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Article

Financial hardship, mastery and social support: Explaining poor mental health amongst the inadequately employed using data from the HILDA survey



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ABSTRACT

Objective: This study analysed data from the Household Income and Labour Dynamics in Australia (HILDA) Survey to examine the relationship between employment status and mental health, and the mediating effects of financial hardship, mastery and social support. In addition, the study sought to explore the effects of duration of unemployment on mental health.

Methods: The primary analysis used three waves of data from the HILDA Survey with 4965 young adult respondents. Longitudinal population-averaged logistic regression models assessed the association of employment status and mental health, including the contribution of mastery, financial hardship and social support in explaining this association between employment groups (unemployed vs. employed; under employed vs. employed). Sensitivity analyses utilised a fixed-effects approach and also considered the full-range of working-age respondents. Regression analysis was used to explore the effect of duration of unemployment on mental health.

Results: Respondents' who identified as unemployed or underemployed were at higher risk of poor mental health outcomes when compared to their employed counterparts. This association was ameliorated when accounting for mastery, financial hardship and social support for the unemployed, and was fully mediated for the underemployed. The fixed-effects models showed the transition to unemployment was associated with a decline in mental health and that mastery in particular contributed to that change. The same results were found with a broader age range of respondents. Finally, the relationship between duration of unemployment and mental health was not linear, with mental health showing marked decline across the first 9 weeks of unemployment.

Conclusions and implications: Mastery, social support and financial hardship are important factors in understanding the association of poor mental health with both unemployment and underemployment. Furthermore, the results suggest that the most deleterious effects on mental health may occur in the first two months of unemployment before plateauing. In order to prevent deterioration in mental health, these findings suggest intervention should commence immediately following job loss.

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1. Introduction

Individuals who lose their jobs, or have never been gainfully employed, are at greater risk of poorer mental health compared to their employed counterparts (Creed, Machin, & Hicks, 1996). This finding is now well documented, evidenced by a numerous studies since the Great Depression of the 1930s (i.e., Eisenberg &

Lazarsfeld, 1938; Jahoda, 1982; Mckenna & Fryer, 1984; Paul & Moser, 2009). Furthermore, by controlling for a number of comprehensive socio-economic and demographic variables, recent studies have minimised the potential bias attributable to health selection (i.e., that selection into unemployment is based on a history of poor mental health; Murphy & Athanasou, 1999; Thomas, Benzeval, & Stansfeld, 2005). Emerging evidence suggests that, like those who are unemployed, those who are underemployed might also be at greater risk of poor mental health. Rates of unemployment may be masked by high rates of underemployment, as some adults may be prone to cycling between unemployment and underemployment, rarely transitioning into

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full-time secure and good quality employment (Leach et al., 2010). Unsurprisingly, this “cycle of disadvantage” can have long-term mental health and economic consequences (Leach et al., 2010; Olesen, Butterworth, Leach, Kelaher, & Pirkis, 2013). Furthermore, particularly for young adults, working is vital for establishing independence and a sense of personal identity (Winefield, Winefield, Tiggemann, & Goldney, 1991). Even a short period of unemployment for young adults could precipitate a series of events that can affect a broad range of outcomes far into the future – from health status, to future income earnings, blood pressure, and even low birthweight of future children (Adler & Newman, 2002). Thus, as gainful employment represents an important protective factor for maintaining good mental health, it is reasonable to hypothesise that both unemployment and underemployment are associated with a loss of those protective factors which promote good mental health.

There is still conflicting evidence as to whether the degree of negative mental health outcomes experienced by the underemployed is similar to that experienced by the unemployed (Friedland & Price, 2003; Monfort, Howe, Nettles, & Weihs, 2015). Underemployment has been conceptualised in many ways including involuntary part-time employment (Dooley & Prause, 2004), insufficient income or wages (Eamon & Wu, 2011), and subjective job fitness (Creed, Lehmann, & Hood, 2009; Monfort et al., 2015). The question of whether inadequate employment is better for mental health than no employment at all is still not confirmed, although some studies have suggested that poor quality work can be as harmful as the unemployment experience (Broom et al., 2006; Butterworth et al., 2011). Indeed, underemployment itself may represent a barrier for individuals in reaping the positive benefits typically attributed to employment. Therefore, understanding the mechanisms through which unemployment and underemployment affect mental health is essential for targeting intervention and social policy. Three key variables that have been identified as playing a role in explaining the association between employment status and poor mental health are *financial hardship*, *a sense of mastery*, and *social support* (Butterworth, Olesen, & Leach, 2012; Creed & Bartrum, 2008; Creed & Moore, 2006). The current study builds upon this previous research, including our recent work considering how employment status influences the mental health of a cohort of young adults in Canberra, Australia (Crowe & Butterworth, 2016). Understanding the roles played by these factors might offer a leverage point for intervention, to help limit the negative mental health impacts of both unemployment and underemployment. This may particularly be the case in young adults who are more susceptible than older age groups to unemployment, underemployment, and poor mental health, and are, therefore, a key group for interventions which target modifiable risk factors (Fergusson, Horwood, & Woodward, 2001; Orygen Youth Health Research Centre, 2014).

1.1. Financial hardship

In both epidemiological and psychological studies, financial strain has been demonstrated to be robustly and independently associated with depression (Butterworth et al., 2012; Kiely, Leach, Olesen, & Butterworth, 2015). Financial hardship is generally conceptualised as the lack of money or resources required to meet basic needs for one's life – food, clothing, shelter, and medical care (Richardson, Lester, & Zhang, 2012). While there is yet to be a universally agreed upon definition of financial hardship, studies have utilised a variety of different measures including: inability to heat one's home, no access to a car, debt, having utilities cancelled or being unable to pay utility bills on time, having to sell possessions, missing meals, or needing to ask community organisations for help. Furthermore, Butterworth et al. (2012) showed that

multiple markers of hardship were associated with almost a doubling in the odds of depression over the experience of just one marker of hardship. Kiely and colleagues (2015) examined the temporal association between financial hardship and poor mental health. The study showed that, while an individual's vulnerability to experiencing financial hardship was associated with a great risk of mental health problems, these problems were exacerbated by occasions of when they did experience hardship (Kiely et al., 2015). The experience of financial hardship may play an important role in the development and maintenance of depression, but equally, mental health difficulties may hinder educational and employment opportunities that increase the chances of experiencing financial hardship (Mirowsky & Ross, 2001). Neo-materialists argue that depression is a direct result of an accumulation of lower living standards and poorer access to resources (Townsend, Whitehead, & Davidson, 1992), including poor housing (Evans, Wells, & Moch, 2003) or poor health knowledge. This argument is consistent with the notion that experiences of unemployment and underemployment are associated with greater financial hardship, which partially explains the association between these employment states and poor mental health.

1.2. Mastery

From a psychosocial viewpoint, the loss of employment or inadequate employment and the associated series of negative economic and personal events may lead an individual to feel a lack of control and/or marginalised from society. It is argued that these feelings of low personal control result in depression or an absence of hope (Price, Choi, & Vinokur, 2002; Price, Friedland, Choi, & Caplan, 1998). Maintaining a sense of control in the face of adversity has been found to aid in the coping ability of individuals and in personal functioning (Mirowsky & Ross, 2001). Research has frequently demonstrated a low sense of mastery in those who are unemployed (Creed & Bartrum, 2008; Dollard & Winefield, 2002; Vinokur & Schul, 1997), as a characteristic that perhaps contributed to becoming unemployed in the first place, but also as a characteristic that can be reinforced by unemployment itself. It is reasonable to assume that several aspects of joblessness centre around a loss of control, ranging from symbolic reflections of an uncontrollable world that lead to unemployment, to specific experiences of financial hardship and being unable to make ends meet (i.e., paying the rent). Therefore, low feelings of control are likely to result in high levels of psychological distress. Arguably, strong feelings of personal control would help to moderate the negative effects of unemployment on wellbeing (Creed & Bartrum, 2008).

1.3. Social support

In addition to mastery, studies have shown that the sense of being connected can mitigate the negative effects of unemployment and financial hardship on psychological wellbeing (Dean, Carroll, & Yang, 2007; Mills, Grasmick, Morgan, & Wenk, 1992; Pittman & Lloyd, 1988). One mechanism through which social support is believed to reduce feelings of distress is through the increased availability of coping resources, which helps the individual to appraise the situation as less stressful and may aid in the inhibition of maladaptive responses (such as alcohol or drug use; (Cohen & Wills, 1985; Fell & Hewstone, 2015). However, unemployment itself often results in a decrement in social networks whereby individuals suffer a loss of contact with people outside the nuclear family (Jahoda, 1982). Furthermore, the financial losses faced in unemployment can restrict social activity, and this has been shown in studies demonstrating reduced activity and greater social isolation in the unemployed (Paul & Batinic, 2010; Underlid,

1996). So while social support may represent a protective factor in the experience of unemployment, it is likely that the unemployed will experience a decrease in this resource when they need it the most.

In previous research we investigated the association between employment status and (likely) depression and the mediating role of these three key factors, drawing on data from a cohort of young adults who were initially aged in their early 20s and followed over 8 years on three separate measurement occasions (Crowe & Butterworth, 2016). We found that social support, financial hardship and a sense of personal control (mastery) were all important mediators between unemployment and depression, while financial hardship explained much of the association between underemployment and depression. The current study seeks to replicate and extend this previous work. The previous study was restricted to respondents from one relatively advantaged geographic region of Australia. Therefore, replication using a broader, nationally representative population is essential. Further, the data used in the previous study lacked measures of other potentially important factors, such as length of unemployment.

1.4. Duration of unemployment

Another important characteristic of unemployment which is likely to play a role in how unemployment influences mental health, and has received relatively little attention in the literature to date, is unemployment duration. One might expect that mental health continues to deteriorate with time unemployed, based on the assumption that the longer one is unemployed the more likely they are to face financial strain and experience decreases in sense of mastery. However, previous studies indicate there is not a 'near linear deterioration' in mental health over the duration of unemployment (Dockery, 2006; Flatau, Galea, & Petridis, 2000). A recent study by Dockery (2006) has plotted the relationship between mental health and time unemployed across four waves of panel data, and concluded that the effect of unemployment on mental health is not a 'monotonic one'. Further research is needed to understand how duration of unemployment affects the severity of poor mental health.

1.5. Study aims

This study built upon the existing research literature to investigate the mediating role of financial hardship, poor social support, and a sense of personal control in the relationship between employment status (employed, unemployed and underemployed) and mental health in a cohort of young adults. It extends previous research by investigating the mediating roles of these three important factors concurrently in one set of analyses, additionally adjusting for a series of potential covariates, all within the context of a nationally representative dataset. While our focus is on young adults to match the sample of our previous study, the current analysis also tests the generalisability of these results through sensitivity analyses conducted over a wider age. In addition, the detail available in the current data provide a rare opportunity to explore how the duration of unemployment negatively affects mental health.

2. Methods

2.1. Data

The analyses were based on data from three waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey. The HILDA survey is a nationally representative panel

survey conducted annually since 2001 (Wooden & Watson, 2007). The HILDA survey was approved by the Faculty of Business and Economics Human Research Ethics Committee at the University of Melbourne (Melbourne, Australia). The survey utilised a multi-stage sampling approach, sampling households within dwellings within a selection of administrative areas. A total of 7696 households 13,696 individuals (aged 15 and more) responded to the survey at Wave 1, with response rate of 66%. Our sample covers three waves of panel data (2003, 2004 and 2007); the waves in which measures of personal control were included. The sample consists of all individuals who completed the questionnaire that were aged 20 years to 34 years to best capture the young working adult group, with a pooled sample of 9382 observations and 4965 individuals. The study focused on the young adult group in order to capture a population moving through many life changes and transitions, including transitions around post-school education and employment. Furthermore, it is this age-group that is highly likely to experience inadequate employment states, as well as to report poorer mental health (Hammer, 1993; Fergusson, Horwood, & Woodward, 2001).

2.2. Measures

2.2.1. Mental health

The primary dependent variable used in the analyses was the Mental Health Inventory (MHI-5), which is drawn from the SF-36 (Ware, Kosinski, & Keller, 1994). The SF-36 assesses functional health status and wellbeing, and measures eight distinct aspects of health. The MHI-5 consists of five items scored on a 5-point scale that assesses the frequency of anxiety and mood disturbance symptoms over the 4 week period preceding the interview. Previous research has indicated high level of comorbidity between depression and anxiety (Olesen et al., 2013); therefore, the measure was interpreted as a dimensional measure of these common mental health problems. Each item is summed and standardised so that the scale values range from 0 to 100 with low scores indicating poorer mental health. The mental health measure was dichotomised at a cut-off point of 50; with scores of 50 and below indicating poor mental health and those with scores higher than 50 indicating better mental health. Previous research has established the effectiveness of the MHI-5 as a screening tool for high-prevalence mental disorders in the community using this cut-point (Butterworth, Crosier, & Rodgers, 2004; Kiely & Butterworth, 2014), demonstrating sound validity and reliability (Gill et al., 2006).

2.2.2. Mastery, financial hardship and social support

A main focus of this study was on how an individual's perceived sense of control, perceived financial hardship, and social support vary in relation to their employment status, and how this may explain their mental health. Personal control (or mastery) was assessed by Pearlin's Mastery Scale (Pearlin & Schooler, 1978), which is a 7-item scale used to assess the degree to which individuals believe that their life is under their control. Ordinarily this scale utilises a 4-point response scale; however, the measure included in the HILDA survey required participants to respond on a 7-point response scale. Therefore, the summed responses ranged from 7 to 49, with low scores indicating low mastery. These scores were rescaled to reflect a possible range from 7 to 28, thereby replicating the usual scores on this measure and permitting the application of the established cut-point (scores below 21) to denote a low sense of mastery as in previous research (Franks & Faux, 1990).

Financial hardship was measured by seven binary questions based on items originally from the Australian Bureau of Statistics Household Expenditure Survey (from the 1999 Survey of Living

Standards Pilot), which assess objective indicators of hardship. The questions ask whether the following events had occurred in the past year due to a shortage of money: 1) Could not pay electricity, gas or telephone bills on time; 2) Could not pay the mortgage or rent on time; 3) Pawned or sold something; 4) Went without meals; 5) Was unable to heat home; 6) Asked for financial help from friends or family; and 7) Asked for help from welfare/community organisations. Participants endorsing one or more of these items were categorised as experiencing financial hardship.

Finally, a measure of social support was used to assess the perceived level of social support respondents received from their family and friends. The scale was derived by summing responses to 10 questions (after reversing the negatively worded scores), such as: "People don't come to visit as much as I would like; I don't have anyone I can confide in; I seem to have a lot of friends". High scores indicated greater perceived social support, and low scores indicated lower levels of perceived support. Previous research has shown the scale to have acceptable levels of reliability (Cronbach's alpha of .79; Crosier, Butterworth, & Rodgers, 2007). To reduce scaling differences between binary and continuous predictors, the continuous social support scale was rescaled such that a one unit increase corresponded to the interquartile range (i.e., a difference between the 25th percentile and the 75th percentile).

2.2.3. Employment status and covariates

During each interview, respondents were asked about their current labour-force status as well as a number of other related questions. This information was used to categorise employment status into five main categories: employed part-time or full time; employed part-time but looking for full-time employment (PTLFT); unemployed; not in the labour force but marginally attached (NILF MA); and not in the labour force (NILF). Those who were considered PTLFT were identified by their endorsement of the following: currently part-time employed, preferred to work more hours, would choose to work more than 30 h per week, and the main reason for working part-time did not include caring for children or preferring to work part-time hours. NILF refers to those who were voluntarily not attached to the labour force (e.g., home duties, studying or disability). Those who were categorised NILF MA were those who are only marginally attached to the labour force, i.e., "discouraged workers". While, the NILF and NILF MA groups were not the focus of this analysis, they were retained in all analysis to control for these periods of non-participation.

The covariates included a number of demographic, physical and psychosocial variables. Demographics included age (categorised as 20–24, 25–29, and 30–34), marital status (married/defacto, never married, and separated/divorced/widowed), education (those who had finished Year 12, and those who had not finished Year 12), dependent children (yes/no), and gender (male/female). Physical health was assessed by the physical functioning subscale from the SF-36. Scores were reversed so that higher scores indicate poorer health.

2.2.4. Duration of unemployment

The HILDA survey collected data on labour force status over the previous year, which enabled estimation of the duration of current unemployment. This calendar was used to calculate the number of weeks each unemployed respondent ($N=313$) had been unemployed (ranging from 1 to 52+ weeks).

2.2.5. Statistical analyses

The descriptive statistics of the key variables and covariates of the respondents were stratified by age and gender (Table 1). Table 2 presents univariate logistic regression models that examine the association between employment status, the other explanatory variables and depression.

Table 1
Sample characteristics ($N=9382$), by age and gender.

Demographic characteristics	20–24 yrs		25–29 yrs		30–34 yrs	
	Male	Female	Male	Female	Male	Female
<i>N</i>	1541	1607	1383	1524	1583	1744
Employment status (%)						
Employed	79.04	67.95	86.33	67.45	88.06	64.91
Unemployed	6.81	5.35	3.69	3.87	2.65	2.12
PT looking FT	5.97	8.45	4.19	4.33	3.03	2.58
NILF MA	4.28	7.84	3.47	8.20	1.64	1.32
NILF	3.89	10.39	2.31	16.14	2.84	20.53
Marital status (%)						
Married	29.53	40.26	54.01	63.06	70.88	52.96
Never married	70.34	59.12	43.24	30.58	7.20	10.09
Divorced/Separated/ Widowed	.13	.62	2.75	6.36	21.92	17.49
Education (%)						
Did not finish Year 12	21.22	18.42	17.57	19.62	19.27	24.60
Dependent children (%)						
Have dependent children	7.95	17.00	27.74	43.39	56.25	67.82
Physical health and mental health measures						
Physical health SF12 (mean & SD)	7.06 (18.03)	7.91 (16.05)	6.87 (16.80)	9.04 (16.80)	8.04 (16.70)	8.90 (15.74)
Depression (%)						
High score (MHI-5)	11.09	12.85	10.11	10.28	7.81	11.48
Socio-economic and psychosocial measures						
Financial hardship (%)						
1 or more marker of hardship	38.19	41.76	35.13	38.52	31.03	30.43
Mastery (%)						
Low sense of mastery (Pearlin's scale)	32.08	33.09	32.69	31.43	33.88	33.01
Social support (mean & SD)	27.55 (9.85)	26.34 (9.90)	28.14 (8.93)	25.76 (9.93)	28.74 (9.76)	26.07 (9.67)

Table 2
Univariate associations between low scores on the MHI-5 (SF-36) and employment status, financial hardship, low sense of mastery, and poor social support.

	Prevalence of MH (%)	Univariate	
		OR	95% CI
Employment status			
Employed	8		
Unemployed	27	3.51	2.70 – 4.55
PTLFT	13	1.65	1.25 – 2.16
NILF MA	20	2.63	2.06 – 3.35
NILF	16	2.14	1.74 – 2.65
Financial hardship			
No	7		
Yes, 1 or more markers	17	2.45	2.10 – 2.84
Mastery			
High	4		
Low	25	7.51	6.33 – 8.90
Social support			
High scores equal low social support	–	3.69	3.34 – 4.08

Six separate longitudinal Generalized-Estimating Equation (population-average) multivariable logistic regression models were then used to examine the association of mental health with different categories of employment status: Employed (reference group), Unemployed, PTLFT, NILF MA and NILF (Table 3). Data were analysed using STATA using the 'xtlogit', pa function. This allowed for the analyses to adjust for both time-varying and time-invariant covariates. The robustness of the results were assessed using fixed-effects models to provide a more direct test of

Table 3

Odds ratios (and 95% confidence intervals) from a series of logistic regression models assessing the relationship between depression and financial hardship, mastery, and social support (bold indicates significance).

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Labour-force status (reference: employed)						
Part-time looking for full-time work	1.67 (1.22–2.86)	1.38 (.98–1.94)	1.45 (1.03–2.04)	1.53 (1.10–2.14)	1.35 (.95–1.98)	1.21 (.84–1.74)
Unemployed	3.12 (2.34–4.18)	2.48 (1.80–3.44)	2.73 (2.03–3.67)	2.87 (2.11–3.90)	2.54 (1.85–3.48)	2.21 (1.58–3.10)
NILF MA	2.24 (1.70–2.94)	1.63 (1.20–2.22)	1.97 (1.49–2.62)	20.01 (1.50–2.70)	1.84 (1.36–2.50)	1.49 (1.08–2.06)
NILF	1.95 (1.53–2.50)	1.56 (1.18–2.05)	1.78 (1.38–2.29)	1.77 (1.36–2.31)	1.68 (1.29–2.20)	1.48 (1.13–1.97)
Social support		3.51 (3.14–3.92)				2.51 (1.13–2.15)
Financial difficulty/Hardship			2.13 (1.80–2.51)		1.84 (1.54–2.19)	1.62 (1.35–1.95)
Pearlin's Mastery Scale				6.64 (5.53–7.97)	6.35 (5.27–7.65)	3.68 (3.01–4.50)
Covariates:						
Gender (men reference)	1.06 (.89–1.28)	1.38 (1.14–1.67)	1.09 (1.38–2.29)	1.00 (.90–1.30)	1.11 (.92–1.34)	1.34 (1.10–1.63)
Age (reference: 20–24 yrs)						
Age 25–29 years	.85 (.69–1.04)	.81 (.65–1.00)	.82 (.66–1.01)	.81 (.65–1.00)	.79 (.63–.98)	.79 (.63–1.00)
Age 30–34 years	.93 (.75–1.16)	.85 (.67–1.08)	1.00 (.80–1.25)	.86 (.68–1.08)	.93 (.73–1.17)	.87 (.68–1.11)
Wave (reference: Wave 1)						
Wave 2 (2004)	1.15 (.98–1.35)	1.09 (.91–1.31)	1.18 (1.00–1.40)	1.22 (1.02–1.46)	1.24 (1.03–1.49)	1.14 (.94–1.38)
Wave 3 (2007)	1.11 (.93–1.32)	1.06 (.88–1.29)	1.20 (1.00–1.43)	1.14 (.94–1.38)	1.19 (.98–1.45)	1.12 (.91–1.38)
Dependent children	.87 (.70–1.08)	.76 (.60–.96)	.76 (.61–.95)	.81 (.65–1.02)	.72 (.58–.91)	.68 (.54–.87)
Marital status (partner/spouse reference)						
Never married	1.54 (1.27–1.86)	1.27 (1.04–1.55)	1.43 (1.18–1.73)	1.37 (1.12–1.66)	1.31 (1.07–1.59)	1.45 (.98–2.14)
Separated/Divorced/Widowed	1.91 (1.35–2.69)	1.63 (1.12–2.38)	1.76 (1.23–2.51)	1.68 (1.12–2.40)	1.59 (1.11–2.29)	1.17 (.95–1.44)
SF-12 Physical Function	1.02 (1.01–1.02)	1.01 (1.01–1.02)	1.01 (1.01–1.02)	1.01 (1.00–1.01)	1.01 (1.01–1.01)	1.01 (1.00–1.01)
Not completed Year 12	1.33 (1.09–1.63)	1.14 (.92–1.41)	1.24 (1.01–1.53)	1.13 (.93–1.40)	1.08 (.88–1.33)	1.03 (.82–1.28)

Table 4

Fraction of difference between unemployed and employed (as well as PTLFT and employed) persons with depression mediated by socio-demographic, financial hardship, a sense of mastery, and social support measures.

Unemployed vs. Employed		PTLFT vs. Employed	
Mediating variable	MHI-5 (%) ^a	Mediating Variable	MHI-5 (%) ^a
Social Support only	30	Social Support only	43
Financial Hardship only	18	Financial Hardship only	33
Mastery only	12	Mastery only	21
Social support, financial hardship and mastery	43	Social support, financial hardship and mastery	69

^a The figures displayed show results after controlling for covariates.

causal pathways, effectively controlling for time-invariant covariates and evaluating the association of change in mental health status with change in the covariates. It must be recognised, however, that as these models are restricted to respondents who demonstrate change in the binary (mental health) outcome and mental ill-health is a relatively uncommon status in the sample (around 11%), the power of the model will be reduced (e.g., the final GEE model comprised 3965 respondents and 7193 observations whereas the final fixed-effect model comprised 323 respondents and 831 observations). Each model adjusted for the covariates (as listed above), and then adjusted for the key mediating variables: social support, financial hardship, and mastery. The percent reduction in odds ratio amongst the unemployed (and PTLFT) compared to the employed category, following the addition of the mediating variables were calculated and can be seen in Table 4. The 'explained fraction' approach (Whitehead, Burström, & Diderichsen, 2000) is calculated by contrasting the OR before (ORb) and after (ORa) the addition of the key variables by applying the following formula: ((ORb–1)–(ORa–1))/(ORb–1) (see Crosier et al., 2007).

Attrition rates are often a problem for panel data; however, in the case of the HILDA dataset the previous wave-retention rates for each wave were 90.4% (Wave 3), 91.6% (Wave 4) and 94.8% (Wave 7). Missing data for most of the variables were minimal, and any respondents with missing data were excluded. Given the analysis was restricted by the respondent's age (20–34 years) in

Table 5

Regression analyses assessing the relationship of mental health measure and duration of unemployment (first 9 weeks of unemployment, compared to 9–52 weeks of unemployment).

	Model 1	Model 2
Weeks unemployed		
Weeks 1–9	.98 (.03, 1.93)	1.02 (.06, 1.99)
Weeks 9–52	.01 (–.26,.24)	.04 (–.20,.28)
Age (reference: 20–24 years)		
Age 25–29 years		.98 (–5.13, 7.08)
Age 30–34 years		–2.46 (–8.43, 3.51)
Gender (men reference)		7.04 (1.44, 12.63)

each wave (in contrast to a cohort design), some survey respondents were only in scope for some waves.

Table 5 reviews the temporal effect of unemployment (in weeks) on mental health (noting reverse score). The "lowess" function was utilised to create a smooth line through the timeplot/scatterplot to provide a visual representation between mental health and time unemployed, whereby high scores indicate poor mental health. This graph shows a likely turning point between 7 and 10 weeks. Piecewise regression was used to statistically evaluate this. By varying the "cut-point" the analyses identified at what point in weeks unemployed the slopes diverged. Week 9 was identified as the point at which the slopes diverged. Thus, weeks unemployed were assessed by two functions representing Time 1 (1–9 Weeks) and Time 2 (9–52 weeks).

Finally, the key analyses were repeated on a wider age range of respondents (aged 20–54 years). Results were consistent to those observed with the more restricted age range. The key findings from the Tables and Figure are available for the larger sample as supplementary online material.

3. Results

Descriptive characteristics of the sample are shown in Table 1, stratified by gender and age. Longitudinal data was collected from 9382 respondents (48% men) across three years: 2003, 2004 and 2007. Respondents that were aged between 20 and 34 years

during these years were included in the analysis. Rates of unemployment in the HILDA dataset mirrored national rates (ABS: 2015), with the highest rates of unemployment occurring in the youngest age group, and declining with age. This pattern was also observed with financial hardship, with a lower proportion of respondents experiencing financial hardship in older age groups. Overall, females were more likely to report poor mental health and were slightly more likely to be part-time employed, looking for full-time employment. Mastery was consistent for males and females across the age groups.

Table 2 presents prevalence rates for poor mental health, and also the univariate associations between poor mental health and employment status, as well as the key explanatory variables. The overall prevalence of poor mental health was 10.6%. However, this rate was elevated for those who were unemployed (27%), NILF MA (20%), PTLFT (13%), experiencing financial hardship (17%), and those who reported little perceived control over their lives (25%). These figures are starkly contrasted with much lower prevalence rates of poor mental health amongst the employed (8%), those who did not experience financial hardship (7%), and for those who reported a high sense of perceived control (4%). This was confirmed by the univariate analyses which showed elevated odds ratios of poor mental health for all employment states relative to the employed. In addition, the analyses also showed that financial hardship, low mastery, and low social support were associated with increased odds of poor mental health. An additional analysis was conducted to test for possible gender differences for mental health and employment status. While not displayed in the tables, the results revealed that there were no gender differences observed for those who were unemployed or PTLFT. However, there was a significant interaction effect between gender and NILF, indicating that the association between NILF and poor mental health was stronger for men than it was for women. While not a key focus of the current study, this may be an interesting finding to explore in future research.

Table 3 presents a series of multivariate longitudinal GEE logistic regression models examining the relationship between employment status and poor mental health, after accounting for the demographic, physical health, socio-economic, and psychosocial factors. Model 1 displays the increased odds of poor mental health for the unemployed, PTLFT, NILF and NILF MA compared to the employed group, after accounting for all covariates. Not being married, not having any dependent children, being divorced/widowed/separated, poor physical health, and not having finished Year 12 were all significantly associated with increased odds of poor mental health.

The next three models systemically added the key variables - social support, financial hardship, and a sense of mastery. Model 2 demonstrated that after accounting for social support, PTLFT was no longer significantly associated with poor mental health. By comparison, while social support decreased the association between unemployment and poor mental health compared to the employed, the odds of poor mental health remained significant. Interestingly, when social support was accounted for, being female became significantly associated with increased odds of poor mental health compared to their male counterparts. Post-hoc analysis considered the interaction between gender and social support. The results indicated the association between poor social support and poor mental health was somewhat stronger for males compared to females. After accounting for financial hardship, in Model 3, the association between poor mental health and unemployment, as well as PTLFT, decreased but remained significant. Similarly, in Model 4, when a sense of mastery was incorporated into the model, there was a decrease in the effect of PTLFT and unemployment.

Model 5 incorporated both financial hardship and mastery into the model. This saw a further reduction in the odds of poor mental

health for those who were unemployed, compared to the employed, suggesting that financial hardship and mastery each make a significant contribution in explaining the increased risk of poor mental health for those who are unemployed. The association between PTLFT and poor mental health was fully mediated by financial hardship and mastery. Finally, Model 6 included all variables and covariates. The association between unemployment and poor mental health remained strong.

Table 4 presents the percentage change in odds ratios for the unemployed and PTLFT, with the addition of the key variables: social support, mastery, and financial hardship. Social support emerged as a strong mediating variable, explaining 30% of the difference between the unemployed and employed individuals in the prevalence of poor mental health. Social support also explained 43% of the difference of prevalence rates between PTLFT and the employed. Compared to the employed, financial hardship explained 18% of the difference in the prevalence of poor mental health for the unemployed and 33% of the difference for the PTLFT. The inclusion of mastery accounted for 12% and 21% of the association of poor mental health for the unemployed and PTLFT respectively. Overall, 43% of the difference between unemployed and employed individuals in the prevalence of depression was explained by socio-demographic, social support, mastery, and hardship measures; whereas for PTLFT compared to the employed, 69% of the difference in prevalence rates was explained by these same variables.

The results from a similar series of fixed-effects logistic regression models are presented in Supplementary Table 1. Although the ORs for the PTLFT state are broadly comparable to the GEE models, this term is not significant in any of the models, likely reflecting the reduced sample size available for the fixed effect modelling. The effect of unemployment was significant in all models, providing more robust evidence that that transition to unemployment was associated with increased likelihood of poor mental health. These fixed-effect models only provided evidence of a mediating role for mastery. The inclusion of hardship had little influence on the unemployment coefficient and after controlling for social support unemployment had a more deleterious effect on mental health.

The graph in Fig. 1 displays the relationship between the duration of unemployment and mental health ($N=313$) using the descriptive ("lowess" function), and quantitative (multivariate regression analysis) methods. The graph provides a visual representation of the relationship between the mental health scale score and weeks unemployed. The graph suggests that there is a general positive association between time unemployed and poor mental health, although this association appears stronger in the

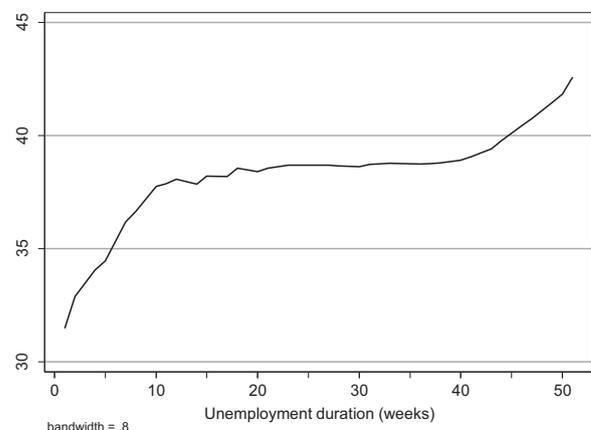


Fig. 1. Non-parametric regression between duration of unemployment and mental health (graph). MH reverse coded so that higher scores = poor mental health.

initial weeks of unemployment. Model 1 (Table 5) demonstrates that during the early phase of unemployment, for each week of unemployment is an associated increase of .97 on the mental health scale (poorer mental health). By contrast, in the later period of unemployment, there is no evidence that different duration of unemployment is associated with different mental health. Model 2 demonstrates that this association between the early phase of weeks unemployed and mental health remains significant after accounting for age and gender.

Finally, the results obtained from repeating these key analyses on a wider age range of respondents (aged 20–54 years) are provided in the Supplementary online materials. These show the same pattern of results, though the strength of association evident between labour force status (unemployment, PTLFT work) is a little weaker.

4. Discussion

It has been well-established that those who are unemployed are significantly more likely to experience poor mental health than those who are employed (Flatau et al., 2000; Paul & Moser, 2009). However, due to growing recognition of a “poverty cycle”, which sees disadvantaged individuals cycling between unemployment and poor quality employment (Leach et al., 2010; Olesen et al., 2013), there is a greater need to take into account underemployment. Furthermore, as previous studies have suggested that there are strong age-related effects in the relationship between mental health and employment status most pertinent to young people (Breslin & Mustard, 2003; Rowley & Feather, 1987), this study focused on the young adult group. The current findings demonstrate that young adults who are unemployed or underemployed are at greater risk of poor mental health than young adults who are employed. Consistent with previous research (Dooley, Prause, & Ham-Rowbottom, 2000; Grzywacz & Dooley, 2003), the multivariate longitudinal regression analysis showed that, compared to full-time employment, all other categories of employment status (unemployment, PTLFT, NILF MA, and NILF) were associated with increased risk of poor mental health. The odds ratios indicated that even after controlling for a comprehensive number of socio-demographic covariates (marital status, gender, age, wave, dependent children, education, and physical health), unemployment was associated with over three times the odds of mental health problems, while those who are PTLFT showed more a moderate risk of poor mental health. While this study used the MHI-5 to assess poor mental health, the findings are broadly consistent with a recent study which used a self-report depression assessment (Crowe & Butterworth, 2016), demonstrating consistency in the pattern of results between employment status and poor mental health.

A key aim of this study was to investigate the extent that financial hardship, social support and a sense of personal control explained the association between employment status and mental health. Each variable showed strong independent associations with mental health, and together accounted for almost half of the difference in mental health between the employed and the unemployed group, and two thirds of the difference in mental health for the PTLFT employed. These findings provide insight into the material resources and psychological processes via which unemployment and underemployment might affect mental health. When considering the experiences of those who are unemployed or underemployed, it seems reasonable to consider that financial hardship, low social support and a low sense of mastery may work in conjunction to increase the odds of poor mental health.

On the one hand, financial hardship may be considered as a motivating factor for job seekers, in providing greater incentive to

obtain employment (Wanberg, Zhu, Kanfer, & Zhang, 2012). On the other hand, it may also be a stressor that compounds the experience of unemployment, may contribute to poorer mental health, and ultimately represent a barrier to finding employment. For instance, financial strain may impact upon an individual's capacity to draw on their psychosocial and social resources. That is, financial hardship may restrict opportunities to participate in social activities or to maintain social connections, or it may reduce a sense of agency to engage with their community and environment (Fryer, 1986). Subsequently, these low levels of mastery and social support are likely to increase feelings of demoralisation and hopelessness, leading to poorer mental health outcomes. In addition, job loss and inadequate employment appear to result in financial, psychological, and social stressors that exceed the individual's personal coping resources, resulting in poorer mental health outcomes. This is broadly supported by the results from the mediational analysis that demonstrated the importance of both psychosocial and economic resources in explaining differences in mental health seen between those who are employed, and those who are unemployed and PTLFT employed.

Importantly, our consideration of the fixed-effects models supported the potential mediating role of mastery. However, social support and, to a lesser extent, financial hardship did not demonstrate the same mediating role as was evident in the GEE models. This suggests a predisposing effect of social support in particular. That is, while greater hardship and lower social support do somewhat explain the poorer mental health of those who are unemployed, this is not tied to the occasions in which they are unemployed. Rather, it reflects an underlying predisposition influencing mental health across all time points irrespective of labour force status. Further investigation of the nature of the association between employment status and social support is required.

Despite the contributions of the key mediating variables, the results suggest that those who were unemployed continued to experience poorer mental health when compared to those who were employed. The increased odds of poor mental health associated with being unemployed remained significant even after accounting for these key variables. As these factors only partially mediated the association between unemployment and mental health, future research may seek to explore other possible explanatory factors in tandem with financial hardship, mastery and social support, such as stigma, employment commitment, welfare imposed requirements (i.e. activity test requirements), and the utilisation of various coping strategies. By contrast, PTLFT was fully mediated by social support, financial hardship and mastery, suggesting that the difference in odds of poor mental health between underemployment and employment can be explained by the experience of poorer financial conditions, low sense of control, and lower levels of social support. Further, the fixed-effect models did not show evidence that PTLFT had poorer mental health than those who were otherwise employed, though this may reflect the relatively small number of respondents included in these models.

An additional key unique aim of this study was to examine the effect of duration unemployed on mental health. The visual representation of this relationship (Fig. 1) suggested a strong negative association between the early weeks of unemployment and mental health, which appeared to somewhat “plateau” after about the 10 week period. This was confirmed by statistical analyses which demonstrated that there was a significant negative association between mental health and the first nine weeks of unemployment. Following the 9 week period, mental health did not significantly change over time. However, the point at which the decline in mental health appears to abate occurs at a level of significant distress – much higher than those who are gainfully employed. These results may have implications for policy and clinical practice, suggesting that interventions that seek to prevent

the deterioration in mental health should target the first two months of unemployment, rather than focus exclusively on long-term unemployment. This analysis was restricted by an essentially cross-sectional design; therefore, only offering a snapshot of mental health of those unemployed without taking into account individual changes since time of unemployment.

Despite this limitation, the results do lend support for previous research, that individuals experience a sharp decline in mental health which then abates with duration of unemployment (Dockery, 2006; Flatau et al., 2000). Flatau and colleagues (2000) asserted that the effect on mental health of those who have recently faced unemployment is likely to follow a series of complex stages, with initial shock, adjustment, and eventually resignation. While it failed to reach significance, the general trend of association between mental health and duration of unemployment did suggest a deterioration in mental health as the duration approached 52 weeks, which may indicate further decline of mental health for the long term unemployed. If true, these findings may indicate another crisis period in mental health, and may have important implications for welfare policy. However, future longitudinal studies are required to observe these effects over a greater period of time to test if this trend is meaningful.

The current study was primarily focused upon the association between employment status and mental health amongst young adults, replicating and extending previous research in this area (Crowe & Butterworth, 2016). However, the HILDA survey data also provided an opportunity to expand this focus and consider the circumstances of a broader age range of respondents. The supplementary results considering the more expansive age range were consistent with those from the younger adults, suggesting the discussion above is generally applicable to all working-age adults.

4.1. Limitations

The current study has a number of limitations, which need to be acknowledged. Most notably, the data used included respondents within the age range of 20–34 years, rather than utilising a strict cohort or panel design. Therefore, as individuals moved in and out of this age range, they were either included or excluded. Accordingly, some individuals were included up to three times in the analysis, while others only contributed in one wave. However, the population average approach accounted for any clustering of observations within individuals and allowed us to maximise use of the data available.

Another potential limitation is the possibility of reverse causation, that is, social support or a low sense of mastery cause unemployment. Indeed, life events such as marriage breakdown or an illness of a spouse may simultaneously impact on employment status and social support or mastery, and thus, mental health. However, the current paper represents a significant advance in understanding the role of these potential mediators, especially using the explained fraction approach. In the future, the current approach could be built upon in longitudinal studies with more waves of data to investigate causality more closely using ‘lagged models’.

A further limitation is that the analyses investigating the temporal effect of unemployment on mental health were essentially cross-sectional. Our fixed-effect models somewhat alleviated these concerns, replicating some of the main findings and identifying important caveats to the interpretation of the mediating effect of social support and hardship, and limitations on the causal interpretation of being in the PTFLT status. Finally, the authors recognise that the categorisation of dependent variable does lead to a loss of sensitivity; however, as the study was focused on what factors have a clinically significant impact on psychological distress, the cut-point to indicate poor mental health was utilised.

4.2. Conclusions

This study contributes important results to the literature examining the relationship between unemployment, as well as underemployment, and mental health. Mastery, social support and financial hardship emerged as important explanatory factors for both unemployment and underemployment – demonstrating that those who experience a low sense of mastery, low social support, and financial hardship are at increased risk of experiencing poor mental health. Importantly, a transition to unemployment was accompanied by a change in mastery. The findings also suggest that any type of employment is not enough to foster good mental health. Being inadequately employed, such as working too few hours, is also associated with high levels of distress. In such circumstances, becoming unemployed has even been perceived as a positive event if it increases a sense of control and allows the individual to find better quality employment (Infurna, Gerstorff, Ram, Wagner, & Heckhausen, 2012). The findings have some important implications for developing interventions to promote the mental health of unemployed individuals. For example, interventions should commence rapidly after people become unemployed to prevent the sharp decline in mental health seen in the first two months of unemployment. Furthermore, the findings suggest employment and social policies which propose a “wait time” for receiving an allowance for job seekers may be detrimental. It is possible that this wait-time may subject individuals to greater financial hardship, and thus, reduced personal control, which may cause further deleterious effects on mental health. Understanding the barriers that job seekers face and the factors that contribute to their mental health is essential for targeting intervention and policy to increase chances of employment participation and breaking the ‘poverty cycle’.

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Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at <http://dx.doi.org/10.1016/j.ssmph.2016.05.002>.

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