Dealing with Job Insecurity

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Abstract

We analyse the effect of perceived job insecurity on mental health using panel data on a representative sample of Dutch employees from 2008-2013. Using a fixed effects estimator to control for unobserved individual characteristics we find that job insecurity is a statistically significant predictor of mental health deterioration, but the effect size is small: a 100 percentage points increase in perceived chance of job loss is associated with a 1.6 points (on a scale of 0-100) decline in mental health. If part of the effect is attributable to reverse causality, the causal effect of job insecurity on mental health would need to be smaller still than the fixed effect found. In our instrumental variables approach we failed to identify such a causal effect. Detrimental effects of perceived job insecurity on mental health are found only when perceived job insecurity is high, and such effects are limited to particular groups of workers: men, especially men without a partner, with medium levels of education, and with a permanent contract. It is recommended that policy measures be targeted on these groups.

JEL Classification: I12, J28, J63, J65

Keywords: Job insecurity; mental health; labour market dynamics; panel data; instrumental variables; Netherlands

1. Introduction

Today's labour markets are more flexible than they were a few decades ago (OECD, 2004; 2013). Relatively closed economies back then permitted tightly regulated labour markets that offered ample protection to workers. Globalization has since intensified competition, and for firm survival in the global economy more adaptable production systems and labour markets have become essential.

The increased flexibility that firms have in wage setting, labour utilization, and labour mobility is shaped by various institutional arrangements: wage setting institutions (collective bargaining and minimum wage laws), employment protection legislation (e.g. mandated severance pay or restrictions on the use of temporary employment contracts), unemployment insurance benefit levels and durations, and active labour market policy programmes.

More labour market flexibility almost invariably implies a deterioration of the security of incumbent workers and jobs. That such a loss in security is detrimental for the wellbeing of those affected, and may cause depressive symptoms is in virtually all economic studies on labour market flexibility merely assumed.

For evidence-based policymaking on labour market flexibility facts rather than assumptions are imperative. How well people cope with job insecurity, job loss and unemployment is, however, empirically still unresolved. While there is no doubt that insecure workers and the unemployed have lower subjective wellbeing and are in worse mental health than the securely employed, there is also little doubt that selection effects occur: workers in worse mental health are more likely to lose their job, and unemployed persons in worse mental health have lower chances of finding a job. How much harm labour market flexibility does to wellbeing has not yet been established. Furthermore, which groups are more vulnerable to detrimental mental health effects of job insecurity, if any, is still unknown.

This paper aims to contribute to our understanding of the effects of labour market flexibility on wellbeing by determining the mental health effects of job insecurity in employees in the Netherlands from 2008-2013. Panel data are used to control for unobserved heterogeneity and instrumental variables to control for the selection effect.

The labour market in the Netherlands at the time was characterised by stringent protection against dismissal for permanent workers; few constraints on the use of fixed-term contracts and temporary agency work; unemployment insurance benefits with a high replacement rate, of EU-average duration, with a long qualifying period; a high minimum wage; and a large share of workers covered by collective bargaining. In the aftermath of the 2007 US subprime crisis the Dutch economy went into recession and unemployment went up

from 304,000 persons in 2008 (or 3.9% of the labour force) to 647,000 persons in 2013 (or 7.3% of the labour force). And "[b]eyond the men and women actually unemployed at any moment, are the millions or more at work at that moment but never knowing how long that work or any work for them may last" (Beveridge, 1944).

An increase in job insecurity may have had adverse effects on mental health. Mental health is considered a very important, if not the most important indicator of wellbeing (Layard, Chisholm, Patel, & Saxena, 2013).

We pay attention to the averge effect, but to potentially differential effects that job insecurity may have on men's and women's mental health as well. Men and women may have different attachments to jobs - despite changes that have taken place in the labour market position of women in the last decades - which may affect how well they cope with job insecurity. Women and men also may have different ways of coping with job insecurity, with varying success.

The next section discusses the previous literature on the effect of job insecurity on mental health. Section 3 presents the data used in the analysis, section 4 explains the estimation strategy, section 5 reports the regression results, section 6 presents robustness checks, and section 7 concludes.

2. Previous literature

Job insecurity has been conceptualised in various ways, but a common element is the "perception of a potential threat to the continuity of the current job" (Heany, Israel & House, 1994). Klandermans and Van Vuuren (1999) called this "perceived job insecurity", to distinguish it from objective job insecurity, which is the actual risk to the continuity of the current job. The perception of job insecurity is a personal one, and the perceived threat may be real or imaginary. Borg and Elizur (1992) further distinguished between "cognitive job insecurity" and "affective job insecurity": whereas cognitive job insecurity refers to the perception of a threat to employment continuity, affective job insecurity refers to the affective response to this perception.

Job insecurity may be harmful to mental health because stress may cause a deterioration in mental health (for a review see Schneiderman, Ironson & Siegel, 2005), job loss is found to be a stressor (Hobson et al., 1998), and the anticipation of a stressor can have similar effects to the stressor itself (Lazarus & Folkman, 1984).

An association between job insecurity and mental health has been firmly established in the epidemiological and psychological literature (Sverke, Hellgren & Näswall, 2002).

Endogeneity and selection problems prevent a causal interpretation of this association. Rather than job insecurity causing a mental health deterioration, the association may be due to workers with mental health problems perceiving more job insecurity. The latter can be caused by workers with mental health problems being selected into more insecure jobs, or by mental health problems bringing with them an increasingly gloomy view of own job security. Furthermore, unobserved characteristics (e.g. optimism; see Conversano et al., 2010) may affect both job insecurity and mental health, resulting in an association that is not causal.

Hellgren and Sverke (2003) used data on affective[1] job insecurity and mental health of survivors of a first round of downsizing in a Swedish retail company. They found that a latent variable model specifying a causal effect from perceived job insecurity on mental health fitted their data better than alternative models of reverse causation (mental health causing perceived job insecurity), mutual causation, or no relationship at all.

Mandal, Ayyagari and Gallo (2011) used panel data on cognitive job insecurity and depression from the US Health and Retirement Study from 1992-2006. They found that job insecurity is a significant predictor of depression in older workers in the age range of 55-65 years, but not in younger workers in the age range of 45-55 years. The effect is rather small: depression increases by 0.15 on a scale from 0 to 8 (or 0.0875 sd) when perceived likelihood of job loss increases from 0 to 100%. As an estimate of a causal relationship this result is biased, as unobserved personal characteristics may affect both perceived job insecurity and mental health, and as conceivable reverse causality is not addressed.

Unobserved characteristics were controlled for by Green (2011), who used panel data from 2001-2008 on cognitive job insecurity and mental health in employees in an Australian national probability sample. In a fixed-effects approach he found that in men an increase in perceived likelihood of job loss was accompanied by a decrease in mental health of 3.9 points on a scale from 0 to 100 (or 0.25 sd); in women no signficant[2] effect was found.

Reichert and Tauchmann (2011) controlled for unobserved characteristics as well. They used three waves (2002, 2004 and 2008) of panel data on affective job insecurity and mental health of private sector workers in Germany. In a fixed-effects approach they found that a shift from 'not concerned about job insecurity' to 'somewhat or very concerned' lowered mental health by 1.4 points on a scale from 0 to 100 (or 0.15 sd). Using OLS they found no difference in coefficient between men and women. These authors further addressed the

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[1] The scale used was constructed from three items, two of them reflecting affective job insecurity, one of them cognitive job insecurity.
[2] At 5%

problem that the relationship found may be one of reverse causality, i.e. of individuals in worse mental health holding more insecure jobs or otherwise perceiving more job insecurity. To that end, they instrumented job insecurity by staff reductions in the company during the last 12 months. This is a strong instrument, but is unlikely to be uncorrelated with mental health conditional on job insecurity, which is a requirement for an instrument: staff reductions are oft part of a larger restructuring with more hurly-burly than just job insecurity. The latter could be reflected in their coefficient of job insecurity being larger in IV estimation than in fixed-effects estimation, contrary to the reasoning that ignoring reverse causality would lead to upwardly biased effect sizes. What is more important: instrumental variables estimation did not yield significant results[3].

Caroli and Godard (2014) found in a cross-sectional sample of men from 22 European countries that perceived cognitive job insecurity increased the probability of self-reported health problems, among which depression and anxiety. When they instrumented job insecurity by the stringency of employment protection legislation in the country of residence interacted with the rate of dismissals in the industry in the US - the identifying assumption being that workers do not self-select in sectors-by-country on the basis of characteristics that are correlated with their health - they found a negative effect of job insecurity on the probability of some self-reported health problems, but not on mental health problems.

This paper improves on this literature in various respects. Our data cover the unfolding of an economic crisis that raised job insecurity in the Netherlands to levels exceeding those in most previous studies. We pay attention to the economic significance of effect sizes, and pay particular attention to differences in effect sizes for men and women. By instrumenting job insecurity with the number of new recipients of unemployment benefits in the month of measurement of perceived job insecurity, we are able to control for both time-invariant and time-varying omitted variables and reverse causality.

3. Data and descriptive analysis

Data are from the LISS (Longitudinal Internet Studies for the Social sciences) panel administered by CentERdata (Tilburg University, The Netherlands). The LISS panel is a representative sample of Dutch individuals who participate in monthly Internet surveys. The panel is based on a true probability sample of households drawn from the population register. Households that could not otherwise participate are provided with a computer and Internet

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[3] Except for a regular IV, that merely compared individuals that have never encountered staff reductions and individuals that frequently are confronted with staff reductions.

connection. A longitudinal survey is fielded in the panel every year, covering a large variety of domains including work, education, income, housing, time use, political views, values and personality. The LISS panel contains data from 2008-2014.

For the purposes of these analyses only employees in permanent or temporary employment, on-call employees or temp-staffers are considered; self-employed/freelance workers, independent professionals, directors of limited liability companies or majority shareholder directors are filtered out.[4]

In order not to confound any effect of perceived job insecurity on mental health with an effect of unemployment on mental health, our analysis is limited to those who still have a job in December, when the Health study is administered from which the dependent variable is taken.

3.1 Dependent variable: mental health

The LISS Health study, administered in November and December every year, contains the MHI-5. The MHI-5 covers two major mental health dimensions: anxiety and depression. The MHI-5 uses the five items from the 38 item HIE Mental Health Inventory (MHI) that formed the best predictor of the summary score of the full MHI. The exact wording of these items is: "The following questions are about how you felt over the past month. For every question, please choose the answer that best describes how you felt during this past month. This past month ...

mhi01 I felt very anxious

mhi02 I felt so down that nothing could cheer me up

mhi03 I felt calm and peaceful

mhi04 I felt depressed and gloomy

mhi05 I felt happy

1 = never; 2 = seldom; 3 = sometimes; 4 = often; 5 = mostly; 6 = continuously"

These five items in the MHI-5 correlated 0.92 with the MHI total score (from the 38 item HIE Mental Health Inventory), both in-sample and out-of-sample (Davies, Sherbourne, Peterson & Ware, 1988). Subsequent research confirmed the MHI-5's good psychometric performance, its validity to screen for mood and anxiety disorders, and its predictive validity (see e.g. Rumpf, Meyer, Hapke & John, 2001; Strand, Dalgard, Tambs & Rognerud, 2003; Thorsen, Rugulies, Hjarsbech & Bjorner, 2013).

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[4] In line with the national definition of the labour force, the analysis is limited to employees who work at least 12 hours a week. In the robustness check this limitation was dropped.

The MHI-5 is widely used in surveys of mental health. Yet, there is no agreed-upon cut-off point (e.g. Hoeymans, Garssen, Westert & Verhaak, 2004). All outcomes between 50 and 78 have been put suggested as cut-off points. The standard procedure for calculating MHI-5 scores is to code mhi01, mhi02, and mhi04 reversely, such that 6-1 becomes 0-5, and to recode mhi03 and mhi05 such that 1-6 becomes 0-5, to subsequently sum the scores and then multiply the sum total by 4 (Ware, Snow, Kosinski, & Gandek, 1993), such that the MHI-5 scale is from 0-100.

Figure 1 shows the distribution of mental health, with 58% of all respondents having mental health scores in the 76-92 range.

Figure 1. *Frequency distribution of MHI-5 scores of employees in the Netherlands, 2008-2013 (in %)*
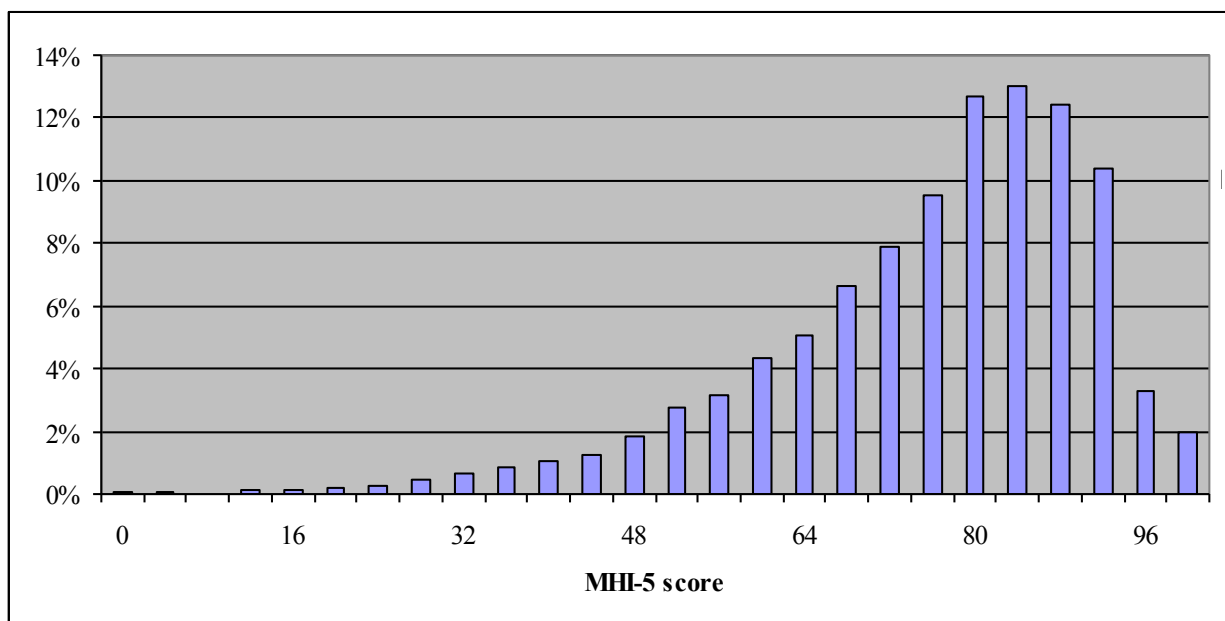
Source: LISS data

3.2 Independent variables

The LISS Income study contains the item "Do you think that there is any chance that you might lose your job in the coming 12 months? You can indicate this in terms of a percentage. 0% means that you are sure that you will not lose your job, and 100% means that you are sure that you will lose your job." This item was as of 2010 only being administered to heads of households and partners. The LISS Income study is administered every June and July (except in 2008, when it was administered in June and September).
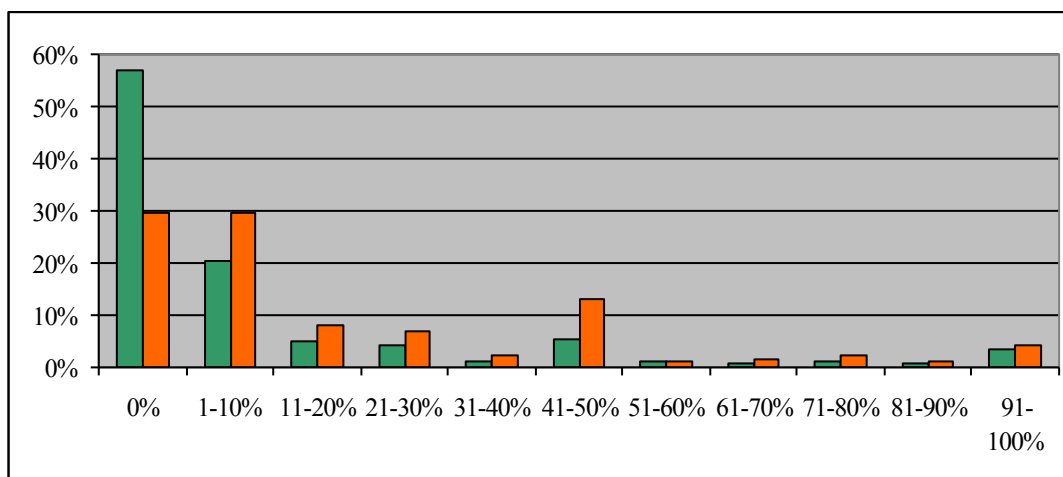
3.2.1 Distribution of perceived likelihood of job loss

Figure 2 shows that two out of three respondents perceived a 10% or smaller chance of losing their job in the coming 12 months, 1 in 11 considered it 50/50, and 1 in 25 was close to or absolutely certain of job loss. 4 out of 10 respondents said there was no chance of them losing their job at all. The proportion of respondents with a perceived chance of job loss equal to 0% almost halved over the years, from 57% in 2008 to 30% in 2013. The average perceived chance of job loss went up from 12.75% in 2008 to 21.65% in 2013. The proportion of respondents who perceived a more than 50% chance of job loss went up from 7% in 2008 to 10.4% in 2013. The proportion answering that the perceived likelihood of job loss is zero is similar to the proportion reported in Dickerson and Green (2012) for Germany. As it is a large group of respondents that answers 0%, we consider its influence on the results in the robustness check.

The vast majority of answers were at the decile points, the 5-percentile points, and at 1 and 99%. This distribution of the responses over decile and 5-percentile points is not different from the Australian and German experience (in Dickerson & Green, 2012).

Figure 2. *Frequency distribution of perceived likelihood of job loss in the Netherlands of employees working at least 12 hours a week, 2008 and 2013 (in %)*

Source: LISS data

3.2.2 Predictive quality of perceived likelihood of job loss

While it is the perception, right or wrong, of likelihood of job loss that is at the centre of our analysis, it is interesting to find out if this perception is a mere symptom in the mind or if it contains private information about the risk of job loss of respondents. To examine whether this is the case, we first determine the risk of subsequent job loss.

As voluntary and involuntary turnover are in practice hard to distinguish (e.g. Schwerdt, 2011), we consider both employees currently (but not previously) without a job and employees that between measurements started a new job as having lost their job during the year. Thus we determine the risk of job loss, that can be compared to the respondent's own prior assessment of the risk of job loss.

Table 1 shows that the respondents' individual assessment of the likelihood of job loss is a useful predictor of the risk of job loss in the subsequent year. The results of a pooled logit analysis in Column (1) confirm that the risk of job loss is higher for respondents who perceive a higher likelihood of job loss. These results are robust to taking into account the repeated observations on the same respondents in the random effects analysis presented in Column (2). The results of a fixed effects approach in Column (3) show that little of the association found is due to unobserved factors (such as personality) influencing both the respondents' assessment of the continuity of the job and the real risk of job loss. Not only is a respondent's assessment of the likelihood of job loss a good predictor of subsequent job loss, it also provides private information in addition to objective factors that are known to influence job loss. This is shown in Columns (4)-(6), that present a similar analysis to Columns (1)-(3) but this time with control variables: sex, age, education level, tenure, hours work per week, public sector employment, temporary contract, and plant size. Even after including objective factors that have been found to influence the risk of job loss, the perceived likelihood of job loss provides additional information on the subsequent risk of job loss.

Table 1. *Subsequent job loss within 12 months predicted from perceived likelihood of job loss and controls.*

|	OLS	RE	FE	OLS	RE	FE
perceived likelihood of job loss	0.0279***	0.0303***	0.0218***	0.0265***	0.0280***	0.0231***
	(0.00122)	(0.00154)	(0.00224)	(0.00129)	(0.00153)	(0.00264)
control variables[1]	no	no	no	yes	yes	yes
Observations	7,510	7,510	1,261	8,548	8,616	1,658
Number of individuals		2,942	403		2,979	474

[1] Control variables: female, age, age^2, education level, tenure, hours work per week, public sector employment, temporary contract, small establishment.

Source: LISS data

Figure 3 shows that respondents who perceived a non-zero chance of job loss systematically overestimated the risk of losing their job. There seems to be an almost monotonically

increasing relationship between the perceived chance of job loss and the actual risk of job loss. This relationship is especially at the higher end of the scale non-linear.

Figure 3. *Kernel-weighted local polynomial smoothing of actual probability of job loss for varying perceived likelihood of job loss (in %)*

Note: kernel = epanechnikov, degree = 0, bandwidth = 2.48
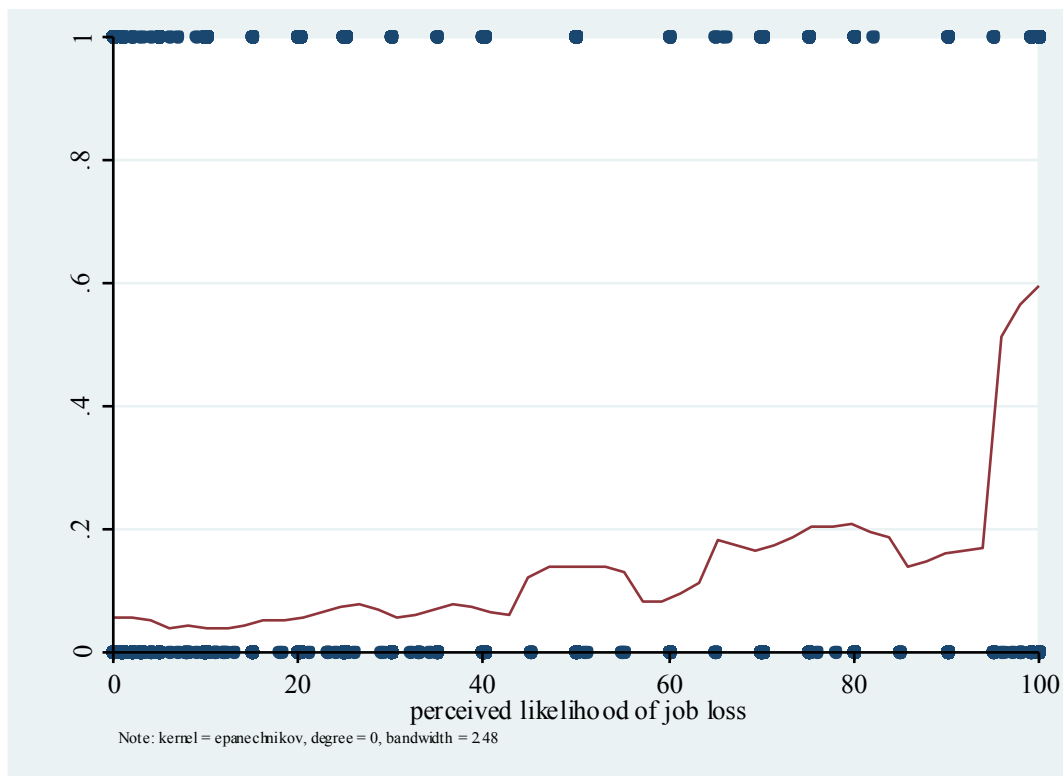
Source: LISS data

3.3 Other explanatory variables and control variables

Data on sex of the respondent, age, degree of urbanisation of area of residence, whether the respondent is living with a partner, educational level, income and and financial situation are provided in the background variables. In order to capture higher-order age effects age squared is also included. Educational level is divided into six levels: primary school, vmbo (intermediate secondary), havo/vwo (higher secondary), mbo (intermediate vocational), hbo (higher vocational), and wo (university). The financial situation is assessed by the natural log of personal net monthly income in euros.

Some explanatory variables are added because they help explain job insecurity: the number of hours actually worked per week on average, tenure (defined as the amount of time elapsed since entering into employment with the current employer), being an employee in temporary employment (or on-call employee or a temp-staffer), being employed in the public sector (government services, public administration, education, healthcare and welfare), a

sector generally thought to have safer employment than the private sector, and working in a small establishment, i.e. one with less than 50 employees.

In order to capture time trends in various sectors, dummy variables are introduced for year and sector of employment and their interaction.

Descriptive statistics are in Table 2.

Table 2. *Descriptive statistics*

	obs	mean	sd	min	max
mental health	9,392	75.75	15.48	0	100
change in mental health	6,553	0.35	14.25	-80	92
perceived likelihood of job loss	9,406	17.45	25.90	0	100
change in perceived likelihood of job loss	5,651	2.47	27.82	-100	100
age	9,392	45.21	10.33	21	90
female	9,427	0.50	0.50	0	1
partner	9,427	0.78	0.42	0	1
degree of urbanisation of area of residence	9,382	3.06	1.26	1	5
education	9,417	3.90	1.38	1	6
net monthly income	8,958	1,822	2,506	0	161,492
temporary employment	9,427	0.078	0.27	0	1
public employment	9,365	0.42	0.49	0	1
tenure	9,303	12.47	10.63	0	49.67

Source: LISS data

4. Estimation strategy

In order to investigate the effect of job insecurity on mental health outcomes we estimate:

$$MHI_{it} = \alpha + v_{it}\,\psi + x'_{it}\,\beta + z_i'\,\gamma + \tau_t\,\kappa_s\,\eta + c_i + u_{it},$$

where MHI_{it} is mental health for individual i at time t, v_{it} is a scalar for job insecurity, x'_{it} is a 12-dimensional row vector of time-varying explanatory variables (personal characteristics including age, age^2, living with a partner, degree of urbanisation of area of residence, level of education attained, net personal income; and job characteristics including number of hours worked, tenure, temporary employment, public employment, small establishment employment) and z_i is a scalar of time-invariant explanatory variables excluding the constant (personal characteristics including sex), α is the intercept, ψ is the parameter of interest, β is a 12-dimensional column vector of parameters, γ is an scalar parameter, η is a column vector of

parameters, τ_t are year dummies and κ_s sector dummies, c_i is an individual-specific effect, and u_{it} is an idiosyncratic error term.

We start with pooled ordinary least squares and correct standard errors for correlations across multiple observations for each individual. The estimated coefficients from pooled ordinary least squares are likely to be inconsistent, however. Although we included several variables to control for observed heterogeneity, a good deal of unobserved heterogeneity is likely to remain. Such unobserved characteristics could be dispositions, be they genetic, psychological or biological, that affect both mental health and perceived job insecurity. An optimistic disposition, e.g., has been found to affect mental health (see e.g. Conversano et al., 2010) and may also affect perceived job insecurity.

Such unobserved characteristics can be assumed to be time invariant, at least within a limited period of time. If we further assume strict exogeneity of the explanatory variables, then the fixed-effects method is capable of solving the endogeneity problem resulting from omitted variables bias. When fixed effects are taken into account, the time-invariant variable (sex) and variables with limited within-variation (degree of urbanisation of area of residence, living with a partner, education level, working on a temporary contract, working in the public sector, and working in a small establishment), are not considered in the estimation process.

With a fixed effects estimation, endogeneity as a result of reverse causality remains an issue: a deterioration in mental health can both be cause and effect of perceived job insecurity. In order to address the issue of reverse causality and establish a causal effect of perceived job insecurity on mental health, we instrument the former by the number of new recipients of unemployment benefits in the month of measurement of perceived job insecurity. Such inflows into unemployment benefits are indicative of the number of layoffs in the economy. They may cast some doubt in the individual on the continuity of the own employment relation. Furthermore, these inflows are exogenous to the individual and are not likely to have any other impact on mental health other than by increasing perceived job insecurity. Variation in values of the instrumental variable stems from different months in which the perceived likelihood of job loss item is administered, sex, five age groups, and public or private sector background of the employee. Yet, with $F(1,5341)= 6.56$ it remains a weak instrument.

5. Results

5.1 Main results

Pooled ordinary least squares estimates in Table 3 serve as a benchmark and for purposes of preliminary descriptive analysis. Respondents who perceive their job as secure

are in better mental health than those who perceive their job as insecure. Table 3 shows that, when controlling for fixed effects, the coefficient of interest is not only markedly lower than with pooled ordinary least squares but also only significant for men. The smaller coefficient for perceived job insecurity in fixed effects implies that individual unobserved characteristics determine to a large extent both the respondent's perceived likelihood of losing his/her job and the respondent's mental health. To the extent that part of the effect is attributable to reverse causality, any causal effect of job insecurity on mental health would need to be smaller still than the fixed effect found. When instrumented by inflow into unemployment benefits, perceived job insecurity does not appear to have a causal effect on mental health. The instrument is weak, however, and hence likely unable to identify a small effect. People are apparently resilient to the stress that perceived job insecurity may bring. An institutional context that cushions the negative consequences of job loss may play a role in this.

Table 3. *Estimated effects of job insecurity on mental health*

	OLS	FE	IV/FE	OLS ♂	FE ♂	IV/FE ♂	OLS ♀	FE ♀	IV/FE ♀
perceived likelihood of job loss	-0.0798***	-0.0161**	0.0188	-0.0958***	-0.0255**	-0.00160	-0.0630***	-0.00344	0.0901
	(0.00844)	(0.00764)	(0.0922)	(0.0118)	(0.0105)	(0.104)	(0.0121)	(0.0108)	(0.169)
living with partner	2.947***			2.717***			2.609***		
	(0.623)			(0.919)			(0.871)		
age	0.363			0.676			-0.244		
	(0.304)			(0.425)			(0.295)		
age2	-0.00355	0.00335	0.00229	-0.00731	0.0144**	0.00180	0.00338	-0.00193	0.00353
	(0.00352)	(0.00376)	(0.00164)	(0.00484)	(0.00684)	(0.00184)	(0.00339)	(0.00674)	(0.00296)
living with children	0.0337	-0.270	-0.404	-1.184	0.0564	-0.474	1.112	-0.656	-0.00377
	(0.624)	(1.064)	(0.995)	(0.831)	(1.451)	(1.381)	(0.861)	(1.566)	(1.469)
log net income	3.374***	1.026	1.102	4.833***	-3.362	-3.417	3.175***	3.315	4.433**
	(0.791)	(2.209)	(1.398)	(1.311)	(2.904)	(2.244)	(1.109)	(2.397)	(1.979)
temporary employment	-0.0161	0.963	0.898	1.715	0.994	1.270	-1.111	0.172	-0.464
	(0.849)	(1.001)	(1.297)	(1.295)	(1.546)	(1.647)	(1.132)	(1.266)	(2.250)
public employment	-4.736*	7.560*	0.351	-4.967	2.125	-0.530	3.984	10.36**	1.312
	(2.877)	(4.060)	(1.363)	(3.493)	(4.918)	(2.065)	(6.502)	(4.220)	(1.873)
small establishment	-0.241	0.740	0.767	-0.665	0.776	0.534	0.545	0.809	0.967
	(0.475)	(0.560)	(0.521)	(0.673)	(0.773)	(0.698)	(0.675)	(0.837)	(0.788)
hours work per week	0.0301	-0.0343	-0.0265	0.121***	-0.0114	-0.00143	-0.0581	-0.0583	-0.0516
	(0.0319)	(0.0456)	(0.0433)	(0.0460)	(0.0613)	(0.0558)	(0.0486)	(0.0661)	(0.0688)
tenure	0.0233	-0.157**	-0.162*	0.0346	-0.0151	-0.0176	0.0277	-0.478***	-0.521***
	(0.0281)	(0.0765)	(0.0858)	(0.0368)	(0.0903)	(0.0883)	(0.0448)	(0.131)	(0.199)
slightly urban	-1.276			-1.255			-1.482		
	(0.870)			(1.232)			(1.203)		
moderately urban	-1.326			-0.836			-1.868		
	(0.822)			(1.091)			(1.202)		
very urban	-0.801			-0.0690			-1.535		
	(0.794)			(1.104)			(1.110)		
extremely urban	-1.226			-0.532			-1.374		
	(0.944)			(1.347)			(1.280)		
intermediate secondary education	1.188			0.627			1.198		
	(1.403)			(2.044)			(2.006)		
higher secondary education	-0.0301			-0.932			0.150		

(1.538)			(2.325)			(2.065)		
intermediate vocational education 0.423			0.0227			0.337		
(1.345)			(1.982)			(1.900)		
higher vocational education 1.129			0.241			1.380		
(1.359)			(2.033)			(1.905)		
university education -0.450			-2.387			0.708		
(1.490)			(2.251)			(2.051)		
Observations 8,613	8,640	7,577	4,344	4,355	3,855	4,269	4,285	3,722
R-squared 0.053	0.018	-0.000	0.076	0.030	0.002	0.053	0.043	-0.019
Number of individuals	3,285	2,222		1,622	1,122		1,663	1,100

Note: Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Source: LISS data

5.2 Heterogeneous effects

The main results indicated a different effect for men and women. Such effect heterogeneity may not be limited to gender only. Age might moderate the relationship between perceived job insecurity and mental health, as beyond a certain age it becomes more difficult to find a new job after losing one. Living with a partner might moderate the relationship between perceived job insecurity and mental health for at least three reasons: people who have no partner may have a different skill set, and people who have no partner lack an opportunity to pool resources, and having a partner may help cope emotionally with the stress of perceived job insecurity. As a corollary of the latter, being a breadwinner[5] could moderate this relationship. Education level might moderate the relationship between perceived job insecurity and mental health for two reasons: for employees with certain education levels it may be more difficult to find a new job than for others, and the social norm of having a job may be different for groups with different educational backgrounds. Working on a permanent contract may moderate the relationship between perceived job insecurity and mental health, as employees on a permanent contract may be less inclined to expect their employment relation to end than employees on a temporary contract.

Table 4 presents only the coefficients of interest, i.e. the coefficients of perceived job insecurity as a main effect for various groups. There is no difference in effect between age groups. The effect of perceived likelihood of job loss on mental health is limited to employees not living with a partner. Being a breadwinner plays no role in this. The effect of perceived likelihood of job loss on mental health is furthermore limited to employees with higher secondary and intermediate vocational education, and in particular to male employees with higher secondary and intermediate vocational education. The effect of perceived likelihood of

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[5] According to respondent's own assessment of being head of household.

job loss on mental health is furthermore limited to employees with a permanent employment contract. There is no subgroup of women for which an effect of perceived likelihood of job loss on mental health is found. The resilience that people in general have in the face of perceived job insecurity is definitely not found in all of them. For some specific groups of male employees perceived job insecurity is an ordeal.

Table 4. *Heterogeneity of coefficient of perceived job insecurity in fixed effects estimation of mental health*

	FE	FE ♂	FE ♀
< 45 years of age	-0.0132	**-0.0320***	-0.00329
	(0.0120)	(0.0178)	(0.0165)
	N=1,759	825	934
≥ 45 years of age	**-0.0170***	-0.0148	-0.0107
	(0.0099)	(0.0132)	(0.0154)
	N=1,738	907	831
no partner	**-0.0344****	**-0.0335***	-0.0382
	(0.0160)	(0.0182)	(0.0249)
	N=808	355	453
with partner	-0.00950	**-0.0194***	-0.00738
	(0.00816)	(0.0115)	(0.0117)
	N=2,605	1,332	1,273
with partner, breadwinner	-0.0120	-0.0184	0.0578
	(0.0117)	(0.0122)	(0.0441)
	N=1,481	1,206	275
with partner, no breadwinner	-0.0120	-0.0318	-0.00973
	(0.0119)	(0.0354)	(0.0127)
	N=1,218	157	1,061
primary and intermediate secondary education	0.00577	-0.000553	0.0285
	(0.0141)	(0.0209)	(0.0198)
	N=782	386	396
higher secondary and intermediate vocational education	**-0.0230****	**-0.0440*****	-0.00739
	(0.0102)	(0.0142)	(0.0153)
	N=1,285	628	657
higher vocational and university education	-0.0194	-0.0148	-0.0218
	(0.0140)	(0.0172)	(0.0227)
	N=1,304	654	650
permanent contract	**-0.0198****	**-0.0266****	-0.0132
	(0.00783)	(0.0106)	(0.0116)
	N=3,062	1,539	1,523
temporary or flexible contract	0.0161	**0.0869****	-0.0410
	(0.0291)	(0.0399)	(0.0432)
	N=430	170	260

Note: Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Source: LISS data

5.3 Robustness checks

   The LISS panel contains another recurring item that captures an aspect of job insecurity. To check the robustness of the results we also performed the analysis for the item in the LISS Work & Schooling study "It is uncertain whether my job will continue to exist.

1 disagree entirely

2 disagree

3 agree

4 agree entirely."

Table 5. *Estimated effects on mental health of extent of agreement with* It is uncertain whether my job will continue to exist.

base category: disagree entirely	**OLS**	**FE**	**OLS** ♂	**FE** ♂	**OLS** ♀	**FE** ♀
disagree	**-3.314*****	-0.113	**-3.523*****	0.267	**-3.082*****	-0.455
	(0.438)	(0.415)	(0.610)	(0.556)	(0.628)	(0.616)
agree	**-6.133*****	-0.221	**-6.916*****	0.122	**-5.198*****	-0.474
	(0.571)	(0.516)	(0.799)	(0.689)	(0.831)	(0.783)
agree entirely	**-7.822*****	-1.058	**-7.623*****	-1.509	**-7.722*****	-0.425
	(0.956)	(0.892)	(1.262)	(1.203)	(1.440)	(1.305)
living with partner	**2.930*****		**2.519*****		**2.870*****	
	(0.593)		(0.876)		(0.835)	
control variables	yes	yes	yes	yes	yes	yes
joint significance of "disagree", "agree" and "agree entirely" dummy variables		$F(3,3631)=0.48$ $p = 0.6943$		$F(3,1770)=0.96$ $p = 0.4111$		$F(3,1861)=0.20$ $p = 0.8997$
Observations	10,128	10,159	5,046	5,060	5,082	5,099
R-squared	0.057	0.018	0.071	0.025	0.057	0.033
Number of individuals		3,632		1,771		1,862

Note: Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Source: LISS data

Table 5 shows that, when controlling for fixed effects, the coefficients of being uncertain about the continuity of the job are small and insignficant. The size of the coefficients, especially for the 'agree entirely' category, are comparable to the one found for perceived likelihood of job loss, however.

   As another robustness check we did the analysis with all workers who satisfy the ILO definition of working at least 1 hour a week rather than with the subgroup that satisfies the Dutch national definition (at least 12 hours per week) only. The coefficient of perceived likelihood of job loss on mental health remained stable (at least 12 hours per week: -0.0161; at last 1 hour a week: -0.0187).

As a robustness check on nonlinearity in the relationship between perceived likelihood of job loss and mental health, dummy variables were created for various classes (intervals) of perceived likelihood of job loss. The results clearly indicate nonlinear effects. Table 6 shows that it is only the highest classes of perceived likelihood of job loss that are associated with a deterioration in mental health.

Table 6. *Estimated effects on mental health by classes of perceived likelihood of job loss.*

perceived likelihood of job loss:	FE	FE	FE
base category: > 0% but < 11%		♂	♀
= 0%	0.362	-0.386	0.962
	(0.467)	(0.596)	(0.718)
> 10% but < 31%	0.204	0.0979	0.231
	(0.483)	(0.618)	(0.760)
> 30% but < 50%	0.622	-0.805	2.985
	(1.288)	(1.743)	(1.942)
= 50%	0.297	-0.718	**1.679***
	(0.664)	(0.981)	(0.927)
> 50% but < 100%	-0.502	**-2.242***	1.334
	(0.777)	(1.145)	(1.038)
= 100%	**-2.605***	**-3.504****	-1.627
	(1.340)	(1.726)	(1.960)
control variables	yes	yes	yes
Observations	8,640	4,355	4,285
R-squared	0.019	0.032	0.046
Number of individuals	3,285	1,622	1,663

 Note: Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Source: LISS data

6. Discussion

We estimate the effect of perceived job insecurity on mental health using data from the Netherlands for 2008-2013. Fixed effect estimation of the effect of perceived job insecurity on mental health indicates a small effect. The small effect size is robust to different operationalisations of perceived job insecurity. It is similar to the effect found by Reichert and Tauchmann (2011) for Germany, and smaller than the effect found by Green (2011) for Australia. A possible explanation for the difference in effect size between the Netherlands and Germany on the one hand and Australia on the other is the lack of unemployment insurance in Australia, with hence a larger income loss after job loss than in the Netherlands and Germany, where unemployment insurance enables some income smoothing by replacing a portion of the

lost income for some time. Previous international comparison studies have suggested that employment protection may be less effective for satisfaction with job security than unemployment insurance levels (Clark & Postel-Vinay, 2009). Our results, which show that in an environment with a high replacement rate the effects of perceived likelihood of job loss on wellbeing are insubstantial, are consistent with the view that unemployment insurance levels are more important for employee wellbeing than employment protection.

To the extent that part of the effect is attributable to reverse causality, any causal effect of job insecurity on mental health would need to be smaller still than the fixed effect found. In our instrumental variables approach we failed to identify such a causal effect, just like Reichert and Tauchmann (2011) and Caroli and Godard (2014) before. Either the causal effect is too small to distinguish at all or a stronger instrument is needed to identify it.

The mean effect of perceived job insecurity on mental health may be small, but some groups have clearly more trouble than others in adapting to perceived job insecurity. Men appear to be affected by perceived job insecurity, while no effect has been found for women. This confirms findings for Australia (Green, 2011). There are no indications in our results that men are more affected due to their breadwinnership. It could be that the effect is mediated by a social norm of having paid employment being stronger for men (e.g. Clark, 2003), or women being better at coping with the stress that perceived job insecurity involves. Furthermore, a negative effect appears to be stronger for men who do not live with a partner. This can be due to them lacking social support to cope, or to personal characteristics of being less stable in the face of adversity (such as perceived job insecurity) being selected against in partner choice. In addition, negative effects of perceived job insecurity on mental health are found predominantly among men with intermediate levels of education. A possible explanation is that their chances of finding a (similar) new job on a polarized labour market (e.g. Goos, Manning & Salomons, 2014) are smaller than for other groups. That would be in line with findings by Green that suggest that employability moderates the effect of perceived job insecurity on mental health. Finally, negative effects of perceived job insecurity on mental health are found among men with permanent contracts only. These permanent contracts may have prompted an expectation of continuity of the employment relation, and the perceived job insecurity may be felt as breach of a psychological contract (e.g. De Cuyper & De Witte, 2007).

It appears that, contrary to popular belief, in general people are resilient in the face of perceived job insecurity. Although flexible labour markets and a recession have stricken workers with more job insecurity over the last few years, higher than the levels measured in

previous studies (e.g. Green, 2011), in general the effects on mental health appear to be very limited. Detrimental effects of perceived job insecurity on mental health are, however, found when perceived job insecurity is high, as well as in particular groups of workers. Groups at risk are men, especially those without a partner, with medium levels of education, and with a permanent contract. Companies that are downsizing and unions should be aware of the noxious effect of job insecurity on these groups and consider offering counselling to those who have trouble coping. Governments should pay attention to the labour market perspectives of these groups, as their lack of perspective after job loss may fuel their distress. Improving their employability may help avoid them getting in a vicious circle of labour market insecurity and mental health deterioration, eventually alienating them from the labour market and possibly from society.

References

Beveridge, W.H. (1944). *Full employment in a free society.* London, UK: George Allen & Unwin.

Borg, I. & Elizur, D. (1992). Job insecurity: Correlates, moderators and measurement. *International Journal of Manpower, 13*, 13-26. doi: 10.1108/01437729210010210

Caroli, E. & Godard, M. (2014). Does job insecurity deteriorate health? *Health Economics,* doi: 10.1002/hec.3122

Clark, A. E. (2003). Unemployment as a social norm: Psychological evidence from panel data. *Journal of Labor Economics, 21*, 323-351. doi: 10.1086/345560

Clark, A. & Postel-Vinay, F. (2009). Job security and job protection. *Oxford Economic Papers, 61*, 207-239. doi: 0.1093/oep/gpn017

Conversano, C., Rotondo, A., Lensi, E., Della Vista, O., Arpone, F., & Reda, M. A. (2010). Optimism and its impact on mental and physical well-being. *Clinical Practice and Epidemiology in Mental Health, 6*, 25-29. doi: 10.2174/1745017901006010025

Davies, A.R., Sherbourne, C.D., Peterson, J., & Ware, J.E. (1988). *Scoring manual, adult health status and patient satisfaction measures used in RAND's health insurance experiment*. Santa Monica, CA: RAND Corporation.

De Cuyper, N. & De Witte, H. (2007). Job insecurity in temporary versus permanent workers: Associations with attitudes, well-being, and behaviour. *Work & Stress, 21*, 65-84. doi: 10.1080/02678370701229050

Dickerson, A. & Green, F. (2012). Fears and realisations of employment insecurity. *Labour Economics, 19*, 198-210. doi: 10.1016/j.labeco.2011.10.001

Goos, M., Manning, A. & Salomons, A. (2014). Explaining job polarization: Routine-biased technological change and offshoring. *American Economic Review, 104*, 2509-2526.

Green, F. (2011). Unpacking the misery multiplier: How employability modifies the impacts of unemployment and job insecurity on life satisfaction and mental health. *Journal of Health Economics, 30*, 265-276. doi: 10.1016/j.healeco.2010.12.005

Heaney, C., Israel, B. & House, J. (1994). Chronic job insecurity among automobile workers: Effects on job satisfaction and health. *Social Science and Medicine, 38*, 1431-1437. doi:10.1016/0277-9536(94)90281-X

Hellgren, J. & Sverke, M. (2003). Does job insecurity lead to impaired well-being or vice versa? Estimation of cross-lagged effects using latent variable modelling. *Journal of Organizational Behavior, 24*, 215-236.

Hobson, C.J., Kamen, J., Szostek, J., Nethercut, C.M., Tiedmann, J.W., & Wojnarowicz, S.

(1998). Stressful life events: A revision and update of the Social Readjustment Rating Scale. *International Journal of Stress Management, 5*, 1-23.

Hoeymans, N., Garssen, A.A., Westert, G.P., & Verhaak, P.F. (2004). Measuring mental health of the Dutch population: A comparison of the GHQ-12 and the MHI-5. *Health and Quality of Life Outcomes, 2*, 23.

Klandermans, B. & Van Vuuren, T. (1999). Job insecurity: Introduction. *European Journal of Work and Organizational Psychology, 8,* 145-153. doi: 10.1080/135943299398294

Layard, R., Chisholm, D., Patel, V. & Saxena, S. (2013). Mental illness and unhappiness. In J. Helliwell, R. Layard & J. Sachs (Eds.), *World happiness report 2013* (pp. 38-53). New York, NY: UN Sustainable Development Solutions Network.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

Mandal, B., Ayyagari, P., & Gallo, W.T. (2011). Job loss and depression: The role of subjective expectations. *Social Science & Medecine, 72*, 576-583. doi: 0.1016/j.socscimed.2010.11.014

Organisation for Economic Cooperation and Development (OECD). (2004). *Employment outlook 2004*. Paris: Author.

Organisation for Economic Cooperation and Development (OECD). (2013). *Employment outlook 2013*. Paris: Author.

Reichert, A. & Tauchmann, H. (2011). *The causal impact of fear of unemployment on psychological health* [Ruhr Economic Papers, No. 266]. Essen, Germany: RWI.

Riumallo-Herl, C., Basu, S., Stuckler, D., Courtin, E. & Avendano, M. (2014). Job loss, wealth and depression during the Great Recession in the USA and Europe. *International Journal of Epidemiology, 43*, 1508-1517. doi: 10.1093/ije/dyu048

Rumpf, H.-J., Meyer, C., Hapke, U., & John, U. (2001). Screening for mental health: Validity of the MHI-5 using DSM-IV Axis I psychiatric disorders as gold standard. *Psychiatry Research, 105*, 243-253. doi: 10.1016/S0165-1781(01)00329-8

Schneiderman, N., Ironson, G., & Siegel, S.D. (2005). Stress and health: Psychological, behavioral, and biological determinants. *Annual Review of Clinical Psychology, 1*, 607-628.

Schwerdt, G. (2011). Labor turnover before plant closure: "Leaving the sinking ship" vs. "Captain throwing ballast overboard". *Labour Economics, 18*, 93-101. doi: 10.1016/j.labeco.2010.08.003

Strand, B.H., Dalgard, O.S., Tambs, K., & Rognerud, M. (2003). Measuring the mental health

status of the Norwegian population: A comparison of the instruments SCL-25, SCL-10, SCL-5 and MHI-5 (SF-36). *Nordic Journal of Psychiatry, 57*, 113-118. doi: 10.1080/08039480310000932

Sverke, M., Hellgren, J., & Näswall, K. (2002). No security: A meta-analysis and review of job insecurity and its consequences. *Journal of Occupational Health Psychology, 7*, 242-264. doi: 10.1037//1076-8998.7.3.242

Thorsen, S.V., Rugulies, R., Hjarsbech, P.U., & Bjorner, J.B. (2013). The predictive value of mental health for long-term sickness absence: the Major Depression Inventory (MDI) and the Mental Health Inventory (MHI-5) compared. *BMC Medical Research Methodology, 13*, 115. doi: 10.1186/1471-2288-13-115

Ware, J.E. Jr., Snow, K.K., Kosinski, M., & Gandek, B. (1993). *SF-36 Health Survey: Manual and Interpretation Guide*. Boston, MA: Health Institute.