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on Subjective Well-Being

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Abstract

It is widely assumed that the economic and social costs that unemployment gives rise to must be exacerbated where joblessness is concentrated within families and neighbourhoods. This hypothesis is tested in this paper. Specifically, data from the first three waves of the HILDA Survey are used to test whether jobless individuals score worse on two indicators of well-being – a measure of overall life satisfaction and a measure of mental health – when they live in households with other jobless people. Consistent with a wealth of previous research, unemployment is found to be associated with lower levels of well-being, but there appears to be very little additional disadvantage that stems from being both unemployed and living in a jobless household. Females involved in home production and not actively searching for work are the only group for whom it can be confidently concluded that the situation of the household matters.

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, 2005; Gregory 1999; Miller 1997). Moreover, 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 one aspect of this issue – the consequences of joblessness for psychological well-being.

Investigation of the links between unemployment and psychological (or subjective) 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 of the jobless in jobless households with that of other jobless persons 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 we

potentially can control for unobserved heterogeneity (though with such a young panel this introduces a fresh set of problems).

Consistent with a wealth of previous research, unemployment 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). Females involved in home production who were not actively searching for work were the only group for whom it can be confidently concluded that the situation of the household matters. 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 associations 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 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; Shields and Wooden 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. That said, not all research has been supportive, with Shields and Wheatley-Price (2005) finding no evidence of such a gender difference.

A particularly important study is that of Clark (2003). This study stands out from previous research in that, in addition to regional effects, it 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), Clark's research is distinctive in testing whether the labour market status of others in the household influences individual well-being.¹ 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

¹ The only other study that we are aware of that has formally tested the impact of one family member's employment status on the well-being of another family member is Whelan (1994). He used data from a sample of Irish households to test whether husband's unemployment impacted on the psychological well-being of wives. He found no evidence of a significant effect.

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.

This study follows that of Clark (2003) in exploring the relationship between household joblessness, in its various forms, and levels of well-being.

3. Hypotheses and methods

3.1. 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 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.² 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

² Cobb and Kasl (1977), in their seminal study of factory closure, reported that retrenchment was associated with a high incidence of morbidity indicators (such as raised cholesterol levels) among individuals who did not have a supportive spouse.

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 referents 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 the analysis of 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.

3.2. *Methods*

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 testing loosely follows that of Clark (2003) where a person's individual well-being is a linear function of their own employment circumstances and those of 'relevant others'.³ The estimated model therefore takes the following simple form:

$$W_{it} = \alpha_0 + \alpha_1 X_{it} + \mu_{it} \quad (1)$$

where W is a measure of psychological well-being, and X is a vector of individual, household and time variant characteristics that we believe determine a person's psychological well-being. X includes the employment status of individuals and of other household members. 'Relevant others' in our specification includes all members of the household.

Three variants of equation 1 are estimated. In the first variant, Model 1, we simply pool all observations over the three years without 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.

³ Note that the theoretical model used by Clark (2003) is based on Akerlof's (1980) social norm model where utility is a function of reputation in the community with respect to some social norm (in this case employment). A linear specification in this model fulfils Akerlof's criteria of no reputation effect if the employment code is followed, but a negative effect if the code is not respected. Also, the reputational effect from not following the code diminishes as the percentage of relevant others not following the code increases.

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 model; our Model 2. These models account for unobserved heterogeneity, μ_{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, is a predictor of 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, potentially making it more likely for those in a depressive state to be both unemployed and living in a jobless household.

An alternative approach which does not impose this orthogonality assumption is the fixed effects model; our Model 3. As the name suggests, this 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. Further, 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. This problem is exacerbated, when T, the length of the panel is small, as it is in the data used here.

4. Data and definitions

4.1. Sample

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 with 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 analysis suggests that any resultant bias is, at least for the first few waves, likely to be relatively small (see Watson and Wooden 2004b).

The principal mode of data collection is personal interviews, though telephones are used as a last resort where necessary. Some of the more sensitive subjective information, however, is collected via a self-completion questionnaire. While the majority of these questionnaires are collected by the interviewer, in many cases this is not possible and respondents are asked to return them by mail. This inevitably leads to additional non-

response. Over the first three waves, an average of 92 per cent of all persons successfully interviewed each year also returned the self-completion questionnaire.

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

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.

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 omit these observations for consistency.

4.3. Variables

To measure psychological well-being we make use of two indicators. The first is a broad measure of satisfaction with life, which has 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 for these questions is based on 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.

As this measure of life satisfaction has a finite (and limited) number of categories that have a natural ordering, the ordered probit model is used in estimation. Note that while it has been established that maximum likelihood estimation of non-linear models is inconsistent in the presence of fixed effects when T , the length of the panel, is fixed (see Lancaster 2000), it is not obvious that other estimators are preferred given the strong possibility of unobserved heterogeneity. Monte Carlo simulations reported in Greene (2004), however, suggest that

estimates from the simple pooled data specification may be superior when T is very short, as it is here. Estimates from random effects specifications were found to always be inferior.

The second indicator is a measure of mental health derived from the administration within the HILDA Survey of 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. Given our concern with psychological well-being, the analysis presented here focuses on the mental health scale. While the variable is not strictly linear, the absence of many cases at the limits suggests that it is reasonable to apply linear regression methods. Note that the SF-36 was administered as part of the leave behind self-completion questionnaire, and as a result is associated with lower Ns than is the case with the life satisfaction measure, which was administered as part of the personal interview.

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 selecting control variables we are mostly guided by the specification adopted by Shields and Wooden (2003).

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, while divorce or separation tends to reduce well-being. We therefore differentiate between those who are 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

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

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, and so we 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 differentiate between minor, moderate and severe 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 given household incomes are obviously affected by household joblessness. Unless such households have other income sources, jobless households will be reliant on the state for income support. Thus, if income enhances well-being, you would expect people in jobless households to have lower levels of well-being than other people simply because of 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. Most crucially, and 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.

Further description of all of the variables used in the analysis, along with means and standard deviations for each wave are provided in an Appendix.

4.4. 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 first three years of the HILDA survey; 2001 to 2003. Note that the measures do not reflect household members that were not individually interviewed. Although the dataset enables us to identify the employment status of non-responding household members in 2001 and 2003, this information is missing 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’ (jobless) and ‘all-work’ household rates in comparison with the figures (for wave 1) reported in Scutella and Wooden (2004).⁶

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

	2001	2002	2003
	%	%	%
Jobless household rate (% of households)	19.8	19.6	18.4
All-work household rate	62.2	63.5	64.4
Mixed-work household rate	18.0	16.9	17.3
Adults in jobless households (% of individuals 15 yrs+)	15.5	16.0	15.2
Jobless household rate – with kids (under 15 years)	17.3	16.6	15.6
Children under 15 years living in jobless households	19.0	17.5	16.8
Individuals in a jobless household ¹ :			
- in any of the three years		20.0	
- in two of three years		13.7	
- in all three years		9.2	

Note: 1. This longitudinal analysis is restricted to individuals observed in all three years. The appropriate longitudinal weight has been applied.

Close to 20 per cent of working-age households were estimated to have no adult in paid employment in 2001. By 2003 this rate had fallen to 18.4 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, although falling over the period, remains at close to 16 per cent in 2003. This converts to 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.

Table 1 also provides summary information about the duration of joblessness, revealing that of the 20 per cent of individuals living in jobless households in any of the three years, over two-thirds were in a jobless household for at least two of those years (13.7 per cent of all working-age individuals) and close to half were in a jobless household for the whole three years (9.2 per cent of all individuals). It thus appears that household joblessness is a relatively persistent phenomenon, at least within the sub-population defined here.

5. Empirical results

5.1. *Life satisfaction*

The results from the estimation of our three models using life satisfaction as the dependent variable are presented in Table 2 for males and females respectively. Focusing first on the results from the simple pooled specification (Model 1), we find that they are broadly in line with the cross-section results from wave 1 reported by Shields and Wooden (2003). Briefly, the estimated coefficients on the control variables reveal the following:

- Age exhibits the expected u-shaped relationship with life satisfaction.
- 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, while separated persons are found to be more dissatisfied than divorced persons, possibly reflecting the time divorced people have to adjust to their changed circumstances.
- Females with children are less satisfied than other females.
- Somewhat unexpectedly, but in line with results reported by Shields and Wooden (2003), Aboriginals and Torres Strait Islanders score higher on the life satisfaction scale than non-indigenous people.
- More in line with expectations, immigrants from a non-English-speaking country exhibit lower levels of life satisfaction than the Australia-born, with the differential even greater if they have poor English language ability.
- People with an illness or disability exhibit lower levels of life satisfaction, with their satisfaction diminishing with the severity of their condition.
- Reported life satisfaction tends to decline with educational attainment, a result Shields and Wooden (2003) attribute to unmet aspirations.
- Family background appears to exert some influence, with current life satisfaction associated with both the presence of two parents and the labour market situation of the parents when the respondent was growing up.

- Income has a significant positive effect on the life satisfaction of both males and females, though arguably the magnitude of this effect might be judged small.⁷
- All other things constant, life satisfaction tends to rise the further one lives from a major city.

⁷ The relationship between income and life satisfaction in these data has been explored in greater detail by Headey and Wooden (2004).

Table 2: Ordered probit estimates for life satisfaction by gender, 2001 to 2003

	<i>Males</i>			<i>Females</i>		
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
	<i>Pooled, clustered se's</i>	<i>Random effects</i>	<i>Fixed effects</i>	<i>Pooled, clustered se's</i>	<i>Random effects</i>	<i>Fixed effects</i>
Constant	4.242**	11.898**		3.647**	9.813**	
Age/10	-0.648**	-1.808**	-0.526	-0.491**	-1.278**	-0.941**
(Age/10) ²	0.079**	0.222**	0.049	0.063**	0.166**	0.099**
Marital status (Never married = reference group)						
Married	0.346**	0.967**	0.694**	0.299**	0.802**	0.384**
Defacto	0.212**	0.629**	0.503**	0.138**	0.485**	0.508**
Separated	-0.301**	-0.762**	-0.450**	-0.272**	-0.623**	-0.294**
Divorced	-0.046	-0.280**	-0.423**	-0.112**	-0.336**	-0.079
Widowed	0.119	0.584	-0.851	0.082	0.285	0.100
Presence of children	-0.035	-0.081	-0.091	-0.119**	-0.245**	-0.064
Number of children	-0.005	0.003	0.083	0.004	0.006	-0.035
Number of working-age adults	0.038**	0.110**	0.094**	0.018	0.017	-0.048
Lone parent	-0.042	-0.020	-0.042	-0.055	-0.192**	-0.126
Country of birth (Australia-born = ref. group)						
O/S English speaking	0.020	0.067		0.013	0.071	
O/S non-English speaking	-0.156**	-0.594**		-0.088	-0.307*	
English speaking immigrant*years in Australia	-0.001	-0.003	-0.016	0.002	0.006	0.013
Non-English speaking immigrant*years in Australia	0.002	0.009	-0.029	0.000	0.000	-0.047**
Aboriginal or Torres Strait Islander	0.279**	0.725**		0.154**	0.398**	
English speaking ability poor	-0.267**	-0.412**	0.077	-0.281**	-0.555**	-0.017
Illness / disability (No condition = ref. group)						
Severe	-0.691**	-1.550**	-0.456**	-0.983**	-2.123**	-1.138**
Moderate	-0.395**	-0.807**	-0.249**	-0.486**	-0.894**	-0.259**
Minor	-0.099**	-0.203**	-0.056	-0.122**	-0.150	0.020
Educational attainment (Primary school = ref. group)						
Postgraduate	-0.272**	-0.643**	-0.067	-0.184	-0.207	1.025**
Undergraduate	-0.306**	-0.746**	-0.190	-0.19*	-0.245	0.590*
Certificate	-0.259**	-0.663**		-0.158	-0.207	
Year 12	-0.293**	-0.683**	-0.099	-0.166	-0.232	-0.252
Year 10/11	-0.177	-0.441**		-0.093	-0.006	
Less than Year 10	-0.065	-0.119		-0.032	0.107	
Region (Major city = ref. group)						
Inner regional	0.067**	0.161**	0.078	0.176**	0.372**	0.120*
Outer regional	0.151**	0.325**	0.040	0.292**	0.634**	0.166*
Remote	0.227**	0.54**	0.218	0.407**	0.788**	0.146

Table 2 (cont'd)

	<i>Males</i>			<i>Females</i>		
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
	<i>Pooled, clustered se's</i>	<i>Random effects</i>	<i>Fixed effects</i>	<i>Pooled, clustered se's</i>	<i>Random effects</i>	<i>Fixed effects</i>
State (ACT = ref. group)						
New South Wales	-0.058	-0.102	0.511	0.100	0.197	-0.263
Victoria	-0.087	-0.205	0.389	0.127*	0.271	0.002
Queensland	-0.144*	-0.350	0.196	0.076	0.195	0.266
South Australia	-0.081	-0.144	1.113**	0.180*	0.425	0.423
Western Australia	-0.157*	-0.374	0.039	0.079	0.150	-0.573
Tasmania	-0.060	-0.119	0.139	0.140	0.410	0.749
Northern Territory	-0.160	-0.435	0.068	-0.138	-0.354	-0.356
Not living with both parents at 14	-0.095**	-0.314**		-0.055*	-0.176**	
Father not employed at age 14	0.036	0.192		0.017	-0.025	
Father unemployed for > 6 mths	-0.094**	-0.326**		-0.076*	-0.226**	
Mother not employed at age 14	0.040	0.118*		-0.048**	-0.110*	
Annual disposable household income/10,000	0.009**	0.011*	-0.006	0.015**	0.032**	0.011**
Employment status (Employed FT = ref. group)						
Employed part time	0.039	0.017	0.003	0.083**	0.207**	0.130**
Unemployed – in jobless hh	-0.28**	-0.739**	-0.499**	-0.239**	-0.392**	-0.062
Unemployed – other	-0.196**	-0.455**	-0.352**	-0.217**	-0.33**	-0.117
Retired – in jobless hh	0.149**	0.076	<i>-0.010</i>	0.166**	0.25**	-0.018
Retired – other	0.238*	0.450**	<i>0.330*</i>	0.277**	0.727**	0.512**
Home duties – in jobless hh	0.099	0.385	0.592**	0.092**	0.227**	0.129*
Home duties – other	-0.155	-0.554	-0.552**	0.255**	0.563**	0.324**
Other jobless – in jobless hh	-0.145**	-0.453**	<i>-0.237**</i>	<i>-0.160**</i>	-0.349**	-0.129
Other jobless	-0.156*	-0.188	<i>-0.009</i>	<i>0.029</i>	0.003	-0.18
Year 2002	-0.042**	-0.126**		-0.062**	-0.184**	
Year 2003	-0.014	-0.049		-0.005	-0.026	
No. of observations	14,459	14,459	14,471	15,637	15,637	15,651
No. of groups (i.e., individuals)	6,010	6,005	5,512	6,364	6,357	5,877
Log likelihood	-24,998	-23,350	-19,915	-26,819	-25,199	-17,973
Chi-squared	671.41	3,263.13		1,026.73	3232.45	
Sigma		2.101**			1.997**	

Notes: ** p<0.05; * p <.10.

1. Bold font is used to indicate pairs of coefficients on the comparable jobless and employed household variables which are significantly different at the 5 per cent level, while italics indicate significant difference at the 10 per cent level.
2. The fixed effects model bypasses any groups (individuals) where there is no within-person variation in the dependent variable and hence the person fixed effect is inestimable.
3. Not reported are the nine threshold parameters.

Turning now to the variables of most interest for this analysis, the Model 1 results confirm what has long been established – the unemployed (that is, the jobless actively seeking work) report significantly lower levels of life satisfaction than people in paid employment. However, there is little evidence that the unemployed are likely to report significantly different 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 in absolute terms for both unemployed males and females in jobless households, the difference is a long way from achieving statistical significance.

Similarly, when we focus on other types of jobless – the retired, those engaged in home duties and others (mostly people with a long-term illness or disability) – there is very little evidence in the simple pooled data specification, especially among men, that life satisfaction outcomes are influenced by living with other jobless people. For example, while retirement is found to be associated with higher levels of life satisfaction compared with full-time employment, those levels of reported life satisfaction do not appear to vary much depending on whether other members of the household have paid jobs or not. Only among women is there any evidence of significant differences, with women who report their main activity as being home duties (i.e., house wives) being significantly more satisfied if someone else in the household (typically the spouse) is employed. There is also some weak evidence that females who are jobless for other reasons are more satisfied when living with employed people.

To this point we have largely ignored the issue of unobserved heterogeneity, and thus we now turn to the results from the estimation of Models 2 and 3. Given the unpalatable nature of the orthogonality assumption, the results from the random effects specification are mainly reported for completeness, though it perhaps is worth noting that for the most part the random effects specification delivers qualitatively similar results to Model 1. Many of the coefficients, however, are much larger in absolute magnitude, but given the likelihood of large bias we do not put much faith in these estimated magnitudes.

More interesting are the results from the fixed effects specification. Since this model is effectively a first-differences specification we do not expect strong effects from variables that do not change much over the relatively short window covered by this panel. Thus variables such as education and region of residence tend to lose statistical power, though it is interesting that among women at least, university education is now strongly positively associated with life satisfaction. In other words, women who have recently completed a

university qualification report significant improvements in their satisfaction with life, a result which accords strongly with intuition.

With respect to the variables of central interest to this study, the fixed effects specification suggests even stronger negative effects of unemployment on life satisfaction for men but not women. Indeed, these results imply that movements between unemployment and full-time employment (the reference category) are not associated with changes in life satisfaction among women. However, it is still the case that unemployment is inferior to part-time employment, home duties and retirement.

The fixed effects specification also provides more evidence that household joblessness might make some difference. Nevertheless, our key finding – that unemployed people living in jobless households are no more or less satisfied than unemployed people who live with employed people – remains intact. For among people who have ceased job search, however, household joblessness appears to make more of a difference. Both men and women are more satisfied when the retired, but apparently only if someone else is still in employment. Thus in couple households, retirement brings no improvement to subjective well-being once both members of the couple have retired (bearing in mind that the sample used here is restricted to persons aged under than 65 years and hence who have mostly not reached the age of eligibility for the aged pension).

As noted previously, a similar conclusion applies to ‘housewives’. The fixed effects results, however, suggest that for ‘househusbands’ the reverse is true. That is, men who exit the workforce to concentrate on home duties will be significantly more satisfied only if they are in a jobless household. They are far less content if someone else in the household (e.g., the spouse) is employed.

Finally, the fixed effects specification provides some weak evidence that men who are jobless for some other reason are somewhat less satisfied with their lives when they live in a jobless household as compared with living with other employed people.

In summing up, although the estimates from all of our ordered probit models are inconsistent, the robustness of the results on the unemployed makes us confident that there is no evidence of what Clark terms ‘social norm’ effects of unemployment within a household, at least in relation to life satisfaction. On the other hand, there is also no evidence that being in a jobless household exacerbates the negative effects of unemployment on well-being. Being in a jobless household does, however, have a negative impact on the satisfaction of

females that are not actively seeking employment, particularly for those women reporting to be involved in home duties. There is also some evidence that men involved in home duties are more satisfied when their partner is also out of work, though this is not a very large group.

5.2. *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 derived from the SF-36.

The results are reported in Table 3. Focusing first on Model 1, the results appear, at least at first glance, to be 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, living 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.

Nevertheless, there are variables where the estimated coefficient is very different, often changing sign, once the mental health measure is substituted for the life satisfaction measure. Most obvious here is the coefficient on the variable identifying Aboriginal and Torres Strait islanders. The female indigenous population shows up as having much lower levels of psychological well-being, which contrasts with the positive coefficient in the life satisfaction equation. The male indigenous population, on the other hand, show up as not significantly different from the rest of the population, which is still an important difference when compared with the positive life satisfaction coefficient.

The effect of education also differs; those with little formal education exhibit significantly lower mental health scores, whereas significantly higher levels of education were coupled with lower levels of life satisfaction. In hindsight, such results seem highly reasonable. Higher levels of education raise aspirations which will promote discontent if those aspirations are not met, but the more educated are also better equipped to deal with the stresses of modern life thus promoting better mental health outcomes. This relationship between mental health and education is also much stronger for females.

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

	<i>Males</i>			<i>Females</i>		
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
	<i>Pooled, clustered se's</i>	<i>Random effects</i>	<i>Fixed effects</i>	<i>Pooled, clustered se's</i>	<i>Random effects</i>	<i>Fixed effects</i>
Constant	80.257**	77.649**	65.932**	69.464**	64.825**	40.762**
Age/10	-5.992**	-5.782**	2.384	-2.959**	-1.684	8.931*
(Age/10) ²	0.829**	0.789**	-0.154	0.559**	0.395**	-0.575
Marital status (Never married = reference group)						
Married	4.069**	4.263**	3.620**	2.761**	2.557**	-0.522
Defacto	1.940**	2.355**	2.920**	0.039	-0.031	-1.092
Separated	-3.894**	-2.916**	-1.996	-2.246*	-2.166**	-3.570**
Divorced	1.667	-0.040	-2.448	0.531	-0.366	-2.481
Widowed	6.269**	2.770	-9.441*	1.143	0.706	-0.236
Presence of children	-0.292	-0.014	-0.496	-0.989	-0.635	0.416
Number of children	-0.241	-0.259	0.322	0.294	0.212	-0.262
Number of working-age adults	-0.350	-0.428*	-0.679**	-0.509*	-0.261	0.075
Lone parent	-1.203	-0.516	0.250	-0.814	-0.958	-1.537
Country of birth (Australia born = ref. group)						
O/S English speaking	-0.046	-0.318		-0.058	0.319	
O/S non-English speaking	-2.006*	-2.741**		-1.639*	-1.779**	
English speaking immigrant*years in Australia	0.003	0.013	-0.289	0.015	0.004	0.004
Non-English speaking immigrant*years in Australia	-0.009	-0.008	-0.261	-0.022	-0.026	-0.675*
Aboriginal or Torres Strait Islander	0.540	0.562		-3.371**	-3.173**	
English speaking ability poor	-6.124**	-3.777**	0.604	-2.106	-2.767**	-0.320
Illness / disability (No condition = ref. group)						
Severe	-19.383**	-9.867**	0.638	-19.250**	-14.309**	-7.344**
Moderate	-10.935**	-7.573**	-1.870**	-11.940**	-8.235**	-3.468**
Minor	-3.192**	-1.526**	0.272	-4.709**	-2.683**	-0.548
Educational attainment (Primary school = ref. group)						
Postgraduate	4.925**	7.114**	-7.209*	8.568**	10.226**	8.734**
Undergraduate	5.433**	7.956**	-4.334	8.319**	9.785**	5.447
Certificate	5.884**	7.981**		7.897**	9.383**	
Year 12	5.137**	7.176**	-2.846	7.458**	8.253**	-2.359
Year 10/11	5.101**	6.909**		6.437**	7.295**	
Less than Year 10	3.504*	4.888**		4.238**	4.733**	
Region (Major city = ref. group)						
Inner regional	0.875*	0.710*	0.688	1.731**	1.529**	1.182*
Outer regional	1.177*	0.821	0.283	1.688**	1.968**	2.251**
Remote	2.022	1.630	0.464	2.419*	0.981	-1.306

Table 3 (cont'd)

	<i>Males</i>			<i>Females</i>		
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
	<i>Pooled, clustered se's</i>	<i>Random effects</i>	<i>Fixed effects</i>	<i>Pooled, clustered se's</i>	<i>Random effects</i>	<i>Fixed effects</i>
State (ACT = ref. group)						
New South Wales	-1.557	-1.481	0.318	-0.383	0.198	5.647
Victoria	-1.616	-1.380	3.318	-0.591	-0.261	7.953*
Queensland	-2.131*	-1.769	5.929	-0.100	0.415	9.331**
South Australia	-2.461*	-1.969	13.793**	0.615	1.009	7.744
Western Australia	-1.586	-1.144	2.387	1.178	1.556	2.443
Tasmania	-1.705	-1.533	6.734	1.828	2.167	8.226
Northern Territory	-2.079	-2.314	0.068	0.935	1.604	9.045
Not living with both parents at 14	-0.322	-0.603		-1.339**	-1.671**	
Father not employed at age 14	-0.839	-0.437		-0.549	-0.503	
Father unemployed for > 6 mths	-0.965	-0.936		-1.952**	-1.977**	
Mother not employed at age 14	0.316	0.218		-0.878**	-0.994**	
Annual disposable household income/10000	0.170**	0.135**	0.040	0.126**	0.106**	0.015
Employment status (Employed FT = ref. group)						
Employed part time	-0.188	-0.467	-0.123	-0.319	0.049	0.724
Unemployed – in jobless hh	-3.967**	-2.650**	-1.130	-6.464**	-4.100**	-0.419
Unemployed – other	-3.484**	-2.784**	-1.967	-4.787**	-3.020**	-1.634
Retired – in jobless hh	-1.568	-1.908**	-0.444	-1.395	-0.077	2.365**
Retired – other	-2.835	-2.753**	-0.819	-1.690	-0.305	1.447
Home duties – in jobless hh	-3.395	-3.448*	-0.231	-2.290**	-1.370**	<i>0.617</i>
Home duties – other	-5.276**	-5.956**	-4.864*	-0.522	-0.842	<i>-0.785</i>
Other jobless– in jobless hh	-7.271**	-5.179**	-1.672*	-7.942**	-4.999**	-1.035
Other jobless	-7.088**	-4.522**	-1.487	-2.293	-3.017**	-2.552**
Year 2002	0.870**	0.752**		0.461*	0.182	
Year 2003	0.545**	0.272		0.831**	0.643**	
No. of observations	13,024	13,024	13,024	14,429	14,429	14,429
F-stat / Chi-sq	15.90	848.74	2.27	18.33	1016.42	2.91
Rho		0.576	0.712		0.552	0.694
Correlation (μ_i, x)		0	-0.3243		0	-0.3609
Hausman test (chi-sq)			389.65			328.05

Notes: ** $p < 0.05$; * $p < 0.10$.

Bold font is used to indicate pairs of coefficients on the comparable jobless and employed household variables which are significantly different at the 5 per cent level, while italics indicate significant difference at the 10 per cent level.

Turning to the employment outcomes variables, we again find clear evidence supporting the hypothesis that the well-being of the unemployed is inferior to that of the employed. However, unlike the results for life satisfaction, we find that all jobless categories have lower mental health scores than the employed, though the difference is not significant for the retired group. This suggests to us the strong possibility that reverse causation – poor well-being preceding job loss – is more in evidence for mental health than for life satisfaction scores. As with life satisfaction, we also find little evidence that household joblessness matters. Indeed, the differences between individuals in jobless households and otherwise comparable individuals are statistically smaller than is the case for life satisfaction. We are thus again drawn to the conclusion that, for the most part, being in a jobless household does not significantly exacerbate nor ameliorate the effect on psychological well-being. The exception to this is females in jobless households who are either involved in home duties or in the ‘other jobless’ group. There is evidence that this group of women (mostly women with out of work husbands or performing as a carer for sick or disabled family members) have lower levels of mental health than otherwise comparable women but who live in households where at last someone is in paid employment.

Accounting for individual heterogeneity using a random effects specification (Model 2) appears to make little difference to most coefficients, though the differences between women living in jobless households and women living in other households just discussed disappear.

With the fixed effects specification (Model 3), the magnitude of most coefficients, including those on the unemployment variables, decrease quite substantially, with many losing insignificance. Indeed, the overall explanatory power of the fixed effects specification is extremely poor. Bear in mind, however, that the fixed effects specification is very different from the Model 1 (and 2) specification. The latter are measured in levels whereas the fixed effects specification measures variables as first difference; that is, the model is capturing the effect of changes in variables. The results from our three models, when taken together, thus imply that while we are able to do an adequate job in explaining variation across persons in mental health, we have been unable to explain more than a tiny fraction of the within-person variation in mental health scores. We suspect that at least part of the reason for this has to do with the very short length of our panel. Nevertheless, it is also highly likely that much of the variation in mental health scores is inherently difficult to explain and is the result of other factors that are not observable with these data and which are individual specific. Irrespective

of the relative importance of person-specific effects, what can be confidently concluded is that there is no evidence of Clark's so called 'social norm' effects operating within Australian households, at least not in the HILDA Survey data.

6. Conclusions

This paper has taken the literature on unemployment and well-being one step further by examining the impact of household joblessness on two measures of well-being – life satisfaction and mental health. The analysis used the first three waves of the HILDA survey, which enabled us to compare the situation of the jobless in jobless households with that of other jobless people 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, the panel nature of the data enabled us to control for unobserved heterogeneity (albeit imperfectly given the availability of only three years of data).

The findings on individual joblessness were consistent with previous research with unemployment found to be associated with lower levels of life satisfaction and poorer self-assessed mental 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 jobless groups for whom we can confidently say it mattered were women involved in home production and, to a lesser extent, women in the 'other jobless' group, which includes carers and individuals with a long-term health condition or disability. These women reported significantly higher levels of life satisfaction and psychological well-being if they lived in a household where others (typically the husband) were employed than if they lived in a jobless household.

Overall, the results presented here provide no support for social norm arguments, at least not within households. The effects of individual joblessness on psychological well-being are not ameliorated by the presence of other jobless people in the household. But neither have we found any evidence to support the widely held concern that the concentration of joblessness within households is especially damaging for psychological health. The implications for policy-makers are striking. Unemployment and joblessness does adversely affect well-being and as such is deserving of serious attention by policy-makers.

Nevertheless, the evidence presented here does not provide a case for special measures targeted at jobless households.

Note, however, that this in itself does not mean that jobless households should not receive greater levels of assistance than other households. First, and most obviously, income needs will be greater in households without any source of earned income. Second, the concentration of joblessness within households may have detrimental effects on younger generations as parental background is a significant determinant of a child's future welfare.

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Appendix Table: Variable definitions and sample summary statistics

<i>Variable</i>	<i>Definition</i>	<i>2001</i>		<i>2002</i>		<i>2003</i>	
		<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>
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
Defacto	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 dependent 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

<i>Variable</i>	<i>Definition</i>	<i>2001</i>		<i>2002</i>		<i>2003</i>	
		<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>
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
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	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	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	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	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
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

<i>Variable</i>	<i>Definition</i>	<i>2001</i>		<i>2002</i>		<i>2003</i>	
		<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>
Year 10/11	Equals 1 if only completed Year 10 or 11, and 0 if otherwise.	0.425	0.494	0.424	0.494	0.417	0.493
Less than 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	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

<i>Variable</i>	<i>Definition</i>	<i>2001</i>		<i>2002</i>		<i>2003</i>	
		<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>
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
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	Self-reported overall life satisfaction on a scale ranging from 0 (completely unsatisfied) to 10 (completely satisfied)	7.843	1.678	7.770	1.589	7.840	1.547
Mental health	Five-item scale from the SF-36. Scale scores constructed by summing across items and transforming to a 0 to 100 scale.	73.371	17.588	73.700	17.362	73.831	17.277
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
Unemployed – in jobless hh	Equals 1 if unemployed and in jobless household, and 0 if otherwise.	0.023	0.152	0.022	0.147	0.022	0.146
Unemployed – other	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
Retired – in jobless hh	Equals 1 if retired and in jobless households, and 0 if otherwise.	0.047	0.212	0.040	0.197	0.054	0.226
Retired – other	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 hh	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
Home duties – other	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 jobless – in jobless hh	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
Other jobless	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