

 Open access • Journal Article • DOI:10.1002/AJIM.22176

Precarious employment, psychosocial working conditions, and health: Cross-sectional associations in a population-based sample of working Australians.

— [Source link](#) 

Dominic Keuskamp, Anna Ziersch, Fran Baum, Anthony D. LaMontagne

Institutions: Flinders University

Published on: 01 Aug 2013 - American Journal of Industrial Medicine (Wiley)

Topics: Psychosocial, Mental health and Population

Related papers:

- [Precarious Employment: Understanding an Emerging Social Determinant of Health](#)
- [Temporary employment and health: a review](#)
- [The Employment Precariousness Scale \(EPRES\): psychometric properties of a new tool for epidemiological studies among waged and salaried workers](#)
- [Is the association between precarious employment and mental health mediated by economic difficulties in males? Results from two Italian studies.](#)
- [Precarious Employment and Psychosocial Hazards: A Cross-Sectional Study in Stockholm County](#)

Share this paper:    

View more about this paper here: <https://typeset.io/papers/precarius-employment-psychosocial-working-conditions-and-3skdzsripi>



Archived at the Flinders Academic Commons:

<http://dspace.flinders.edu.au/dspace/>

This is the authors' version of an article published in *American Journal of Industrial Medicine*. The original publication is available by subscription at:
<http://onlinelibrary.wiley.com/doi/10.1002>

doi: 10.1002/ajim.22176

Please cite this article as:

Keuskamp, D., Ziersch, A. M., Baum, F. E. and LaMontagne, A. D. (2013), Precarious employment, psychosocial working conditions, and health: Cross-sectional associations in a population-based sample of working Australians. *Am. J. Ind. Med.*, 56: 838–844.

Copyright (2013) Wiley-Blackwell. All rights reserved.

Please note that any alterations made during the publishing process may not appear in this version.

Precarious employment, psychosocial working conditions, and health: Cross-sectional associations in a population-based sample of working Australians

Abstract

Background: Precarious employment has been associated with poor health, but the potential mechanisms are unclear. We examined the relationships between precarious employment and health, and investigated psychosocial working conditions as potential mediators.

Methods: A cross-sectional population-based survey was conducted in South Australia in 2009 (N = 1016 employed). SF-12 measures of mental and physical health were modelled using logistic regression in relation to employment arrangement, controlling for sociodemographics, years in job and psychosocial working conditions.

Results: There was no association between casual full-time or part-time employment and poor mental health in multivariate analyses. Conversely, there was a significant association between casual full-time employment and poor physical health (compared to permanent full-time workers, OR = 3.14, 95% CI 1.26-7.85). The association with physical health was unaffected by adjustment for psychosocial working conditions.

Conclusions: Casual full-time employment was strongly associated with poor physical health but not with poor mental health. This association was not mediated by the psychosocial working conditions measured in this study, but may be related to other (unmeasured) working conditions.

Key words: precarious, casual, employment, psychosocial, health

Introduction

Precarious employment refers to a diverse set of employment arrangements (also known as atypical, contingent or nonstandard), defined by their deviation from the “standard” employment relationship of permanent or on-going full-time work [Bergstrom and Storrie, 2003; Campbell et al., 2009; Kalleberg 2009]. Considerable growth in precarious employment over the past three decades has raised questions about its implications for worker health, given that it is characterised by insecurity, instability, a lack of entitlements and protections, and social and economic vulnerability [Quinlan et al., 2001; Benach and Muntaner, 2007].

While much previous research has linked precarious employment to poor health, null and even converse relationships have also been found [Quinlan et al., 2001; Ferrie et al., 2008]. The lack of consistency in the literature may be due in part to heterogeneity in the forms of precarious employment studied, variation in sample composition (e.g. working population-based versus age- or sex-specific groups), or the variety of health outcomes examined [Aronsson et al., 2002; Saloniemi et al., 2004; Silla et al., 2005]. Cultural, regulatory, labour market and social welfare regime distinctions between countries also play a role in shaping precarious-employment-health relationships [Virtanen et al., 2005; Kalleberg, 2009; Kim et al., 2012].

The mechanisms through which precarious employment might be causally linked to ill health also remain unclear [Virtanen et al., 2005; Benach and Muntaner, 2007; Ferrie et al., 2008]. Psychosocial working conditions, such as job security, psychological demand, and job control, tend to be more prevalent for the precariously employed compared to permanently-employed workers [Artazcoz et al., 2005; LaMontagne et al., 2012b]. Job insecurity is logically a putative mediator [Ferrie et al., 2008], but may only provide a partial explanation,

as other factors such as lack of entitlements or poor regulatory oversight may also be involved [Benach et al., 2002; Benach and Muntaner, 2007]. Workers' employability has also been found to interact with the insecurity-health relationship, but only for some outcomes [Silla et al., 2009]. For some precariously-employed workers, the ready availability of comparable jobs may mitigate job insecurity concerns. Job demands and job control could receive more attention as potential mediating factors [Ferrie et al., 2008]. The adverse impacts of precarious employment may be mediated in part by strain from efforts to retain paid work, suggesting that multiple job holding should also be considered [Lewchuk et al., 2008].

The forms of precarious employment vary both within and between labour markets and countries [Louie 2006, Kim et al., 2012]. In Australia, the most prevalent form of precarious employment is 'casual', an omnibus term defined by the absence of entitlement to paid annual and sick leave [Burgess et al., 2008]. Following rapid growth in the 1990s, the proportion of casual workers has remained high, now accounting for almost one fifth of working Australians, exceptional by international standards [Burgess et al., 2008; Australian Bureau of Statistics (ABS), 2012]. Casual workers are predominantly young (40% are aged between 15 and 24), just over half are female, and 70% work part-time. One quarter are in fact full-time secondary or tertiary students working casually part-time. Casual workers are concentrated in lower skill, private sector jobs working in retail, hospitality, accommodation and food service industries [Louie et al., 2006; ABS, 2012]. They are a heterogeneous group, and those working full-time are well differentiated by their demographics and exposure profile [Louie et al., 2006; Campbell et al., 2009; LaMontagne et al., 2012b]. Some casual work is short-term or on-call, yet the larger proportion of workers are used on a regular long-term basis, in effect substituting for permanent employees [Burgess et al., 2008]. Casual contracts offer employers lower cost and administration, and more flexibility and ease of dismissal [Burgess et al., 2008].

Much remains to be understood about the implications of casual employment for worker health in Australia. Only three very recent published studies (to our knowledge) have used Australian data to assess the association between casual employment arrangements and poor mental health. Neither of the two longitudinal studies showed an impact from entering casual employment, in contrast to most of the findings from other OECD countries [Llena-Nozal, 2009; Richardson et al., 2012], and this was corroborated by cross-sectional data from a survey in the state of Victoria [LaMontagne et al., 2012a]. The three studies used mental health summary scales derived from the SF-36 [Ware et al., 1994] or the more abbreviated SF-12 [Ware et al., 1996].

A better understanding is needed of how exposures to known psychosocial working conditions vary by employment arrangement, and whether those exposures could mediate associations between casual employment and mental health. This paper set out to compare psychosocial working conditions across four mutually-exclusive employment arrangements in a sample of Australian workers and ask whether there is an association between casual employment and poor mental health, and if so, the extent to which psychosocial working conditions can explain this association. Use of the SF-12 also offered the opportunity to assess physical health, though our survey did not collect data on physical working conditions. International research with regard to precarious employment and physical health has produced mixed findings [Ferrie et al., 2008; Virtanen et al., 2011], but given the recognised associations of casual work with poor occupational health and safety protections [Quinlan et al., 2001], we also chose to test the hypothesis that casual work is associated with poor physical health.

Materials and methods

Sampling and measures

Questions on psychosocial working conditions were included as part of a Health Monitor survey in 2009 as described previously ([#]). This study was reviewed and approved by Flinders University's Social & Behavioural Research Ethics Committee (project 3828). A total of 1853 households were surveyed anonymously (with implied consent) with a response rate of 59.7%. Those outside the labour force, including full-time students, were excluded from the sample. Employment arrangements were classified by self-report into 8 mutually-exclusive categories [Louie et al., 2006]. We focused on the casual groups because casual work is the most prevalent form of precarious employment, and other forms were only represented in the sample in small numbers. The analysis was therefore conducted using four groups - permanent full-time, permanent part-time, casual full-time and casual part-time. Small percentages of workers on fixed-term contracts (these workers have a similar profile and entitlement to permanent workers, but a preset period of employment), labour hire contracts and self-employed workers were excluded. Following Australian Bureau of Statistics (ABS) definitions, working hours (usual number of hours per week in current job) were used to distinguish full-time (FT, 35 or more hours) from part-time (PT, less than 35).

We used the SF-12 v2 mental health summary score (MCS) which accurately reproduces the SF-36 score, has been validated against a wide range of mental health disorders and has established psychometric properties as a self-report measure [Ware et al., 1996; Sanderson and Andrews, 2002]. The MCS and PCS (physical health summary score) were calculated by standard methods on a scale from 0-100; scores were dichotomised to define poor health as below the cut point, which for mental health was 42 (13.7% of population), and for physical health was 43.85, the lowest octile (12.5%) for the employed population [Ware et al., 1996; D'Souza et al., 2003]. Age (in years), sex (male/female) and highest educational attainment (categorical) were also recorded. Subjective financial strain was

assessed by asking 'How would you say you are managing financially at the moment?' with responses analysed as either 'Living comfortably', 'Getting by', or 'Finding it difficult'.

Occupational group was dichotomised from the 8 single-digit categories of ANZSCO (1st edition) as 'Manager/Professional' and 'Other' (high/low). Our survey collected data on income but this was only at the household level, and incomplete (17.8% missing). Education, subjective financial strain and occupational group were included as measures of socioeconomic and occupational status. We found that education and subjective financial strain were each broadly correlated with household income and nationally collected postal level data, Socio-Economic Indexes for Areas (SEIFA).

Respondents self-rated their satisfaction with their job, and satisfaction with their employment arrangement from low to high on a 0-10 scale. A binary variable representing distress from job insecurity was developed by combining two items from the original effort-reward imbalance model [Siegrist, 1996]. The first item asks whether respondents agree with the statement '*My job security is poor*' and if they do, the second asks '*How distressed are you by this situation?*'. Points on the combined scale are thus: (1) no (i.e. job security is not poor), (2) yes, I am not at all distressed, (3) yes, I am somewhat distressed, (4) yes, I am distressed, (5) yes, I am very distressed [Laszlo et al., 2010]. The variable was dichotomized as yes (3-5) or no (1-2). An 11 question version of the demand/control model was utilised, with all items measured on a 4-point scale [Mausner-Dorsch and Eaton, 2000; Ylipaavalniemi et al., 2005]. Psychological demands were measured as the sum of 3 items (Cronbach's alpha = 0.72). Job control was the sum of 2 equally weighted subscales (Cronbach's alpha = 0.84) measuring skill discretion (5 items) and decision authority (3 items). Both demand and control were dichotomised at medians. A self-rated employability variable utilised responses on a 0-10 scale to the question *If you lost your job, how difficult do you think it would be to get another job with similar pay and hours?* [Broom et al., 2006]. The variable was reverse coded such that higher scores indicated greater employability. To adjust for duration of exposure [Ferrie et al., 2008], respondents were queried on the length

in years of tenure in their current main job (if holding more than one job, they were asked to report tenure for their main job). Acknowledging that casual workers in particular are more likely to hold multiple jobs and work more irregular hours, in the interests of parsimony we confined our analysis to the current main job, which for 80.3% of casual workers was their only one.

Statistical analysis

Bivariate associations of psychosocial working conditions and poor health across employment arrangements were tested using Pearson chi square or one-way ANOVA as appropriate. Multivariate logistic regression was used to model the probability of poor physical health and poor mental health in relation to employment arrangement, years in job, age, sex, marital status, education, financial strain and occupational level (those variables significant in bivariate analysis) in Model I for both dependent variables. Model II added all psychosocial working conditions: distress from job insecurity, control, demands, multiple job holding, employability and satisfaction with employment arrangement (but not job satisfaction, because of a conceptual overlap with satisfaction with employment arrangement). Models were built manually. Data were analysed in SPSS v19 (IBM, Chicago, IL).

Results

Employees in the two casual arrangements were socio-demographically different from the permanent workers. Casual workers overall were more likely to be younger, under financial strain, not be partnered and have a lower education (Table I, all $p < 0.01$). Female workers and those in non-professional occupations were more likely to be in part-time work, whether permanent or casual.

INSERT TABLE I HERE

Psychosocial working conditions were generally poorer for the casually employed groups (Table II). Distress from job insecurity and low job control were most prevalent for casual FT workers, but high psychological demands were most likely for permanent FT workers (all $p < 0.001$). Casual FT workers had the lowest means for job satisfaction ($p < 0.05$), satisfaction with employment arrangement ($p < 0.001$) and employability ($p < 0.05$). Multiple job holding was highest for the two part-time groups, and far higher for casual than permanent FT workers ($p < 0.001$).

INSERT TABLE II HERE

Mental health was poorest for casual FT workers ($p < 0.001$), of whom 20.0% (7) had poor mental health compared to 10.6% (62) of permanent FT employees. Casual PT workers also had worse mental health (19.1%, 29) than those working permanent PT (13.4%, 26). For physical health, differences between groups were even more marked ($p < 0.001$). Casual FT workers had the poorest physical health (25.7%, $N=9$), compared to 12.2% (71) of those working permanent FT; casual PT workers (13.1%, 20) had worse health than permanent PT workers (8.8%, 17).

The association of employment arrangement and poor mental health did not persist following adjustment for sociodemographic characteristics (Table III). While the association of employment arrangement and poor mental health was not significant, odds exceeded 1 in Models I and II for casual FT and PT groups, and were attenuated appreciably after the inclusion of psychosocial working conditions.

In Model I with adjustment for socio-demographic characteristics only, casual FT workers had more than 3-fold higher odds of poor physical health than permanent FT workers. Those odds were attenuated inappreciably in Model II after adjustment for psychosocial working conditions. Three other variables were significantly associated with poor physical health: age and financial strain in both models and employability in Model II only.

INSERT TABLE III HERE

Discussion

In this Australian working population sample, poor mental health was not associated with employment arrangement, after adjustment for sociodemographic characteristics. This finding was consistent with a cross-sectional study from a neighbouring southeastern Australian state, Victoria [LaMontagne et al., 2012a], as well as findings from national longitudinal analyses [Llena-Nozal, 2009; Richardson et al., 2012]. Several international studies have also shown null findings, although the larger and prospective studies have tended to show an association [Virtanen et al., 2005; Ferrie et al., 2008].

As Virtanen et al. [2005] highlighted at the conclusion of their meta-analysis, the national labour market and welfare contexts shape the precarious-employment-health relationship. In Australia, the particular protections offered to casual workers are undoubtedly significant. In compensation for their lack of leave benefits, they are entitled to a “loading” of 15 to 25% on the hourly rate of pay, they benefit from the protections of minimum wage and anti-discrimination legislation, and are entitled to compensation for work-related injury or disease. Those conditions combined with the relative security offered by a long-term buoyant Australian economy and low unemployment may currently ameliorate any psychosocial impact [Burgess et al. 2008].

Our findings accorded with others in documenting that psychosocial working conditions are mostly concentrated in casual, and especially casual FT employment [Louie et al., 2006; LaMontagne et al., 2012b]. Compared to those permanently employed, casual FT workers were more dissatisfied with their job and the way they were employed, felt less employable, were more distressed about job insecurity, had lower job control and and were more likely to hold multiple jobs. Nonetheless, psychological demands were highest in permanent FT employment, which is consistent with casual jobs tending to be lower skilled than permanent ones. Our findings also reinforce the importance of considering the heterogeneity of

precarious employment arrangements [Aronsson et al., 2002; Virtanen et al., 2005], and add to a growing body of literature suggesting that ‘precarious’ employment may not be inferior in all aspects and contexts, and may be adversely associated with some health outcomes but not others [Saloniemi et al., 2004; Louie et al., 2006; Lewchuk et al., 2008; LaMontagne et al., 2012b; #].

We included a physical health outcome for completeness in our study and in response to the lack of previous Australian studies of physical health outcomes. We observed a strong association with casual FT employment. Not surprisingly, this association was not mediated by the psychosocial working conditions measured in this study, which were hypothesised as potential mediators of associations with poor mental health. Others have noted that despite the attention focussed on psychosocial working conditions, principally job security, they may be insufficient to explain associations between precarious employment and health [Benach et al., 2002; Benach and Muntaner, 2007]. This would apply in particular to associations with physical health or injury outcomes. For example, international studies have shown higher rates of occupational injuries among precarious employees [Virtanen et al., 2005]. Although one Finnish study did not find the same, they noted that ‘precarious’ fixed-term contracts are concentrated in Finland’s public sector, with low occupational injury rates [Saloniemi and Salminen, 2010]. Subsequent to the commencement of our study, a national Australian government study has been reported [Safe Work Australia, 2012], revealing higher incidence of injury for casual compared to permanent workers. The highest rate was found in the accommodation and food services industry, one of the areas within which casuals are concentrated. Another recent publication detailed that casual FT workers in the state of Victoria exhibited the worst manual hazard exposure profile of any employed group [LaMontagne et al., 2012b]. That study’s measure of manual or traditional blue-collar occupational hazards included self-reports of exposure to noise, electrical hazards, dangerous machinery, dangerous work methods, and dangerous chemicals [LaMontagne et al., 2012b]. In addition to the direct physical stressors of manual work, a lack of occupational

health and safety training, committee representation, or regulatory oversight may play a role [Quinlan et al., 2001; Benach et al., 2002; Benach and Muntaner, 2007]. These factors would compound the vulnerabilities such as low educational attainment also documented in this study.

We acknowledge certain limitations of our study and its findings. First, the lack of measures of physical working conditions precluded investigation of these as potential mediators of the observed association between casual FT employment and physical health. As the design was cross-sectional, the association observed could reflect selection of workers with poor health into casual FT work. However, this would be the reverse of the phenomenon more commonly observed, the 'healthy worker effect'. This term has been adapted from its original use (in explaining that the labour force on average is healthier than the population as a whole) to explain how illness and morbidity can be lower among workers in more precarious employment [Virtanen et al., 2005; Wagenaar et al., 2012]. This would be due mainly to the lack of paid sick or annual leave among casual or precariously-employed workers, compared to workers with paid leave, and consequently more rapid out-selection of unhealthy workers from casual employment. Thus, we contend that the physical health association observed may well reflect a genuine negative impact of casual FT employment on physical health. In contrast, the positive association between employability and physical health could more likely represent reverse causation (poor physical health leading to reduced employability). Although we did not include all precariously-employed forms of employment in our analyses, e.g. self-employed contractors, we focussed on the distinction between permanent to casual workers, which is akin to a simple core-periphery comparison. We also acknowledge the common limitations regarding the representativeness of the CATI (Computer Assisted Telephone Interviewing) method. Additionally, neither industry nor sector were measured in the survey.

In summary, we found no association of casual employment with poor mental health but casual FT employment was strongly associated with poor physical health. The high level of casualisation in the Australian workforce remains a concern for occupational health & safety, and the physical health impacts could be substantial for full-time casual employees. Physical health outcomes and physical working conditions warrant further attention in future studies of the health impacts of precarious employment both in Australia and internationally.

Acknowledgments

The authors wish to thank the survey participants in this study. Project funding was provided from the Australian National Health and Medical Research Council, grant no. 375196.

References

- Aronsson G, Gustafsson K, Dallner M. 2002. Work environment and health in different types of temporary jobs. *Eur J Work Organ Psy* 11:151 - 175.
- Artazcoz L, Benach J, Borrell C, Cortes I. 2005. Social inequalities in the impact of flexible employment on different domains of psychosocial health. *J Epidemiol Community Health* 59:761-767.
- Australian Bureau of Statistics. 2012. Forms of Employment, Australia, November 2011 cat no. 6359.0. Canberra: Australian Bureau of Statistics.
- Benach J, Amable M, Muntaner C, Benavides FG. 2002. The consequences of flexible work for health: Are we looking at the right place? *J Epidemiol Community Health* 56:405-406.
- Benach J, Muntaner C. 2007. Precarious employment and health: Developing a research agenda. *J Epidemiol Community Health* 61:276-277.
- Bergström O, Storrie D. 2003. Contingent employment in Europe and the United States. Cheltenham, UK: Edward Elgar.

Broom DH, D'Souza RM, Strazdins L, Butterworth P, Parslow R, Rodgers B. 2006. The lesser evil: Bad jobs or unemployment? A survey of mid-aged Australians. *Soc Sci Med* 63:575-586.

Burgess J, Campbell I, May R. 2008. Pathways from casual employment to economic security: The Australian experience. *Soc Indic Res* 88:161-178.

Campbell I, Whitehouse G, Baxter J. 2009. Australia: Casual employment, part-time employment and the resilience of the male-breadwinner model. In: Vosko L, MacDonald M, Campbell I, editors. *Gender and the contours of precarious employment*. Abingdon, UK: Routledge. pp. 60-75.

D'Souza RM, Strazdins L, Lim LLY, Broom DH, Rodgers B. 2003. Work and health in a contemporary society: Demands, control, and insecurity. *J Epidemiol Community Health* 57:849-854.

Ferrie JE, Westerlund H, Virtanen M, Vahtera J, Kivimaki M. 2008. Flexible labor markets and employee health. *Scand J Work Environ Health Suppl*:98-110.

Kalleberg AL. 2009. Precarious work, insecure workers: Employment relations in transition. *Am Sociol Rev* 74:1-22.

#

Kim IH, Muntaner C, Vahid Shahidi F, Vives A, Vanroelen C, Benach J. 2012. Welfare states, flexible employment, and health: A critical review. *Health Policy* 104:99-127.

LaMontagne AD, D'Souza RM, Shann CB. 2012a. Socio-demographic and work setting correlates of poor mental health in a population sample of working Victorians: Application in evidence-based intervention priority setting. *Int J Health Promot* 14:109-122.

LaMontagne AD, Smith PM, Louie AM, Quinlan M, Ostry AS, Shoveller J. 2012b. Psychosocial and other working conditions: Variation by employment arrangement in a sample of working Australians. *Am J Ind Med* 55:93-106.

Laszlo KD, Pikhart H, Kopp MS, Bobak M, Pajak A, Malyutina S, Salavec G, Marmot M. 2010. Job insecurity and health: A study of 16 European countries. *Soc Sci Med* 70:867-874.

- Lewchuk W, Clarke M, de Wolff A. 2008. Working without commitments: Precarious employment and health. *Work Employ Soc* 22:387-406.
- Llena-Nozal A. 2009. The effect of work status and working conditions on mental health in four OECD countries. *Nat Inst Econ Rev* 209:72-87.
- Louie AM, Ostry AS, Quinlan M, Keegel TG, Shoveller J, LaMontagne AD. 2006. Empirical study of employment arrangements and precariousness in Australia. *Ind Relat* 61:452-489.
- Mausner-Dorsch H, Eaton WW. 2000. Psychosocial work environment and depression: Epidemiologic assessment of the demand-control model. *Am J Public Health* 90:1765-1770.
- Quinlan M, Mayhew C, Bohle P. 2001. The global expansion of precarious employment, work disorganization, and consequences for occupational health: A review of recent research. *Int J Health Serv* 31:335-414.
- Richardson S, Lester L, Zhang G. 2012. Are casual and contract terms of employment hazardous for mental health in Australia? *J Ind Relat* 54:557-578.
- Safe Work Australia 2012. Australian Work-related Injury Experience by Sex and Age, 2009-2010. Canberra: Safe Work Australia. 44 pp.
- Saloniemi A, Salminen S. 2010. Do fixed-term workers have a higher injury rate? *Safety Science* 48:693-697.
- Saloniemi A, Virtanen P, Vahtera J. 2004. The work environment in fixed-term jobs: Are poor psychosocial conditions inevitable? *Work Employ Soc* 18:193-208.
- Sanderson K, Andrews G. 2002. The SF-12 in the Australian population: Cross-validation of item selection. *Aust N Z J Public Health* 26:343-345.
- Siegrist J. 1996. Adverse health effects of high-effort/low-reward conditions. *J Occup Health Psychol* 1:27-41.
- Silla I, Gracia FJ, Peiro JM. 2005. Job insecurity and health-related outcomes among different types of temporary workers. *Econ Ind Dem* 26:89-117.
- Virtanen M, Kivimäki M, Joensuu M, Virtanen P, Elovainio M, Vahtera J. 2005. Temporary employment and health: A review. *Int J Epidemiol* 34:610-622.

Virtanen P, Janlert U, Hammarstrom A. 2011. Exposure to nonpermanent employment and health analysis of the associations with 12 health indicators. *J Occup Environ Med* 53:653-657.

Wagenaar AF, Kompier MAJ, Houtman ILD, van den Bossche SNJ, Taris TW. 2012. Employment contracts and health selection: Unhealthy employees out and healthy employees in? *J Occup Environ Med* 54:1192-1200.

Ware JE, Jr., Kosinski M, Keller SD. 1994. SF-36 Physical and Mental Health Summary Scales: A User's Manual. Boston: The Health Institute, New England Medical Center.

Ware JE, Jr., Kosinski M, Keller SD. 1996. A 12-item short-form health survey: Construction of scales and preliminary tests of reliability and validity. *Med Care* 34:220-233.

Ylipaavalniemi J, Kivimaki M, Elovainio M, Virtanen M, Keltikangas-Jarvinen L, Vahtera J. 2005. Psychosocial work characteristics and incidence of newly diagnosed depression: A prospective cohort study of three different models. *Soc Sci Med* 61:111-122.

Table I. Socio-Demographic Characteristics by Employment Arrangement.

Socio-demographics	Permanent FT	Permanent PT	Casual FT	Casual PT	Row total (%)^a	<i>p</i>-value
	N (col %)	N (col %)	N (col %)	N (col %)		(Pearson chi-square)
Female	211 (36.2%)	145 (74.7%)	17 (48.6%)	95 (62.5%)	468 (48.5%)	0.000
Secondary or less education (vs Vocational or University)	178 (30.6%)	86 (44.6%)	19 (54.3%)	87 (56.9%)	370 (38.4%)	0.000
How managing financially ('Difficult vs Getting by, Comfortable')	28 (4.8%)	16 (8.3%)	2 (5.7%)	15 (9.8%)	61 (6.3%)	0.001
Not partnered (vs Married/de facto)	127 (21.8%)	50 (25.9%)	16 (45.7%)	70 (46.1%)	263 (27.3%)	0.000
Non-professional occupation	293 (50.3%)	136 (70.5%)	19 (54.3%)	127 (83.6%)	575 (59.7%)	0.000
Column total (%)^a	583 (60.4%)	193 (20.1%)	35 (3.6%)	153 (15.9%)		
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Row mean (SD)	<i>p</i>-value
						(One-way ANOVA)
Age	41.54	42.84	33.12	36.01	40.62	0.000

^aCell counts may not sum exactly because of weighting.

Table II. Psychosocial Working Conditions by Employment Arrangement.

Psychosocial working condition	Permanent FT N (col %)	Permanent PT N (col %)	Casual FT N (col %)	Casual PT N (col %)	Row total (%) ^a	<i>p</i> -value (Pearson chi-square)
Distress from job insecurity	39 (6.8%)	15 (7.9%)	10 (28.6%)	36 (24.2%)	100 (10.6%)	0.000
Low job control	301 (52.4%)	119 (61.7%)	30 (85.7%)	117 (77.0%)	567 (59.4%)	0.000
High psychological demands	253 (44.4%)	78 (41.9%)	10 (28.6%)	37 (24.5%)	378 (40.1%)	0.000
Multiple job holding	35 (6.0%)	37 (19.1%)	5 (14.3%)	32 (20.9%)	109 (11.3%)	0.000
Column total (%)^a	583 (60.4%)	193 (20.1%)	35 (3.6%)	153 (15.9%)		
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Row mean (SD)	<i>p</i> -value (One-way ANOVA)
Job satisfaction ^b	7.70 (1.63)	7.28 (2.23)	7.14 (2.87)	7.53 (1.75)	7.57 (1.84)	0.024
Satisfaction with employment arrangement ^b	8.22 (1.57)	7.91 (2.22)	6.81 (2.99)	7.06 (2.57)	7.92 (2.01)	0.000
Employability ^b	4.39 (2.87)	4.69 (2.99)	2.89 (2.96)	4.42 (3.02)	4.40 (2.93)	0.011

^aCell counts may not sum exactly because of weighting.^bOn a 0-10 (low to high) scale

Table III. Odds Ratios^a and 95% CI's from Logistic Regression Modelling of Poor Physical Health and Poor Mental Health.

	Physical health Model I (unweighted N=798)		Physical health Model II^b (unweighted N=744)		Mental health Model I (unweighted N=798)		Mental health Model II^b (unweighted N=744)	
	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
Employment arrangement								
Permanent full-time	Reference		Reference		Reference		Reference	
Permanent part-time	0.576	0.316-1.049	0.572	0.295-1.108	1.111	0.645-1.912	0.903	0.502-1.624
Casual full-time	3.192	1.320-7.719	3.144	1.258-7.854	2.009	0.803-5.028	1.294	0.482-3.470
Casual part-time	0.962	0.532-1.740	1.132	0.591-2.171	1.596	0.928-2.745	0.952	0.512-1.769
Age	1.028	1.009-1.047	1.029	1.009-1.049	1.007	0.990-1.026	1.004	0.985-1.024
Managing financially								
Comfortable	Reference		Reference		Reference		Reference	
Getting by	2.518	1.627-3.898	2.073	1.301-3.304	1.912	1.238-2.951	1.589	0.996-2.535
Difficult	3.650	1.768-7.533	2.888	1.324-6.300	4.086	2.153-7.756	3.162	1.579-6.331
Marital status								
Married / defacto	Reference		Reference		Reference		Reference	
Not partnered	0.940	0.576-1.536	0.972	0.583-1.621	1.740	1.120-2.704	1.724	1.081-2.750
Employability	N/A	N/A	0.919	0.849-0.994	N/A	N/A	0.979	0.906-1.058
Satisfaction with employment arrangement	N/A	N/A	0.960	0.860-1.070	N/A	N/A	0.859	0.778-0.949

^aAll models adjusted for years in job, age, sex, marital status, education, managing financially and occupational level. Adjusted odds ratios shown only for variables that were statistically significant in any of the 4 models.

^bVariables added: distress from job insecurity, control, demand, multiple job holding, satisfaction with employment arrangement, employability.