TITLE

Underemployment and mental health: a gendered examination of temporal- and skills-related underemployment in Australia using longitudinal data.

INTRODUCTION AND BACKGROUND

Underemployment includes people earning less than they should or using less of their educational qualifications, training and skills in their current job due to overqualification. It also includes those who feel like they are not using their education or experience or feel like they are employed in a lesser job that should be better to provide them with more. All these forms of underemployment have been a persistent and pervasive feature of labour markets, but they are rarely given the same attention as unemployment. This is because for many decades now having a job–*any job*–has been the policy mantra for governments across the globe tackling the rise of precarious work–work that is uncertain unstable and insecure. However, this approach potentially ignores the negative health impacts of underemployment. Latent deprivation theory has found that employment provides workers with not only income but also five latent functions– (1) a habitual *time structure* ; (2) a sense of *purpose*; (3) *social contacts*; (4) *status and identity*; and (5) provides *regular activity*. Unemployment is negatively associated with mental health because it denies or hinders many of the latent functions of employment described above. How does this differ for underemployment?

In this paper, the focus is on two forms of underemployment; the first, temporal underemployment in which workers find themselves in jobs where they would like more hours; and (2) skills-related underemployment where workers are overqualified or are not using their skills to the fullest in their current job. We examine the relationship between these two forms of underemployment and mental health using the Household, Income and Labour Dynamics in Australia (HILDA), a nationally representative longitudinal household dataset. We consider these relationships from a gender perspective, given that women are more likely to find themselves underemployed.

DATA AND METHODS

Data and analysis sample

This study used data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. HILDA is a nationally representative longitudinal study of Australian households with data collected annually (since 2001) from over 7,000 households. In every wave of the HILDA survey, a labour force status question classifies participants as employed, unemployed, or not in the labour force/retired for the year preceding the present interview year. Employed participants are subsequently asked numerous questions regarding their job characteristics, employment conditions and opinions regarding their jobs in both the personal and the self-completion questionnaires.

Analysis for this study utilised pooled data from 22 annual waves of HILDA (2001-2022), with the population of interest restricted to employed adult Australians 25–64 years. Of the 46,412 participants (454,861 observations) in waves 2001-2022, 26,674 participants (233,549 observations) were aged 25-64 years. Of those, 20,725 (168,919 observations) were employed. After excluding participants with missing data from variables of

interest, the resultant analytic sample across all contributing waves was 18,288 participants (124,531 observations), 9,312 women and 9,156 men.

Exposure variables
Two measures of underemployment were constructed and analysed separately. These were 1) Over-skilled in my current job, and 2) More work hours preferred.

Over-skilled in current job
In every wave of the HILDA survey, the self-completion questionnaire includes questions to employed participants regarding their opinions about their jobs. One of these questions relates to skill usage via the statement "I use many of my skills and abilities in my current job", and respondents' answers are measured via a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). For our analysis, the variable was operationalised as a binary exposure and dichotomised into or over-skilled (1-4) or skill-matched (5-7) in the current job.

More work hours preferred
In every wave of the HILDA survey, the personal questionnaire includes questions regarding the job characteristics of the employed participants. One of these questions concerns the number of hours respondents would prefer to work (if they could choose the number of hours they work each week, considering how that would affect their income). Response options are threefold: 1) fewer hours 2) about the same hours 3) more hours. For our analysis, the variable was operationalised as a categorical exposure, with 'about the same hours' coded as the reference group.

Outcome variable
The HILDA Survey includes a range of subjective measures of health, including the internationally recognised Short Form (SF)-36 Health Survey, which has demonstrated validity within the Australian and HILDA context. The SF-36 instrument comprises 36 items assessing health status and well-being within eight distinct functional health scales. One of these is the 5-item mental health scale known as the MHI-5. The MHI-5 assesses symptoms of depression and anxiety (nervousness, depressed affect) and positive markers of mental health (feeling calm, and happy) in the 4 weeks preceding the survey. The MHI-5 is an effective mental health screening instrument and has been validated as a measure for depression using clinical interviews as the gold standard. The MHI-5 is expressed on a 0-100 scale, with lower scores indicating poorer mental health.[4,5] For all analyses in this paper, the MHI-5 score was operationalised as a continuous numerical variable from 0-100.

Statistical analysis
All analyses were stratified by gender. Descriptive analysis was first performed to examine the characteristics of the population of interest. We then utilised Mundlak longitudinal regression modelling to examine the relationship between each of our indicators of underemployment and mental health. Two separate Mundlak models were performed controlling for the covariates described above. Mundlak regression modelling was chosen for two main reasons. Firstly, it includes group-means of time-varying variables in the models which is especially relevant in the current study given the 22 years of data being analysed. Furthermore, Mundlak models exploit the

strengths of both random-effects and fixed-effects regression approaches and are consequently also known as hybrid models. This therefore enables separate estimates for both "within" and "between" person effects. In fixed-effect models, time-invariant confounding (such as personality characteristics) is effectively controlled for, with each person serving as their control (within-person). Conversely, random-effects models (between-person) can estimate coefficients for both time-invariant and time-variant variables but may be biased for time-invariant variables if there is unobserved heterogeneity correlated with variables that are included in the models.[11-13] As such, Mundlak models utilise the strengths of each approach to allow estimation of the effect of a change in underemployment status on mental health (within-persons), as well as the associations between these variables at a group level (between-persons).

RESULTS

Analytical results

Table 2 presents the adjusted coefficients for each of the three models from the Mundlak longitudinal regression models for the relationship between our indicators of underemployment and mental health, stratified by gender. Overwhelmingly, our results show a strong association between underemployment and poorer mental health in both women and men, in both within and between-person components of the models.

Use of skills and abilities in current job model

Compared to participants who were skill matched in their current job, those who were over-skilled in their current job had poorer mental health. In the between-person approach, women's mental health MHI-5 scores were 1.4 points lower (-1.4, 95% CI -1.7, -1.1; p<0.001), and men's were 2.0 points lower (-2.0, 95% CI -2.2, -1.7; p<0.001), after adjusting for confounders. Similar results were observed in the within-person analyses (albeit slightly attenuated), with women's mental health MHI-5 scores 1.1 points lower (-1.1, 95% CI -1.4, -0.8; p<0.001), and men's 1.6 points lower (-1.6, 95% CI -1.8, -1.3; p<0.001), after adjusting for confounders.

Hours of work preferred model

Compared to participants who would prefer the same hours of work, those who reported that they would prefer more hours of work had poorer mental health. In the between-person approach, women's mental health MHI-5 scores were 1.6 points lower (-1.6, 95% CI -1.9, -1.3; p<0.001) if they preferred more work hours, and men's were 1.2 points lower (-1.2, 95% CI -1.5, -0.9; p<0.001), after adjusting for confounders. Similar results were observed in the within-person analyses (albeit slightly attenuated), with women's mental health MHI-5 scores 1.2 points lower (-1.2, 95% CI -1.6, -0.9; p<0.001), and men's 0.6 points lower (-0.6, 95% CI -1.0, -0.3; p<0.001), after adjusting for confounders. Note that Table 1 also reports the findings for the third category of hours of work preferred (prefer fewer hours), which also suggests a strong association with poorer mental health (compared to those who prefer the same hours of work) and prefer to work fewer hours. However, this is not discussed further given that overemployment is not this paper's focus.

DISCUSSION AND CONCLUSION

We find that like unemployment, underemployment is associated with poor levels of mental health for both men and women workers in Australia. Both forms of underemployment analysed here–temporal and skills-related–were associated with lower levels of mental health. This is a critical contribution to the literature highlighting that having a job–*any job*–including a job or jobs that may offer fewer hours than desired (temporal underemployment) or not require the use of one's skills (overqualified/skills-related underemployment) has a significant impact upon workers' health and highlights the need to further explore underemployment and its impact upon workers beyond health. The novel methodological approach here suggests that these are casual relationships, however, they do not show the direction of these relationships. Further here is also needed. Being underemployed significantly disrupts workers' access to the latent functions of employment. It is likely that temporal underemployment not only impacts the structure of working days but also potentially contact with other workers and a sense of regular activity. Skills-related underemployment undoubtedly inhibits workers' sense of purpose. Although this research does not make direct gender comparisons, the magnitude of the coefficients suggests that temporal underemployment is more consequential for the health and well-being of women workers than men and the opposite is true regarding the relationship between skills-related underemployment. The reasons for this will be discussed in the presentation.

Table 1: Mundlak regression

	Women *9,132 persons,* *60,659 observations*	**Men** *9,156 persons,* *63,872 observations*
Underemployment indicators	**MH Score** b coefficient^ (95% CI; p-value)	**MH Score** b coefficient^ (95% CI; p-value)
Between persons		
Use of skills and abilities in current job		
Skill-matched	Reference group	Reference group
Over skilled	-1.4 (-1.7, -1.1; p<0.001)	-2.0 (-2.2, -1.7; p<0.001)
Hours of work preferred		
About the same hours preferred	Reference group	Reference group
Fewer hours preferred	-1.5 (-1.8, -1.3; p<0.001)	-1.6 (-1.9, -1.4; p<0.001)
More hours preferred	-1.6 (-1.9, -1.3; p<0.001)	-1.2 (-1.5, -0.9; p<0.001)
Within persons		
Use of skills and abilities in current job		
Skill-matched	Reference group	Reference group
Over skilled	-1.1 (-1.4, -0.8; p<0.001)	-1.6 (-1.8, -1.3; p<0.001)
Hours of work preferred		
About the same hours preferred	Reference group	Reference group
Fewer hours preferred	-1.3 (-1.6, -1.1; p<0.001)	-1.5 (-1.7, -1.2; p<0.001)
More hours preferred	-1.2 (-1.6, -0.9; p<0.001)	-0.6 (-1.0, -0.3; p<0.001)