

BMJ Open The role of financial hardship, mastery and social support in the association between employment status and depression: results from an Australian longitudinal cohort study

Laura Crowe,¹ Peter Butterworth^{2,3,4}

To cite: Crowe L, Butterworth P. The role of financial hardship, mastery and social support in the association between employment status and depression: results from an Australian longitudinal cohort study. *BMJ Open* 2016;**6**: e009834. doi:10.1136/bmjopen-2015-009834

► Prepublication history for this paper is available online. To view these files please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2015-009834>).

Received 26 August 2015
Revised 22 March 2016
Accepted 21 April 2016



CrossMark

For numbered affiliations see end of article.

Correspondence to

Laura Crowe;
Laura.Crowe@anu.edu.au

ABSTRACT

Objective: There is robust epidemiological and clinical evidence of the harmful effects of unemployment on psychological well-being, but the mechanisms through which this occurs is still strongly debated. In addition, there is even less evidence on the impact of underemployment on mental health. Using longitudinal data collected from a cohort of 20–24 years old, the present study examines a range of employed states and investigates the role of mastery, financial hardship and social support in the relationship between labour status and depression.

Method: Responses were from the Personality and Total Health (PATH) Through Life Project: A representative, community-based survey conducted in Canberra and Queanbeyan (NSW) in Australia, where respondents (n=2404) in their early twenties were followed for 8 years. Depression was measured using the self-report Goldberg Depression Scale, with the likely presence of depression being indicated by scores 7 or greater.

Results: The analyses identified unemployment and underemployment as significant predictors of depression, compared to their employed counterparts. Both unemployment and underemployment remained significantly correlated with depression even after accounting for sociodemographic, economic and psychological variables. Social support, financial hardship and a sense of personal control (mastery) all emerged as important mediators between unemployment and depression.

Conclusions: Both unemployment and underemployment were associated with increased risk of depression. The strength of this relationship was attenuated but remained significant after accounting for key variables (mastery, financial hardship and social support), and extensive sociodemographic and health covariates, indicating that no or inadequate employment contributes to poorer mental health over and above these factors.

INTRODUCTION

Understanding the relationship between social factors and mental health has long

Strengths and limitations of this study

- Use of large longitudinal cohort data with a high response rate.
- The data allowed for the analysis of the independent effects of employment status and depression after controlling for sociodemographic and health factors.
- The limitations were as follows: self-reported health and mental health measures; different measures of financial hardship/difficulty used in wave 1; the findings come from a community sample and require further research to confirm the generalisability for a national sample; lack of data on duration of un/under-employment.

been of interest for mental health service providers and social and economic policy. It has been well established that those who are not employed, or those who are unable to obtain ‘good quality’ employment, are at significant risk for poor mental and physical health.^{1–5} Research has identified a number of pathways through which unemployment may be related to poorer mental health outcomes, including a disruption to daily routine, lower self-esteem, adoption of health-threatening coping behaviours, and a higher level of stress.⁶ This has been further clarified through the identification of the protective mechanisms inherent in obtaining gainful employment. Employment fulfils material and psychological needs such as financial security and social inclusion, and encourages regular social and mental activity.⁷ However, recent literature has also highlighted that jobs that are perceived as unsatisfying, stressful and offer little autonomy do not always protect physical and mental health, and have been associated with comparable health outcomes as unemployment.^{8 9}

Theory and research evidence suggests that the effects of unemployment on depressive symptomatology may be mediated by financial hardship and the related psychological experience of poor personal control over one's life.^{4 10} The focus of this paper is to investigate the extent that financial hardship and a sense of personal control may mediate the relationship between employment status and depression, after taking into account other relevant social and physical factors.¹¹ Of particular interest is comparing the experience of underemployment and unemployment with fulltime employment, not just between groups but also considering within-person change. Research thus far has demonstrated that underemployment is typically associated with lower levels of health and well-being.^{12–14} Therefore, failure to account for this group could lead to an underestimation of the harmful effects seen in inadequate employment settings, or could fail to identify beneficial effects of even minimal employment compared to no employment at all.

Financial loss is an inevitable outcome of unemployment.¹⁵ Measures of financial hardship or deprivation usually assess whether people are unable to provide basic necessities for themselves, their family or other dependents due to a lack of resources.^{1 16} Over a 7-year period, Lorant *et al*¹⁷ showed that subjective financial strain and high scores on the deprivation index were associated with increases in both depressive symptoms and incidence of major depression across annual waves. The study found that changes in income or employment were less strongly associated with changes in depressive symptoms or major depression than poverty and hardship measures.¹⁷ These findings have been demonstrated among other groups, including: families,¹⁸ adults,^{19 20} single mothers^{21 22} and among young unemployed persons.²³ Financial hardship is thus considered to be one of the main pathways through which employment status affects depression.

This is consistent with the neomaterial perspective, which argues that indices of deprivation such as owning a car or a house should be incorporated into research on the social epidemiology of psychiatric disorders.¹¹ Neomaterial scholars argue that it is the material risk and lack of protective factors linked to poverty—such as, poor housing, poor diet, drugs, environmental and workplace hazards, lack of access to healthcare—that determine most social inequalities in health.^{11 24} By contrast, the psychosocial theoretical perspective argues that financial hardship affects overall mental health through undermining an individual's sense of mastery which, in turn, renders an individual more vulnerable to depression.^{25 26} This psychological approach emphasises individuals' perceptions of their relative standing in the income distribution and perceived stress to explain the social gradient in mental health.^{11 24}

Mastery is commonly used as a measure of control, defined by Pearlin and Schooler²⁷ as the perception that events are under one's own personal control, rather than under the control of external forces. Financial

hardship or strain is typically considered to contribute to low mastery through providing a sense that there is great difficulty in changing circumstances in major domains of life,²⁸ as well as actual control over one's life (ie, choice over what neighbourhood to live in, or payment for medical treatment).²⁹ It is thus hypothesised that lower socioeconomic status imbues an individual with a sense that they experience relative disadvantage.^{25 29} However, not all individuals who are exposed to stressors or financial hardship experience deterioration in physical and psychological functioning.^{30 31} Research has shown that a sense of mastery can both directly reduce psychological distress and can also act as a buffer against deleterious effects of stressful life events,^{32 33} such as poor physical health³³ and economic hardship.^{32 33}

Similarly, high levels of social support are also thought to 'buffer' or mitigate the effects of stressful life events on mental health.³⁴ Unemployed individuals who experience greater social connectedness may perceive unemployment-induced stressors to be more manageable, protecting declines in mental health.³⁵ Though social support might attenuate the effects of stress and financial hardship on mental health, those who are of low socioeconomic status or who are unemployed, typically report lower social support levels.^{36 37} Furthermore, research has demonstrated that not only does social support confer resilience to stress, but that unemployment stress is actually exacerbated by low levels of social support.³⁸

The current study seeks to explore the relationship between employment circumstances and mental health in one cohort followed across 8 years and three waves of data. Compared with much of the previous research in this area, this study will incorporate a category of 'underemployment' in addition to unemployment, and those who are 'Not in the labour force' (NILF), and an employed category. Specifically, the study seeks to measure the extent to which a sense of mastery, financial hardship and social support mediate the relationship between employment status and depression, after taking into account potential confounding sociodemographic and health factors.

METHOD

Data source and sample

The data used for this analysis are from the Personality and Total Health (PATH) Through Life Project. PATH follows three cohorts of respondents from Canberra and the neighbouring town of Queanbeyan (initial interviews conducted between 1999 and 2001), and assesses the health and well-being. The sampling frame was the electoral roll (registration on the electoral roll is compulsory for Australian citizens over the age of 18 years), and the initial participation rate was 56.6%. Three waves of data were collected with 4-year intervals between each wave. All respondents were sent a letter outlining the purpose of the research and, if they were willing to participate,

they were then interviewed by a professionally trained interviewer. The wave to wave response rate for this sample at each wave of subsequent data collection was 89% (Wave 2) and 82% (Wave 3). Participants who did not respond at one wave may still return for a later wave. The Human Research Ethics Committee of The Australian National University approved the study protocol. Further details of the survey including the sampling procedure are reported elsewhere.³⁹ The current study is restricted to the youngest PATH cohort (birth years: 1975–1979) who were aged 20–24 years at the initial interview. This resulted in a total possible sample of 2404 participants.

Survey procedure

Participants completed the questionnaire on a laptop computer. An interviewer took each participant through the first set of questions, demonstrating how to enter responses into the personal computer. The interviewer conducted physical and cognitive tests. The components of the questionnaire relevant to the present study are outlined below. Unless stated otherwise, measures were collected at each wave.

Measures

Depression

The outcome measure analysed in this study was the Goldberg Depression Scale,⁴⁰ a nine-item scale measuring experience of a particular symptom of depression (eg, loss of weight, lack of energy) in the prior 4 weeks. Total scores for depression are calculated by summing the number of items endorsed providing a continuous score of 0–9. We drew on the results of previous research assessing the validity of the Goldberg Depression Scales to identify an appropriate cut point to classify likely depression in this study.⁴¹ This previous research, also based on PATH data, assessed depressive episodes according to the International Classification of Diseases using WHO's Composite International Diagnostic Interview as criterion. The results showed high concordance between scores on the Goldberg Depression Scale and depression diagnosis, and good discrimination between cases and non-cases. The analysis supported the use of a score of seven or greater on the Goldberg Depression Scale to indicate the presence of likely depression (1). For this analysis, therefore, the total score was dichotomised so that a score of seven or greater indicated the presence of likely depression (1), and below seven represented no depression (0). For ease of reading we often use the term 'depression' through this report, but acknowledge that this is more accurately defined as 'likely depression'.

Mastery, financial hardship/difficulty and social support

Mastery was measured by Pearlin's Mastery Scale,²⁷ which is a seven-item scale used to assess the degree to which individuals believe that their life is under their control by indicating the degree to which they agree or

disagree with statements such as 'There is really no way I can solve problems I have' or, 'I have little control over the things that happen to me'. Scores range from 7 to 28, with higher scores indicating higher mastery. Although a cut-off point has not been established, generally, a score of 21 or less indicates the likelihood that one perceives that their life is directed by forces outside of their control.⁴² Therefore this measure was dichotomised accordingly.

Financial hardship assessed four core components of objective deprivation drawn from the Australian Household Expenditure Survey.⁴³ The questions pertaining to financial strain asked participants the following: Over the past year have the following happened to you because you were short of money—(1) pawned or sold something (2) went without meals, (3) unable to heat home, (4) asked for help from welfare/community organisations. Participants endorsing one or more of these items were categorised as experiencing financial strain. The hardship items were not included in Wave 1, instead a measure of financial difficulty was used which asked participants if they had gone without things they really needed in the last year because they were short of money. Participants who answered 'yes, sometimes' and 'yes often' were categorised as experiencing financial strain. While this does not constitute an objective measure of deprivation, it allows comparison of the association of depression with financial circumstances.

Finally, a social support measure that assessed the level of positive social supports from friends and family (high vs low) and conflict from friends and family (high vs low) was included. These interactions were assessed using two sets of five items, each applied to both friend and family relationships.⁴⁴ These measures were dichotomised at the 50th centile, with the bottom 50% representing low positive social support and the top 50% representing high positive social support from family and friends, and the reverse for negative social support—the bottom 50% representing high conflict and the top 50% representing low conflict.

Employment status and covariates

Basing on participants' reports, employment status was categorised as 'fulltime/part-time employed', 'part-time employed but looking for full-time employment', 'unemployed' and, 'not in the labour force' (NILF). Other demographic, social and physical measures that were used as covariates for the analyses included: gender, age, years of education, marital/partner status, any dependent children, physical health and social support (friends and family). Marital status was categorised into 'cohabiting relationship', that is, married or de facto, 'divorced/separated/widowed' and 'never married'. Education was categorised into 'finished Year 12' and 'not finished Year 12'. Participants were categorised into 'have at least one dependent child' and 'no children'. Physical health was measured using the 12-Item Short Form Health Survey (SF-12)⁴⁵ with higher

scores indicating better health. As the SF-12 measure is not a key variable, and our preliminary analysis showed a linear relationship with the measure of depression, this was included in the model as a continuous variable.

Statistical analyses

Descriptive statistics of the sociodemographic and economic circumstances of the respondents were calculated by gender and age. Simple logistic regression was then used to assess the association of depression with the demographic and socioeconomic characteristics. Eight separate longitudinal random intercept multivariable logistic regression models were used to examine predictors of depression for individuals who were unemployed, PTLFT, NILF and employed. Moderating variables included social support, financial hardship/deprivation and a sense of personal control. Covariates included age, gender, marital status, physical health and dependent children. Finally, the 'explained fraction' approach⁴⁶ was used to calculate the proportion of the relationship between employment status and depression that was explained by important mediating variables (ie, financial hardship, mastery, social support and the sociodemographic variables). The change in ORs for the unemployed and PTLFT work were quantified by calculating the per cent reduction in ORs after the addition of the key mediating variables. This was calculated by

contrasting the OR of the model before (OR_b) (model 3) with the OR after (OR_a) (models 4–7) each of the mediating variables were added by applying the following formula: $((OR_b - 1) - (OR_a - 1)) / (OR_b - 1)$.

Most participants (n=6521) had complete data at both baseline and follow-up. In wave 2, a total of 265 participants (11%) had dropped out of the survey, and 426 participants (17%) had dropped out by wave 3. Cases with missing data were minimal (ranging from 0 to 1.1% for individual items). The statistical models used all available data; those with missing data were excluded. Previous sensitivity analysis conducted on the data by Butterworth *et al*⁴⁷ showed that attrition was not independently associated with depression, but was associated with being male, not participating in the labour force (although not unemployed), poorer physical functioning, lower levels of educational attainment and not having a spouse/partner.

RESULTS

Table 1 presents descriptive data on the respondents across waves 1–3 by gender. Unemployment rates were highest at wave 1 (ages 20–24 years), and declined across the following two waves (ages 24–28 and 28–32 years). Table 2 demonstrates the univariate relationships between the measure of depression and a number of

Table 1 Descriptive statistics reporting health, socioeconomic, demographic and psychosocial characteristics of respondents across the three waves

	Wave 1 (20–24 years)		Wave 2 (24–28 years)		Wave 3 (28–32 years)	
	Men	Women	Men	Women	Men	Women
N	1162	1242	1013	1126	920	1058
Employment status (%)						
Employed	81.24	79.22	89.72	84.07	94.35	85.35
Unemployed	6.74	5.11	4.25	2.58	2.28	1.80
PT looking FT	4.58	4.79	2.08	1.69	0.43	0.95
NILF	7.43	10.88	3.95	11.65	2.93	11.91
Marital status (%)						
Married	18.58	27.84	22.04	30.19	42.61	48.25
Never married	81.16	70.45	76.19	65.98	52.07	46.83
Divorced/separated/widowed	0.26	1.70	1.78	3.83	5.33	4.92
Education (%)						
Did not finish Year 12	7.78	7.39	5.64	5.35	4.35	4.84
Dependent children (%)						
Have dependent children	6.23	13.88	15.91	26.27	36.41	46.50
Physical health						
RAND SF12 (mean score and SD)	52.31 (6.5)	50.81 (7.2)	52.36 (6.1)	50.66 (7.6)	51.8 (6.5)	50.3 (8.2)
Financial difficulty (%)						
Facing financial difficulty sometimes or often (w1), experience hardship (w2+w3)*	24.35	30.24	15.61	13.02	7.74	9.11
Mastery (%)						
Low sense of mastery score (Pearlin's scale)	33.94	40.86	35.98	41.29	35.56	38.18
Depression (%)						
High score (indicating clinical depression)	7.19	12.27	9.80	12.15	8.92	10.98

*w1=wave1, w2=wave 2, w3=wave 3.

FT, full-time; PT, part-time; NILF, not in the labour force.

Table 2 Prevalence of depression and univariate relationship between depression and various socio-economic, demographic and psychological measures

	Current Depression (%)	Univariate Odds ratio (95% CI)
Employment status		
Employed	9	
Unemployed	21	2.35 (1.71 to 2.72)
PT looking FT	17	1.80 (1.20 to 2.72)
NILF	17	1.74 (1.35 to 2.23)
Gender		
Male	9	
Female	12	1.44 (1.18 to 1.75)
Marital status		
Married	8	
Never married	11	1.37 (1.13 to 1.67)
Divorced/separated/widowed	23	3.14 (2.14 to 4.60)
Education		
Finished Year 12	10	
Did not finish Year 12	18	1.92 (1.41 to 2.63)
Dependent children		
No children	10	
Have dependent children	12	1.15 (0.95 to 1.39)
Physical health		
RAND SF12		0.91 (0.91 to 0.93)
Financial difficulty/hardship		
No	8	
Yes	21	2.50 (2.08 to 2.98)
Mastery		
High	4	
Low	21	5.82 (4.79 to 7.06)
Social support friends (positive)		
Low	14	2.06 (1.75 to 2.44)
High	7	
Social support family (positive)		
Low	16	2.06 (1.74 to 2.45)
High	8	
Social support friends (conflict)		
Low	7	
High	12	1.64 (1.36 to 1.98)
Social support family (conflict)		
Low	7	
High	12	1.63 (1.36 to 1.95)
Age/Wave		
Wave 1 (20–24 years)	10	
Wave 2 (24–28 years)	11	1.15 (0.97 to 1.38)
Wave 3 (28–32 years)	10	1.05 (0.88 to 1.25)

FT, full time; PT, part-time; NILF, not in the labour force.
 Bold typeface denotes $p < 0.05$.

sociodemographic, economic and psychological measures. Around a fifth of respondents who were unemployed were classified with likely depression, compared to only 9% of those who were employed. The prevalence of depression among the ‘underemployed’ was also nearly double the prevalence rates of those who were employed at 17%. The ORs for both unemployment and PTLFT indicated a greater likelihood of depression (OR=2.35; OR=1.80) compared to employed. Experiencing financial hardship (OR=2.50) and a low sense of mastery (OR=5.82) each demonstrated a strong association with depression.

Table 3 presents a series of separate multivariate logistic regression models conducted to examine the association between employment circumstance and depression, while controlling for a number of demographic, physical health, socioeconomic and psychological variables.

Model 1 demonstrated that the association between unemployment and depression remained significant (OR=2.40) after controlling for gender. There was also an association between PTLFT and depression (OR=1.79). In model 2, when age is incorporated into the model, the ORs of both unemployment and PTLFT

Table 3 Results of a multivariable logistic regression analyses for predictors of depression

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Labour-force status (reference: employed)								
Part-time looking for full-time work	1.79 (1.19 to 2.70)	1.89 (1.25 to 2.87)	1.75 (1.13 to 2.70)	1.75 (1.12 to 2.74)	1.62 (1.04 to 2.52)	1.73 (1.10 to 2.71)	1.60 (1.01 to 2.53)	1.59 (1.00 to 2.53)
Unemployed	2.40 (1.74 to 3.32)	2.49 (1.80 to 3.62)	2.13 (1.50 to 3.00)	1.91 (1.34 to 2.72)	1.88 (1.32 to 2.68)	1.80 (1.25 to 2.88)	1.64 (1.14 to 2.38)	1.55 (1.06 to 2.25)
NILF	1.65 (1.29 to 2.13)	1.67 (1.30 to 2.14)	1.25 (0.95 to 1.66)	1.23 (0.92 to 1.64)	1.13 (0.85 to 1.52)	1.16 (0.86 to 1.55)	1.06 (0.79 to 1.44)	1.06 (0.78 to 1.44)
Gender (men reference)	1.42 (1.16 to 1.73)	1.41 (1.16 to 1.72)	1.28 (1.05 to 1.56)	1.54 (1.27 to 1.88)	1.30 (1.06 to 1.52)	1.22 (0.99 to 1.49)	1.24 (1.00 to 1.52)	1.39 (1.13 to 1.71)
Age (reference: 20–24 years)								
Age 24–28 years		1.22 (1.02 to 1.44)	1.20 (1.00 to 1.45)	1.24 (1.02 to 1.52)	1.37 (1.13 to 1.66)	1.22 (1.00 to 1.48)	1.37 (1.12 to 1.69)	1.40 (1.13 to 1.73)
Age 28–32 years		1.13 (0.94 to 1.35)	1.04 (0.85 to 1.24)	1.01 (0.88 to 1.36)	1.26 (1.01 to 1.56)	1.06 (0.86 to 1.33)	1.26 (1.00 to 1.59)	1.28 (1.01 to 1.62)
Dependent children			1.70 (0.85 to 1.29)	1.08 (0.84 to 1.39)	0.99 (0.78 to 1.28)	1.11 (0.86 to 1.43)	1.05 (0.81 to 1.35)	1.06 (0.82 to 1.36)
Marital status (partner/spouse reference)								
Never married			1.47 (1.18 to 1.84)	1.45 (1.16 to 1.82)	1.43 (1.14 to 1.79)	1.46 (1.16 to 1.84)	1.41 (1.12 to 1.78)	1.38 (1.09 to 1.75)
Separated/divorced/widowed			3.29 (2.18 to 4.97)	3.12 (2.04 to 4.76)	3.07 (2.03 to 4.65)	3.18 (2.07 to 4.88)	2.96 (1.92 to 4.59)	2.89 (1.86 to 4.89)
RAND SF-12 physical function			0.92 (0.91 to 0.93)	0.93 (0.92 to 0.93)	0.93 (0.92 to 0.94)	0.93 (0.92 to 0.94)	0.93 (0.92 to 0.94)	0.93 (0.92 to 0.94)
Did not finished Year 12 (finished Year 12 reference)			1.58 (1.13 to 2.21)	1.41 (1.01 to 1.98)	1.43 (1.02 to 2.00)	1.43 (1.02 to 2.02)	1.32 (0.93 to 1.86)	1.26 (0.89 to 1.79)
Social support								
Low positive family support				1.59 (1.32 to 1.91)				1.32 (1.09 to 1.60)
High conflict family support				1.13 (0.89 to 1.42)				1.03 (0.81 to 1.31)
Low positive friend support				1.92 (1.59 to 2.32)				1.50 (1.27 to 1.82)
High conflict friend support				1.44 (1.14 to 1.81)				1.32 (1.05 to 1.69)
Economic measures								
Financial difficulty/hardship					2.17 (1.78 to 2.65)		1.99 (1.62 to 2.45)	1.87 (1.51 to 2.30)
Pearlin's Mastery Scale						4.71 (3.85 to 5.75)	4.57 (3.74 to 2.45)	4.05 (3.30 to 4.98)

NILF, not in the labour force.
 Bold typeface denotes $p < 0.05$.

work increased (OR=2.49; OR=1.89). Model 3 demonstrates that this association between unemployment and depression (OR=2.13), and PTLFT and depression (OR=1.75), remained significant after controlling for all the covariates. In addition to the experience of unemployment and PTLFT employment, being separated/divorced or never been married, lower physical function, not having finished Year 12, aged 24–28 years and being female, all showed an independent association with depression.

The next three models consider the role of key explanatory covariates. Model 4 included the social support measures (family and friends). These measures did not appear to impact the association between PTLFT employment and depression which remained significant at (OR=1.75), while the association between unemployment and depression decreased but remained significant (OR=1.91). Low positive family, low positive friend, and high negative friend support were all associated with increased odds of having depression.

Model 5 included a measure of financial hardship, which was associated with over double the odds of depression (OR=2.17). After controlling for financial difficulty, the OR between unemployment and depression, and between PTLFT employment and depression decreased, but both remained significant (OR=1.88; OR=1.62). Model 6 incorporated Pearlin's measure of Mastery. After controlling for sense of mastery, the association between unemployment and depression decreased but remained significant (OR=1.80). Similar to model 4, accounting for the measure of mastery did not impact the association of depression with PTLFT (OR=1.73). In model 7, both mastery and financial hardship were included in the model. This saw a further reduction in the OR between depression and unemployment (OR=1.64) and between depression and PTLFT (OR=1.60).

Model 8 incorporated all the variables. The odds of depression when unemployed decreased further (OR=1.55) when compared to being employed, while the association between depression and PTLFT remained largely unchanged. Having a low sense of personal control over one's life showed the highest odds of depression.

Finally, table 4 quantifies the change in ORs for the unemployed, and PTLFT work following the addition of key mediating variables. For example, the explained fraction showed 51% of the difference between unemployed and employed individuals in the prevalence of depression was explained by the sociodemographic, social support, mastery and financial hardship measures, compared with only 21% of the difference between PTLFT and employed individuals. Considered separately, the inclusion of financial hardship accounted for 28% and 17% of the association of depression with unemployment and PTLFT work, respectively. While the mastery and social support measures also mediated the relationship between unemployment and depression, they

Table 4 Percentage of difference between unemployed (and PTLFT) and employed persons in the prevalence of depression

Unemployed vs employed		PTLFT vs employed	
Mediating variable	Depression	Mediating variable	Depression
Social support only	19	Social support only	1
Financial hardship only	22	Financial hardship only	17
Mastery only	29	Mastery only	3
Social support, financial hardship, mastery	51	Social support, financial hardship, mastery	21

PTLFT, part-time looking for full-time employment.

explained little of the association between PTLFT and depression.

DISCUSSION

This study examined employment status and its association with depression in one cohort from the PATH study across three waves, taking into account both unemployed and 'underemployment'. While this study did not directly seek to evaluate the psychological theories of unemployment, it did assess two key factors thought to mediate the effects of employment status: a sense of personal control and financial hardship. The multivariate logistic regression models confirmed that both underemployment and unemployment were associated with increased risk of depression compared to being employed, after controlling for all other measures, including educational attainment, marital status, dependent children and gender. A key finding of this study was the increased risk of depression that underemployment infers, which supports previous research.¹³ However, the odds of depression for the PTLFT compared to the employed group remained largely unaffected by the inclusion of covariates across the different models, except for age and financial hardship. After accounting for all variables, the odds of depression for underemployment (OR=1.59) were comparable to the odds of depression for unemployment (OR=1.55).

Another key study finding is that social support, financial hardship and a sense of personal control are all important determinants of the association between unemployment and depression. This is consistent with theories that posit that mental health is enhanced by both the manifest (eg, direct financial) and latent (eg, interpersonal and psychological) benefits that arise from work.^{10 47} The increased risk of financial hardship and deprivation is a salient characteristic in the experience of unemployment. Financial hardship may influence mental health by limiting the capacity of unemployed individuals to fully participate in the generally accepted

standards of society.¹⁵ As such, hardship may be conceptualised as analogous to the psychological aspects of unemployment, reducing one's sense of personal control over the future and perceived opportunities. The association between unemployment and depression was also moderated by levels of support from family and friends. Social support may influence how unemployed people respond to their situation and their capacity to deal with it, providing a 'buffer' from the negative effects of unemployment.⁴⁸ For some individuals, limited social support from friends and family may be compensated by social connections in the workplace. For such individuals, the impact of job loss may be greater.

While the PTLFT group also showed poorer mental health than those otherwise employed, the current findings showed a distinct set of moderating factors. Importantly, the pattern of results observed for this group also lends support for the distinction between latent and manifest benefits of work. Evidence that social support and a sense of personal control were not important mediators of the association between PTLFT status and depression suggests that even inadequate levels of employment may provide individuals with some access to these latent benefits. By contrast, hardship was identified as a significant mediator of this association, suggesting that the inadequate remuneration associated with underemployment is a determinant of the poorer mental health of those who are seeking increased working hours.

Strengths and limitations

There are a number of strengths associated with this study and the use of the PATH data set. The large sample size, random selection from the population, and longitudinal design contribute to the high statistical power and limited sampling bias.³⁹ Furthermore, the study design, following respondents initially aged in their early 20s over 8 years, focuses our attention on the consequences of employment for a key age group. However, this study has a number of limitations. Most notably were the different measures used for financial hardship, whereby the measure for the first wave was a subjective measure of financial difficulty, and the measure for the second and third waves sought to provide a more objective measure of hardship. As per the study conducted by Butterworth and colleagues¹ using these different measures, each was strongly associated with depression, was strongly inter-related, and did not differ significantly in prevalence rates. Another potential limitation was the use of 'part-time employed, looking for full-time work' as a marker of underemployment. Without further information around hours, quality and stability of the part-time work, the respondents in this group may be quite heterogeneous in terms of social and economic circumstances. This is beyond the scope of the current project, but is an important topic for future research. Finally, another

potential limitation is that participants drawn from the Canberra/Queanbeyan region may not be representative of the broader Australian population due to relatively higher levels of educational attainment and higher socioeconomic status. Therefore, it is important that this research is replicated at a national level.

Implications for policy and practice

These findings sit within the broader research field in seeking to understand the mechanisms through which employment status contributes to mental health outcomes, and has clinical and social policy relevance. In the face of unemployment and financial hardship, having a low sense of mastery is likely to strongly increase the risk of depression in comparison with those individuals who are able to maintain a sense of personal control over their life.^{4 49 50} Those with a high sense of mastery, may be able to adopt positive coping strategies, such as focusing on the employment situation that is amenable to change, or implementing a problem-solving approach.^{49 51} Policy and clinical programmes that seek to encourage social inclusion and workforce participation should focus on providing experiences for mastery, as well as access to social relationships, which are both seemingly constrained when facing unemployment.⁵² The findings support the continuation of interventions to assist people with mental health problems to find and sustain employment, but they also suggest that a focus on underemployment is needed to prevent mental health problems.

CONCLUSION

This study shows that the effects of unemployment and underemployment on depression are not completely explained by sociodemographic, socioeconomic and psychosocial factors. There is something unique about the experience of inadequate employment that contributes to poorer mental health over and above financial hardship and a loss of personal control over one's life. However, it should also be noted that unemployment does not automatically equate with poor mental health. Rather, unemployment in comparison with employment increases the risk of experiencing the conditions that contribute to and perpetuate psychological distress, that is, relative poverty, financial stress, loss of personal control and autonomy, poor social support. In order to apply this research on a national level, these results need to be replicated using longitudinal data collected from all around Australia. Further research should consider the effect that protracted unemployed periods might have on an individual's mental health, and how mastery and financial hardship might moderate this experience. Looking specifically at welfare receipt and the job search experience may also elucidate some of the unique experiences that contribute to the poor mental health of the unemployed. However, it is clear that research needs to recognise the heterogeneous

effects of different types of inadequate employment. Research should seek to more comprehensively define employment states, such as underemployment, and the length of time an individual is unemployed, to fully understand the role that employment can play in protecting or reducing an individual's mental health.

Author affiliations

¹Research School of Psychology, Australian National University, Acton, Australian Capital Territory, Australia

²Research School of Population Health, Centre for Research on Ageing, Health and Wellbeing, Australian National University, Canberra, Australian Capital Territory, Australia

³Centre for Mental Health, Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Victoria, Australia

⁴Melbourne Institute of Applied Economic and Social Research, University of Melbourne, Melbourne, Victoria, Australia

Acknowledgements The authors thank the study participants, PATH Interviewers, Karen Maxwell and Trish Jacomb; and to the current PATH Chief Investigators: Kaarin Anstey, Helen Christensen, Anthony Jorm, Bryan Rodgers, Andrew Mackinnon, Simon Easteal and Nicolas Cherbuin.

Contributors LC and PB were both involved in the conception and design of the study. LC conducted the primary statistical analysis and drafted the manuscript, under the supervision of PB. PB provided statistical expertise and revision of the manuscript. Both approve and take responsibility for the final manuscript.

Funding The PATH Through Life Study is funded by National Health and Medical Research Council Grants 973302, 179805 and 418039. LC was supported by the ANU Scholarship and PB was supported by the Australian Research Council Future Fellowship #FT 130101444.

Competing interests None declared.

Patient consent Obtained.

Ethics approval The Human Research Ethics Committee of The Australian National University.

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement Data for the study is from the PATH Through Life 20s cohort. Further information including a list of publications is available at <http://crahw.anu.edu.au/research/projects/personality-total-health-path-through-life>. There is no open access to the data set, but strategic collaborations are welcome and contact information is available on the website for interested parties to learn more about formal application procedures.

Open Access This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

REFERENCES

- Butterworth P, Rodgers B, Windsor TD. Financial hardship, socio-economic position and depression: results from the PATH Through Life Survey. *Soc Sci Med* 2009;69:229–37.
- Weich S, Lewis G. Material standard of living, social class, and the prevalence of the common mental disorders in Great Britain. *J Epidemiol Community Health* 1998;52:8–14.
- Dooley D, Catalano R. Group interventions and the limits of behavioral medicine. *Behav Med* 2000;26:116–28.
- Kessler RC, Turner JB, House JS. Intervening processes in the relationship between unemployment and health. *Psychol Med* 1987;17:949–61.
- Murphy GC, Athanasou JA. The effect of unemployment on mental health. *J Occup Organ Psychol* 1999;72:83–99.
- Tomba E, Polanyi M, Foley J. 'Labour market flexibility and worker insecurity'. In: Raphael D, ed. *Social Determinants of Health: Canadian Perspectives*. 2nd edn. Toronto: Canadian Scholars' Press, 2009:88–98.
- Walsh F, Tickle A. Working towards recovery: the role of employment in recovery from serious mental health problems: a qualitative meta-synthesis. *Int J Psychosoc Rehabil* 2013;17:35–49.
- Butterworth P, Leach LS, Strazdins L, et al. The psychosocial quality of work determines whether employment has benefits for mental health. *Occup Environ Med* 2011;68:806–12.
- Broom DH, D'Souza RM, Strazdins L, et al. The lesser evil: bad jobs or unemployment? A survey of mid-aged Australians. *Soc Sci Med* 2006;63:575–86.
- Creed PA, Macintyre SR. The relative effects of deprivation of the latent and manifest benefits of employment on the well-being of unemployed people. *J Occup Health Psychol* 2001;6:324–31.
- Muntaner C, Borrell C, Chung H, et al. Class exploitation and psychiatric disorders. In: Hofrichter R, Bhatia R, eds. *Tackling health inequalities through public health practice: theory to action*. Oxford: Oxford University Press, 2010:131–46.
- Dooley D, Prause JA. *The social costs of underemployment: inadequate employment as disguised unemployment*. Cambridge: Cambridge University Press, 2004.
- Friedland DS, Price RH. Underemployment: consequences for the health and well-being of workers. *Am J Community Psychol* 2003;32:33–45.
- Eamon MK, Wu C-F. Effects of unemployment and underemployment on material hardship in single-mother families. *Child Youth Serv Rev* 2011;33:233–41.
- Creed PA, Muller J, Machin MA. The role of satisfaction with occupational status, neuroticism, financial strain and categories of experience in predicting mental health in the unemployed. *Pers Individ Dif* 2001;30:435–47.
- Australian Bureau of Statistics. Extended Labour Force Underutilisation Rate. Secondary Extended Labour Force Underutilisation Rate 2014. <http://www.abs.gov.au/AUSSTATS/abs@.nsf/39433889d406eeb9ca2570610019e9a5/ef44f37da92fddeeca2571a3001a41801?OpenDocument> (accessed 12 Feb 2015).
- Lorant V, Croux C, Weich S, et al. Depression and socio-economic risk factors: 7-year longitudinal population study. *Br J Psychiatry* 2007;190:293–8.
- Whelan CT. The role of income, life-style deprivation and financial strain in mediating the impact of unemployment on psychological distress: evidence from the Republic of Ireland. *J Occup Organ Psychol* 1992;65:331–44.
- Payne RL, Hartley J. A test of a model for explaining the affective experience of unemployed men. *J Occup Psychol* 1987;60:31–47.
- Butterworth P, Olesen SC, Leach LS. The role of hardship in the association between socio-economic position and depression. *Aust N Z J Psychiatry* 2012;46:364–73.
- Crosier T, Butterworth P, Rodgers B. Mental health problems among single and partnered mothers. The role of financial hardship and social support. *Soc Psychiatry Psychiatr Epidemiol* 2007;42:6–13.
- Brown GW, Moran PM. Single mothers, poverty and depression. *Psychol Med* 1997;27:21–33.
- Ullah P. The association between income, financial strain and psychological well-being among unemployed youths. *J Occup Psychol* 1990;63:317–30.
- Lynch JW, Smith GD, Kaplan GA, et al. Income inequality and mortality: importance to health of individual income, psychosocial environment, or material conditions. *BMJ* 2000;320:1200–4.
- Mirowsky J, Ross CE. Age and the effect of economic hardship on depression. *J Health Soc Behav* 2001;42:132–50.
- Weng CY. *SES gradient in psychological distress revisited: a dynamic perspective on the mediating effect of financial strain and mastery*. Iowa State University, 2008.
- Pearlin LI, Schooler C. The structure of coping. *J Health Soc Behav* 1978;19:2–21.
- Pearlin LI, Nguyen KB, Schieman S, et al. The life-course origins of mastery among older people. *J Health Soc Behav* 2007;48:164–79.
- Karraker A. "Feeling Poor": perceived economic position and environmental mastery among older Americans. *J Aging Health* 2014;26:474–94.
- Pearlin LI. The stress process revisited: reflections on concepts and their interrelationships. In: Aneshensel CS, Phelan JC, eds. *Handbook of the sociology of mental health*. New York: Kluwer Academic/Plenum, 1999:395–416.

31. Thoits P. Stress, coping, and social support processes: where are we? what next? *J Health Soc Behav* 1995;35:53–79.
32. Pudrovska T, Schieman S, Pearlin LI, *et al.* The sense of mastery as a mediator and moderator in the association between economic hardship and health in late life. *J Aging Health* 2005;17:634–60.
33. Lachman ME, Weaver SL. The sense of control as a moderator of social class differences in health and well-being. *J Pers Soc Psychol* 1998;74:763–73.
34. Cohen S, Wills TA. Stress, social support, and the buffering hypothesis. *Psychol Bull* 1985;98:310–57.
35. Infurna F, Gerstorf D, Ram N, *et al.* Perceived Control Facilitates Adjustment to Unemployment: Findings from the German Socio-Economic Panel Study (SOEP). 10th International German Socio-Economic Panel User Conference Berlin, 2012.
36. Price RH, Choi JN, Vinokur AD. Links in the chain of adversity following job loss: how financial strain and loss of personal control lead to depression, impaired functioning, and poor health. *J Occup Health Psychol* 2002;7:302–12.
37. Creed PA, Moore K. Social support, social undermining, and coping in underemployed and unemployed persons. *J Appl Soc Psychol* 2006;36:321–39.
38. Gore S. The effect of social support in moderating the health consequences of unemployment. *J Health Soc Behav* 1978;19:157–65.
39. Anstey KJ, Christensen H, Butterworth P, *et al.* Cohort Profile: the PATH through life project. *Int J Epidemiol* 2012;41:951–60.
40. Goldberg D, Bridges K, Duncan-Jones P, *et al.* Detecting anxiety and depression in general medical settings. *BMJ* 1988;297: 897–9.
41. Kiely KM, Butterworth P. Validation of four measures of mental health against depression and generalized anxiety in a community based sample. *Psychiatry Res* 2015;225:291–8.
42. Franks F, Faux SA. Depression, stress, mastery, and social resources in four ethnocultural women's groups. *Res Nurs Health* 1990;13:283–92.
43. Australian Bureau of Statistics. *Life on 'Struggle Street': Australian social trends*. Canberra: Australian Bureau of Statistics, 2012. <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features10March+Quarter+2012>
44. Schuster TL, Kessler RC, Aseltine RH. Supportive interactions, negative interactions, and depressed mood. *Am J Community Psychol* 1990;18:423–38.
45. Ware J Jr, Kosinski M, Keller SD. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Med Care* 1996;34:220–33.
46. Whitehead M, Burström B, Diderichsen F. Social policies and the pathways to inequalities in health: a comparative analysis of lone mothers in Britain and Sweden. *Soc Sci Med* 2000;50:255–70.
47. Jahoda M. *Employment and unemployment: a social-psychological analysis*. London: Cambridge University Press, 1982.
48. Paul KI, Moser K. Unemployment impairs mental health: meta-analyses. *J Vocat Behav* 2009;74:264–82.
49. Kilian R, Becker T. Macro-economic indicators and labour force participation of people with schizophrenia. *J Ment Health* 2007;16:211–22.
50. Turner JB, Kessler RC, House JS. Factors facilitating adjustment to unemployment: implications for intervention. *Am J Community Psychol* 1991;19:521–42.
51. Taylor SE, Aspinwall LG. *Mediating and moderating processes in psychosocial stress: Appraisal, coping, resistance, and vulnerability. Psychosocial stress: perspectives on structure, theory, life-course, and methods*. San Diego, CA, US: Academic Press, 1996:71–110.
52. Heckhausen J, Wrosch C, Schulz R. A motivational theory of life-span development. *Psychol Rev* 2010;117:32–60.