Effects of household joblessness on subjective wellbeing

Rosanna Scutella

Melbourne Institute of Applied Economic and Social Research,
The University of Melbourne

and Brotherhood of St Laurence

and

Mark Wooden

Melbourne Institute of Applied Economic and Social Research,
The University of Melbourne

Address for correspondence

Rosanna Scutella
Brotherhood of St Laurence
67 Brunswick Street
Fitzroy
VICTORIA 3065.

Email: rscutella@bsl.org.au
Tel: 03 8344 1324

Acknowledgements

This paper is based on research undertaken as part of the Social Policy Research Services Agreement with the Australian Commonwealth Department of Family and Community Services (FaCS), and funded jointly by FaCS and the Faculty of Economics and Commerce, University of Melbourne. The authors also thank FaCS for providing access to the data in the confidentialised unit record file from the Household, Income and Labour Dynamics in Australia Survey, which is managed by the Melbourne Institute of Applied Economic and Social Research, University of Melbourne.

The findings and views reported in the paper, however, are those of the authors and should not be attributed to FaCS, the Australian Government, the Melbourne Institute of Applied Economic and Social Research or the University of Melbourne.

Effects of household joblessness on measures of subjective wellbeing

Abstract

Studies of subjective wellbeing tend to show that the unemployed have lower levels of wellbeing ceteris paribus. In addition, the unemployed and other jobless have become concentrated in particular households over the last twenty-five years or so in Australia. This study seeks to explore the relationship between household joblessness, in its various forms, and levels of subjective well-being. Using two indicators of psychological well-being, life satisfaction and a measure of mental health, we compare persons not working in jobless households with those living with at least one employed person. Consistent with a wealth of previous research, joblessness is clearly associated with lower levels of psychological well-being. Nevertheless, the analysis presented here suggests that there is very little additional disadvantage that stems from living in a jobless household (that is, living with other jobless family members). Indeed, the only group for whom it seemed to matter were women involved in home production. Housewives reported significantly higher levels of life satisfaction if they lived in a household with an employed person than if they lived in a jobless household.

1. Introduction

Recent research suggests that, in many industrialised countries, the jobless have become increasingly concentrated in particular households over the last twenty-five years or so (see Gregg and Wadsworth 1996; Gregg, Wadsworth and Scutella 2004; OECD 1998). This is also true of Australia (Dawkins, Gregg and Scutella 2002, forthcoming; Gregory 1999; Miller 1997). The policy significance of these trends was given prominence in the McClure Report on Welfare Reform (Reference Group on Welfare Reform 2000). That report identified a growing divide between 'job rich' and 'job poor' households as one of the most significant and disturbing trends in contemporary Australian society. In particular, the view was expressed that unless this trend is reversed, 'significant concentrations of economic and social disadvantage might become entrenched' (p. 2).

Such trends are disturbing in light of the widespread evidence of the damaging economic and social costs of unemployment (e.g., Saunders and Taylor 2002), and give rise to the question of whether or not the concentration of joblessness among households exacerbates these problems. In this paper we look at this issue by focusing on the consequences of joblessness for measures of psychological well-being.

Investigation of the links between unemployment and well-being has a long history, and it is now universally accepted that, compared with persons in paid employment, unemployed persons exhibit more negative emotions and cognitive states, such as anxiety and depression, and report lower levels of happiness and life satisfaction. What has not been the subject of much scrutiny is whether these affects are ameliorated or exacerbated by the presence of others in the household who are also jobless. It is this focus on the distinction between individual joblessness and household joblessness that is the main feature of this paper.

Also of note is the data source we use – the Household, Income and Labour Dynamics in Australia (or HILDA) Survey. A key feature of this data source which makes it well suited for the

task at hand is that unlike many other social surveys, interviews are conducted with *all* persons aged 15 years or over who are members of the selected households. We thus are able to compare the situation with the jobless in jobless households and those living with at least one employed person. We are also able to distinguish between different types of joblessness, such as active job search (i.e., unemployment), long-term illness or disability, retirement and home duties. Further, since it is a panel survey (albeit a relatively young one), we potentially can control for unobserved heterogeneity.

Consistent with a wealth of previous research, joblessness is found to be associated with lower levels of subjective well-being and poorer self-assessed health outcomes. Nevertheless, the analysis presented here suggests that, once the effects of income are taken into account, there is very little additional disadvantage that stems from living in a jobless household (that is, living with other jobless family members). Indeed, the only group for whom it seemed to matter were women involved in home production. These women reported significantly higher levels of life satisfaction if they lived in a household where others (typically the husband) were employed than if they lived in a jobless household.

The paper is structured as follows. First, we follow this introduction by providing, in section 2, a brief overview of the previous literature on the relationship between unemployment and subjective well-being. Section 3 then outlines the methods used in this paper to estimate the effect of household joblessness on measures of subjective well-being. In section 4 we introduce the HILDA survey data, define the variables used in the analysis and provide a brief descriptive summary of the incidence of jobless households in Australia. The results of the estimation of multivariate models of well-being are then presented in section 5. A conclusion completes the paper.

2. Previous literature

Investigation of the links between unemployment and psychological well-being has a long history, often dated as starting with the famous Marienthal study undertaken in Germany in the 1930s (Jahoda et al. 1933), though as pointed out by Flatau et al. (2000), other empirical research was undertaken much earlier in the UK (e.g.., Rowntree and Lasker 1911). There is now a vast literature, dominated mainly by social psychologists, reporting evidence of large correlations between unemployment and poor mental health and low levels of life satisfaction (for reviews, see Argyle 1987; Feather 1990; Warr 1987). More recently, economists have also ventured into this area, typically with the aid of large data sets, and they too have consistently reported evidence of large negative relationships between unemployment and well-being measures (see Frey and Stutzer 2002). In Australia, the most notable contribution here is perhaps that of Flatau et al. (2000) who documented significant association between measures of mental health and unemployment status using data from both the 1995 National Health Survey and the 1997 National Survey of Mental Health and Wellbeing of Adults.

Of greater significance, in recent years economic researchers have exploited recent panel survey data finding evidence of a causal relationship. That is, unemployment and job loss is found to be associated with subsequent declines in life satisfaction and other measures of well-being (e.g., Clark et al. 2001; Frijters et al. 2004; Gerlach and Stephan 1996; Korpi 1997; Theodossiou 1998; Winkelmann and Winkelmann 1998).

Evidence also exists that suggests that the impact of unemployment and job loss on well-being varies with the economic, social and family setting. For example, it has been found that the psychological impact of unemployment is greater in regions where employment levels are relatively high (Clark 2003; Shields and Wheatley-Price 2005; Shields and Wooden 2003; Stutzer and Lalive 2004). Stutzer and Lalive (2004) argue that such results reflect social norms, with unemployment being more socially acceptable in areas where unemployment is more widespread.

Further, evidence of the importance of social norm effects is provided by evidence of a stronger interaction effect with the local unemployment rate among men than among women (Clark 2003; Wooden and Shields 2003). Such findings are more in tune with social norm arguments given community expectations that work is the norm are likely to apply most strongly to men.[1]

A particularly important study is that of Clark (2003). This study stands out from previous research in that it in addition to regional effects, it also tests for the presence of social norm effects within households. That is, while a small number of studies have examined intra-household correlation in well-being (e.g., Woittiez and Theeuwes 1998; Winkelmann 2004; Shields and Wheatley Price 2005), Clarks's research is distinctive in testing whether the labour market status of others in the household influences individual well-being.[2] Using panel data from the British Household Panel Study, he finds the psychological well-being of unemployed persons (as measured by the 12-item General Health Questionnaire) to be positively associated with the unemployment of others in the household, which he takes as further evidence for the importance of social norms in mitigating the adverse psychological consequences of unemployment. Further, as with the effect of regional norms, the effect is much more well-defined for men than women. To sum up, while unemployed persons score worse on the mental well-being measure than do employed persons, among unemployed males the effect is ameliorated by the presence of other unemployed persons in the household.

3. Hypotheses and methods

Hypotheses

A priori it is impossible to predict the direction of any effect from living in a jobless household on the psychological well-being of an unemployed person. This is the result of opposing hypotheses. In the first line of reasoning, and the one emphasised by Clark (2003), the

[1] Evidence on the gender difference, however, is mixed, with Shields and Wheatley-Price (2005) finding no evidence of such a difference.

[2] In a study of a sample of Irish households, Whelan (1994) tested whether husband's unemployment impacted on the psychological well-being of wives, and found no evidence of a significant effect.

concentration of a number of people out of work in a single household promotes 'social norm' effects. That is, unemployed individuals are thought to be better able to cope with their situation if unemployment is the norm. The psychological and health consequences of unemployment will thus be heightened for individuals whose peers, including persons in their own household, are all employed and regard employment as the norm. Somewhat differently, but possibly operating in the same direction, the effects of unemployment are likely to be lessened where there is a supportive family environment.[3] We hypothesise that this may be more likely where other family members are out of work and thus both used to coping with joblessness and have more time to help the individual deal with job loss.

In the alternative line of reasoning, the adverse effects associated with being out of work compound when other members of the household are also out of work. Obviously in jobless households there is likely to be a high dependence on the state for income support, which invariably means living on relatively low incomes. But even if we hold constant the income effect associated with household joblessness, one might still expect the psychological and health consequences associated with job loss and having to deal with failed attempts at job search to be magnified when this is a common experience shared with other household members. While social norm effects suggest sharing the unemployment experience can reduce some of the psychological damage, this all depends on what individuals judge as the relevant reference group. For most Australian households, which typically comprise only two adults, the most relevant referent persons are more likely to be neighbours, friends and former co-workers, rather than spouses.

The aim of this study, therefore, is to test which of these opposing influences is more dominant. While we are specifically interested in outcomes for the unemployed, we are also interested to see whether other types of joblessness pose similar problems. Thus we expand on

[3] Cobb and Kasl (1977), in their seminal study of factory closure, reported that retrenchment produced more cases of arthritis and raised cholesterol for individuals who did not have a supportive spouse.

the analysis by Clark by examining not only the situation of the unemployed (that is, persons actively seeking employment), but also that of other jobless persons who are not engaged in job search.

Our analysis combines household and individual level information, with the unit of observation, *i*, the individual. In addition, we have information on each individual at multiple points in time. The model that we are interested in estimating takes the following form:

$$W_{it} = \alpha_0 + \alpha_1 X_{it} + \alpha_2 Z_{it} + \alpha_3 H_{kt} + \mu_{it} \tag{1}$$

W is a measure of psychological well-being, *X* is a vector of individual, household and time variant characteristics that we believe determine a person's psychological well-being, *Z* refers to the employment status of individuals, while *H* captures the jobless state of the household, *k*.

Three variants of equation 1 are estimated. In the first variant, Model 1, we simply pool all observations over the three years without specifically accounting for any unobserved individual specific effects over the years. The only connection we make between the observations for each individual is that we allow for the correlation in the error terms over the years for each individual (using the Stata cluster option).

A problem with the model specified in this way is that there may be unobservable personality traits that are related to life satisfaction (Frijters et al. 2004). One way of accounting for unobserved heterogeneity is to estimate a random effects linear regression model; our Model 2. These models account for unobserved heterogeneity, u_{it}, under the assumption that it is random and uncorrelated with observed covariates. This assumption, however, is quite unrealistic. Most obviously, it is highly likely that personality traits will be correlated with the other explanatory variables, and especially employment status. It has, for example, been well established that personality is one of the strongest predictors of subjective well-being (Diener and Lucas 1999). In other words, there is a genetic predisposition to being happy. Personality, however, is also a key predictor of how people relate to each other, which in turn almost certainly

predicts success in securing and retaining employment. Unemployment may not therefore be the cause of dissatisfaction (although it could compound it) but rather the outcome of a depressive state. Further, it also could be argued that people with similar personalities are attracted to each other, making it more likely for instance for those in a depressive state to be both unemployed and living in a jobless household. Personality may therefore influence whether you are in a jobless household or not.

To completely account for any unobserved heterogeneity that may be correlated with the dependent variables, we also estimated a fixed-effects linear regression model. This is our final Model 3. As the name suggests, the model accounts for any individual unobserved effects that are fixed (but varying across individuals), eliminating the problem of the possible correlation between unobserved heterogeneity and the covariates. There is however a price to pay for this model, particularly with only three years of data. Obviously any explanatory variables that are time invariant drop out of the model. More importantly, the dependent variables will have much smaller variances than in the original specification as they are now measured as deviations from the individual average rather than in absolute amounts. This may lead to a lack of precision in the estimates.

4. Data and definitions

Sample

As noted above, the data used in this analysis come from the first three waves of the HILDA Survey, conducted in the second half of 2001, 2002 and 2003 respectively. Described in more detail in Watson and Wooden (2002, 2004a), the HILDA Survey began with a large national probability sample of Australian households occupying private dwellings. All members of those responding households in wave 1 form the basis of the panel to be pursued in each subsequent wave.

Note that like almost all large sample surveys, the homeless are excluded from the scope of the HILDA Survey. Also excluded from the initial sample were persons living in institutions, though persons who move into institutions in subsequent years remain in the sample.

After adjusting for out-of-scope dwellings (e.g., unoccupied, non-residential) and households (e.g., all occupants were overseas visitors) and for multiple households within dwellings, the total number of households identified as in-scope in wave 1 was 11,693. Interviews were completed with all eligible members at 6872 of these households and with at least one eligible member at a further 810 households. The total household response rate was, therefore, 66 per cent. Within the 7682 households at which interviews were conducted, there were 19,917 people, 4790 of whom were under 15 years of age on the preceding 30 June and hence ineligible for interview. This left 15,127 persons of whom 13,969 were successfully interviewed. Of this group, 11,993 were re-interviewed in wave 2 and 11,190 were re-interviewed in wave 3. The total number of respondents in each wave, however, is greater than this for at least three reasons. First, some non-respondents in wave 1 are successfully interviewed in later waves. Second, interviews are sought in later waves with all persons who turn 15 years of age. Third, additional persons are added to the sample (mostly on a temporary basis) as a result of changes in household composition (interviews are sought will all persons who live with a sample member even if they were not part of the original sample).

As discussed in Watson and Wooden (2004a), these response rates compare reasonably favourably with the rates achieved in the British Household Panel Survey, which commenced interviewing in 1991. Watson and Wooden (2004a), also note, however, that attrition is clearly non-random. For example, rates of attrition are highest among persons who are young, living alone or in de facto relationships, born overseas and from a non-English-speaking background and who, at wave 1, were living in Sydney. Nevertheless, their preliminary analysis suggests that any resultant bias is, at least for the first few waves, likely to be relatively small (see Watson and Wooden 2004b).

Measuring household joblessness

Following the Australian Bureau of Statistics (ABS), a household in the HILDA Survey was defined as a group of people living at the same address who share meals. The simplest definition of a jobless household is thus one where no adult member of that group is in paid work. For this analysis, an adult is defined as anyone of working age (15 to 64 years of age) who is not a full-time student. Full-time students are excluded since their economic inactivity is a productive investment in their future and thus joblessness on their part will, in the longer-term at least, typically not be associated with significant levels of economic distress. Further, joblessness among students typically carries no social stigma nor is likely to be associated with any significant degree of social exclusion. For similar reasons, individuals of retirement age (65 years or older) are also excluded. Note that these exclusions mean that where a household contains a student or an individual aged 65 years or over, that household is effectively redefined so as to exclude that individual.[4]

At the other end of the age distribution, and again following the ABS, dependent children are defined as comprising all children less than 15 years of age as well as full-time students between the ages of 15 and 24 years who are still living at home with their parents. This means that any household where there is a part-time student aged between 15 and 24 years who also has a job, but where all other members are out of work, will not be defined as a jobless household. This is potentially a problem given that such households are almost certainly 'job poor', and hence of interest to policy makers. However, estimates from the HILDA Survey reveal that only 41,900 households (just 0.7 per cent of working-age households) avoid falling into the jobless basket because of the presence of a young adult (under 25 years of age). Moreover, in only 6600

[4] The choice of these age-based criteria for inclusion is somewhat arbitrary. For example, the definition employed in this analysis means that an older household where the male is of retirement age but his partner is below retirement age with no recent workforce experience will be treated as a single-adult jobless household. In contrast, this type of household would not be classified as jobless using the definition employed by Dawkins et al. (2002). They only took into account the age of the nominated household reference person (often thought of as the household head), and omitted from their definition of jobless households all households where the nominated household reference person had reached age pension eligibility age, irrespective of the age of any other household members.

of these households was the young adult a part-time student. This would seem to be an issue, therefore, that can be safely ignored.

Before proceeding, however, an important data issue needs to be noted. As observed earlier, interviews were not completed with all members of the households in the responding sample. In the first wave for instance, 7.7 per cent of the total sample of adult household members were not individually interviewed. Data on a small number of key characteristics were collected in the first and third waves about all household members as part of the household interview, and one of these characteristics was labour force status. As a consequence, we are able to determine with a reasonable degree of accuracy the employment status of all households in the sample. However, apart from their age, sex, place of residence and relationship in the household, we know very little about the other characteristics of these non-responding sample members. Consequently, many observations had to be omitted from the estimation to follow. Furthermore, and somewhat unfortunately, the key question on the employment status of other household members was not included in wave 2. As a result, all analyses comparing results over the three years omits these observations for consistency.

Variables

Turning now to the variables used in the analysis to follow. To measure psychological well-being we make use of two sets of indicators. The first provides broad measures of satisfaction with life, which have been widely used to evaluate well-being (see Diener et al. 1999). More specifically, survey respondents were asked to indicate how satisfied they were with eight distinct aspects of their life using a scale ranging from 0 (totally dissatisfied) to 10 (totally satisfied). The eight life aspects or domains were: (i) the home in which people live; (ii) employment opportunities; (iii) financial situation; (iv) personal safety; (v) feeling part of the local community (vi) personal health; (vii) the neighbourhood in which people live; and (viii) amount of free time. Respondents were then asked to rate their overall satisfaction with their life using the same 11-point scale. The

format of these questions is essentially identical to a similar set of questions that have been asked as part of the German Socio-Economic Panel since 1984. The wording of the individual items, however, is quite different, and owes much to the work of Cummins (1996). In this analysis we focus on the indicator relating to overall life satisfaction.

The second set of indicators examined relates more specifically to physical and mental health. As noted earlier, the HILDA Survey involved not just personal interviews, but also the administration of a self-completion questionnaire (SCQ). Included as part of the SCQ was the SF-36, a survey of generic health concepts that has been extensively tested and used around the world (including in Australia as part of the 1995 National Health Survey). Described in more detail by Ware et al. (2000), the SF-36 comprises 36 items that can then be used to construct multi-item scales measuring each of the following eight health concepts: (i) physical functioning; (ii) role limitations due to physical health problems; (iii) bodily pain; (iv) general health; (v) vitality; (vi) social functioning; (vii) role limitations due to emotional problems; and (viii) mental health.[5] Raw scores on each of the scales are standardised so that the scale values range from 0 to 100. As we are mainly concerned with psychological well-being, the focus in this analysis is on the mental health variable. The effects on all other measures are however estimated and any significant differences are commented on in the discussion.

Scutella and Wooden (2004) show that the characteristics of individuals living in jobless households are very different to the remainder of the population; they are typically females, often sole parents, either quite young or old, and have low levels of education. The combination of these characteristics may help explain differences in well-being. We therefore need to control for these influences. In our second and third models we therefore include controls for the factors observed that we believe to have an effect on life satisfaction. In the most part we follow the specification adopted by Shields and Wooden (2003).

[5] In addition, one item is used to provide information about changes in health status during the year prior to survey.

Following Shields and Wooden and other previous studies, we include age as a quadratic. We also include marital status, as it is usually found that married persons report higher levels of psychological well-being and divorce or separation can reduce well-being. We therefore differentiate between those married, in a defacto relationship, separated, divorced, widowed and never married (the control group). Other family characteristics are also included. These include measures of both the presence and number of dependent children in the household under 15 years of age and the number of adults in the household. We also include a separate control for lone parents. Studies are ambiguous in their findings of the effect of children while lone parents typically exhibit lower levels of well-being given the pressures they face having to raise children without a partner.

Controls were also included to identify Aboriginal or Torres Strait Islanders and for the overseas born, distinguishing between immigrants born in one of the main English-speaking countries and those born elsewhere. We also expect persons with poor English-speaking skills to face language barriers, and thus include a measure of English speaking ability. Recent immigrants are also expected to face some difficulties adjusting into a new home country, particularly persons from non-English speaking backgrounds, therefore we also include measures capturing the number of years in Australia differentiated by whether from an English speaking or non-English speaking country.

Also included are controls for whether someone is suffering from a long-term health condition or disability. Following Shields and Wooden we also differentiate between the severities of those conditions on the basis of responses to a question asking respondents to indicate the extent to which those conditions affected the ability to undertake work. Serious conditions reflect situations where no work is possible while minor conditions are those where there is no impact on the amount or type of work that can be done.

It was felt important to capture any differences in well-being between persons with different levels of educational attainment. Thus a series of dummy variables were included to reflect this. A set of regional and state dummies were also included.

Again following Shields and Wooden, we include a measure of household disposable income in our list of control variables. It is particularly important to control for incomes in our case as household incomes are obviously affected by household joblessness, as no one in the household is earning any income. Unless such households have other income sources jobless households are mainly reliant on the State for income support, which is not very generous. Thus, if income has an overall effect on well-being, you would expect people in jobless households to have lower levels of well-being than other people, simply due to the effect of lower incomes.

We also include crude indicators of family history. These variables capture whether a person was not living with both parents at age 14, whether a person's father was jobless at age 14, whether their father was unemployed for at least six months, and whether their mother was not employed at age 14.

The key explanatory variable for this analysis of course is employment status. Unlike most previous research, however, we move beyond a focus on the unemployed to examine aspects of the psychological well-being of all jobless individuals, distinguishing between the unemployed (i.e., persons in active job search), the retired, persons involved with home duties and the care of children, and other jobless individuals (mainly the disabled and long-term ill and their carers). Persons in full-time jobs (the control group) and those in part-time jobs are also individually identified.

Following Clark (2003), we test for the presence of interaction effects with the employment status of others in the household. That is, we included variables that differentiate not only between different individual jobless states, but also between those living in jobless households or not.

Finally, estimation using the full three waves of data included year dummies to capture any aggregate year effects. As the year effects were generally found to be insignificant, rather than omitting the age variable in the fixed effects estimation we omitted the year dummies.

The incidence of household joblessness

Before moving to our analysis of well-being, it may be helpful to know how significant the household joblessness phenomenon is. We thus provide, in Table 1, summary information on the distribution of employment across households in each of the three years of the HILDA survey; 2001 to 2003. Note that the measures do not reflect household members that were not individually interviewed, as although we have a good indication of their employment situation in 2001 and 2003 we do not have it in 2002. To ensure consistency across the years, these individuals were therefore omitted in all three years. This effectively reduces average household size, resulting in a slight increase in the 'no-work' and 'all-work' household rates in comparison with the figures (for wave 1) reported in Scutella and Wooden (2004).[6]

Over 19 per cent of working-age households were estimated to have no adult in paid employment in 2001 and 2002. By 2003 this rate had fallen slightly, to just under 19 per cent. This translates to between 15 and 16 per cent of working-age adults living in households where no adult member is employed. Consistent with previous research, this table also reveals that joblessness is a relatively serious problem in households where there are dependent children present. The jobless household rate for households with children remains at around 16 per cent across the three years. This converts into an individual rate for children of around 17 per cent. That is, 1 in 6 children under 15 years are growing up in a home where no adult is employed and with no earned income.

[6] Note that a range of estimates of household joblessness using varying definitions is provided in Headey and Wooden (2005). Using the definition closest to the one employed here, we still get a significant difference in the proportion of individuals in jobless households but this can be explained by a difference in our determination of the working age group. In this analysis, working age households include any household with an individual aged between 15 and 64 years that is not a full-time student, whereas in Headey and Wooden this was restricted to those aged between 15 and 59 years.

Table 1 also provides summary information about the duration of joblessness within households. As the participants in the survey were tracked over three years we can examine the persistence of household joblessness. Indeed we find that of the 26 per cent of households found to be jobless in any of the three years, 17.6 per cent were jobless for at least two of those years and 11.5 per cent were a jobless household for the whole three years. It appears then, that household joblessness is a persistent phenomenon.

5. Empirical results

In this section we provide the results of the estimation using the methods outlined in Section 3 and the data and specification outlined in Section 4. First we discuss the results of the determinants of life satisfaction, and then turn to the outcomes on mental health.

Life satisfaction

The results for the first three models using life satisfaction as the dependent variable are presented in Table 2 for males and females respectively. Focussing initially on the simple pooled regression results representing Model 1 we find that the results are broadly in line with those reported by Shields and Wooden (2003).[7] Age, for example, exhibits the u-shaped relationship with life satisfaction. The magnitudes of the estimated coefficients indicate that dissatisfaction is greatest in the early 40s for men and late 30s for women. Also, as expected there is a positive association between marriage and life satisfaction, with persons in defacto relationships more satisfied than the control group (never married) but not quite as satisfied as the married group. Also as in Shields and Wooden (2003), separated persons are found to be more dissatisfied than divorced persons, reflecting the time divorced people have to adjust to their changed circumstances.

[7] Some differences are evident in the coefficients. These, however, can be mostly explained by differences in the population of interest (i.e., in this analysis we only examine the non-student working-age population).

Unlike Shields and Wooden we do not find a lone parent effect. We find that females with children, whether a lone parent or otherwise, are less satisfied than other females.

The finding that Aboriginal and Torres Strait Islander men score higher on the life satisfaction scale than non-indigenous people follows that of Shields and Wooden (2003). Even the size of the effect is similar. In our analysis however, the effect among indigenous women disappears. As expected, immigrants from a non-English-speaking country show lower levels of life satisfaction, with a much lower level of satisfaction if they have poor English language ability. People with an illness or disability also exhibit lower levels of satisfaction, with their satisfaction diminishing with the severity of their condition.

The effects of education are relatively small, particularly for men. The sign of the coefficients however points to relatively lower levels of satisfaction among the more educated. This is in line with the findings of Shields and Wooden and as noted by them is possibly the result of high aspirations that have yet to be met.

We also find that men who lived with both their parents at age 14 are more satisfied, men with an unemployed father at age 14 were slightly less satisfied and women with a mother not working at age 14 were significantly less satisfied.

We also find evidence that money does matter, with income having a significant positive effect on the life satisfaction of both males and females.

Turning now to the variables of most interest for this analysis, consistent again with Shields and Wooden (2003), and with most previous research, the jobless generally report lower levels of life satisfaction than those in employment. Among men, however, the effect is only pronounced among the unemployed; that is, among the jobless actively seeking work. Satisfaction levels among other jobless males, irrespective of whether their joblessness is enforced or voluntary, are not much different from men in full-time jobs. Most importantly, there is little evidence here that a jobless male is likely to report significantly lower levels of life

satisfaction if they live in a jobless household. While it is true that the size of the negative coefficient on the unemployment variable is larger for unemployed males in jobless households, the difference is a long way from achieving statistical significance.

For females, on the other hand, the employment status of other household members appears to matter more. In particular, women engaged in home duties where someone else is working (in most cases this will be their male partner) report significantly higher levels of life satisfaction than otherwise comparable women living in jobless households. Indeed, women living with other employed persons, whether they are retired or involved in home duties, emerge as more satisfied than any other group of women, including those in employment. Females in the 'other jobless' category, which mostly comprises persons who are not in the labour force because of illness, are also less satisfied if living in a jobless household. Statistical tests performed on differences in the coefficients on the various jobless groups in a jobless household with their counterparts in mixed-work households, however, revealed that with the exception of women involved in home duties and in the other jobless category, none of these apparent differences in life satisfaction levels are significant.

Now we turn to Models 2 and 3 that deal with individual heterogeneity. Fortunately the general results are quite robust across the various specifications. In particular, the estimates under the random effects specification (Model 2) do not change very much. The coefficients do become slightly smaller but this is not substantial. In relation to the variables of our specific focus, consistent with the estimates from Model 1, women involved in home duties have significantly lower levels of life satisfaction if they are in a jobless household. In terms of the other groups of jobless women, the female retirees replace the 'other jobless' group of females as exhibiting weakly significant differences between those in jobless households and those living with at least one other employed person.

However, if we believe that individual specific effects are important, the fixed effects model should provide the most accurate outcomes. Under the fixed effects specification, however, while we do see many relationships still strong, the size of most coefficients decrease quite substantially. What is important to note with this specification is that it is a first differences model; that is, the model is capturing the effect of changes in variables. So we cannot expect that the change in a variable would have the same effect as the level of that variable. Take for example income. While Models 1 and 2 tell us that disposable income is positively related to male's life satisfaction, income is an insignificant variable in the fixed effects Model 3. This does not necessarily mean that income is not important, but rather that the variation in peoples incomes observed are not large enough on a year to year basis to exert any significant change on men's general life satisfaction, at least not over the three-year for which we have data.

That said, many of the stronger relationships remain in the fixed effects model. People who are married or in cohabiting relationships are much more satisfied, while those separated or, to a lesser extent, divorced are dissatisfied, and people with a moderate to severe health condition or disability are much less satisfied. Most important for our analysis is that unemployment clearly has a negative effect on life satisfaction for males, even after accounting for individual specific effects such as personality. This does not appear to be the case for women. Women appear to be the most satisfied when they are either working part-time, or involved in home duties when their partner is employed. Changes in income play a much larger part of a woman's life satisfaction than was the case for men.

Turning now to the effects of our variables differentiating household joblessness with the other jobless, in the fixed effects case the difference between women in the home duties category become insignificant. It is difficult to say whether this is due to the presence of fixed effects, or whether the result is simply a reflection of insufficient variation in both our measure of life satisfaction and the explanatory variables given the availability of only three years of data. At the very least however, we can be confident that there is no evidence of any 'social norm' effects of

joblessness within a household, at least in relation to life satisfaction, whether the jobless spell is unemployment or otherwise. What we will be able to determine with future waves of the survey is if the detrimental effects of being in a jobless household for certain groups of women, particularly those involved in home production, are really a reflection of individual specific characteristics or whether it is the added stress of being in a jobless household that causes the dissatisfaction.

Mental health

The previous section was concerned with psychological well-being as determined by a subjective account of life satisfaction. Clark (2003) specifically used an indicator of mental health in his analysis. In this section, therefore, we present results from the analysis of a measure of mental health.

Table 3 presents the results of the estimation of determinants of psychological well-being when using the SF-36 measure of mental health. The results are generally in line with what was found for life satisfaction. Higher levels of psychological well-being are evident for people that are either quite young or old, in relationships, born in Australia or from one of the main English speaking countries, have higher incomes and are employed. Individuals with an illness or disability also, as expected, have much lower levels of mental health.

One of the main differences between the outcomes on mental health and life satisfaction is that Aboriginal and Torres Strait islanders now exhibit the expected result; when it comes to indicators of mental health the indigenous population in HILDA do appear to have much lower levels of psychological well-being. In addition, females with children do not appear to have lower levels of mental health. The effect of education also differs; those with little formal education exhibit significantly lower mental health scores, whereas significant higher levels of education were coupled with lower levels of life satisfaction.

Examining the employment outcomes further, again the results generally confer with the results on life satisfaction. The jobless group as a whole generally have the lowest levels of psychological well-being. It is, however, again apparent that for the most part, being in a jobless household does not significantly exacerbate this relationship. That is, individuals in jobless households do not tend to display lower levels of well-being than other jobless individuals in a similar jobless state. So, for instance, an unemployed person in a jobless household does not suffer more than an unemployed person living with employed persons. The one exception to this is again females in jobless households involved in home duties, or in the 'other jobless' group. This group of women (largely with out of work husbands or performing as a carer for sick or disabled family members) do generally have lower levels of well-being than other women at home with employed members of the family.

Similar to the case for life satisfaction, once individual heterogeneity is accounted for in either the random or fixed effects case, particularly in the fixed effects case, the effects for women diminish.

Reiterating what was said in the discussion on life satisfaction, it is difficult to know whether the effects in under the fixed effects specification are due to insufficient variation in the variables of interest due to the short time period we are restricted to look at, or whether there are indeed unobservable individual specific effects that make it more likely for women with lower levels of mental health to be in a jobless household. We will have to wait for further years of data enabling us to capture more variation in people's circumstances to be able to determine this. At this stage however, we can definitely say that there is no evidence of Clark's so called 'social norm' effects within the household.

Examining the other SF-36 indicators of general health and well-being results in findings are generally consistent with the conclusions drawn above with respect to mental health. With regards to the more physical aspects of well-being (physical functioning, role-physical, bodily

pain and general health), again individuals in jobless households tend not to suffer any more than other jobless individuals in similar jobless circumstances. Here, not surprisingly, the retired and the 'other jobless' groups tend to have the lowest levels of well-being with the other jobless groups generally exhibiting similar levels of well-being to the employed. The retired and the sick (in 'other jobless') women in jobless households had lower levels of general health than the other retired or sick women. Interestingly, the male unemployed in jobless households actually showed higher levels of general health than the unemployed in other households.

6. Conclusions

This paper has taken the literature on unemployment and well-being one step further by examining the consequences of household joblessness on measures of psychological well-being. The analysis used the first three waves of the HILDA survey, which enabled us to compare the situation with the jobless in jobless households and those living with at least one employed person. We were also able to distinguish between different types of joblessness, such as active job search (i.e., unemployment), long-term illness or disability, retirement and home duties. Further, since HILDA is a longitudinal survey, we were able to control for unobserved heterogeneity, although this was ability was limited given only three years of data were available at the time of writing.

The findings on individual joblessness were consistent with previous research in that joblessness was found to be associated with lower levels of subjective well-being and poorer self-assessed health outcomes. Nevertheless, the analysis presented here suggests that, once the effects of income are taken into account, there is very little additional disadvantage that stems from living in a jobless household (that is, living with other jobless family members). Indeed, the only groups for whom it seemed to matter were women involved in home production, women in the other jobless group, which includes carers and individuals with a long term health condition or disability, and there was some indication that female retirees experienced lower levels of

psychological well-being. These women reported significantly higher levels of life satisfaction and were found to have lower mental health outcomes if they lived in a household where others (typically the husband) were employed than if they lived in a jobless household. Once individual heterogeneity was fully accounted for using a fixed effects estimator, this effect for these groups of women essentially disappeared. Therefore, while we find little evidence suggesting household joblessness confounds the negative psychological effects of unemployment, or other forms of joblessness, we certainly find no evidence of a so called 'social norm' effect.

References

Argyle, M. (1987), *The Psychology of Happiness*, Methuen, London.

Clark, A. (2003), 'Unemployment as a Social Norm: Psychological Evidence from Panel Data', *Journal of Labor Economics*, 21(2): 323-351.

Clark, A., Georgellis, Y. and Sanfey, P. (2001), 'Scarring: The Psychological Impact of Past Unemployment', *Economica*, 68(270): 221-241.

Cobb, S. and Kasl, S.V. (1977), *Termination: The Consequences of Job Loss*, US Department of Health, Education, and Welfare, Cincinnati.

Cummins, R.A. (1996), 'The Domains of Life Satisfaction: An Attempt to Order Chaos', *Social Indicators Research*, 38(3): 303-332.

Dawkins, P., Gregg, P. and Scutella, R. (forthcoming) 'Employment Polarisation in Australia', *The Economic Record*.

Dawkins, P., Gregg, P. and Scutella, R. (2002) 'The Growth of Jobless Households in Australia', *The Australian Economic Review*, 35(2): 133-154.

Diener, E. and Lucas, R. (1999), 'Personality and Subjective Well-being', in D. Kahneman, E. Diener and N. Schwarz (eds), *Well-being: The Foundations of Hedonic Psychology*, Russell Sage, New York.

Feather, N.T. (1990), *The Psychological Impact of Unemployment*, Springer-Verlag, Berlin.

Flatau, P., Galea, J. and Petridis, R. (2000), 'Mental Health and Wellbeing and Unemployment', *Australian Economic Review*, 33(2): 161-181.

Frey, B.S. and Stutzer, A. (2002), 'What Can Economists Learn from Happiness Research', *Journal of Economic Literatur*e, 40(2): 402-435.

Frijters, P., Haisken-DeNew, J. and Shields, M.A. (2004), 'Investigating the Patterns and Determinants of Life Satisfaction in Germany Following Reunification', *Journal of Human Resources*, 39(3): 649-674.

Gerlach, K. and Stephan, G. (1996), 'A Paper on Unhappiness and Unemployment in Germany', *Economics Letters*, 52(3), 325-330.

Gregg, P., Wadsworth, J. and Scutella, R. (2004), 'Reconciling Workless Measures at the Individual and Household Level: Theory and Evidence from the United States, Britain, Germany, Spain and Australia', Centre for Economic Performance Discussion Paper no. 635, London School of Economics and Political Science, London.

Gregg, P. and Wadsworth, J. (1996), 'It Takes Two: Employment Polarization in the OECD', Centre for Economic Performance Discussion Paper no. 304, London School of Economics and Political Science, London.

Gregory, R. (1999) 'Children and the Changing Labour Market: Joblessness in Families with Dependent Children', Centre for Economic Policy Research Discussion Paper no. 406, Australian National University, Canberra.

Headey, B. and Wooden, M. (2005), 'Income, Wealth and Joblessness: Insights from the HILDA Survey', in P. Dawkins and M. Stutchbury (eds), *Sustaining Prosperity*, Melbourne University Press, Melbourne.

Jahoda, M., Lazarsfeld, P.F. and Zeisel, H. (1933), *Marienthal: The Sociography of an Unemployed Community* (English translation, 1971), Aldine, Chicago.

Korpi, T. (1997), 'Is Utility Related to Employment Status? Employment, Unemployment, Labour Market Policies and Subjective Well-being Among Swedish Youth', *Labour Economics*, 4(2): 125-147.

OECD (1998) *OECD Employment Outlook, July 1998*, OECD, Paris.

Miller, P. (1997) 'The Burden of Unemployment on Family Units: An Overview', *Australian Economic Review,* 30(1): 16-30.

Rowntree, B. and Lasker, B. (1911), *Unemployment: A Social Study*, MacMillan, London.

Saunders, P. and Taylor, R. (eds) (2002), *The Price of Prosperity: The Economic and Social Costs of Unemployment*, University of New South Wales Press, Sydney.

Scutella, R. and Wooden, M. (2004), 'Jobless Households in Australia: Incidence, Characteristics and Financial Consequences', *Economic and Labour Relations Review*, 14(2): 187-207.

Shields, M.A. and Wooden, M. (2003), 'Investigating the Role of Neighbourhood Characteristics in Determining Life Satisfaction', Melbourne Institute Working Paper Series no. 24/03. Melbourne Institute of Applied Economic and Social Research, Melbourne.

Shields, M.A. and Wheatley-Price, S. (2005), 'Exploring the Economic and Social Determinants of Psychological Health and Perceived Social Support in England', *Journal of the Royal Statistical Society Series A*, forthcoming.

Stutzer, A. and Lalive, R. (2004), 'The Role of Social Work Norms in Job Searching and Subjective Well-being', *Journal of the European Economic Association*, 2(4): 696-719.

Theodossiou, I. (1998), 'The Effects of Low-pay and Unemployment on Psychological Well-being: A Logistic Regression Approach', *Journal of Health Economics*, 17(1): 85-104.

Ware, J.E., Snow, K.K., Kosinski, M. and Gandek, B. (2000), *SF-36 Health Survey: Manual and Interpretation Guide*, QualityMetric Inc., Lincoln, RI.

Warr, P.B. (1987), *Work, Unemployment and Mental Healt*h, Clarendon Press, Oxford.

Watson, N. and Wooden, M. (2002) 'The Household, Income and Labour Dynamics in Australia (HILDA) Survey: Wave 1 Survey Methodology', HILDA Project Technical Paper Series No. 1/02, May (Revised September 2002), Melbourne Institute of Applied Economic and Social Research, University of Melbourne.

Watson, N. and Wooden, M. (2004a), 'The HILDA Survey Four Years On', *Australian Economic Review,* 37(3): 343-349.

Watson, N. and Wooden, M. (2004b), 'Sample Attrition in the HILDA Survey', *Australian Journal of Labour Economics*, 7(2): 293-308.

Whelan, C.T. (1994), 'Social Class, Unemployment and Psychological Distress', *European Sociological Review*, 10(1): 49-61.

Winkelmann, R. (2004), 'Subjective Well-being and the Family: Results with Multiple Random Effects', IZA Discussion Paper no. 1016, IZA, Bonn.

Winkelmann, L. and Winkelmann, R. (1998), 'Why are the Unemployed so Unhappy? Evidence from Panel Data', *Economica*, 65(257): 1-15.

Woittiez, I. and Theeuwes, J. (1998), 'Well-being and Labour Market Status', in S. Jenkins, A. Kapteyn and B. van Praag (eds), *The Distribution of Welfare and Household Production: International Perspectives*, Cambridge University Press, Cambridge.

Table 1: Aggregate statistics on the distribution of employment across households, HILDA Survey 2001 to 2003

	2001 %	*2002* %	*2003* %
Jobless household rate (% of households)	19.4	19.4	18.7
All-work household rate	63.1	64.3	65.2
Mixed-work household rate	17.5	16.3	16.1
Adults in jobless households (% of individuals 15 yrs+)	15.2	16.0	15.6
Jobless household rate – with kids (under 15 years)	16.0	15.9	15.8
Children under 15 years living in jobless households	17.3	16.8	17.2
Jobless in any of three years		26.0	
Jobless in two of three years		17.6	
Jobless over entire period		11.5	

Table 2: Estimates for life satisfaction by gender, 2001 to 2003 pooled

	Males			Females		
	Model 1 Pooled	Model 2 RE	Model 3 FE	Model 1 Pooled	Model 2 RE	Model 3 FE
constant	9.399**	9.362**	7.311**	9.085**	9.048**	8.612**
age/10	-0.923**	-0.964**	-0.221	-0.777**	-0.772**	-0.197
$(age/10)^2$	0.112**	0.116**	0.030	0.098**	0.098**	0.021
married	0.459**	0.500**	0.559**	0.442**	0.471**	0.250*
defacto	0.285**	0.353**	0.436**	0.218**	0.300**	0.348**
separated	-0.540**	-0.486**	-0.396**	-0.441**	-0.350**	-0.364**
divorced	-0.076	-0.174*	-0.314*	-0.193*	-0.209**	-0.190
widowed	-0.005	0.046	-0.432	0.078	0.116	-0.030
presence of children	-0.024	-0.018	-0.049	-0.121*	-0.073	0.015
number of children	-0.023	-0.015	0.057	-0.006	-0.009	-0.031
Number of working-age adults	0.059**	0.049*	0.034	0.022	0.005	-0.028
Lone parent	-0.183	-0.145*	-0.048	-0.050	-0.098	-0.141
cob-english speaking	0.082	0.082		0.050	0.031	
cob-non English speaking	-0.274**	-0.305**		-0.195**	-0.247**	
English speaking immigrant*years in Australia	-0.003	-0.003	-0.004	0.002	0.002	0.018
Non-English speaking immigrant*years in Australia	0.003	0.003	-0.012	0.001	0.002	-0.010
Aboriginal or Torres Strait Islander	0.478**	0.428**		0.119	0.091	
English speaking ability poor	-0.346**	-0.191	0.087	-0.355**	-0.237**	-0.047
Severe illness or disability	-1.038**	-0.686**	-0.314*	-1.812**	-1.515**	-1.065**
Moderate illness or disability	-0.580**	-0.438**	-0.214**	-0.768**	-0.559**	-0.272**
Minor illness or disability	-0.112*	-0.074	-0.018	-0.160**	-0.082	0.015
postgraduate	-0.244	-0.125		-0.329*	-0.216	
undergraduate	-0.307	-0.183	-0.050	-0.348*	-0.248	-0.324
certificate	-0.258	-0.175	-0.025	-0.333*	-0.218	-0.109
yr 12	-0.325	-0.207	0.112	-0.373**	-0.294*	-0.436
yr 10/11	-0.148	-0.059		-0.260	-0.163	
secondary under yr 10	-0.023	0.052		-0.225	-0.152	

inner regional	0.108**	0.105**	0.091	0.229**	0.194**	0.097
outer regional	0.226**	0.190**	0.095	0.403**	0.330**	0.118
remote	0.271**	0.265**	0.190	0.507**	0.406**	0.131
New South Wales	-0.030	0.016	0.497	0.145	0.090	-0.550
Victoria	-0.035	0.005	0.329	0.233**	0.182	-0.353
Queensland	-0.151	-0.107	0.331	0.140	0.099	-0.270
South Australia	-0.094	-0.045	0.768	0.247**	0.205	0.494
Western Australia	-0.185	-0.130	0.583	0.139	0.088	-0.968*
Tasmania	-0.098	-0.076	0.307	0.244**	0.227	0.227
Northern Territory	-0.138	-0.130	0.154	-0.192	-0.253	-0.563
Not living with both parents at age 14	-0.112**	-0.122**		-0.075	-0.095**	
father not emp at age 14	-0.004	-0.008		-0.075	-0.104	
father unemp for > 6 mths	-0.132*	-0.146**		-0.092	-0.110*	
mother not emp at age 14	0.068*	0.071*		-0.081**	-0.076**	
Unemployed – in jobless household	-0.426**	-0.315**	-0.193**	-0.548**	*-0.336***	-0.136
Unemployed – other	-0.380**	-0.366**	-0.351**	-0.234	*-0.081*	0.020
Employed – part time	0.073	0.048	0.044	0.121**	0.105**	0.093**
Retired – in jobless household	0.163	0.056	0.035	0.186**	*0.062*	*-0.030*
Retired – other	0.238	0.130	0.149	0.332**	*0.285***	*0.237**
Home duties – in jobless household	0.064	0.015	0.056	**0.083**	**0.072**	0.113
Home duties – other	0.028	-0.082	-0.149	**0.345****	**0.260****	0.175**
Other jobless– in jobless household	-0.254**	-0.234**	-0.144*	*-0.398***	-0.282**	-0.138
Other jobless	-0.373**	-0.178*	-0.013	*-0.021*	-0.126	-0.184
Annual disposable household income/10000	0.018**	0.010**	-0.003	0.019**	0.016**	0.008**
Year 2002	-0.019	-0.026		-0.060**	-0.079**	
Year 2003	0.010	0.006		0.022	0.009	
n	12,218	12,218	12,218	13,331	13,331	13,331
R-sq	0.0903	0.0876	0.0424	0.1177	0.1147	0.0336
F-stat/Chi-sq	11.10	698.57	3.91	16.01	976.06	4.40
rho		0.498	0.600		0.484	0.608
Correlation ui and x's		0	-0.062		0	-0.174
Hausman for re, chi-sq		107.72			168.47	

Table 3: Estimates for mental health by gender, 2001 to 2003 pooled

	Males			Females		
	Model 1 Pooled	Model 2 RE	Model 3 FE	Model 1 Pooled	Model 2 RE	Model 3 FE
constant	81.719**	79.651**	59.961**	70.302**	66.896**	47.011**
age/10	-6.954**	-7.149**	4.042	-3.539**	-2.470*	6.900
(age/10)2	0.946**	0.955**	-0.351	0.611**	0.460**	-0.378
married	3.855**	4.264**	3.802**	2.921**	2.758**	-0.957
defacto	1.723**	2.283**	2.759**	0.597	0.440	-1.255
separated	-3.163**	-2.270**	-2.220	-1.347	-1.167	-3.339*
divorced	2.225*	0.233	-2.556	1.147	0.300	-2.582
widowed	5.685*	1.814	-10.100*	1.472	0.779	-2.032
presence of children	-0.094	0.250	0.039	-0.674	-0.396	0.116
number of children	-0.196	-0.218	0.081	0.147	0.097	-0.218
Number of working-age adults	-0.030	-0.285	-0.803*	-0.404	-0.279	-0.291
Lone parent	-1.619	-0.975	0.423	-1.003	-1.412**	-2.081**
cob-english speaking	0.946	0.768		0.070	0.576	
cob-non English speaking	-1.168	-1.352		-2.461**	-2.535**	
English speaking immigrant*years in Australia	-0.023	-0.012	0.012	0.003	-0.018	-0.006
Non-English speaking immigrant*years in Australia	-0.029	-0.047	-0.414	-0.001	-0.006	-0.694*
Aboriginal or Torres Strait Islander	1.404	0.976		-4.587**	-4.656**	
English speaking ability poor	-6.209**	-3.582**	0.743	-0.130	-0.896	-0.531
Severe illness or disability	-17.605**	-8.421**	0.132	-19.163**	-14.620**	-8.382**
Moderate illness or disability	-10.557**	-7.067**	-2.042**	-11.923**	-8.107**	-3.571**
Minor illness or disability	-2.976**	-1.242**	0.289	-4.732**	-2.574**	-0.523
postgraduate	4.028*	6.073**	-6.822*	8.752**	10.091**	8.601**
undergraduate	4.303*	6.791**	-3.781	8.273**	9.372**	5.198
certificate	4.893**	6.973**		7.689**	8.831**	
yr 12	4.386*	6.382**	-2.607	7.635**	8.053**	-2.526
yr 10/11	4.377**	6.288**		6.893**	7.631**	
secondary under yr 10	2.745	3.912**		4.353**	4.727**	
inner regional	1.096**	0.982**	0.821	1.752**	1.615**	1.265*
outer regional	1.453**	1.221**	0.781	1.633**	1.933**	2.386**
remote	1.946	1.621	0.488	2.145	0.733	-1.391
New South Wales	-1.263	-0.867	3.081	-0.542	-0.250	5.437
Victoria	-1.280	-0.699	5.481	-0.301	-0.018	7.592
Queensland	-1.920	-1.285	7.835*	-0.003	0.370	9.211**
South Australia	-2.120	-1.170	16.195**	0.392	0.530	9.389
Western Australia	-1.576	-0.903	4.955	1.170	1.428	1.078
Tasmania	-1.937	-1.515	8.996	1.894	2.072	8.628
Northern Territory	-2.051	-2.155	2.238	0.661	1.224	9.648
Not living with both parents at age 14	-0.002	-0.074		-1.092*	-1.272**	
father not emp at age 14	-1.762	-2.170		-1.279	-1.595	
father unemp for > 6 mths	-0.703	-0.553		-2.161**	-2.248**	
mother not emp at age 14	0.506	0.488		-0.655	-0.644	
Unemployed – in jobless household	-3.959**	-2.470**	-0.670	-6.738**	-4.041**	-0.695

Unemployed – other	-4.213**	-3.510**	-2.559**	-4.927**	-3.128**	-2.109
Employed – part time	-0.155	-0.519	-0.266	-0.179	0.083	0.574
Retired – in jobless household	-2.101*	-2.303**	-0.280	-1.376	-0.239	2.135**
Retired – other	-4.137**	-3.969**	-1.638	-1.686	-0.192	1.607
Home duties – in jobless household	-0.588	-2.362	-1.129	**-2.566****	-1.593**	0.490
Home duties – other	-5.343**	-6.359**	-6.136**	**-0.427**	-0.834	-0.919
Other jobless– in jobless household	-7.630**	-5.207**	-1.294	**-7.834****	*-4.756***	-1.111
Other jobless	-7.730**	-4.977**	-2.116	**-0.976**	*-2.422***	-2.535*
Annual disposable household income/10000	0.170**	0.133**	0.035	0.112**	0.090**	0.007
Year 2002	1.132**	0.910**		0.451*	0.180	
Year 2003	0.593**	0.350		0.835**	0.646**	
n	11,189	11,189	11,189	12,456	12,456	12,456
R-sq	0.1202	0.1129	0.0051	0.1186	0.1129	0.0177
F-stat/Chi-sq	12.38	683.07	2.40	14.55	800.98	2.86
rho		0.567	0.699		0.542	0.684
Correlation (ui,x)	0	0	-0.340	0	0	-0.378
Hausman for re (p>chi-sq)		372.45			391.60	

Appendix Table A: Variable Definitions and Sample Summary Statistics

		2001		*2002*		*2003*	
Variable	*Definition*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Female	Equals 1 if female and 0 if male.	0.506	0.500	0.506	0.500	0.510	0.500
Age/10	Age (years) at last birthday, divided by 10.	3.989	1.250	4.043	1.244	4.053	1.246
$(Age/10)^2$	The squared transformation of Age/10.	17.475	10.172	17.894	10.183	17.984	10.208
Married	Equals 1 if legally married, and 0 if otherwise.	0.582	0.493	0.571	0.495	0.555	0.497
De facto	Equals 1 if living with someone in a relationship but not legally married, and 0 if otherwise.	0.119	0.323	0.125	0.331	0.137	0.344
Separated	Equals 1 if separated from a marriage and not living with someone in a relationship, and 0 if otherwise.	0.036	0.187	0.038	0.192	0.036	0.185
Divorced	Equals 1 if divorced and not living with someone in a relationship, and 0 if otherwise.	0.057	0.232	0.062	0.242	0.067	0.250
Widowed	Equals 1 if widowed and not living with someone in a relationship, and 0 if otherwise.	0.013	0.115	0.015	0.122	0.015	0.122
Never married	Equals 1 if never legally married and not living with someone in a relationship, and 0 if otherwise.	0.193	0.395	0.189	0.391	0.190	0.392
Presence of children	Equals 1 if any dependent children aged under 15 years present in household, and 0 otherwise.	0.407	0.491	0.391	0.488	0.394	0.489
Number of children	Number of dependent children aged under 15 years in household.	0.775	1.095	0.748	1.082	0.750	1.078
Number of working age adults	Number of adults not studying full-time aged 15 to 64 years in household.	2.146	0.867	2.075	0.822	2.062	0.821
Lone parent	Equals 1 if in a lone parent household, and 0 otherwise. A lone parent family consists of a parent and a child, though the child cannot have a child or partner of their own. Dependent children are defined as all children under the age of 15 years, and all full-time students aged 15 to 24 years resident in the home.	0.092	0.289	0.089	0.284	0.094	0.291
Australia-born	Equals 1 if born in Australia, and 0 if otherwise.	0.748	0.434	0.763	0.425	0.774	0.418

		2001		2002		2003	
Variable	*Definition*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Born O/S -- English speaking	Equals 1 if born overseas in the UK, Ireland, New Zealand, Canada, the USA or South Africa, and 0 if otherwise.	0.109	0.312	0.106	0.308	0.101	0.302
Born O/S – Non-English speaking	Equals 1 if born overseas a country other than the main English-speaking countries, and 0 if otherwise.	0.143	0.350	0.131	0.337	0.125	0.331
English speaking immigrant * years in Australia	Born O/S -- English speaking x number of years since came to live in Australia.	2.412	8.462	2.383	8.409	2.308	8.270
Non-English speaking immigrant * years in Australia	Born O/S – Non-English speaking x number of years since came to live in Australia.	2.720	8.734	2.488	8.401	2.345	8.160
Aboriginal or Torres Strait Islander	Equals 1 if of Aboriginal or Torres Strait Islander origin, and 0 if otherwise.	0.018	0.132	0.018	0.132	0.020	0.139
English speaking ability poor	Equals 1 if English ability as self assessed is poor to not being able to speak English at all, and 0 otherwise.	0.023	0.149	0.017	0.128	0.015	0.121
Severe illness or disability	Equals 1 if has long-term health condition or disability that prevents work, and 0 if otherwise.	0.005	0.068	0.006	0.076	0.006	0.075
Moderate illness or disability	Equals 1 if has long-term health condition or disability that partially limits type or amount of work, and 0 if otherwise.	0.097	0.296	0.121	0.326	0.121	0.326
Minor illness or disability	Equals 1 if has long-term health condition or disability that does not limit type or amount of work, and 0 if otherwise.	0.032	0.175	0.045	0.208	0.047	0.212
Postgraduate qual.	Equals 1 if has a post-graduate qualification, and 0 if otherwise.	0.066	0.250	0.073	0.260	0.076	0.266
Undergraduate qual.	Equals 1 if has a bachelor degree or undergraduate diploma, and 0 if otherwise.	0.165	0.371	0.173	0.378	0.177	0.382
Certificate	Equals 1 if has a certificate level qualification, and 0 if otherwise.	0.077	0.267	0.084	0.277	0.091	0.288
Completed Year 12	Equals 1 if completed Year 12 but does not have post-school qualifications, and 0 if otherwise.	0.114	0.318	0.105	0.306	0.105	0.306
Completed Year 10/11	Equals 1 if only completed Year 10 or 11, and 0 if	0.425	0.494	0.424	0.494	0.417	0.493

		2001		2002		2003	
Variable	*Definition*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
	otherwise.						
Secondary school -- < Year 10	Equals 1 if left secondary school without completing Year 10, and 0 if otherwise.	0.132	0.338	0.125	0.331	0.120	0.325
Primary school / No formal education	Equals 1 if has no formal education or only attended primary school, and 0 if otherwise.	0.021	0.142	0.016	0.127	0.014	0.117
Major city	Equals 1 if lives in a major city, as defined by ARIA, and 0 if otherwise.	0.584	0.493	0.616	0.486	0.615	0.487
Inner regional	Equals 1 if lives in inner regional Australia, as defined by ARIA, and 0 if otherwise.	0.280	0.449	0.239	0.427	0.242	0.428
Outer regional	Equals 1 if lives in outer regional Australia, as defined by ARIA, and 0 if otherwise.	0.118	0.323	0.118	0.323	0.118	0.323
Remote	Equals 1 if lives in a remote part of Australia, as defined by ARIA, and 0 if otherwise.	0.018	0.133	0.022	0.147	0.021	0.142
New South Wales	Equals 1 if lives in New South Wales, and 0 if otherwise.	0.313	0.464	0.304	0.460	0.304	0.460
Victoria	Equals 1 if lives in Victoria, and 0 if otherwise.	0.252	0.434	0.249	0.433	0.245	0.430
Queensland	Equals 1 if lives in Queensland, and 0 if otherwise.	0.198	0.398	0.202	0.401	0.205	0.404
South Australia	Equals 1 if lives in South Australia, and 0 if otherwise.	0.087	0.281	0.092	0.288	0.093	0.291
Western Australia	Equals 1 if lives in Western Australia, and 0 if otherwise.	0.100	0.300	0.100	0.300	0.100	0.300
Tasmania	Equals 1 if lives in Tasmania, and 0 if otherwise.	0.027	0.162	0.028	0.165	0.028	0.164
Northern Territory	Equals 1 if lives in the Northern Territory, and 0 if otherwise.	0.006	0.075	0.006	0.078	0.006	0.080
ACT	Equals 1 if lives in the ACT, and 0 if otherwise.	0.017	0.130	0.019	0.136	0.018	0.132
Not living with both parents at age 14	Equals 1 if did not live with both 'own' parents at age 14 years, and 0 if otherwise.	0.259	0.438	0.253	0.435	0.251	0.433
Father not employed at age 14	Equals 1 if father not employed when respondent aged 14 years, and 0 if otherwise.	0.028	0.164	0.028	0.165	0.029	0.168
Father unemployed for > 6 mths	Equals 1 if father unemployed for 6 months when respondent was growing up, and 0 if otherwise.	0.093	0.291	0.093	0.291	0.098	0.298

		2001		*2002*		*2003*	
Variable	*Definition*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Mother not employed at age 14	Equals 1 if mother not employed when respondent aged 14 years, and 0 if otherwise.	0.435	0.496	0.430	0.495	0.427	0.495
Annual household disposable income/10,000	Annual usual household income net of taxes and transfers	5.453	3.901	5.702	4.186	5.817	4.621
Life satisfaction	Range from 0 (completely unsatisfied) to 10 (completely satisfied)	7.843	1.678	7.770	1.589	7.840	1.547
Mental health	Range from 0 to 100	73.371	17.588	73.700	17.362	73.831	17.277
Unemployed in jobless household	Equals 1 if unemployed and in jobless household, and 0 if otherwise.	0.023	0.152	0.022	0.147	0.022	0.146
Other unemployed	Equals 1 if unemployed and at least one employed person in household, and 0 if otherwise.	0.025	0.157	0.015	0.123	0.020	0.139
Employed part-time	Equals 1 if employed part-time, and 0 if otherwise.	0.188	0.391	0.184	0.387	0.193	0.395
Retired in jobless household	Equals 1 if retired and in jobless households, and 0 if otherwise.	0.047	0.212	0.040	0.197	0.054	0.226
Other retired	Equals 1 if retired and at least one employed person in household, and 0 if otherwise.	0.017	0.130	0.012	0.108	0.019	0.135
Home duties in jobless household	Equals 1 if not working and in home duties and in jobless households, and 0 if otherwise.	0.037	0.190	0.035	0.185	0.034	0.181
Other home duties	Equals 1 if not working and in home duties and at least one employed person in household, and 0 if otherwise.	0.078	0.267	0.055	0.228	0.070	0.256
Other not in labour force in jobless household	Equals 1 if other not in labour force and in jobless households, and 0 if otherwise.	0.024	0.152	0.041	0.198	0.019	0.135
Remaining other not in labour force	Equals 1 if other not in labour force and at least one employed person in household, and 0 if otherwise.	0.023	0.151	0.017	0.131	0.020	0.141