without a chronic disease (Boot et al., 2014). Fewer studies have investigated the relationship between work conditions, depression and meaning at work.

Nonetheless, based on the Reconceptualised Uncertainty in Illness Theory (RUIT), we argue that especially when having depression, high job control is related positively to maintaining employment and meaning at work. The RUIT addresses the constant uncertainty that is associated with a chronic illness, which has a high possibility of recurrence and often requires long-term adjustments and management (Mishel, 2014). Here uncertainty is a cognitive state where the individual has trouble establishing the meaning of events related to the illness (Giammanco et al., 2015). Sources of uncertainty might be not knowing the cause and/or progression of the chronic disease, fluctuating symptoms that seem unpredictable and a lack of knowledge about the outcome (Brown, 2018). The uncertainty brought about by suffering from depression might add further subjective value to job control. As the individual experiences uncertainty concerning their illness, having the possibility to influence work can bolster feelings of stability and certainty lacking in other areas of life. This additional value

assigned to job control not only increases the probability to maintain employment but also amplifies the positive relation between job control and meaning at work.

Hypothesis 6: When having depression the positive relation between job control and (a) maintaining employment, as well as the positive relation between job control and (b) meaning at work are amplified.

In a healthy sample, the interaction term of high job demands and high job control is expected to relate positively to meaning at work and maintaining employment. Considering the aforementioned theories and findings, we expect that when having depression the interaction of job demands and job control will have a negative effect on meaning at work and maintaining employment. For people with depression the stress aspect of job demands might be heightened and job control might not be able to buffer it.

Hypothesis 7: When having depression the interaction effect of job demands and job control relates negatively to (a) maintaining employment and (b) meaning at work.

All variables and pathways are depicted in Figure 1A and B.

Method

Participants

The study is based on data from the Lifeline cohort study which included 152,758 adults in the baseline questionnaire (T1). Included in the study are adult participants from the Lifeline cohort study between 18 and 65 years old who are living in the North of the Netherlands, and who are employed at T3, which leaves a sample size of 55,950. See Figure 2 for an overview of the sample selection. In the T3 sample (N = 55,950) two groups of participants are analysed: depressed (n = 1,188) and non-depressed individuals (n = 54,762). Participants are included in the depression group if they have a depressive disorder, or a dysthymic disorder and use antidepressants as measured at T1.

Of the study population, 59.7% were female and 40.3% male. The mean age of the study population was 44.35 years with a standard deviation of 9.81. The educational level of

the sample was diverse, with 10.8% from a low education, 52.3% medium and 35.3% from a high education. On average participants worked 32.16 ($SD = 11.80$) hours per week and about 41% of the participants were employed for over 10 years at their current employer.

Research Design and Procedure

The current research project used data from the Dutch longitudinal population-based Lifelines cohort study and biobank study matched with Register data from Statistics Netherlands (CBS). Lifelines is a multi-disciplinary prospective population-based cohort study examining in a unique three-generation design the health and health-related behaviours of 167,729 persons living in the North of the Netherlands. It employs a broad range of investigative procedures in assessing the biomedical, socio-demographic, behavioural, physical and psychological factors which contribute to the health and disease of the general population, with a special focus on multi-morbidity and complex genetics. Participants were recruited via general practitioners; subsequently, family members were invited to participate; and, finally, adults could self-register to participate.

The Lifelines cohort does not enable public data sharing. The cohort's data are available only to researchers who, upon approval of a submitted research proposal, have signed a Data/Material Transfer Agreement. The study was conducted according to the Helsinki Declaration and was approved by the medical ethical review committee of the University Medical Center Groningen, the Netherlands. All participants provided their written informed consent (Scholtens et al., 2015; Stolk et al., 2008). The Lifelines cohort study collected data in a number of waves, of importance for this research study are T1: 2007-2013 and T3: 2012-2017 (for a more complete account see Scholtens et al., 2015).

Measures

In the T3 measurements working conditions were included. The Lifelines cohort implemented 21 questions from eight dimensions of the Copenhagen Psychosocial Questionnaire second version (COPSOQ2; Pejtersen et al., 2010). The current study focused

on five dimensions measuring the underlying concepts of job demands, job control, and meaning at work. All questions focus on the experience at work in the past month (“The following questions concern your experience at work in the past month”). The COPSOQ is theory-based; it has been developed to fit seven influential theories of psychosocial factors at work, one of which is the JDC model (Kristensen et al., 2005).

Job demands

Job demands were measured by four questions, two questions focus on quantitative demands the first question being a reversed item (“Do you have enough time for the work you need to do?”; “Do you get behind in your work?”) and two questions on work pace (“Is the work pace high throughout the workday?”; “Do you have to work very fast?”). Each item was answered on a 5-point Likert scale with answer options ranging from 1. “Always” to 5. “(Almost) never”. The Cronbach’s alpha of job demands was .73.

Job control

Job control was measured with four questions divided into two sub dimensions: influence (“Do you have a high degree of influence on your work?”; “Can you influence the amount of work you have to do?”) and possibilities for development (“Do you have the possibility to learn new things through your work?”; “Does your work require you to take the initiative?”). Each item is answered on a 5-point Likert scale. The influence over work has answer options ranging from 1. “Always” to 5. “(Almost) never”, while the possibilities for development questions have answer options ranging from 1. “To a very high degree” to 5. “To a very small degree”. Due to necessary model adjustments later on, the item “Can you influence the amount of work you have to do?” was excluded. The remaining three items had a reliability score of $\alpha = .61$. For the simple slopes low, medium and high values of job control were calculated at one standard deviation below the mean, the mean and one standard deviation above the mean.

Meaning at work

Two questions measured meaning at work (“Is your work meaningful?”; “Do you think the work you do is important?”) with a 5-point Likert scale ranging from 1. “To a very high degree” to 5. “To a very small degree” and a Cronbach’s alpha of .88.

Employment status

Register data from Statistics Netherlands (CBS) was matched with the data from the Lifelines cohort to track the employment status of the participants. This research project checked employment status at T3 and every month for the following two years. Employment status was classified as having paid employment and not having paid employment (dichotomous). People are classified as having employment when their main income component is from paid employment (excluding self-employed). The following categories are counted as not having paid employment: receiving disability benefits or unemployment benefits, early retirement and economic inactivity. The variable counts the number of months not having employment during the two years after T3, ranging from 0 to 23.

Depression

Depression was assessed at T1 using the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998; van Vliet et al., 2007). The MINI is a short structured diagnostic interview developed by clinicians and psychiatrists mainly designed for research purposes. It can be used to assess the diagnosis of psychiatric patients using the ICD-10 and DSM-IV criteria. In this study, participants were classified as having depression if (1) they had a depressive disorder, or (2) they had a dysthymic disorder and used antidepressants (ATC-code N06A; World Health Organization, 2017).

Control Variables

Perceived health. Perceived health is measured by the first question of the RAND-36: “How would you rate your health, generally speaking?” (Hays & Morales, 2001). The item has a 5-point Likert scale with answer options ranging from 1. “Excellent” to 5. “Poor”.

Perceived health is a control variable as it is a risk factor to exiting paid employment (van Rijn et al., 2014).

Multimorbidity. People with multiple chronic health problems have a higher risk of leaving full-time employment compared to people with one chronic disease (van Zon et al., 2020). Hence, the number of chronic diseases is controlled for; the range for chronic diseases in this sample was zero to four. The study takes into account a variety of physical chronic diseases next to depression; namely cardiovascular diseases, diabetes, chronic obstructive pulmonary disease and rheumatoid arthritis.

Statistical analysis

Before the statistical analysis, the items of job demands, job control, meaning at work and self-perceived health were recoded, with higher scores representing more demands, control, meaning at work and better self-perceived health. Descriptive statistics and assumption checks were done in SPSS (IBM Corp, 2017), while the confirmatory factor analysis (CFA) and the final models were analysed in a structural equation modelling approach (SEM) using Mplus 8.0 (Muthén & Muthén, 1998-2017). A CFA on the latent constructs of job demands, job control and meaning at work was performed and gave an insufficient model fit. The model was respecified based on modification indices, which indicated that two of the job demands item error terms needed to correlate with each other. The theoretical bases for adding this parameter specification was item content overlap. The resulting model had an adequate model fit (see Table 1).

Afterwards two structural models were independently assessed using model codes given by Stride et al. (2015). The first SEM analysed the outcome “month of not being employed” in a zero-inflated Poisson (ZIP) regression using manifest variables. The second model focused on the outcome “meaning at work” and used latent variables. This first analysis was supposed to be analysed with latent variables as well. However, due to convergence issues when estimating the three-way interaction it was switched to manifest

variables instead. The ZIP regression analyses two regression pathways for each effect. In addition to the path predicting the number of month out of employment (path 1) it predicts a binary path: the probability of scoring a zero on “month of not being employed (path 2)”.

The variable “month of not being employed” violated the normality assumption, the distribution was skewed and highly kurtosis. Therefore, all analyses in Mplus 8.0 (Muthén & Muthén, 1998-2017) were performed with a robust maximum likelihood estimator (MLR). Additional support for using the MLR estimator in all analyses was given by scaling correction factors above one.

We assessed the model fit of the baseline models (no interaction) with the root mean squared error of approximation (RMSEA), comparative fit index (CFI) and Tucker-Lewis index (TLI). An adequate model fit is given by a RMSEA value below .06 and CFI and TLI equal or above .95 (Schreiber et al., 2006). Furthermore, we calculated the log-likelihood ratio test to compare the model fit of the baseline and interaction model for meaning at work. The log-likelihood ratio test values are approximately distributed as chi-square; where a significant p-value indicates that the interaction model is also a well-fitted model and can be used in the analysis (Maslowsky et al., 2015). Lastly, a Poisson regression and ZIP regression baseline model were compared with the Bayes information criterion (BIC), the smaller BIC indicates the better fitted model (Schreiber et al., 2006). All model fit indices are reported in Table 1. The model results are reported in the form of unstandardized beta coefficients, the standard errors and the two-tailed significance values.

Results

Sample characteristics are displayed in Table 2; means, standard deviations and correlations can be seen in Table 3.

Month of not Being Employed

The direct effect of job demands on month not being employed was significant ($b =$

-.05, $SE = .02$, $p < .01$). Higher job demands were associated with fewer months out of employment during the 2-year follow-up. The second pathway (binary outcome) showed a similar significant effect ($b = .23$, $SE = .02$, $p < .001$), implying that having high job demands increased the probability of maintaining employment throughout the follow-up. Also, the direct effect of job control was significant ($b = -.03$, $SE = .01$, $p = .02$). Having high job control was related with fewer months out of employment. The same is true for the second pathway ($b = .36$, $SE = .02$, $p < .001$). There was no effect of depression on employment in either pathway (path 1: $b = -.06$, $SE = .07$, $p = .33$; path 2: $b = -.09$, $SE = .10$, $p = .36$). Both control variables showed a significant relation to the outcome “month not having employment” in path 1 and path 2: self-perceived health (path 1: $b = -.07$, $SE = .01$, $p < .001$; path 2: $b = .11$, $SE = .02$, $p < .001$), total amount of chronic diseases (path 1: $b = .11$, $SE = .03$, $p < .001$; path 2: $b = -.25$, $SE = .04$, $p < .001$). Higher self-perceived health had a small but significant relation to fewer months out of employment and increased the likelihood of maintaining employment. While having multiple chronic diseases was related to more months of unemployment over the two-year follow-up and less likely to maintain employment.

The interaction effect of job demands and job control was significant in both pathways (path 1: $b = -.04$, $SE = .02$, $p = .02$; path 2: $b = .06$, $SE = .03$, $p = .02$), meaning, that having high job demands while also having high job control was related to fewer months out of employment and a greater probability to maintain employment. The calculation of the simple slopes showed that in the first pathway job demands did not have an effect on month out of employment when job control was low ($b = -.01$, $SE = .02$, $p = .78$). However, job demands were associated with fewer months of unemployment under medium ($b = -.05$, $SE = .02$, $p < .01$) and high levels of job control ($b = -.09$, $SE = .03$, $p < .01$). In the second pathway only the simple slope for medium levels of job control was significant (low: $b = .24$, $SE = .15$, $p = .10$; medium: $b = .23$, $SE = .02$, $p < .001$; high: $b = .22$, $SE = .15$, $p = .13$). A participant was more likely to maintain employment in a job characterized by high demands and medium

levels of job control. There was no effect of job demands and depression on months not being employed for either pathway (path 1: $b = .12$, $SE = .07$, $p = .11$; path 2: $b = -.25$, $SE = .13$, $p = .06$). Likewise, the interaction of job control and depression was non-significant in both pathways (path 1: $b = -.04$, $SE = .06$, $p = .53$; path 2: $b = -.10$, $SE = .12$, $p = .41$). Finally, the three-way interaction was significant for path 1 ($b = .18$, $SE = .07$, $p = .02$), but not for path 2 ($b = -.07$, $SE = .15$, $p = .62$). In the first pathway, the interaction of high job demands, high job control and having depression was related to more months without employment during the two-year follow-up. Calculating the simple slopes, we found that job demands did not have an effect on months unemployed under having depression combined with low, medium and high levels of job control in pathway 1 (low: $b = -.08$, $SE = .08$, $p = .34$; medium: $b = .06$, $SE = .07$, $p = .35$; high: $b = .20$, $SE = .11$, $p = .08$). However, the slope difference test was significant for the slopes comparing high job demands with high job control and having or not having depression ($b = .29$, $p = .02$). All effect sizes of the relations between the variables are displayed in Figure 3A and B, while the three-way interaction of path 1 is plotted in Figure 4.

Meaning at Work

Job demands had a significant negative direct effect on meaning at work ($b = -.11$, $SE = .01$, $p < .001$). Having high job demands was related with a lower sense of meaning people felt at work. Job control had a significant positive effect on meaning at work ($b = .35$, $SE = .01$, $p < .001$). In general, people with high job control said that they felt more meaning at work compared to people with low job control. The effect of depression on meaning at work was non-significant ($b = -.04$, $SE = .03$, $p = .14$). Both control variables were significantly related to meaning at work: rating ones self-perceived health as good had a small positive effect ($b = .05$, $SE = .01$, $p < .001$), total amount of chronic diseases also had a small positive relation to meaning at work ($b = .05$, $SE = .01$, $p < .001$).

There was no interaction effect of job demands and control on meaning at work

($b = -.01$, $SE = .01$, $p = .30$). Furthermore, there was no effect of the interaction term job demands and depression ($b = -.06$, $SE = .05$, $p = .21$). However, the interaction of job control and depression was significant ($b = .12$, $SE = .03$, $p < .001$). When having depression, high job control had an even stronger positive relation to meaning at work. Finally, the three-way interaction of job demands, control and depression was non-significant ($b = .07$, $SE = .08$, $p = .40$). All effect sizes of the relations between the variables can be seen in Figure 5; the three-way interaction is displayed in Figure 6.

Discussion

The aim of this research project was to identify the relations of job demands and job control to meaning at work and the probability of maintaining employment, with a focus on people suffering from depression. It is important to include vulnerable individuals into the work domain. Therefore it is essential to find out which work conditions fit their needs. To fully answer the research question and the underlying hypotheses we will first summarize the findings, followed by interpretations of the most important results. Thereafter implications for theory and practice, strengths, limitations, and future directions for research will be discussed.

To summarize, job demands had an unexpected positive relation to maintaining employment, which runs counter hypothesis 1a. In line with our hypothesis 2a, job control had a positive association with maintaining employment. The interaction effect of job demands and control was positively related to employment status. However, it did not show a buffer effect as predicted in hypothesis 3a. Depression had no effect on maintaining employment (4a). Also, the interaction effects of depression and job demands (5a), as well as depression and job control (6a) were non-significant. Lastly in line with hypothesis 7a, the three-way interaction of depression, demands and control was negatively related to maintaining employment. Job demands were negatively related to meaning at work, which runs counter hypothesis 1b. In line with hypothesis 2b, Job control had a positive association with meaning at work. Depression had no effect on meaning at work (4b). Also the interaction

of job demands and control (3b), as well as the interaction of job demands and depression were nonsignificant (5b). Depression did amplify the positive relation between job control and meaning at work as predicted in hypothesis 6b. While the three-way interaction was nonsignificant (7b).

Maintaining Employment

Surprisingly, in this study, higher job demands had a positive effect on maintaining employment, which is contradicting our hypothesis and previous research relating high job demands to burnout indicating that especially over time high job demands increase stress and negative work outcomes (Alarcon, 2011). A possible explanation for this might be that people with low job demands experienced more boredom at work, which resulted in them quitting that particular job. Reijseger et al. (2013) found that high job demands were negatively related to feeling boredom at work. High workload can be stimulating and therefore people experienced more job satisfaction and commitment the less boredom they felt. Workers who did experience high amounts of boredom at work also intended to quit their jobs more often (Reijseger et al., 2013). The finding that high job control is related to fewer months out of employment throughout the two-year follow up is in line with previous research (Hintsa et al., 2015). Job control is a resource and gives employees autonomy and ownership in their work as well as it increases the capability to deal with job demands (Bakker & Demerouti, 2007). Accordingly, the interaction effect of high job demands and high job control also related positively to the probability of maintaining employment. This follows the learning hypothesis, saying that the combination of high demands and high control increases learning and motivation while decreasing possible stress from work demands (Karasek & Theorell, 1990; van der Doef & Maes, 1998).

It was argued that depression strengthens the negative relation between job demands and maintaining employment. In this study, no such effect was present. Previous studies have found depressive symptoms, such as difficulty concentrating and tiredness, to be associated

with impaired functioning during work, especially in managing time demands, output skills and mental-interpersonal skills (Sanderson and Andrews, 2016). However, this could more accurately relate to presenteeism than absenteeism. For example, some studies have found a greater connection between depression and presenteeism than depression and absenteeism (Stewart et al., 2003). Presenteeism describes lost productivity due to attending work while unwell (Sanderson and Andrews, 2016). Workers with depression might have reduced quantity and quality of work tasks and output during unwell days, but might not lose or quit their job because of high job demands. Another explanation for the non-significant finding could be that the sample of depressed participants might have consisted of mildly depressed people instead of people with a rather severe depression. Unfortunately, in this study we could not assess and distinguish between different levels of severity. A third reason might be that job demands not only increase stress but also imply that people rely on you and trust in your ability to deal with tasks. As such, in the current sample, the people with depression might have perceived high demands as both, stressful and motivating.

Contradictory to our hypothesis, we did not find an interaction effect between job control and depression. It was argued that having depression would strengthen the positive effect of job control on the probability to maintain employment. This argument was built on a longitudinal study in which high job control was the only significant predictor reducing the probability of entering disability pension in depressed people up to 11 years later (Markkula et al., 2017). In this study, maintaining employment was assessed by counting the number of months out of employment. As a consequence, this study does not distinguish between different kinds of being out of employment, which could have biased the results by underestimating the influence of work conditions and depression on maintaining employment. In the study of Markkula et al. (2017) they focused on people who had been granted disability pension because of their mental health issues. While in this study many other reasons could have caused leaving employment, also circumstances such as downsizing of the firm.

In this study, a significant effect of the three-way interaction on maintaining employment was found. When diagnosed with depression two years prior, the combination of high demands and high control was related to more months out of employment during a two-year follow-up. A person with depression was more likely to maintain employment when having high job control and low job demands. This result should be interpreted with caution, as the simple slopes themselves were non-significant. Nevertheless, the slope difference test showed that there was a significant difference between job demands and months out of work under the condition of high job control and having or not having depression. On average, a person suffering from depression seemed to have difficulties dealing with high job demands even when they had high job control. This indicates that maladaptive emotion regulation strategies and cognitive limitations could reduce the capacity to deal with high workload and that job control did not buffer the negative effect.

Meaning at Work

Next, we want to highlight and interpret some of the findings predicting meaning at work. An unexpected finding is the negative relation between job demands and meaning at work. Clausen and Borg (2011) found a small but significant positive effect and we expected to find the same; since Karasek (1979) hypothesized that psychological job demands increase stress but also learning. Built on that notion, it was argued that having high job demands can be positively related to feeling that one's job is important. Demands such as workload were expected to represent a challenge-related stressor (Podsakoff et al., 2007); meaning that people experiencing high workload would be stronger motivated to work efficiently and thus experience more meaning at work. Unfortunately, this study could not test if participants viewed job demands as a challenge or more as a hindrance-related stressor, which could have influenced the results. Challenge-related stressors are often viewed as motivating and giving an opportunity for achievement and personal development. Hindrance-related stressors on the other hand, are often viewed as obstacles to task accomplishment and

personal growth (Podsakoff et al., 2007). We expected, that a person who experienced their high job demands as a challenge-related stressor would report higher scores of meaning at work; while a person experiencing high job demands as a hindrance-related stressor would have reported lower scores of meaning at work.

Another explanation for the difference in findings might be that the relation between job demands and meaning at work could be dependent on the occupational field. Clausen and Borg (2011) studied the same concepts with the same questionnaire (COPSOQ), but in a sample solely consistent of employees in eldercare-service. People occupied in health care might have chosen this line of work, besides other reasons, because of a wish to help others and contribute to society. Hence, for them having higher workload could be connected to helping more people and therefore increase the amount of meaning felt at work. People in other occupations might think differently about it. For example, working under constant high work pace in a factory might give a feeling of unimportance and having to adhere to deadlines given by other people. Therefore, the factory worker might experience less meaning at work when having higher demands.

The finding that higher job control is related to higher levels of meaning at work is in line with previous research (Clausen and Borg, 2011). It seemed that people with high job control also perceived their job to be more meaningful. This might be due to feelings of independence and ownership brought about by having control over how and when to perform certain tasks at work (Pierce et al., 2004). The finding of the positive interaction term of job control and depression expands the knowledge on depression in the workplace. For people diagnosed with depression two years prior, the relation between job control and meaning at work was amplified. When having depression, job control was more strongly connected to meaning at work than when not having depression. Former studies have shown that depressed people valued their work if they perceived it as meaningful (Vooijs et al., 2018), but to our knowledge there has been no study investigating the effect of job control on feeling meaning

at work while having depression. We believe this effect to be connected to the RUIT (Mishel, 2014). People with a chronic disease like depression have to deal with constant uncertainty regarding their illness, its cause, symptoms and overall progression. Job control allows to actively decide when and how to fulfil a task. The sense of control is especially important for somebody with a chronic disease, because it gives security and autonomy otherwise lacking. Consequently, people with depression might perceive their job to be especially meaningful when having job control.

Implications

The current study has a number of theoretical implications. First, our result that the interaction effect of depression and job control had no effect on the probability to maintain employment stands in direct contrast to earlier research. It indicates that even though job control is an important factor in many instances, in some it may not. Future research could investigate whether other work related and or person related factors can be more important for maintaining employment than job control when suffering from depression. Second, the results highlight the importance of studying meaning at work and what strengthens and weakens meaning at work in different populations. In order to do that efficiently, it would be beneficial to improve the conceptualization of meaning at work. Second, the RUIT (Mishel, 2014) can be a valuable theory explaining why high job control relates stronger to meaning at work for people with depression compared to people without.

This research project also has a number of practical implications. The findings showed that people with depression were most likely to maintain employment in a job characterized by low job demands and high job control (low strain job). Therefore, a low strain job might fit them better than an active job. People with depression could profit from knowledge on how their disease and work environment interact, for example when deciding on a specific job or when having trouble navigating through difficult aspects of a job. This could be integrated in workshops, therapeutic sessions or coaching. High job control is positively related to meaning

at work, especially for people suffering from depression. This can be used to help people with depression feel more secure and possibly increase their overall well-being. This is beneficial for the individual in question and society as a whole. Human resources could advocate an open and stigma free work environment to help people suffering from mental disorders step forward and assist them with their needs to increase sustainable employability.

Strengths and Limitations

The current study has a number of strengths. First, access to the Lifeline cohort study allowed us to study the constructs in a sample of over 55,000 workers, which increases confidence in the effects we did find. Second, being able to track the employment status with register data from Statistics Netherlands over two years allows for careful suggestions of work condition effects over time. Last, the use of structural equation modelling in the meaning at work analysis increases the validity on the construct level and reliability of relationships between constructs. The study also has a number of limitations. Contrary to previous studies, in our results we found no direct effects of depression on the work outcomes (Allan et al., 2016; Knudsen et al., 2013). This might have been due to shortcomings in the study design. First, depression was assessed approximately two years prior measuring work conditions and outcomes; there was no second assessment of the depressive symptoms at T3. The large time lag between the measurements and the lack of reassessing depression are a limitation of this study. Second, we did not distinguish between different levels of severity for depression. Together this might have resulted in underestimating the direct and interaction effects of depression on both outcomes. Future research should include measures of severity as well as reassessing depression if there is a significant time gap between measurements. Another limitation is the relatively small unstandardized regression coefficients (*b*-values ranging from .18 to -.05) in the first analysis, which hint towards small effects of the predictors on maintaining employment.

Directions for Future Research

To shed more light on some of the unexpected findings surrounding job demands, future research could look at job demands in a hindrance and challenge-stressor approach. We would expect that challenge focused appraisals relate more to positive effects in both maintaining employment and meaning at work. While hindrance focused appraisals relate more to negative effects in employment and meaning at work. Furthermore, people with depression might perceive job demands more often as hindrance stressors compared to non-depressed people; this might result in a lower probability to maintain employment and feeling less meaning at work. Therefore, adding a measure about how people perceive their high job demands compared to only asking if they have high job demands could provide more clarity over its effects on work outcomes in depressed and non-depressed employees.

Another future research project could include a measure of uncertainty in chronic illnesses while studying the impact of job control on meaning at work in a sample of depressed employees. By directly measuring the level of uncertainty in chronic illnesses the scientific community would gain more insight in the underlying mechanisms influencing the relation of job control and meaning at work in depressed individuals. We would expect that a person with more uncertainty regarding their depression would rate a job as more meaningful when having high job control compared to a person with a less uncertainty regarding their depression.

Conclusion

In conclusion, job control is positively related to meaning at work, especially for people with depression. For them, job control might symbolize certainty and control they feel is lacking in dealing with their disorder. Hence, they feel more meaning at work when being in control of work tasks. With regard to maintaining employment, depressed people had the highest probability to maintain employment in a job characterized by low demands and high control.

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Figure 1A

Conceptualized Model: Maintaining Employment

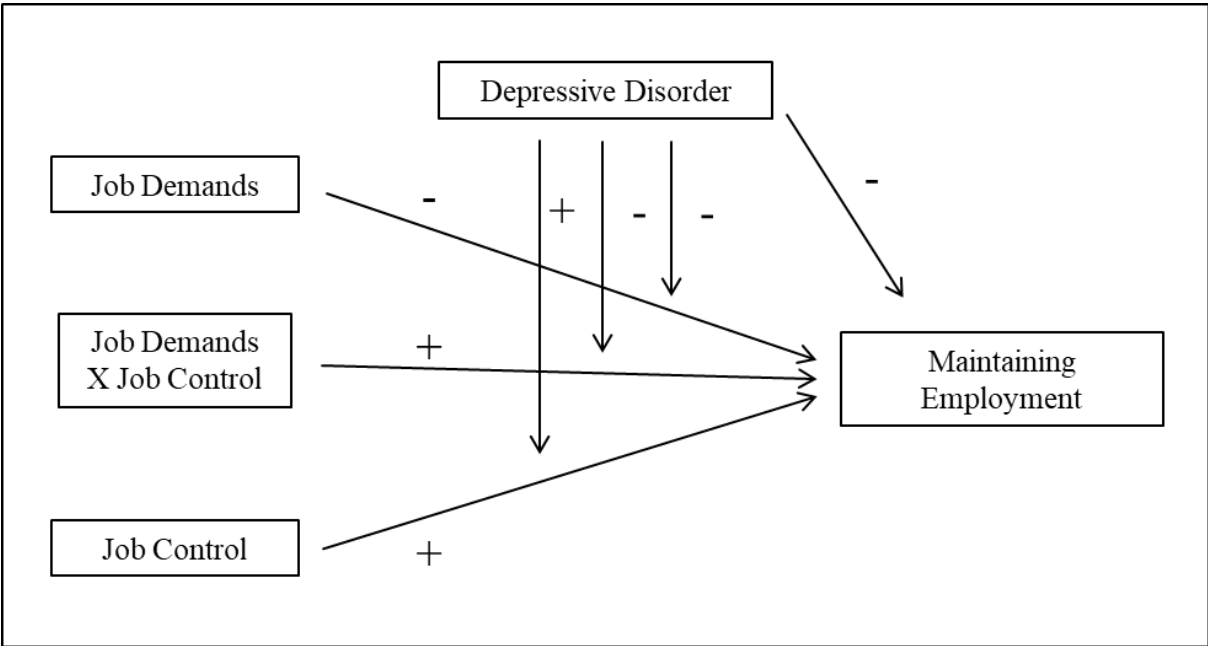


Figure 1B

Conceptualized Model: Meaning at Work

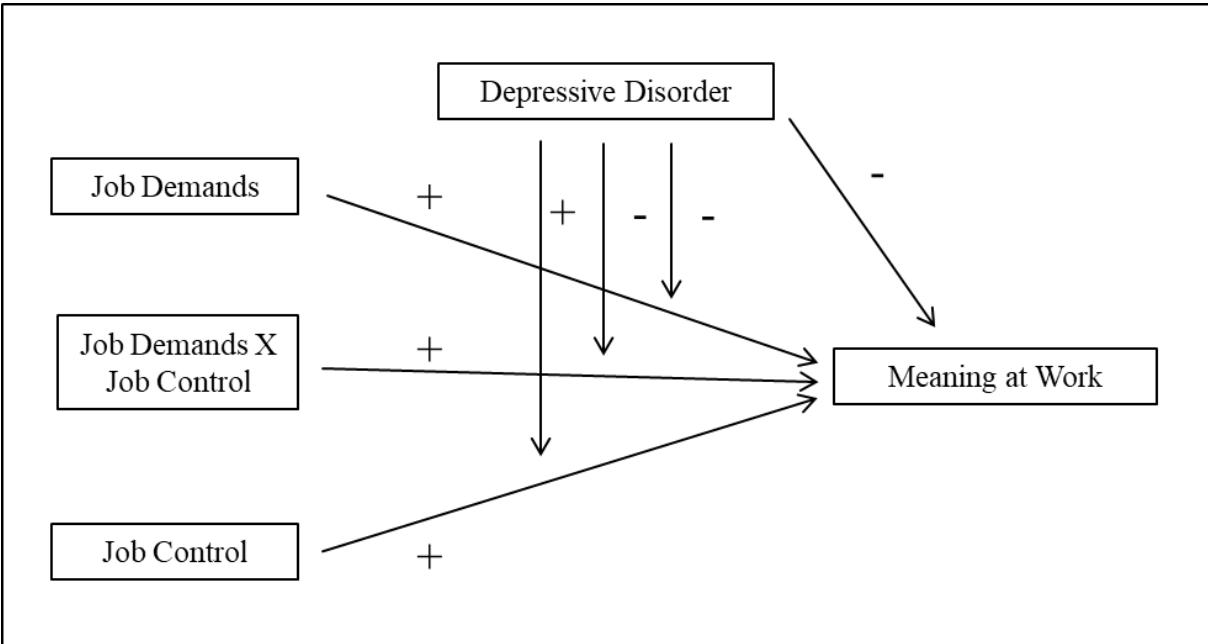


Figure 2

Sample Selection

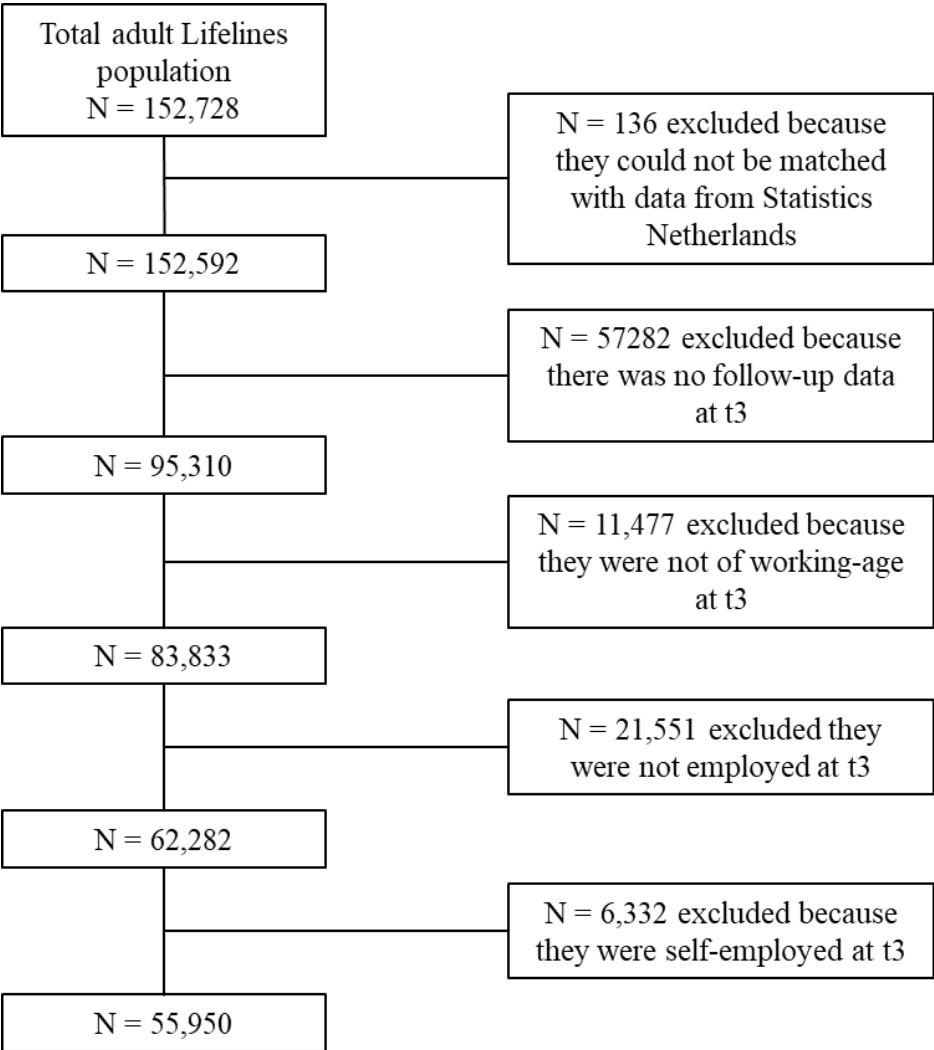


Table 1*Model Fit*

Model	Sample Size	RMSEA	CFI	TLI	Log-likelihood ratio test	BIC
CFA	53531	.05	.97	.95	—	—
Meaning at work						
Baseline model	53453	.05	.95	.94	—	—
Interactions	53453	—	—	—	$D = 31.48^{**}$ ($df = 4$)	—
Employment						
log-transformation: baseline model	53229	.05	.93	.91	—	—
Poisson regression: baseline model	53229	—	—	—	—	242,263.92
ZIP regression: baseline model	53229	—	—	—	—	87,584.34

Note: Variation in sample size due to missing data.

* $p < .05$. ** $p < .01$. (2-tailed).

Table 2*Sample Characteristics at T3*

Variable	Sample				
	Size	Range	Mean	SD	Percentage
Age	55,950	19 - 64	44.35	9.81	
Working hours per week	46301		32.16	1.02	
Depressed	1,188				2.1%
Non-depressed	54,762				97.9%
Gender	55,950				
Female					59.7 %
Male					40.3%
Education ^a	55,950				
Low					10.8%
Medium					52.3%
High					35.3%
Job tenure ^b	55,950				
> 10 years					41%

^a low education (no education, primary education, lower or preparatory vocational education, lower general secondary education); medium education (intermediate vocational education or apprenticeship, higher general senoir secondary education or pre-university secondary education); high education (higher vocational education, university).

^b job tenure: at current employeer.

Table 3*Descriptive Statistics and Correlations*

Variable	1	2	3	4	5	6	7	8	9
1. Job demands ^a	—								
2. Job control ^a	.01	—							
3. Meaning at work ^a	.04**	.23**	—						
4. month no employment ^c	-.05**	-.06**	-.05**	—					
5. Depression ^b	.01*	-.04**	-.02**	.02**	—				
6. Chronic diseases	-.02**	-.05**	-.01	.05**	.45**	—			
7. Self-perceived health ^a	-.09**	.13**	.10**	-.05**	-.10**	-.16**	—		
8. Job tenure	.04**	-.02**	.02**	-.05**	-.01**	.06**	-.05**	—	
9. Hours per week	.19**	.25**	<-.01	-.09**	-.03**	-.03**	.05**	.01	—
<i>Mean</i>	2.80	3.26	4.11	0.80	0.02	-	3.33	3.04	32.16
<i>Standard deviation</i>	0.68	0.73	0.70	3.02	0.14	-	0.75	1.02	11.80

Note: Listwise deletion. N = 46301.

^a measured at T3.

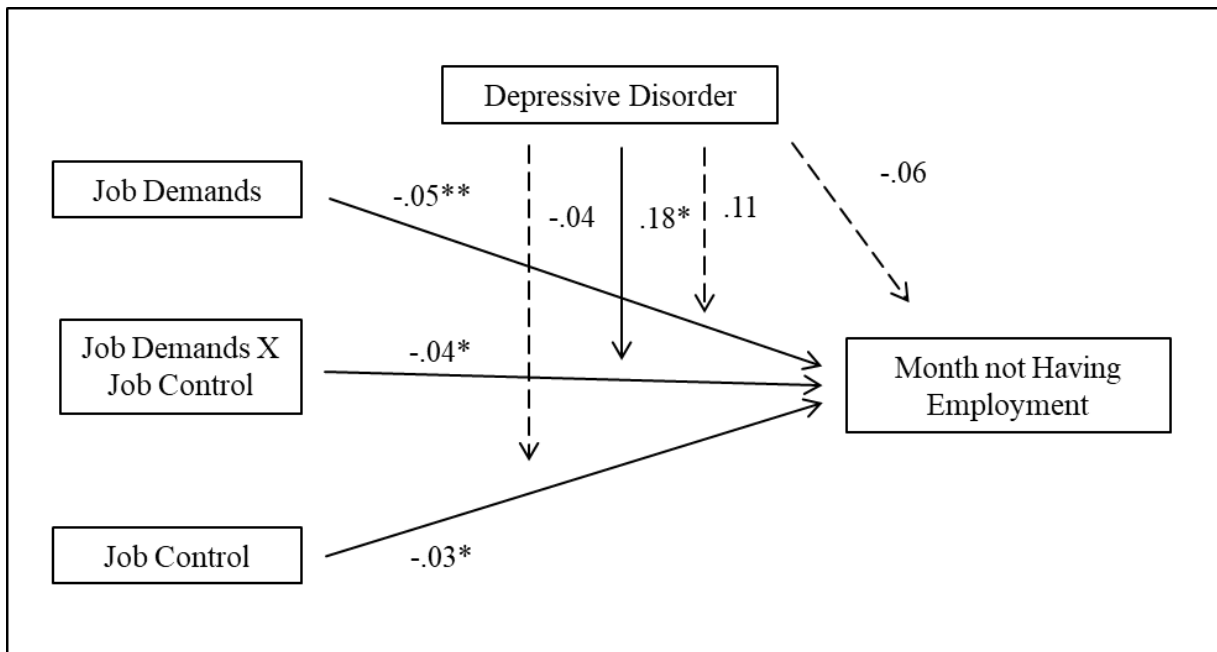
^b measured at T1.

^c two-year follow up after T3.

* p < .05. ** p < .01. (2-tailed).

Figure 3A

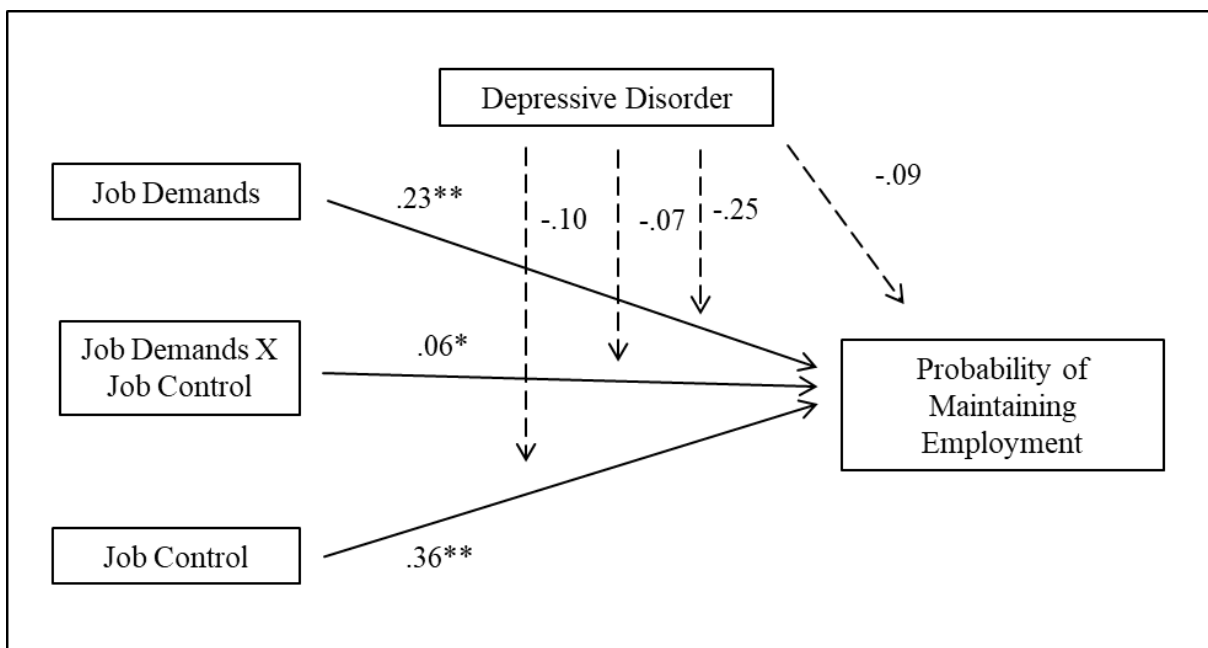
Model Results: Month not Having Employment – Path 1



* $p < .05$. ** $p < .01$. (2-tailed)

Figure 3B

Model Results: Probability of Maintaining Employment – Path 2



* $p < .05$. ** $p < .01$. (2-tailed)

Figure 4

3-way Interaction: Month not Having Employment – Path 1

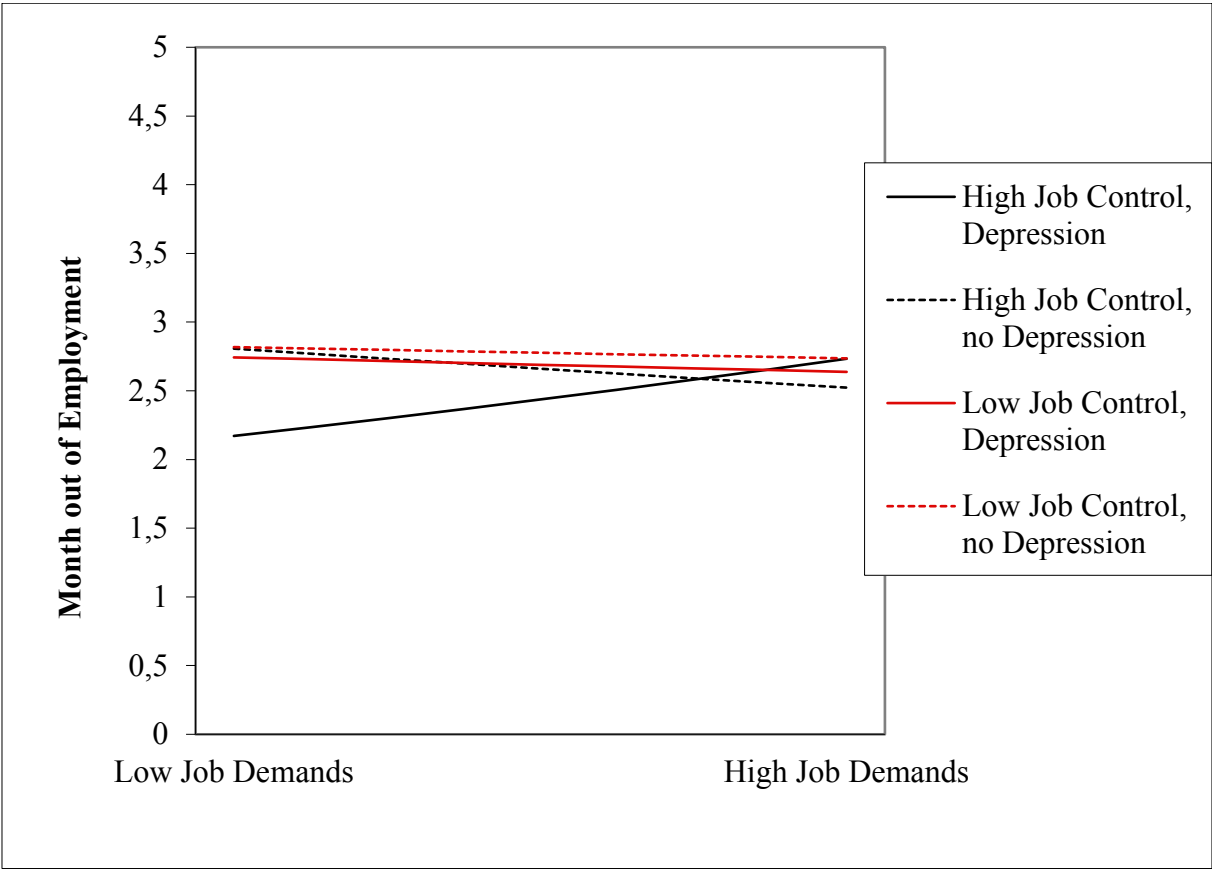
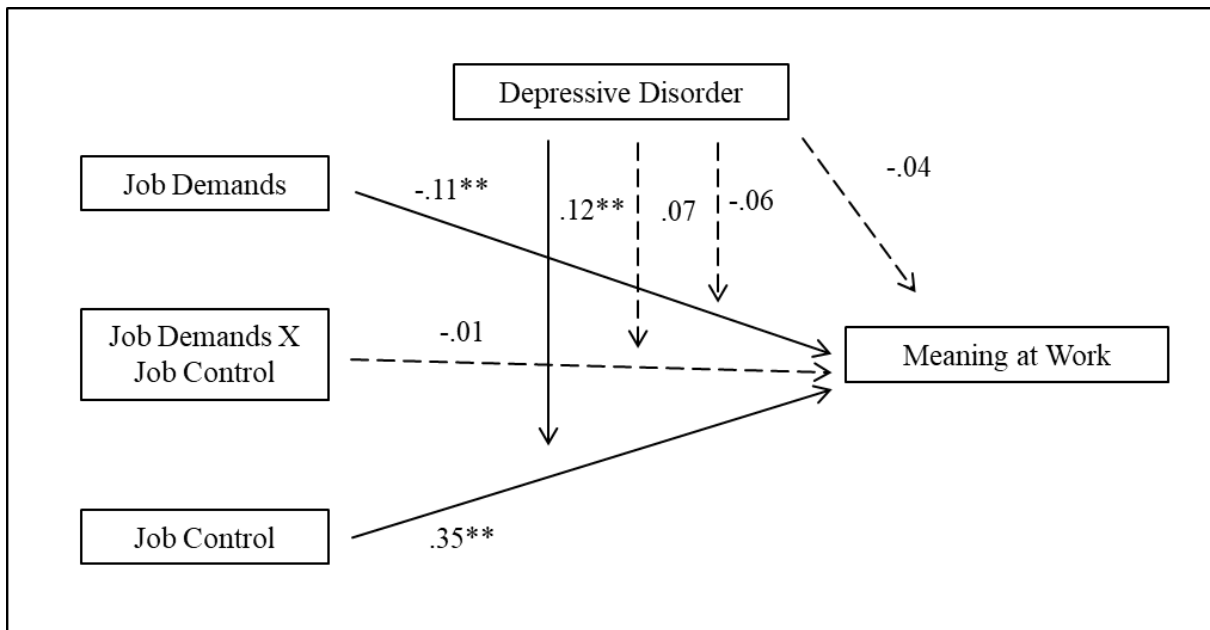


Figure 5

Model Results: Meaning at Work



* $p < .05$. ** $p < .01$. (2-tailed)

Figure 6

3-way Interaction: Meaning at Work

