# Does Loneliness have an Effect on Emotional Exhaustion and Emotional Resources above and beyond Job-Demands & Resources? A Longitudinal Study

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## Abstract

Previous literature on burnout has suggested a significant positive relationship between job demands and exhaustion along with the buffering role of job resources on that relationship. The Job-demands-resources model by Demerouti et al., (2000) that has been commonly used as a theoretical framework to support this relationship, formed the basis of the present study. The present longitudinal study aimed at exploring whether loneliness explained variance in exhaustion and emotional resources among paid employees, over and above job demands and resources. Data was extracted from the LISS panel, which comprised of a heterogenous and randomly selected sample (N > 3000), who were paid employees throughout the three waves of the study. Multiple regression analysis was conducted to study the effect of loneliness (T2), job demands, resources and existing exhaustion and emotional resources (T1) on exhaustion and emotional resources at a later time stage (T3). Contrary to the expectations of the present study, loneliness had a significant impact on exhaustion and emotional resources, although it was a very trivial contribution. Moreover, no evidence was found in support of the JDR model, as only emotional demands among other demands were found to have a significant impact on exhaustion. The results revealed that the strongest contributors towards exhaustion and emotional resources were pre-existing exhaustion and emotional resources themselves.

*Keywords:* Loneliness; Job demands; Job resources; Exhaustion; JDR model

## Introduction

According to a recent study by Gallup (2020), it was inferred that almost 76% of employees worldwide undergo burnout at least sometimes in their career. In the Netherlands itself, the percentage of employees experiencing burnout is 17%, showing a significant increase in the past decade (Best, 2020). The term 'burnout' has been a popular domain of research since the 1970's when people started observing the negative consequences of human-work relationships on employees and eventually on the organizations. An individual reaches a stage of burnout when they experience immense exhaustion, cynicism and diminished sense of personal accomplishment (Maslach, Schaufeli & Leiter, 2001).

Although, there are several possible antecedents of burnout, the most extensively researched are the job-demands and resources (Maslach et al., 2001; Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Job demands are those physical, social, or organizational facets of an occupation that demand prolonged physical and/or psychological efforts from an employee. These demands can be quantitative or qualitative in nature. Job-resources on the other hand, are those aspects of a job that could aid in reducing the negative effects of job demands, help in attaining work related goals or encourage personal growth and development. These resources could be physical, social, psychological or organizational in its nature. It is expected, according to the job-demands and resources model (JDR model), that burnout is a consequence of such highly demanding work environments complemented by low availability of resources (Demerouti et al., 2001; Bakker & Demerouti, 2007).

Lack of social support at work or in personal life as a resource in particular along with high demands, is found to be positively correlated to symptoms of burnout, in particular the exhaustion domain of burnout (Bakker, Demerouti & Verbeke, 2004). Lack of social support and loneliness are two constructs that share some overlapping characteristics in respect to conceptualization however are conceptually two different terms (Turan, 2019). Therefore, individuals who lack social support in life can be considered lonely, since lack of social support is a component of the development of loneliness, but not synonymous with it (Murphy & Kupshik, 1992). Loneliness is considered as a multidimensional concept that is subjective to the individual experiencing it and is manifested by a myriad of emotional states. Hence, it makes it difficult to capture the real essence of loneliness. Wright (2005, p.15), defines loneliness based on several researches as "the distressing and subjective deficiency

between an individual's real and ideal social environment, in terms of social and intimate relationships". This study will focus on loneliness as an individual state of employees.

According to Maslow's need hierarchy (1954), social relationships are essential for an individual's growth and motivation. Sense of belongingness and affiliation with others is fundamental for well-being, and lack of it may result in feelings of aloofness or loneliness. Conservation of resources (COR) theory also posits the occurrence of stress in individuals due to conditions such as loss of key resources (social support), threat of losing resources or the inability to gain key resources (Hobfoll, Halbesleben, Neveu & Westman, 2018). COR theory also states that social support is a resource in itself that provides or facilitates the conservation of other valuable resources of the individual. One of the key principles of this theory, primacy of loss, is that the resources lost are more impactful and powerful for the individual than the resources gained. Therefore, loss of a resource such as social support will have a higher effect on the person than the gain of any other resource (Hobfoll et al., 2018). Maslach et al. (2001), found that the stigmatization arising from lack of social support, especially in the workplace led to unmet needs of employees which resulted in loss of engagement and commitment to the organization. Individuals who lack social support find difficulty to endure the high job demands compared to those with high social support, which eventually manifests as burnout (Cohen & Wills, 1985; Koeske & Koeske, 1989). In other words, social support is believed to alleviate the negative consequences of job demands such as burnout symptoms.

There exists a plethora of research on the established relationship between job demands, resources and burnout with the moderating role of social support (Cohen & Wills, 1985; Koeske & Koeske, 1989; Maslach et al.,2001; Bakker & Demerouti, 2007). However, there is a lack of literature regarding the role of loneliness on burnout, especially the exhaustion domain of burnout (Turan, 2019). There is also insufficient literature available on the effect of loneliness on the emotional resources of an individual. This study aims at introducing the underexplored effect of loneliness as a variable in the burnout studies instead of the much-studied effect of social support. That being so, the question this research intends to answer is:

*Does loneliness explain burnout symptoms (emotional exhaustion) and emotional resources of employed individuals above job demands and resources, over and above existing exhaustion, demands and resources ?*

According to a survey conducted by Statistics Netherlands (CBS) in 2019, 31% of the population in the Netherlands reported experiencing loneliness sometimes in their lives and 7% of the people felt lonely often. It is known that loneliness can have detrimental consequences for individuals and the organizations, therefore such a problem should not be left unnoticed (Wright, 2015). The theoretical relevance of this study is to contribute to the existing literature on burnout. Furthermore, this research will add extra value to the literature by studying a construct that is scarcely explored in the extant literature, loneliness. Despite the availability of numerous studies on job demands, social support and burnout, this study will be insightful by exploring an unchartered territory in these relations. Loneliness is said to have an effect on one's physical and mental health. Two meta-analytic reviews have revealed that loneliness is associated with high mortality rates, obesity, and mental health issues such as depression (Wang, Mann, Evans, Ma & Johnson, 2018). Considering such negative outcomes of loneliness, this study will help organizations create effective intervention strategies to curb negative consequences for lonely employees. Burnout is largely related to aspects of the job in the form of absenteeism, turnover and turnover intentions, reduced job satisfaction and commitment, among many others. Burnout can also 'spillover' from one's work to one's personal life. It is also believed to have adverse effect on one's health: physiological and mental (Maslach et. al.,2001). This study will help organizations comprehend the burnout outcomes better and create strategies to tackle with this growing problem, to avoid unwanted outcomes. It will also be beneficial for organizational psychologists and counsellors to analyze the workplace situation and make it a safe space for employees to deal with loneliness and feel secure.

The present study will also contribute to the field of human resources in particular, as burnout is one of the most common and widespread occurring phenomena among employees. This study combines an individual emotional state such as loneliness with another emotional state that is a result of negative workplace factors, emotional exhaustion. HR professionals worldwide are witnessing a rise in prevalence of these burnout symptoms among their employees and it is a matter of growing concern for them (Halbesleben & Buckley, 2004). Burnout has many negative repercussions to organizations in the form of absenteeism, turnover intentions, and for the individual well-being of employees. This study will help HR professionals to device strategies and plans to tackle this rising problem. They can focus on more on recognizing employees who are lonely and could be predisposed to burnout, and further assist them to avoid reaching the burnout stage.

# Theoretical framework

## Emotional exhaustion

The term ‘burnout’ was initially examined in the human care and service industries which consisted of a giver- receiver relationship. However, later it was found to be prevalent in all types of occupations, irrespective of its nature (Maslach et al., 2001). According to Maslach (1982), burnout is a psychological ailment in response to the exposure of chronic stressors at a workplace such as work overload and role ambiguity among others. Subsequently, burnout manifests in the form of three dimensions; profuse emotional exhaustion, reduced sense of personal accomplishment or depersonalization and job detachment (Maslach et al., 2001).

Exhaustion is the most often and obvious experienced symptom of burnout. This domain of burnout is referred to as the core component of burnout, and a severe form of strain as a result of enduring processes (Lee & Ashforth, 1996; Maslach, 1982). Individuals who undergo burnout, complain of feeling emotionally drained and lacking emotional resources. This state of exhaustion is the body’s response to prolonged job stress, prompting one to distance emotionally and cognitively from the work. Emotional exhaustion can be manifested in the form of both physical and psychological fatigue and drainage (Wright & Cropanzano, 1998). Researchers believe that emotional exhaustion is the antecedent to the other two symptoms or the first occurring symptom of burnout (Maslach, 1982).

## Job demands

According to Demerouti et al. (2001), job demands are those physical, social or organizational characteristics of a job that call for a persistent effort either physically or psychologically, at certain costs (exhaustion, physiological health). These job demands could be quantitative such as work overload or qualitative such as emotional demands. Expectedly, most of the jobs entail demands to a certain extent, but when these demands exceed the employee’s resources, they turn into stressors. Such high demands produce negative consequences in the individual such as anxiety, depression or ultimately burnout (Bakker & Demerouti, 2007; Demerouti et al., 2001).

**Job Resources**

According to Demerouti et al., (2001)**,** job resources are those physical, psychological, social or organizational facets of a job that: support in attaining goals that are work related; lower the negative physical or physiological costs of job demands; and act as a stimulus for individual growth and personal development. Emotional resources in particular can be a sub-type of personal resources. These emotional resources of an individual serve to fulfill the emotional labor demands of the individual and to help deal with stressful situations while upholding one's well-being. Emotions are identified as valuable and a source of gaining other kinds of resources for the individuals. According to Collins (1981), emotional resources are a result of thriving interpersonal interactions that further enhance or produce positive emotions.

This study will focus on emotional resources specifically rather than job resources in general.

**Loneliness**

Harré (1986) believed that loneliness is a basic, rudimentary, and one of the strongest experiences for an individual. Loneliness is "a complex set of feelings encompassing reactions to unfulfilled intimate and social needs" (Cacioppo et al., 2000, p.143) usually accompanied by negative emotional states like anxiety, and intense desire for companionship (Hartog et. al., 1980). Despite the many structured definitions of loneliness, it is considered as a distressed subjective state for the individual experiencing it and may manifest in the form of other symptoms (Peplau & Goldston, 1985; Weiss, 1987).

Loneliness arises when individuals are dissatisfied with their interpersonal relationships or when a gap exists between their expectations and reality of the social status (Bauminger & Kasari, 2000). Two types of loneliness have been classified: emotional and social loneliness (Weiss, 1973; Weiss, 1974). Emotional loneliness results from a lack of intimate or close relationships with others. Individuals who have lost a spouse, divorced or gone through a break up may experience such loneliness. Social loneliness results from deficiency of social networks or low sense of belongingness to a social group. This type of loneliness may result from relocating to a new city, or being in new social environments like school, university or church (Russel, Cutrona, Rose & Yurko, 1984). Weiss (1973), also believed that the two types of loneliness were characterized by different feelings for the individual. Emotional loneliness led to anxious feelings of isolation, whereas, social

loneliness led to boredom, insecurity or aimless behaviour. Apart from factors like cognitive dissatisfaction with social relationships, other factors such as lack of control over one's social situation or self-determination. This could be noticed in work environments where the employees have minimal control over such factors such as working with unpleasant co-workers or bosses (Wright, 2005). Loneliness at workplace is a common yet not sufficiently researched upon. The existing studies suggest that loneliness is not only prevalent among lower level employees but also of the senior level positions as a result of lack of direct communication and feeling disconnected with rest of the organization (Cooper, 1981).

**Job demands, Job resources and loneliness in relation to emotional exhaustion and emotional resources**

Studies have shown that job demands, and resources have a positive relationship with burnout (Maslach et al.,2001; Bakker & Demerouti, 2007; Demerouti et al.,2001). According to Maslach & Schaufeli (1993), high job demands deplete the individual's coping resources and energy, leading to chronic symptoms of burnout. This positive relation between job demands along with resources and burnout can be best explained through the JD-R model (Bakker & Demerouti, 2007; Demerouti et al., 2001). This model suggests that almost all job environments can be differentiated into two categories: job demands and job resources. The risk of burnout is at its peak when the work environment consists of high job demands and low job resources. The two processes supposed by the JDR model are : the energetic and the motivational process.

According to the energetic process, high job demands result in taxation and wearing out of the employee's resources such as energy, leading to exhaustion and ultimately other burnout symptoms (Schaufeli & Bakker, 2004). This is consistent with the findings of Hobfoll & Freedy (1993), which revealed that high job demands elicit severe exhaustion in response to dealing with strain. Specifically, a meta-analysis by Lee & Ashforth (1996), found job demands to be positively correlated with the emotional exhaustion domain of burnout. The work environments that contain high demands predict burnout among employees, as they deplete the individual of their coping abilities. Therefore, we can say that job demands indeed do have a positive relationship with burnout symptoms such as exhaustion.

According to the JDR model, job resources such as social support, autonomy and decision-making, may buffer the negative effects of high job demands on burnout (Bakker &

Demerouti, 2007; Demerouti et al., 2001). This belief is in accordant with the buffering or interaction effect hypothesis in the stressor-strain relationship at work (Kahn & Byosiere, 1992). The motivational process of the model states that job resources act as a source of motivation for employees, either intrinsically or extrinsically. Resources such as presence of social support at work or in life fulfil the basic need of relatedness among employees. They also aid in effective coping ability from strain, further resulting in positive consequences for both the individual and the organization. Alternatively, a lack of such resources hinders the effective coping processes of employees, fostering negative states like emotional exhaustion symptom of burnout (Schaufeli & Bakker, 2004). Lack of social support as a resource in organizations and in personal life may lead to feelings of loneliness in an employee. In accordance with the JDR theory, employees who are exposed to high work demands and are lonely as a result of lack of social support, are at a higher risk for burnout. This could be due to the unsatisfied needs and unfulfilled obligations of those employees (Russel, et al. 1984; Turan,2019).

Another theory that can be used to further explain the role of job demands, resources and loneliness on burnout is COR theory (Hobfoll,1989). This theory states that individuals strive to acquire, expand and protect the resources they value, such as social support. The actual loss, threat of loss or inability to gain resources play a role in predicting burnout for the individual in this theory. Individuals who have less resources at their disposal along with high demands result in maladaptive coping techniques which further result in burnout symptoms. The consistent experience of high demands accompanied by low resources like social support result in further depletion of resources such as self-efficacy, energy and identification, all a component of the burnout process (Hobfoll, Freedy, Lane, & Geller, 1990). In contrast, individuals with high amount of resources and who are exposed to high demand situations will function optimally, resulting in reinvestment of job resources (Hobfoll,1989).

Further explanation for this relationship between loneliness and emotional exhaustion can also be explained through the social support theory (Lakey & Cohen, 2000). According to this theory, individuals who have high social support will find it easier to cope with stressors such as job demands and will practice effective coping strategies. Perceptions of high social support also play a role in appraising the high demand situations as less stressful (Lazarus & Folkman, 1984; Lazarus, 1966; Lakey & Cohen, 2000). Social support has been a popular predictor of burnout along with high job demand situations at workplace (Maslach et al., 2001). Therefore, from the aforementioned theories, it can be inferred that lonely

individuals who have low social support as a resource or perceive social support as less, may find difficulty in dealing with high job demand situations. This inability to cope effectively with stressful high demand situations among lonely individuals could be a contributor to burnout among working individuals (Turan, 2019).

As discussed above in the theories of JDR, COR and social support theory, it can be believed that those individuals are experiencing loneliness in personal or work life, may be prone to burnout symptoms such as emotional exhaustion. This relation will be stronger than the effect of job demands and resources on emotional exhaustion. To study this, the following is hypothesised:

*H1: Loneliness at T2 (Feb 2012) explains emotional exhaustion at T3 (July 2012) over and above existing exhaustion, job demands and resources at T1 (Jan, 2012).*

The COR theory can be used to explain how loneliness can have an effect on the emotional resources of an individual. Personal resources such as emotional resources help the employee to carry out job roles, while protecting them from stress-inducing situations. According to Collins (1981), emotional resources are an outcome of successful interpersonal interactions. Therefore, those individuals who are successfully a part of such social interactions acquire more emotional resources in the form of warmth, positivity, and self-confidence among many others. On the other hand, individuals who are lacking or deprived of such successful social interactions have decreased emotional resources. The emotional resources depend on the individual's social standing and further enhance their ability to engage in social exchange. This is aligned with the conceptualization of Hobfoll's et al., (1988; 1989; 1998). It gives us reason to believe that lonely individuals who lack social support will have an effect on their emotional resources. The specified time frames are chosen to correctly study the cause-effect relation of the variables, as we expect the existing loneliness to have an effect on emotional resources in a later period of time, hence the specific time frames are selected. . Therefore the following can be hypothesised about the relation of loneliness and emotional resources.

*H2: Loneliness at T2 (Feb 2012) explains emotional resources at T3 (July 2012) over and above existing exhaustion, job demands and resources at T1 (Jan, 2012).*

The following conceptual frameworks can be considered for the job demands, resources loneliness, emotional exhaustion and emotional resources relationship:

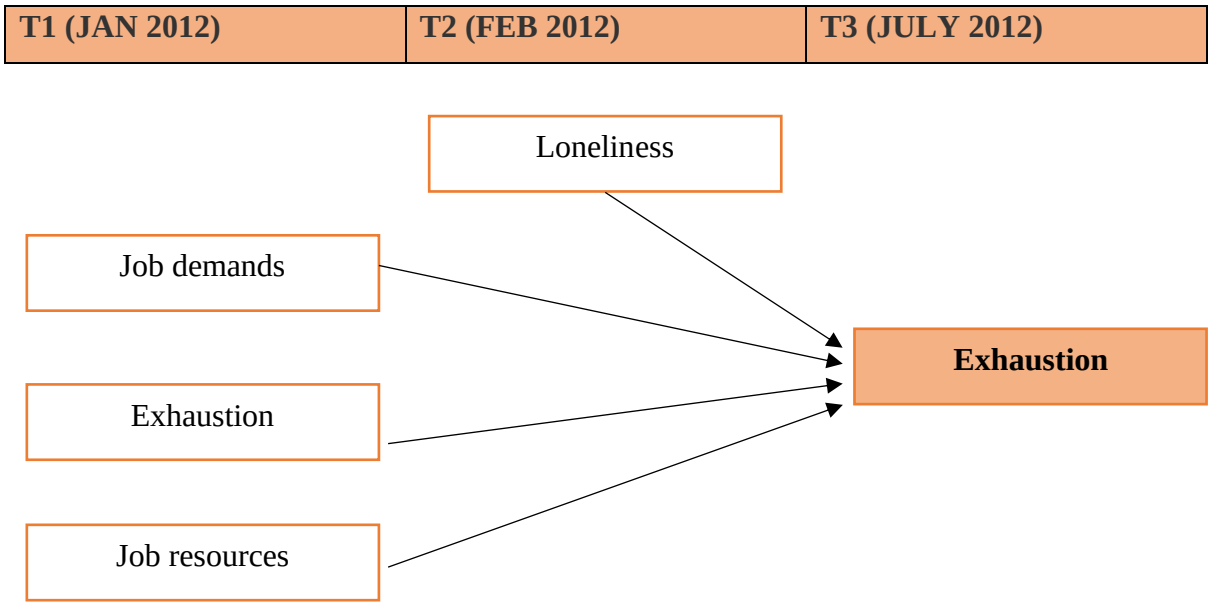


Figure 1. The conceptual framework: Exhaustion

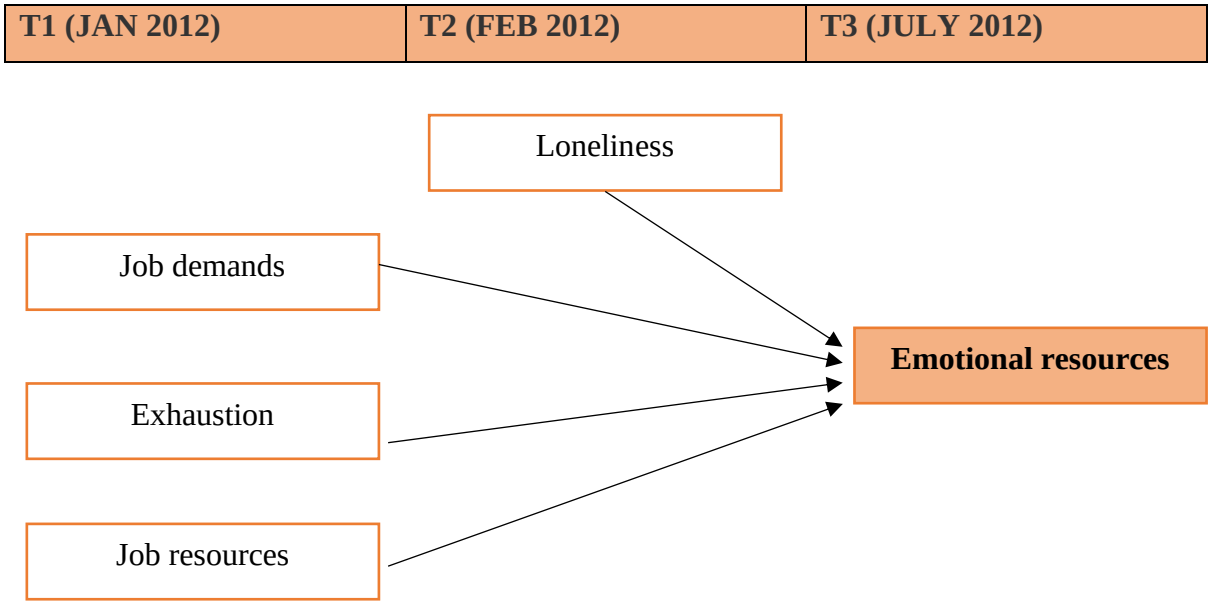


Figure 2. The conceptual framework: Emotional resources

# Method

## Research design

The present study will follow a quantitative research design to study the effect of loneliness on the job demands and burnout relationship. The data will be extracted from online surveys conducted by the Longitudinal Internet Studies for the Social Sciences (LISS) panel over the course of two years, 2011 and 2012. Therefore, making this a longitudinal study.

## Sample

The target population for this study was Dutch employees that are working and are getting paid. The data was extracted from the LISS panel which is operated by the CentERdata (Tilburg, the Netherlands; Van den Tooren & Rutte, 2016) that collects data from a traditional random sample from the Dutch population register maintained by Statistics Netherlands. The panel follows a true probability sampling for collecting the data. There is no age criteria to be a part of the sample as to have sufficient variation in the sample to study the hypothesised relationship. The only criteria for the present study sample was to be employed, and getting paid for their work. For the present study, data of approximately >3000 paid employees from the panel will be used from the available random sample.

## Data collection

The LISS panel comprises of around 7500 individuals that fill online surveys on a monthly basis after signing an informed consent form. The respondents are compensated with 15 euros per hour for their contribution. Individuals who do not have access to a computer are provided with one and internet connection by the panel. The different core and assembled studies of LISS were evaluated and approved by the Board of Overseers, the Internal Review Board until 2014. In accordance with the new General Data Protection Regulation, participants gave explicit consent for the use of the collected data for scientific and policy relevant research when the surveys were initially conducted.

The LISS panel conducts the surveys in various waves (time frames), hence providing us with data to conduct longitudinal researches like the present study. For the present study, data for studying loneliness from this panel will be extracted from wave 5 of the ‘social integration and leisure survey’ conducted in February- March 2012 (T2). This survey was

conducted over the period of 10 years, every year (2009-2018), out of which we decided to choose wave 5. A total of 5917 (64.5%) of the respondents completed this survey. Data for job demands and emotional resources will be retrieved for wave 1 of the available two waves of 'type D personality and job resources survey' conducted in January 2012 (T1). The number of respondents who completed this survey were 5849 (79%). Wave 1 (T1) & 2 (T3) of the 'type D personality and job resources survey' which was conducted in January & July 2012 will be used for exhaustion domain of burnout. Both these surveys had a total of 5849 (79%) and 5382 (74.4%) respondents respectively. These three surveys contained relevant questions to study the four variables; job demands, emotional resources, loneliness and emotional exhaustion and also the time frame in which all variables were measured contributed well to making this a longitudinal study. All intended participants were sent reminders twice to complete the surveys. The panel has received the International data seal of approval (DSA), to ensure reliability of the data available in the panel.

## Instruments

For the present study, general demographic details such as age, educational level and employment status were extracted to match the sample criteria. Only those individuals who were employed, were paid and who fully participated in all three surveys were used for the present study. All the complete survey questionnaires can be accessed online (see https://www.dataarchive.lissdata.nl/).

### *Emotional exhaustion*

Emotional exhaustion, the core dimension of burnout was measured from the Utrecht Burnout Scale at T3 (Schaufeli & Van Dierendonck, 2000). This scale is a Dutch version of the popular Maslach Burnout Inventory. The respondents rate each item on a 7-point Likert scale, ranging from 0 (never) to 6 (always). To measure the exhaustion dimension of burnout the scale contains items such as "I feel mentally exhausted by my work". The scale had a Cronbach's alpha value of $\geq$ .91 (Schaufeli & Van Dierendonck, 2000). All scores were reverse coded to assume higher scores to represent high level of emotional exhaustion. The test-retest reliability of this scale is high (approx. .60). The test also has a correlation with other burnout scales, a sign of high validity. The scale has a good convergent and discriminatory validity.

*Job demands*

Job demands were measured through two types: emotional and cognitive demands. ). Both types were measured through 14 items, 7 of which are adopted from a questionnaire of studying characteristics of the work environment (Van Veldhoven & Meijman, 1994). Emotional demands were assessed through questions such as “Is your work emotionally taxing?”(α = 0.79), whereas cognitive demands were assessed through questions like “Does your work require you to remember a lot of things?” at T1 (α = 0.89). Respondents had to rate each item on a 4 point scale (1= always and 4 = never). All scored were reverse-coded so that higher scores represent higher job demands.

*Job resources*

Both emotional resources and cognitive resources were measured at T1. Questions such as “When I am at work, I have the option of taking a mental break” (α = 0.93) and “ When I am at work, I have the option of calling on the knowledge and expertise of my colleagues” (α = 0.83), were used to measure this construct. This was measured using the DISQ2.1 questionnaire (De Jonge et al., 2009). The scale comprised of 5 items that required respondents to rate them on a 4 point Likert scale (1= never, 4 = always). Higher scores depicted higher job resources of the respondent.

*Loneliness*

Loneliness was measured through a 6-item scale known as the De Jong Gierveld Loneliness Scale at T2 (Gierveld & Tilburg, 2006). This scale measures both emotional and social forma of loneliness. Questions such as “I have a sense of emptiness around me” or “I know a lot of people that I can fully rely on” are rated on a 3-point Likert scale (1=yes, 2= more or less, 3= no). The scale comprises of three positively and three negatively formulated statements. The three negative formulated items were recoded and then total scores were calculated. The scale is found to be reliable as the α coefficient is found to be .73. The congruent validity of the scale was also found to be high. Therefore, this scale is a reliable and valid measurement of loneliness in surveys (Gierveld & Tilburg, 2006).

### Data analysis

All analysis of the collected data was carried out using IMB SPSS (version 26). All files retrieved from the LISS panel containing the relevant survey data were matched to make one data sheet. To predict the outcome of our independent variables on the dependent variable, a multiple regression analysis were carried out. The two outcome variables: emotional exhaustion and emotional resources were added to the dependent variable dialog box respectively. The analyses were conducted three steps. At step 1, age and gender were entered. At step 2, Exhaustion, Cognitive resources, Emotional resources, Cognitive demands, and Emotional demands at T1 were added to the list of predictors. At step 3, loneliness at T2 was added. Gender and age may be associated with the dependent variables (see also table 1a and 1b) and were therefore entered at step 1 to rule out the possibility that findings can be attributed to gender and age.

The accumulated data was tested for the general assumptions of a regression analysis. Firstly, the data was checked for any system missing values and extreme values through a histogram. To check for any missing values, a descriptive table was studied. To test the linearity between the predictor and outcome variable, a scatter plot was inspected. A F-test was conducted to check the overall significance of the model. The value of R-square was looked at to check this significance and how much of the variance in the dependent variable can be explained by the independent variables. The unstandardized coefficient values indicated which independent variable made the strongest unique contribution to the dependent variable when controlling the variance of the other independent variables. The sig. value was looked at to check whether the variables made statistically significant contribution to the model.

## Results

### Participants

The total sample size of the study was N=3381, out of which 48.2% were males and 52% were females with an average age of 43.3 years. In total, 944 of the respondents were graduated from high school and had attained an MBO degree (28%) whereas, 885 respondents had attained an HBO degree (26.2%) and 363 had received a WO degree (10.7%). Out of the total sample, 2631 (77.8%) respondents were currently working

employees who were getting paid among who, 283 (8.4%) respondents were autonomous or freelance workers.

**Intercorrelations**

The intercorrelations between all study variables, as well as mean scores and SD's, are presented in Table 1a and Table 1b. It is seen from the tables that all correlations at the bi-variate level are significant. There is a significant correlation between Job demands, resources, and existing exhaustion at T1 as well as loneliness at T2 on Exhaustion at T3 and emotional resources at T3. The highest correlation observed is between existing exhaustion at T1 and exhaustion at T3 ($r = .72$, $p < .01$) followed by emotional demands at T1 ($r = .25$, $p < .01$), as shown in Table 1a. Table 2a shows that the strongest correlation relationship exists between existing emotional resources at T1 and emotional resources at T3 ($r = .60$, $p < .01$), followed by cognitive resources at T1 and emotional resources at T3 ($r = .40$, $p < .01$).

**Multiple regression analysis**

Multiple linear regression analyses were conducted with exhaustion and emotional resources at T3 as dependent variables, and Job demands, resources, existing exhaustion at T1 and loneliness at T2 as predictors. The results of regression analysis are presented in Table 2 and 3 respectively.

As described in the method section, the regression analysis was conducted in three steps. In the first step of the analysis only demographic variables, age and gender were added ($R^2$=0.005). Model 1 indicated that both age and gender were significant predictors of exhaustion at T3 ($F (2, 2106) = 5.686$, $p = .003$). At Step 2, Job demands and resources along with existing exhaustion were added and they predicted 51.9% of variance ($R^2 = .519$) in exhaustion at T3 with a significant regression equation ($F (7, 2101) = 323.995$, $p = .000$). However, only existing exhaustion and emotional demands were significant contributors to exhaustion at T3 ($p < .05$). Loneliness was added in Step 3 of the analysis in order to identify its unique contribution to Exhaustion at T3. Contrary to H1, loneliness only contributed to 0.2% of additional variance in exhaustion at T3, a significant but trivial predictor ($R^2 =.521$) with a significant regression equation ($F (8, 2100) = 285.571$, $p = .000$). To study the unique contribution of emotional demands at T1 on exhaustion at T3, another step was added to the regression equation. Emotional demands were removed from Step 2 and were added in Step 4

instead. Emotional demands explained a unique variance of 0.2% on exhaustion at T3, same as loneliness at T2 ($R^2$ change = 0.002).

Table 3 represents the result of regression analysis conducted for the dependent variable, emotional resources at T3. This analysis was also conducted in three steps. The step 2 of the model included predictor variables, job demands and resources along with exhaustion at T1. These variables predicted a variance of 37.4% on emotional resources at T3 ($R^2$ = .374) and a significant regression equation was found (F (7, 2101) = 180.803, p = .000). After adding loneliness in step 3 of the model, we noticed a R square change of 0.1%, which shows a significant but a very low contribution of loneliness to emotional resources ($R^2$ = .375) and a significant regression equation was observed (F (8, 2100) = 159.053, p = .000). All predictors except cognitive demands and emotional demands had a significant contribution towards emotional resources at T3, however, loneliness had the lowest contribution.

**Table 1A**

*Intercorrelations, mean and standard deviations study variables.*

| | | 1 | 3 | 4 | 5 | 6 | 7 | 8 | M | SD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Exhaustion T3 | | | | | | | | 1.59 | 1.05 |
| 2 | Gender | -0.044** | | | | | | | 1.52 | 0.5 |
| 3 | Age | -0.049** | | | | | | | 4.33 | 1.3 |
| 4 | Exhaustion T1 | 0.717** | -0.064** | | | | | | 1.6 | 1.04 |
| 5 | Cognitive resources T1 | -0.039** | -0.032 | -0.026 | | | | | 2.83 | 0.8 |
| 6 | Emotional resources T1 | -0.101** | -0.119** | -0.104** | 0.532** | | | | 2.44 | 0.81 |
| 7 | Cognitive demands T1 | 0.120** | 0.143** | 0.160** | 0.260** | 0.120** | | | 3.03 | 0.62 |
| 8 | Emotional demands T1 | 0.253** | 0.079** | 0.297** | 0.098** | 0.070** | 0.398** | | 1.88 | 0.49 |
| 9 | Loneliness T2 | -0.204** | 0.081** | -0.222** | 0.048* | 0.120** | 0.029 | -0.048* | 11.39 | 1.21 |

*Note.* Intercorrelations for T1 variables are based on 3328 respondents. Intercorrelations for exhaustion at T3 is based on 2545 respondents, whereas for loneliness at T2 is based on 2676 respondents.
* Correlation is significant at 0.05 level (2 tailed)
** Correlation is significant at 0.01 level (2 tailed

**Table 1B**

*Intercorrelations, mean and standard deviations study variables*.

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | M | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Emotional resources T3 | | | | | | | | | 1.59 | 1.05 |
| 2 | Gender | 0.111** | | | | | | | | 1.52 | 0.5 |
| 3 | Age | -0.114** | -0.077 | | | | | | | 4.33 | 1.3 |
| 4 | Exhaustion T1 | -0.092** | -0.015 | -0.064** | | | | | | 1.6 | 1.04 |
| 5 | Cognitive resources T1 | 0.402** | -0.014 | -0.032 | -0.026 | | | | | 2.83 | 0.8 |
| 6 | Emotional resources T1 | 0.599** | 0.140** | -0.119** | -0.104** | 0.532** | | | | 2.44 | 0.81 |
| 7 | Cognitive demands T1 | 0.108** | -0.032 | 0.143** | 0.160** | 0.260** | 0.120** | | | 3.03 | 0.62 |
| 8 | Emotional demands T1 | 0.069** | 0.018 | 0.079** | 0.297** | 0.098** | 0.070** | 0.398** | | 1.88 | 0.49 |
| 9 | Loneliness T2 | 0.114** | 0.013 | 0.081** | -0.222** | 0.048* | 0.120** | 0.029 | -0.048* | 11.39 | 1.21 |

*Note.* Intercorrelations for T1 variables are based on 3328 respondents. Intercorrelations for exhaustion at T3 is based on 2545 respondents, whereas for Loneliness at T2 is based on 2676 respondents.

* Correlation is significant at 0.05 level (2 tailed)

** Correlation is significant at 0. 01 level (2 tailed)

**Table 2**

*Results multiple linear regression analysis predicting exhaustion at T3*

| | | Exhaustion at T3 | | | |
|---|---|---|---|---|---|
| | $R^2$ | B | SE | β | p |
| Step 0 | | | | | |
| Exhaustion at T3 | | | | | |
| Step 1 | | | | | |
| Gender | 0.005 | -0.113 | 0.046 | -0.054 | 0.014 |
| Age[1] | | -0.044 | 0.018 | -0.054 | 0.013 |
| Step 2 | | | | | |
| Gender | 0.519 | -0.082 | 0.032 | -0.039 | 0.011 |
| Age | | -0.012 | 0.013 | -0.015 | 0.349 |
| Exhaustion T1 | | 0.708 | 0.016 | 0.699 | <0.001 |
| Cognitive resources T1 | | -0.02 | 0.024 | -0.015 | 0.402 |
| Emotional resources T1 | | -0.026 | 0.024 | -0.02 | 0.281 |
| Cognitive demands T1 | | -0.008 | 0.029 | -0.005 | 0.774 |
| Emotional demands T1 | | 0.111 | 0.037 | 0.052 | 0.002 |
| Step 3 | | | | | |
| Gender | 0.521 | -0.082 | 0.032 | -0.039 | 0.011 |
| Age | | -0.01 | 0.013 | -0.013 | 0.421 |
| Exhaustion T1 | | 0.698 | 0.017 | 0.689 | <0.001 |
| Cognitive resources T1 | | -0.022 | 0.024 | -0.015 | 0.426 |
| Emotional resources T1 | | -0.019 | 0.024 | -0.015 | 0.426 |
| Cognitive demands T1 | | -0.004 | 0.029 | -0.002 | 0.892 |
| Emotional demands T1 | | 0.11 | 0.037 | 0.051 | 0.003 |
| Loneliness T2 | | -0.039 | 0.014 | -0.046 | 0.004 |

[1] Age in CBS categories: 2=15 - 24 years, 3=25 - 34 years, 4=35 - 44 years, 5=45 - 54 years, 6=55 - 64 years, 7=65 years and older.

**Table 3**

*Results multiple linear regression analysis predicting emotional resources at T3*

| | Emotional resources at T3 | | | | |
|---|---|---|---|---|---|
| | $R^2$ | B | SE | β | p |
| Step 0 | | | | | |
| Emotional resources T3 | | | | | |
| | | | | | |
| Step 1 | | | | | |
| Gender | 0.026 | 0.161 | 0.033 | 0.104 | <0.001 |
| Age | | -0.068 | 0.013 | -0.115 | <0.001 |
| | | | | | |
| Step 2 | | | | | |
| Gender | 0.376 | 0.057 | 0.027 | 0.037 | 0.036 |
| Age | | -0.038 | 0.011 | -0.064 | <0.001 |
| Exhaustion T1 | | -0.039 | 0.014 | -0.052 | 0.005 |
| Cognitive resources T1 | | 0.114 | 0.020 | 0.117 | <0.001 |
| Emotional resources T1 | | 0.494 | 0.020 | 0.514 | <0.001 |
| Cognitive demands T1 | | 0.025 | 0.025 | 0.020 | 0.312 |
| Emotional demands T1 | | 0.052 | 0.031 | 0.033 | 0.094 |
| | | | | | |
| Step 3 | | | | | |
| Gender | 0.377 | 0.057 | 0.027 | 0.037 | 0.036 |
| Age | | -0.039 | 0.011 | -0.066 | <0.001 |
| Exhaustion T1 | | -0.033 | 0.014 | -0.044 | 0.019 |
| Cognitive resources T1 | | 0.115 | 0.020 | 0.118 | <0.001 |
| Emotional resources T1 | | 0.490 | 0.020 | 0.509 | <0.001 |
| Cognitive demands T1 | | 0.022 | 0.025 | 0.018 | 0.369 |
| Emotional demands T1 | | 0.053 | 0.031 | 0.033 | 0.088 |
| Loneliness T2 | | 0.024 | 0.011 | 1111 | 0.032 |

[1] Age in CBS categories: 2=15 - 24 years, 3=25 - 34 years, 4=35 - 44 years, 5=45 - 54 years, 6=55 - 64 years, 7=65 years and older.

## Discussion

The present study aims at studying the impact of loneliness on the exhaustion domain of burnout as well as on emotional resources of paid employees, and whether that impact was over and above the impact of job demands and resources. There are several studies that

highlight the relationship between work variables, such as job demands and resources and burnout symptoms (Cohen & Wills, 1985; Koeske & Koeske, 1989; Maslach et al.,2001; Bakker & Demerouti, 2007; Demerouti et al., 2001). However, to the best of my knowledge, no study, specifically a longitudinal study has studied the relationship between loneliness and burnout symptom such as exhaustion.

The present study contradicts the results of previous studies that found evidence for the JDR model, according to which job demands are positively related with burnout symptoms and how the presence of job resources placates those negative consequences (Bakker & Demerouti, 2007; Demerouti et al., 2001). From the results of multiple regression analysis, only emotional demands and above all existing exhaustion at T1 were significant predictors of exhaustion at T3. Non-emotional job demands, and resources were insignificant predictors, which is contrary to the JDR model by Demerouti et al., (2001).

No support was found for the "energetic process" of JDR model that states that high job demands result in loss of energy for employees, further resulting in exhaustion and other burnout symptoms. Neither did the present study find any support for the "motivational process" of the model that highlights the importance of job resources in buffering the negative effects of job demands on employees (Schaufeli & Bakker, 2004).

The present study hypothesised, that loneliness at T2 will predict exhaustion at T3 over and above job demands and resources. As observed, loneliness did have a significant contribution to exhaustion, however a very trivial one. Loneliness only contributed 0.2% of variance in exhaustion at T3, therefore, rejecting H1. This significant but very small variance explained by loneliness can be due to the large sample size of the present study (N >3000).

Emotional demands were alone found to explain 0.2% of variance in exhaustion, which was not the case for other job demands and resources. The findings of present study are aligned with some previous studies that found stronger support for a positive relationship between emotional demands and exhaustion when compared with 'non-emotional' job demands (Näring, Briet, & Brouwers., 2006; Van Daalen, Willemsen, Sanders & Van Veldhoven, 2009). This relationship between emotional demands and exhaustion can be attributed to the fact that, dealing with emotional demands in the workplace such as faking emotions can be energy draining hence resulting in exhaustion (Hochschild,1983).

The results of multiple regression analysis for emotional resources at T3 as a dependent variable were also contrary to the hypothesis. The strongest correlation was found to be that of existing emotional resources at an earlier stage with emotional resources at the later time stage. The second highest correlation was observed between cognitive resources at

T1 and emotional resources at T3. Loneliness explained a variance of 0.1% of emotional resources at T3, which was significant but a negligible contribution that can be attributed to the large sample size of the present study. Therefore, H2 was rejected.

As observed from both regression models, the strongest predictors of both dependent variables were the same variables existing at an earlier stage i.e., exhaustion and emotional resources at T1, respectively. This autoregression has been observed by several previous studies, especially in the case of psychological symptoms (Lesener, Gusy & Wolter, 2018).

## Conclusion

The findings of the present study are contradictory when compared with most previous studies who take the JDR model of Demerouti et al., (2001), into consideration in relation to burnout symptoms. As predicted, all job demands at an early time stage were expected to have a positive and significant relationship with exhaustion at a later stage. However, opposed to the first hypothesis, only emotional demands and existing exhaustion had significant impact on exhaustion of that individual. No other form of job demands such as the 'non-emotional' or 'physical' demands had a significant impact on exhaustion

The present study highlights the importance of existing burnout symptoms or resources at an earlier stage of an individual, in order to predict the symptoms at the later stage. Both dependent variables, exhaustion and emotional resources at T3 were predicted the strongest by the same existing variables at T1. This finding is relevant for organizations that can predict burnout among their employees, simply by observing the presence of existing symptoms such as exhaustion.

The COVID-19 pandemic has increased loneliness among people due to the preventive measures being implemented in order to maintain social distance and avoid possible social contact (Van Tilburg et al., 2020). A study by Van Tilburg et al., (2020), found supporting evidence for increase in loneliness in a Dutch sample, especially emotional loneliness since the COVID-19 pandemic. Although, they did not find any support for the effect of loneliness on mental health of those individuals (Van Tilburg et al., 2020), employers can develop interventions to help employees that could be experiencing loneliness to pacify other negative consequences of loneliness apart from mental health.

Loneliness was expected to have a strong correlation with burnout symptoms such as exhaustion in context to the social support theory (Lakey & Cohen, 2000). However, the

findings revealed a very minor impact of loneliness on exhaustion, suggesting that loneliness does not have an impact on burnout symptoms for those employees.

**Strengths and limitations**

The strengths of the present study are that it is a longitudinal study that spans over a period of three different time periods. Moreover, the large and heterogenous sample size (N>3000) that was selected at random from the Dutch population is also a major asset of the present study. All variables were measured through reliable and valid instruments in the LISS panel which strengthens the findings of the present study.

The present study also had its limitations. All variables in the LISS panel were measured through self-reporting methods via online surveys and questionnaires thus increasing the possibility of common method bias among the respondents (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).The present study also did not take into consideration, possible mediators or moderators in the predicted relationships, while previous burnout literature has found significant indirect effects on burnout symptoms such as employee perception of work environment (Bakker & Demerouti, 2007) or quality of relationship with supervisors (Tuxford & Bradley, 2015) Another limitation to the present study is in respect to the time lags selected between the different variables. No specific reason is provided behind selecting these time periods, thus questioning whether these time lags were optimal to the present study. The present study considered job demands as an encompassing homogenous variable, wherein all types of job demands would have similar impact on the exhaustion of employees. However, a study by Van den Broeck, Cuyper, Witte & Vansteenkiste (2010), suggests otherwise. They state that job demands can be categorized into two types: job challenges and job hindrances. They can either act as stimulants to optimize job performance or act as a barrier further resulting in health impairment, therefore having a unique relationship with exhaustion and vigor, respectively (GonzalezRoma, Schaufeli, Bakker, & Lloret, 2006; Maslach et al., 2001). Job demands could be have therefore been classified into the aforementioned categories to study their unique contribution towards exhaustion at T3 of the present study.

**Recommendations for future research**

Since the present study collected data from three different time periods, and not found many obvious longitudinal relationships, future research can focus on different time periods.

They can collect data for different variables by choosing a different time lag between the study variables. According to Dormann and Griffin (2015), the most optimal time lag measures the maximum effect size between the predictor and dependent variable while controlling for existing values of dependent variable. The optimal time lags can be achieved through latent variable structural equation modelling (SEM) or ordinary least square regression analysis. They suggest studies to be shortitudinal in nature (short time lags), instead of cross sectional or longitudinal study designs (Dormann & Griffin, 2015). Additionally, to better select the time periods, pilot studies can be carried out to analyze the stability of different study variables and identify the optimal time lags (Lesener et al, 2018). Future research should take into consideration the possible indirect or spurious relationships between predictor and dependent variables (Bakker & Demerouti, 2007). Future studies that base their research on JDR models, can classify job demands into job challenges and job hindrances to further investigate their relationship with exhaustion or other burnout symptoms (Van den Broek et al., 2010). Breaking down job demands as a variable can prove to be rather enlightening as very limited previous studies have examined the respective relationships between the two types of job demands with exhaustion (Van den Broek et al., 2010).

Understanding predictors of burnout are important to organizations since burnout has several negative consequences that impact both employees and employers. Future researches should keep in mind the consequences of COVID-19 and study possible predictors that can result in burnout symptoms as a consequence of social distancing for employees. Those organizations that believe the pandemic to have an effect on employee burnout rates can try to identify factors other than loneliness as a predictor of burnout symptoms, such as disrupted work-life balance or role conflict (Griffith, 2020).

**Practical implications**

The present study contributes towards existing literature on burnout and its predictors. Contrary to the previous studies that found support for a positive relationship between all types of job demands and exhaustion, the current findings revealed otherwise. Since only emotional demands were found to have a significant impact on the exhaustion domain of burnout, organizations can implement interventions that will placate the negative consequences of such demands in the workplace. In order to keep the emotional demands at an optimal level at the workplace, employers can conduct trainings in deep-acting strategies,

educating employees on the deteriorating effects of surface acting on mental health, and introducing essential breaks during the job (Tuxford & Bradley, 2014). Deep-acting strategies will train employees in generating the expected emotions at work by imagining pleasant images in one's mind or thinking of other positive memories (Brotheridge & Lee, 2003). Such deep acting strategies will divert the employees mood from the unpleasant or unwanted work situation and help them deal with expected emotional demands(Sutton, 2004).

Since the results of the present study revealed that the strongest predictor of exhaustion was existing exhaustion at an earlier stage, employers could conduct surveys which measure burnout symptoms in order to identify those at a higher risk of burnout. The exhaustion domain of burnout is found to be the most strongly correlated to negative health conditions such as headaches, severe fatigue, tensed muscles, among others. Thus, further emphasising the need to identify employees on the verge of burnout, so as to help them cope optimally (Maslach & Leiter, 2016).

The outbreak of COVID-19 pandemic has resulted in alternative forms of work arrangements such as working from home, therefore limiting physical contact between colleagues. Loneliness is a common public issue that could be at a rise due to the pandemic, especially for those employees who live alone (Luchetti et al., 2020). Although, findings of the present study do not reveal any substantial impact of loneliness on burnout symptoms, employers can nonetheless continue to identify other possible predictors of burnout.

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# Appendix 1

**Syntax**

```
**demographics (Jan2012) **

get FILE = '/Users/...../......../ avars_201201_EN_2.0p.sav'

**loneliness (feb-march 2012) **
get FILE = '/Users/...../......../ cs12e_1.0p_EN.sav'.

**loneliness**

MATCH FILES
 FILE='/Users/…… / cs12e_1.0p_EN.sav'
/FILE='/Users/…… / avars_201201_EN_2.0p.sav'
/rename= (nohouse_encr wave geslacht positie gebjaar leeftijd lftdcat lftdhhh aantalhh
aantalki partner burgstat woonvorm woning belbezig brutoink nettoink brutocat nettocat
oplzon oplmet oplcat doetmee herkomstgroep simpc=
 nohouse_encr2012 wave2012 geslacht2012 positie2012 gebjaar2012 leeftijd2012
lftdcat2012 lftdhhh2012 aantalhh2012 aantalki2012 partner2012
 burgstat2012 woonvorm2012 woning2012 belbezig2012 brutoink2012 nettoink2012
brutocat2012 nettocat2012 oplzon2012 oplmet2012 oplcat2012 doetmee2012
herkomstgroep2012 simpc2012)
/by nomem_encr.
SAVE OUTFILE   '/Users/……. /Loneliness2012.sav'.

**job demands – January 2012**

MATCH FILES
FILE= '/Users/…… / fv12a_EN_1.0p.sav'
/FILE= '/Users/….. / avars_201201_EN_2.0p.sav'
```

```
/rename= (nohouse_encr wave geslacht positie gebjaar leeftijd lftdcat lftdhhh aantalhh
aantalki partner burgstat woonvorm woning belbezig brutoink nettoink brutocat nettocat
oplzon oplmet oplcat doetmee herkomstgroep simpc=
 nohouse_encr12012 wave12012 geslacht12012 positie12012 gebjaar12012 leeftijd12012
lftdcat12012 lftdhhh12012 aantalhh12012 aantalki12012 partner12012
   burgstat12012 woonvorm12012 woning12012 belbezig12012 brutoink12012
nettoink12012 brutocat12012 nettocat12012 oplzon12012 oplmet12012 oplcat12012
doetmee12012 herkomstgroep12012 simpc12012 )
/by nomem_encr.
SAVE OUTFILE  '/Users/…… /job demands jan 2012.sav'.

**job demands – July 2012**
MATCH FILES
FILE= '/Users/……. / fv12b_EN_1.0p.sav'
/FILE= '/Users/…….. / avars_201201_EN_2.0p.sav'
/rename= (nohouse_encr wave geslacht positie gebjaar leeftijd lftdcat lftdhhh aantalhh
aantalki partner burgstat woonvorm woning belbezig brutoink nettoink brutocat nettocat
oplzon oplmet oplcat doetmee herkomstgroep simpc=
 nohouse_encr22012 wave22012 geslacht22012 positie22012 gebjaar22012 leeftijd22012
lftdcat22012 lftdhhh22012 aantalhh22012 aantalki22012 partner22012
   burgstat22012 woonvorm22012 woning22012 belbezig22012 brutoink22012
nettoink22012 brutocat22012 nettocat22012 oplzon22012 oplmet22012 oplcat22012
doetmee22012 herkomstgroep22012 simpc22012 )
/by nomem_encr.
SAVE OUTFILE  '/Users/……. /job demands July 2012.sav'.


Match files FILE=  '/Users/……. /Loneliness2012.sav'.
              /FILE=   '/Users/…… /job demands jan 2012.sav'.
            /FILE=   '/Users/……. /job demands July 2012.sav'.
            /by nomem_encr.

**MHI-5.
RECODE  cs12e285 cs12e286  cs12e287  (1=2)(2=1).
```

```
RECODE  fv12a056 to fv12a069  fv12b056 to fv12b069
(1=0)(2=1)(3=2)(4=3)(5=4)(6=5)(7=6).
RECODE fv12a022 to fv12a035 (1=4)(2=3)(3=2)(4=1).
RECODE fv12b022 to fv12b035 (1=4)(2=3)(3=2)(4=1).

COMPUTE LONELINESS2012= cs12e284 + cs12e285 + cs12e286 + cs12e287 + cs12e288
+ cs12e289.
compute exhaustion_1=(sum (fv12a056 to fv12a060))/5.
compute exhaustion_2=(sum (fv12b056 to fv12b060))/5.
compute cog_resources_1=(sum (fv12a036 to fv12a040))/5.
compute cog_resources_2=(sum (fv12b036 to fv12b040))/5.
compute emo_resources_1=(sum (fv12a041 to fv12a045))/5.
compute emo_resources_2=(sum (fv12b041 to fv12b045))/5.
compute cog_demands_1=(sum (fv12a022 to fv12a028))/7.
compute emo_demands_1=(sum (fv12a029 to fv12a035))/7.
compute cog_demands_2=(sum (fv12b022 to fv12b028))/7.
compute emo_demands_2=(sum (fv12b029 to fv12b035))/7.

SAVE OUTFILE '/Users/…… /matchedfiles.sav'.
```

---

```
GET FILE  ‘/Users/…… /matchedfiles.sav'.

DESCRIPTIVES geslacht22012 lftdcat22012 LONELINESS2012 exhaustion_1
exhaustion_2 cog_resources_1 emo_resources_1 emo_resources_2
   cog_resources_2  cog_demands_1 emo_demands_1 cog_demands_2 emo_demands_2.

SELECT IF (exhaustion_1 ge 0).
  FREQUENCIES VARIABLES= geslacht22012 lftdcat22012 LONELINESS2012
exhaustion_1 exhaustion_2 cog_resources_1 emo_resources_1 emo_resources_2
   cog_resources_2  cog_demands_1 emo_demands_1 cog_demands_2 emo_demands_2
  /STATISTICS=STDDEV   VARIANCE MEAN MEDIAN MODE SUM
  /ORDER=ANALYSIS.
```

```
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING PAIRWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT exhaustion_2
  /METHOD=ENTER geslacht22012 lftdcat22012
  /METHOD=ENTER exhaustion_1 cog_resources_1 emo_resources_1 cog_demands_1
emo_demands_1
  /METHOD=ENTER LONELINESS2012
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN NORMPROB(ZRESID)
  /SAVE PRED ZPRED ADJPRED SEPRED COOK RESID ZRESID DFBETA SDBETA.

REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING PAIRWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT exhaustion_2
  /METHOD=ENTER geslacht22012 lftdcat22012
  /METHOD=ENTER exhaustion_1 cog_resources_1 emo_resources_1 cog_demands_1
  /METHOD=ENTER LONELINESS2012
  /METHOD=ENTER emo_demands_1
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN NORMPROB(ZRESID)
  /SAVE PRED ZPRED ADJPRED SEPRED COOK RESID ZRESID DFBETA SDBETA.

REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
```

```
  /MISSING PAIRWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT emo_resources_2
  /METHOD=ENTER geslacht22012 lftdcat22012
  /METHOD=ENTER exhaustion_1 cog_resources_1 emo_resources_1 cog_demands_1
emo_demands_1
  /METHOD=ENTER LONELINESS2012
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN NORMPROB(ZRESID)
  /SAVE PRED ZPRED ADJPRED SEPRED COOK RESID ZRESID DFBETA SDBETA.
```