# Mental health and relationships during the COVID-19 pandemic

# ANU Centre for Social Research and Methods

Professor Nicholas Biddle;[1] Associate Professor Ben Edwards[1]; Professor Matthew Gray[1]; and Kate Sollis[1]

1        ANU Centre for Social Research and Methods

Australian National University

8th July, 2020

## Abstract

The aim of this paper is to explore the relationship between mental health outcomes and relationship quality during the COVID-19 period. We find that after a significant worsening in mental health outcomes between February 2017 and April 2020, there was strong evidence for improvements between April and May and weaker evidence for a further improvement between May and the end of June/start of July. However, for those Australians under the age of 45, psychological distress is still at a higher level than it was prior to the spread of COVID-19. We find that a number of people have reported negative changes to their subjective circumstances. Only 22.5 per cent of the population are estimated to have not experienced any of the negative changes during the COVID-19 period from our dataset compared to 51.6 per cent who reported no improvements in the same measures. The majority of respondents reported no change in relationship quality, and for those who did report a change, there was a net improvement. We find a very strong relationship between self-reported changes in outcomes and psychological distress, with a particularly strong relationship between changes in stress, loneliness and relationships and mental health outcomes.

## Acknowledgements

# 1   Introduction and overview

The spread of COVID-19 has had a negative impact on the mental health of Australians, with initial data suggesting that this impact has been much greater for younger Australians, particularly those who have lost their job (Biddle et al. 2020a). What began as a public health crisis and resulted in the largest economic contraction in at least the last 90 years appears to have led to a significant mental health challenge.

In Australia, policies to reduce the spread of COVID-19 appear to have been successful, with low rates of infection and low rates of mortality. This has led to an easing of many of the earlier physical distancing restrictions, and a gradual opening up within the country. However, international borders remain effectively closed, and at the time of writing there were concerns about local outbreaks (particularly in Victoria) requiring a return to lockdown conditions in particular geographic regions. There are some initial signs that certain outcomes are beginning to improve, but it is clear that we are far from returning to pre-COVID conditions with many aspects of the lives of the Australian population continuing to be disrupted.

One of the potential impacts of COVID-19 has been on the quality of people's relationships. There has been little empirical research conducted on the impact of the COVID-19 pandemic on relationship quality, particularly in Australia. Balzarini et al. (2020) have found that COVID-19-related stressors have a significant association with lower relationship satisfaction and higher conflict, while Chung et al. (2020) show that COVID-19 has resulted in greater levels of parental stress, potentially leading to harsher parenting styles. Using data from emergency services in the United States, Sanga and McCrary (2020) estimate a 12 per cent increase in domestic violence incidents. Within the Australian context, Relationships Australia (2020) have found that 42 per cent of individuals engaging with their service have experienced worsened relationship quality as a result of COVID-19.

While research on the impacts of COVID-19 on relationship quality is still very preliminary, it has been well documented that financial hardship and stress has significant negative implications for relationship quality (Amato 2007; Broderick et al. 2019; Conger et al. 2010; Cutrona et al. 2003; Dakin and Wampler 2008). For example, Shim et al. (2016) have found that material hardship resulted in lower levels of satisfaction in family life and spousal relationship, with food hardship resulting in negative levels of relationship satisfaction for both males and females, but experiencing problems with credit impacting females only. Hardie and Lucas (2010) highlight that this is especially true of young people in relationships.

Worsened relationship quality, coupled with financial hardship, can subsequently lead to a range of negative impacts for families and children. Specifically, greater relationship quality has shown to be associated with fewer behavioural issues in children (Goldberg and Carlson 2014; Marchand-Reilly and Yaure 2019), reduced externalising behaviours (Garriga, Martínez-Lucena, and Moreno 2019), and greater parental engagement (Carlson et al. 2011). The family stress model contends that economic hardship leads to economic pressures such as difficulties paying bills and meeting basic needs that lead to psychological distress (Masarik and Conger 2017). This increased psychological distress causes problems in couple relationships and these findings have been replicated across cultures, family types and in longitudinal research designs (Masarik and Conger 2017). The impacts of financial hardship on psychological distress and parents' relationship quality impair and disrupt parenting capacity and this can have negative effects on children and adolescents including increased behavioural problems, learning

difficulties, reduced academic achievement and health. COVID-19 may have long-term effects for family functioning and child development outcomes.

The aim of this paper is to explore these links, with a particular focus on the relationship between mental health outcomes and relationship quality during the COVID-19 period. The paper is primarily based on the May 2020 ANUpoll (the 34th ANUpoll) which collected data from a representative sample of the Australian population from Life in Australia™, Australia's only probabilistic, longitudinal panel.[1] Most of the panel members who completed the May 2020 ANUpoll (the 38th Wave of data collection on Life in Australia™) had also completed the April 2020 ANUpoll (Wave 37 of Life in Australia™) and the February survey (Wave 35). That is, they are the same individuals. The longitudinal nature of our data allows us to look at the changes in economic circumstances at the individual level.[2] **The** May 2020 ANUpoll collected information from 3,249 respondents aged 18 years and over across all eight States/Territories in Australia, and is weighted to have a similar distribution to the Australian population across key demographic and geographic variables.[3]

Data for the vast majority of respondents was collected online, with a small proportion of respondents enumerated over the phone. About half of respondents (1,555) completed the survey on the 12th or 13th of May, with the remaining respondents interviewed between the 14th and 24th of May.[4] Of those individuals who completed the May 2020 ANUpoll, 91.6 per cent or 2,976 individuals had completed the February 2020 survey. The linkage rate was slightly higher with the April 2020 ANUpoll with 2,984 individuals or 91.8 per cent of the May respondents having completed the survey in the previous month. Data for this survey is available through the Australian Data Archive (doi:10.26193/GNEHCQ).

The remainder of the paper is structured as follows. In the next section, we describe mental health outcomes in Australia, focusing on changes leading up to the easing of restrictions (April to May 2020). In the section that follows (Section 3), we examine relationship quality, combining data from ANUpoll with the Household, Income, and Labour Dynamics in Australia (HILDA) survey. Section 4 then looks at three additional determinants of mental health outcomes – loneliness, stress, and hope for the future. Section 5 combines these different sets of data by looking at the predictors of mental health outcomes, and Section 6 concludes.

## 2   Mental health outcomes

Analysis of data from the May 2020 ANUpoll shows that service gaps being experienced during the COVID-19 include violence services and mental health services (Biddle and Gray 2020). The ANU COVID-19 longitudinal monitoring surveys show that there was a significant decline in mental health outcomes during the initial stages of the spread of COVID-19. In particular, there was a significant and substantial increase in the Kessler-6 (K6) measure of psychological distress up until the end of April when the physical distancing measures were at their strictest (Biddle et al. 2020b). This worsening in mental health was particularly large for young Australians.

Between April and May 2020, by which time some of the restrictions were starting to be eased in Australia, we found a small improvement in mental health outcomes. In the May 2020 ANUpoll we repeated the same six questions from the April ANUpoll (Kessler et al. 2002), which was also asked on Life in Australia™ in February 2017. Specifically, the K6 questions ask the respondent how often in the last four weeks they felt: 'nervous'; 'hopeless'; 'restless or fidgety'; 'so depressed that nothing could cheer you up'; 'that everything was an effort'; and

'worthless'. There were five response categories, from "none of the time" to "all the time", with values ranging from 1 through 5. Respondents who score highly on this measure are considered to be at risk of a serious mental illness (other than a substance use disorder). It is important to recognise that the K6 screens for the risk of serious mental illness, but is not a clinical diagnostic measure.

The K6 items can be summed to produce an index, with potential values ranging from 6 to 30. People with a sum of 11 to 18 out of a possible maximum of 30 are categorized as experiencing moderate psychological distress. This group can be considered to be struggling with mental distress worthy of mental health support but are not at risk of clinical levels of mental health problems like those in the serious category (Prochaska et al 2012). Those with a K6 sum of 19 or higher out of a possible maximum of 30 are categorized as experiencing severe psychological distress consistent with having a 'probable serious mental illness'.

Across the total sample, the aggregate K6 score declined from an average of 11.9, with 10.6 per cent of the sample estimated to have a probable serious mental illness in April 2020, to an average of 11.5 and 9.7 per cent of the sample above the serious threshold in May 2020. This decline in psychological distress of 0.413 points is significant at the 5 per cent level.

There is also some evidence that this reduction in psychological distress has continued since the May 2020 ANUpoll. In late June/early July, a subset of Life in Australia$^{TM}$ were invited to participate in a short tracking survey, and asked six key data items from the previous waves of ANUpoll. In total, 522 individuals completed this ANUpulse survey, and were weighted to the total Australian population. Most of the sample (around 85 per cent) completed the survey on the 29th of June, with the remaining 15 per cent completing it on either the 30th of June or 1st of July. Over this period, the K6 measure of psychological distress declined by a further 0.372 points amongst the linked sample. While this difference was not statistically significant due to the relatively small sample size, it does give weak evidence that mental health outcomes may have continued to improve as physical distancing measures continue to be eased, and certainly no evidence that mental health outcomes have started to worsen again.

Figure 1 gives the average score on the K6 index by age group for the three time periods for which it is available on the full Life in Australia$^{TM}$ sample. While there is some uncertainty around the estimates, a reasonably clear pattern emerges across the age distribution, with three age clusters emerging. For those aged 45 to 54 years there was essentially no difference in this measure of psychological distress between February 2017, April 2020, and May 2020. This age group is essentially the fulcrum around which the age distribution has shifted with very different patterns for those above and below.

For young Australians (18 to 24 year olds in particular, but also all those aged under 45), there was a significant worsening in psychological distress between February 2017 and April 2020. This can not necessarily be attributed to the spread of COVID-19, but is likely to be at least somewhat related, especially given the much larger negative impacts of COVID-19 for that group documented elsewhere in this series of papers. Between April and May 2020, however, there was a slight improvement in psychological distress, with an average improvement of 0.55 and a p-value of 0.06. However, for these groups, psychological distress is still significantly and substantially above what it was in February 2017.

For older Australians, that is those aged 55 years and over, however, there was a slight improvement in this measure of psychological distress between February 2017 and April 2020,

and a further improvement between April 2020 and May 2020 (0.30 change between April and May, p-value = 0.06).

Figure 1    Psychological distress (K6) aggregate score, February 2017, April 2020 and May 2020, by age group
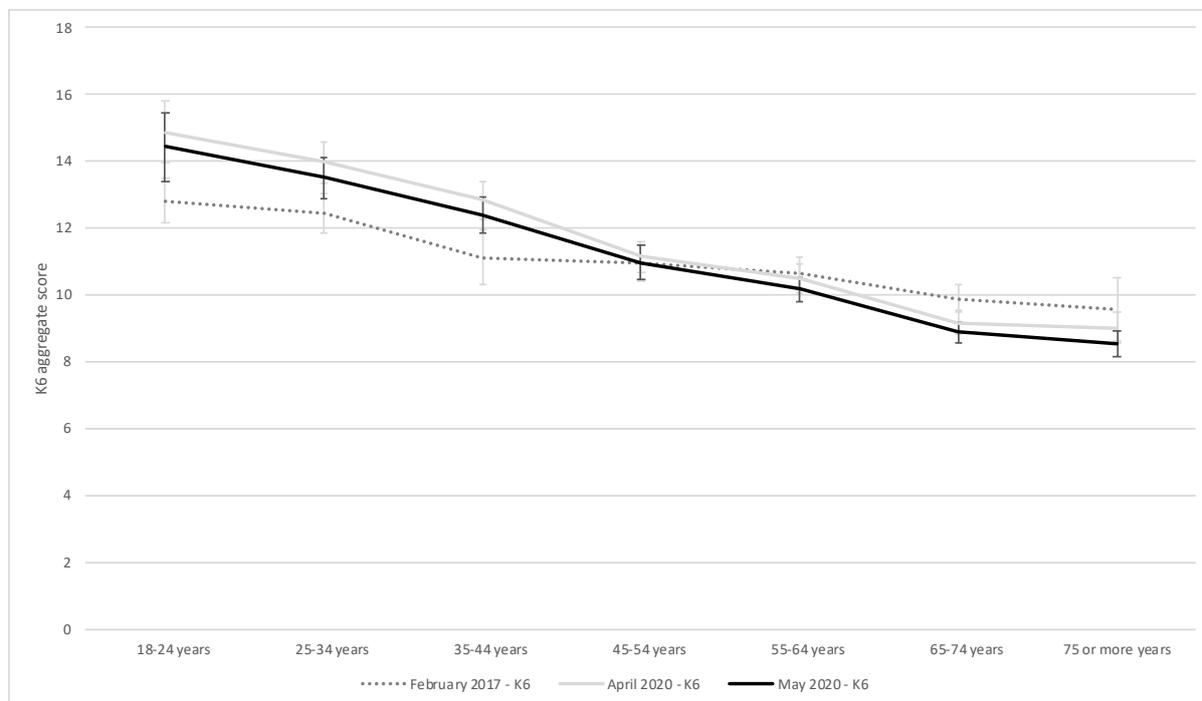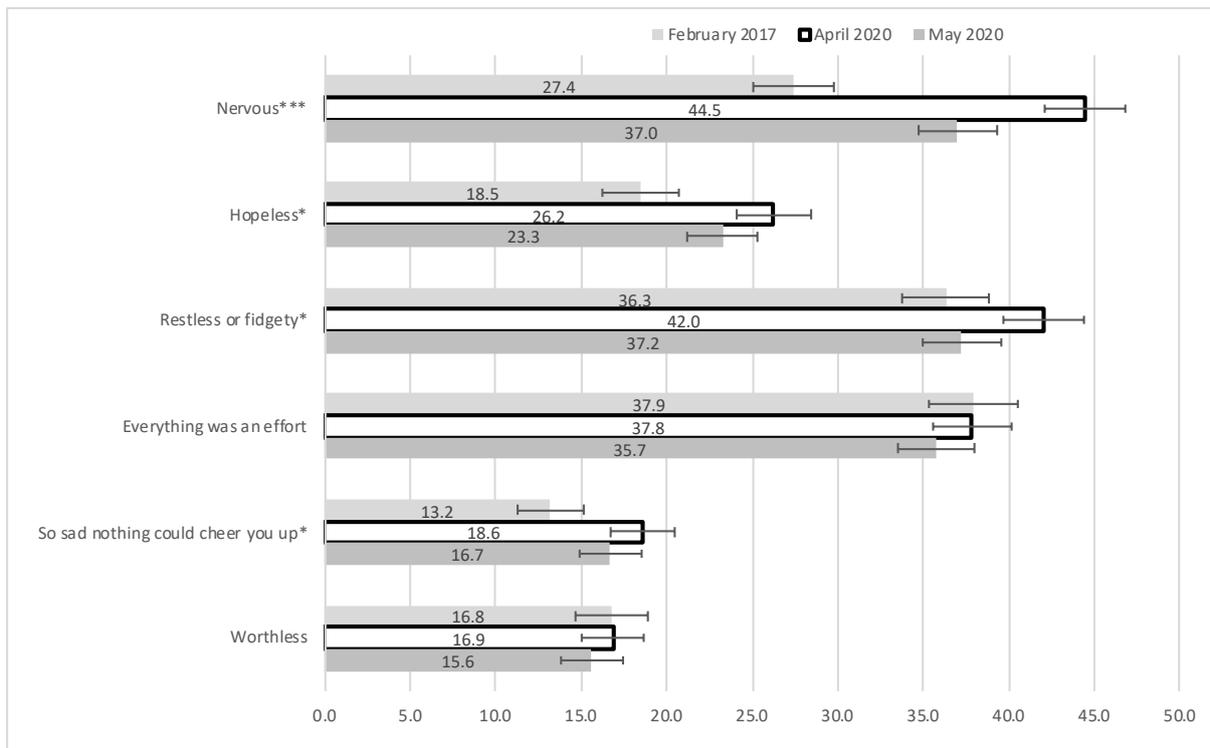


Notes:    The "whiskers" on the bars indicate the 95 per cent confidence intervals for the estimate.

Source:    Life in Australia™ February 2017 and ANUpoll, April 2020

The change in psychological distress was not consistent across the underlying individual components of the measure. Figure 2 shows the percentage of respondents across the three samples reporting that in the last 4 weeks they felt each of the indicators of psychological distress some, most, or all of the time. Four of six of these indicators of distress increased by a statistically significant amount between February 2017 and April 2020. However, the proportion of people who felt nervous at least some of the time declined significantly and substantially between April and May 2020 (from 44.5 per cent to 37.0 per cent). Furthermore, an additional three measures (Hopeless; Restless or fidgety; and So sad nothing could cheer you up) also declined, albeit at the 10 per cent level of significance only.

The ANU Centre for Social Research and Methods

Figure 2    Proportion of respondents reporting feeling indicators of psychological distress, February 2017, April 2020, and May 2020



Notes:    The "whiskers" on the bars indicate the 95 per cent confidence intervals for the estimate. Values that are significantly different between April 2020 and May 2020 at the 1 per cent level of significance are labelled ***; those significant at the 5 per cent level of significance are labelled **, and those significant at the 10 per cent level of significance are labelled *.
Source:    Life in Australia™ February 2017 and ANUpoll, April 2020 and May 2020.

# 3   Relationship quality

## 3.1   Relationship quality change

In order to measure relationship outcomes during the COVID-19 period, we first asked respondents 'How has the quality of your relationships with other people/family members in your household changed since the spread of COVID-19?' A slight majority of the sample (54.6 per cent) said that there had been no change. However, for those who did feel that there had been a change in the quality of their relationships, there was a net improvement with 5.2 per cent of respondents saying that their relationships were a lot closer/stronger and a further 22.7 per cent saying that their relationships were a little closer/stronger. Only 2.3 per cent of Australians were estimated to have thought that their relationships were a lot more difficult/strained, with a further 15.2 per cent saying that they were a little more difficult/strained.

Taking the per cent of those who feel their relationship worsened away from the per cent who felt their relationship improved, we find a net improvement of 10.4 per cent for all adults. Figure 3 shows that, although there was some variation by age and sex, all groups reported a net improvement in their relationships since the spread of COVID-19. There was a slightly higher net improvement for females compared to males (13.3 per cent compared to 7.3 per cent) due to a significantly higher per cent who said their relationships improved. The age groups with the highest net improvement were those aged 45-54 years (15.3 per cent), 35-44

years (13.8 per cent) and 75 years and older (13.3 per cent). Those aged 18-24 years had only a small net improvement (4.1 per cent) due to a relatively high per cent of the sample who felt that their relationships worsened (24.1 per cent).

Figure 3        Self-reported change in relationship quality during COVID-19, by age and sex, May 2020
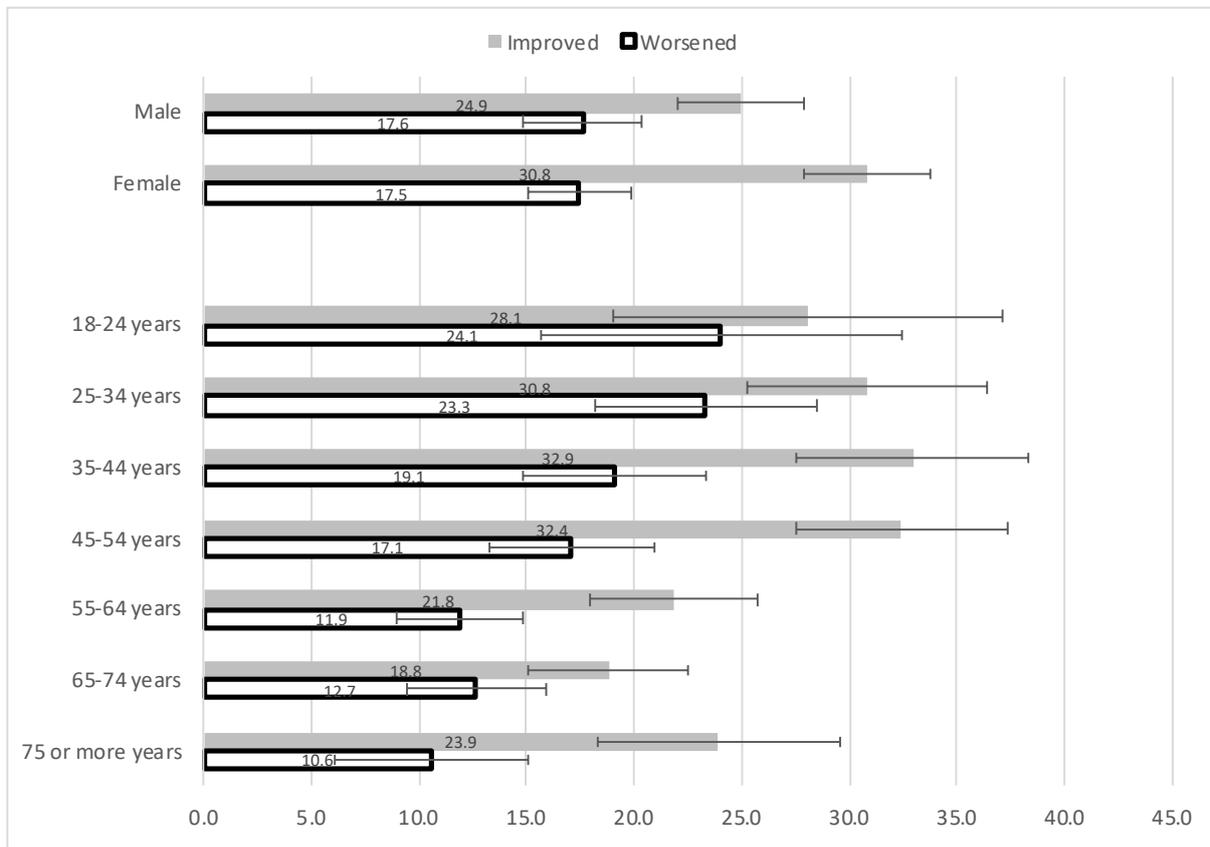


Source:     ANUpoll, May 2020.

While we did not specify what relationships people should be referring to when they answer whether or not their relationships have improved or worsened, it is likely that people take into account their closest relationships, including the relationship they have with their partner and their children. In May 2020, we asked respondents 'Are you married or living with someone in a long-term relationship?' in order to identify those with a married or de facto partnership. There is additional information collected in January 2020 (or February 2020 for those who did not complete a survey in January) related to the age and sex of all children in the household. Categorisation is based on the following questions:

- Including yourself and any children, how many people regularly live in your household?
- The next few questions are about each member of your household. Please answer from oldest to youngest in the household, excluding yourself. Firstly, what sex is the oldest person?/Thinking about the next person, what sex are they?;
- n what year was the oldest person born?/In what year were they born?; and
- And, what is their relationship to you?

Any respondents that answered that the relationship of at least one household member was son / daughter (incl. step, adopted, foster, child of partner) are classified as parents.

The ANU Centre for Social Research and Methods

Figure 4 shows that almost all of the improvement in relationships came from those who were married or living with someone in a long-term relationship. For those who were not partnered, roughly the same proportion of people said that their relationship improved (22.2 per cent) compared to those who said that it worsened (21.4 per cent). For those who were partnered, however, there was a 15.0 per cent net improvement with 30.7 per cent saying their relationships improved compared to 15.7 per cent saying it worsened.

Being a parent of a child in the household was not associated with whether or not a person felt their relationship worsened with 17.2 per cent of non-parents saying their relationship worsened compared to 18.0 per cent for parents. It was, however, associated with a higher probability of reporting an improvement in relationships – 32.7 per cent compared to 24.9 per cent.

Figure 4    Self-reported change in relationship quality during COVID-19 , by partnering and parenting status, May 2020
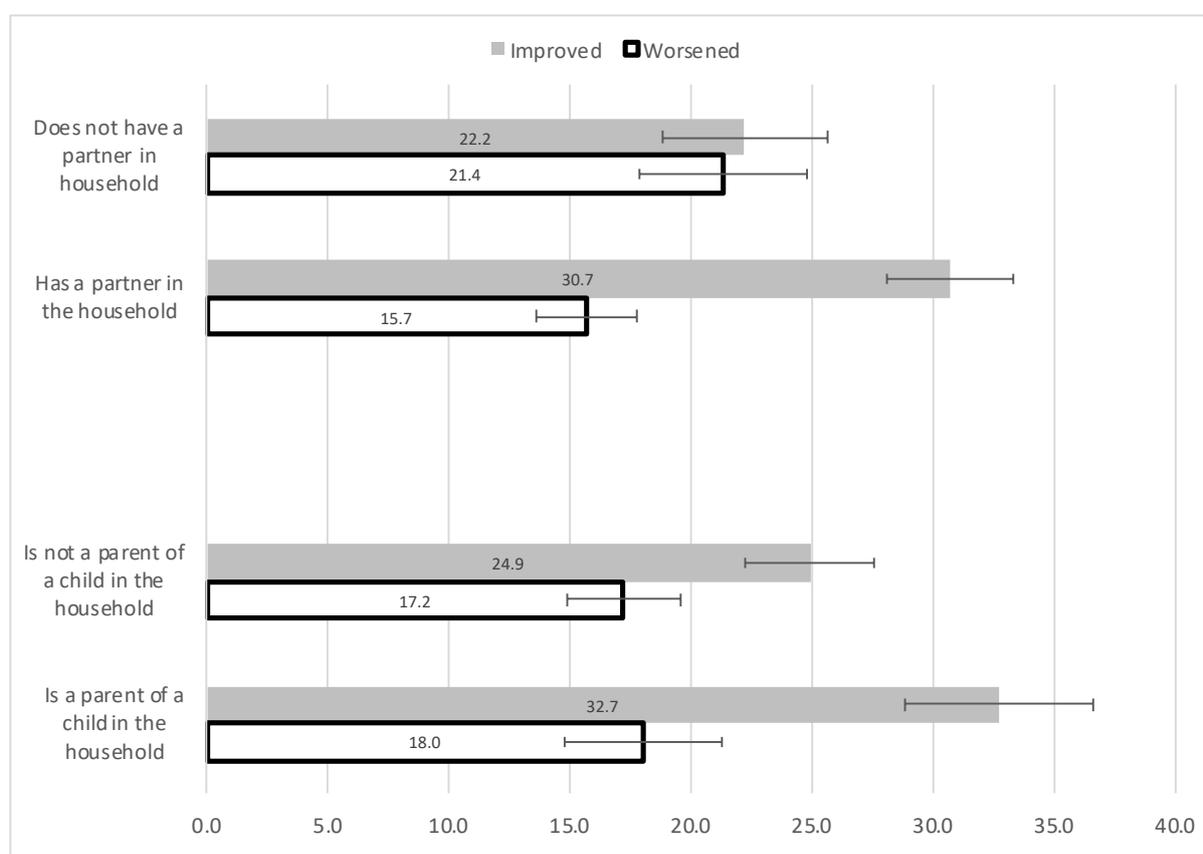


Source:  ANUpoll, May 2020.

Perhaps not surprisingly, changes in partnering status are linked to changes in relationship quality. There have been some suggestions that COVID-19 will have had an effect on the ability of people to form new partnerships as many of the types of social interactions that lead to partnership formation have been restricted. However, there were slightly more people in May 2020 who were living with a partner than in February 2020 (67.2 per cent compared to 64.7 per cent, p-value = 0.13) with a number of people separating from their partner but more people forming a new relationship. In the linked sample, 11.0 per cent of those who were not living with a partner in February 2020 were doing so in May 2020, whereas 1.7 per cent of those who were living with a partner in February were no longer doing so in May 2020.

9

Although these sample sizes are too small to make definitive statements about the effect of partnering change on relationship quality, and it is just as likely that the causality runs in the opposite direction, there is some weak evidence that those who were no longer living with a partner were more likely to say that their relationship had worsened (35.2 per cent) than those who were not living with a partner in either period (21.6 per cent). The differences are smaller between those who were newly living with their partner in May 2020 (19.6 per cent said their relationship worsened) compared to those who were living with their partner in both periods (15.0 per cent).

## 3.2  Partnering quality

One of the challenges in asking respondents about how aspects of their lives have changed due to COVID-19 is the very strong potential for recall bias (Sheikh 2016). While the time period is reasonably short (at least by the May 2020 ANUpoll), the period has been extremely disruptive, making it quite difficult to remember the characteristics of one's relationship prior to the spread of COVID-19. For many of the measures that are being used in the ANU Centre for Social Research and Methods' COVID-19 impact monitoring survey program, we are able to make use of longitudinal data to compare outcomes for the same individual over multiple time periods without the respondents having to remember their previous responses. We make use of such techniques later in the paper for other domains, but unfortunately we do not have access to baseline data (i.e. prior to COVID-19) for relationship quality from the longitudinal Life in Australia™ sample.

A less than ideal but still useful approach though is to compare responses on ANUpoll to other national-level datasets from prior to COVID-19. A set of follow-up questions in the May ANUpoll asked of those with a partner were based on exactly the same questions from the Household, Labour, and Income Dynamics in Australia (HILDA) survey, collected most recently in 2016. Response options ranged from one to five with labels given to the extreme categories. The six specific questions and labels for the extreme categories are as follows:

- How good is your relationship compared to most?
    - (1 = poor, 5 = excellent)
- How often do you wish you had not married/got into this relationship?
    - (1 = never, 5 = always)
- To what extent has your relationship met your original expectations?
    - (1 = hardly at all, 5 = completely)
- How much do you love your spouse/partner?
    - (1 = not much, 5 = very, very much)
- How many problems are there in your relationship?
    - (1 = not many, 5 = very many)
- How well does your spouse/partner meet your needs?
    - (1 = poor, 5 = excellent)

While the questions we asked were the same as in HILDA, there is still the potential for mode effects (where the way in which the survey is collected influences responses) or errors of representation (where one or both of the samples do not have the same unobserved characteristics as the population of interest) to lead to differences in observed outcomes that do not reflect changes in the population through time (Groves and Lyberg 2010; Krumpal 2013). These are minimised to a certain extent as for both surveys they were collected using a self-complete mode. Observed differences between the 2016 HILDA and May 2020 ANUpoll

should therefore be treated with caution. Nonetheless, they do give some indication that some aspects of relationship quality have declined between 2016 and May 2020 (Figure 5).

Specifically, in Figure 5 we give the per cent of the two samples that reported the two worst values for each of the six questions. For the first, third, fourth, and sixth questions, the worst values are one or two (on a scale of one to five). For the second and fifth question for which lower values reflect a stronger relationship, the worst values are four and five. To test for differences between the 2016 HILDA scores and the May 2020 ANUpoll findings, we pool the two datasets and run a simple probit model controlling for sex and age (in 10-year cohorts) and using the survey-specific probability weights. Statistical significance is reflected in the number of asterisks (as described in the notes under the table).

Compared to HILDA 2016, and controlling for differences in age and sex, there is some evidence that certain relationship aspects may have worsened up until the May 2020 survey. In particular, it would appear that respondents are more likely to say that they wish they had not gotten into the relationship; that their relationship has not met their original expectations; that they do not love their spouse/partner; and that their spouse/partner does not meet their needs.

Figure 5    Relationship quality – 2016 baseline and May 2020
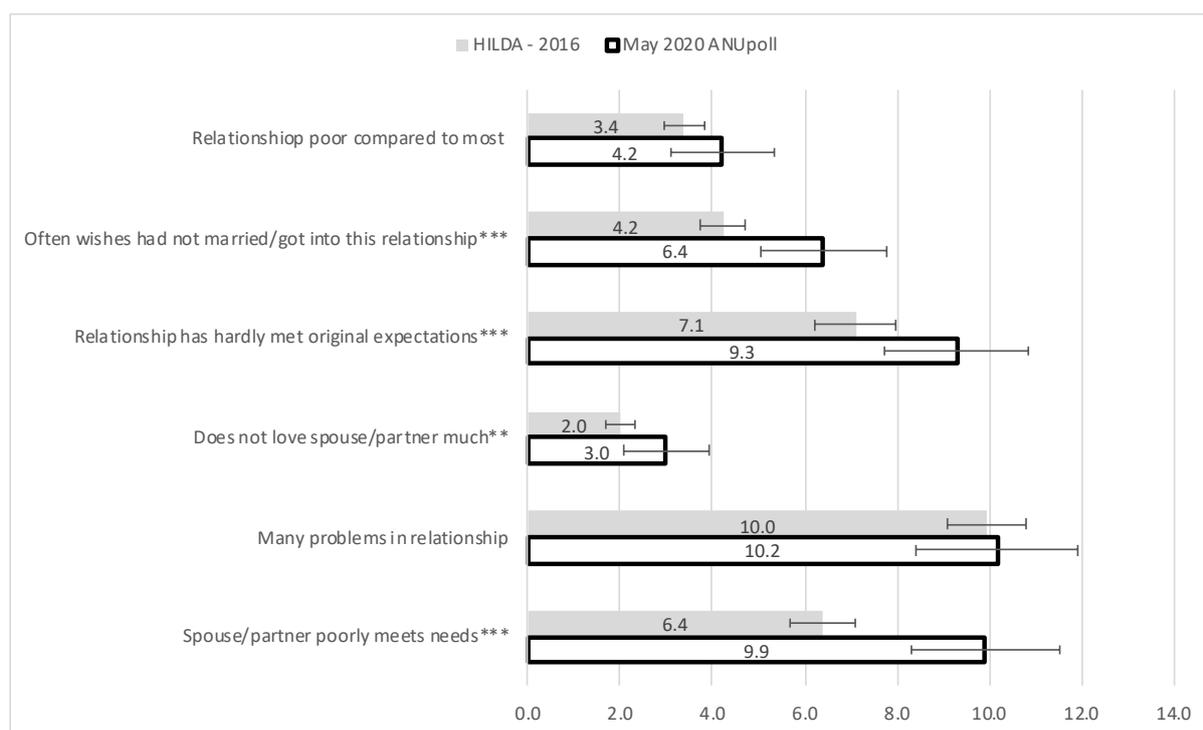


Notes:    The "whiskers" on the bars indicate the 95 per cent confidence intervals for the estimate. Differences between the May 2020 ANUpoll and the 2016 HILDA responses that are statistically significant at the 1 per cent level of significance are labelled ***; those significant at the 5 per cent level of significance are labelled **, and those significant at the 10 per cent level of significance are labelled *.

Source:    ANUpoll, May 2020.

There are a number of limitations of this data that we should be aware of. The differences between the estimates using the 2016 HILDA and the May 2020 ANUpoll cannot necessarily be attributed to COVID-19. There may be measurement issues between the two surveys as described above. There may have been other factors that impacted on Australian's relationship

The ANU Centre for Social Research and Methods

quality in between 2016 and May 2020. These caveats aside, results presented in Figure 5 give some evidence that although there are a sizable proportion of people who felt that their relationships improved during the COVID-19 period, there also appears to be a higher number of people who report quite negative relationship quality  a number of years prior.

The relationship questions summarised in Figure 5 are designed to be combined into an index of relationship quality. We undertook a Principal Components Analysis of the six variables using May 2020 ANUpoll data and found very strong support for a single component explaining most of the variation in the data (Eigenvalue of 4.14 for the first component and 0.55 for the second component). In order to make comparisons through time, we summed across the six variables with a value of 1 for each variable for those individuals who reported the lowest score possible (most negative relationship), and a value of 5 for those who reported the highest score possible (most positive relationship). The bounds of this additive index are therefore 30 for those who reported the most positive relationship across all the component variables, and a value of 6 for those who reported the most negative relationship across the variables.

The mean score for the 2016 HILDA sample (weighted) was 25.63, whereas the mean value for the May 2020 ANUpoll was 25.24. This difference was statistically significant at the 1 per cent level of significance using the pooled regression analysis described above for the individual components. There was not, however, an observed worsening for all population groups, as shown in Figure 6, or even most age groups. Specifically, there was an observed decline in relationship quality for males, but not for females. There was an observed decline for one age group only, those aged 35 to 44 years.

Figure 6        Relationship quality – 2016 baseline and May 2020, by age and sex
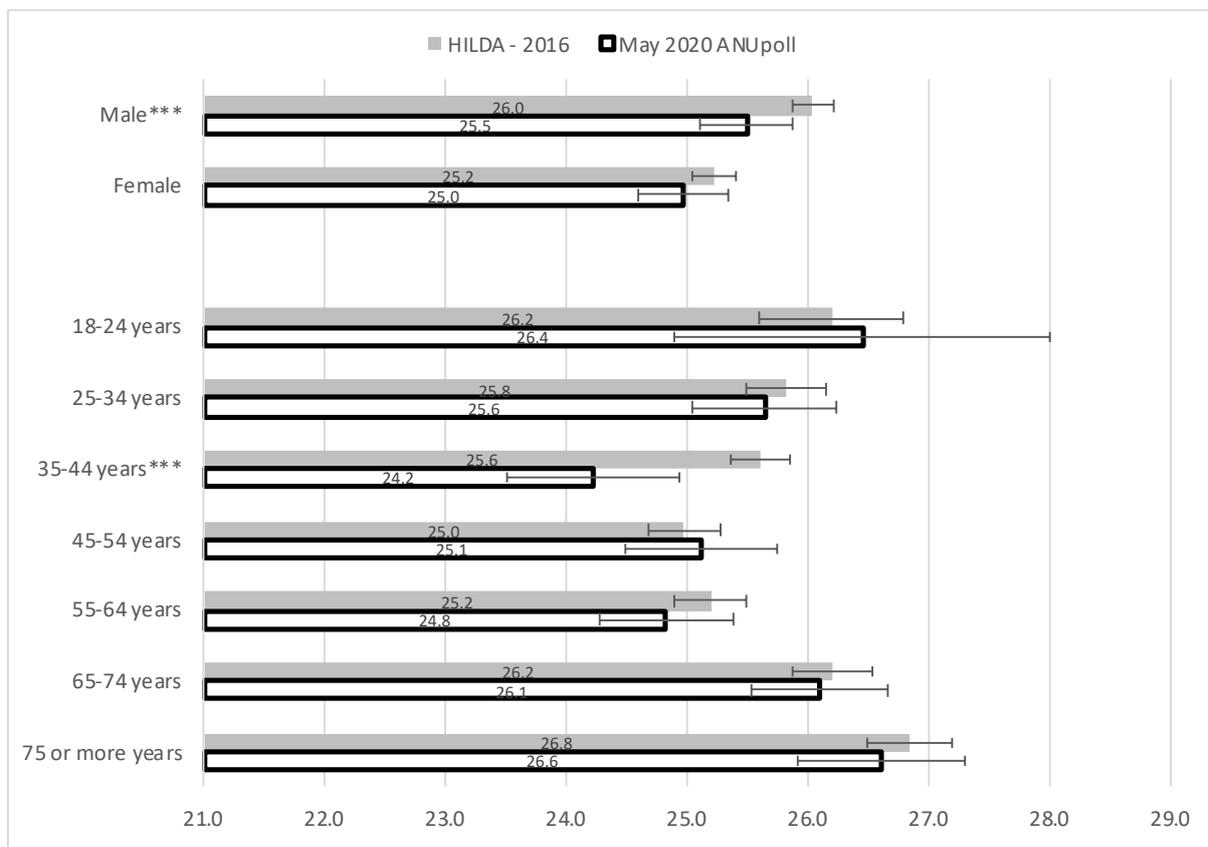


Notes:     The "whiskers" on the bars indicate the 95 per cent confidence intervals for the estimate. Differences between the May 2020 ANUpoll and the 2016 HILDA responses that are statistically significant at the

The ANU Centre for Social Research and Methods

1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*. For the comparisons by sex, we control for age group. For the comparisons by age group, we control for sex.

Source:    ANUpoll, May 2020.

If the differences between the 2016 HILDA results and the May 2020 ANUpoll results were due to measurement error only, we would expect to see a consistent difference across age and sex between the two sets of data collection. However, we observe differences for certain sections of the population only, giving some indication that for these age groups there was some systematic change between 2016 and 2020, with the differential impact of COVID-19 a plausible explanation.
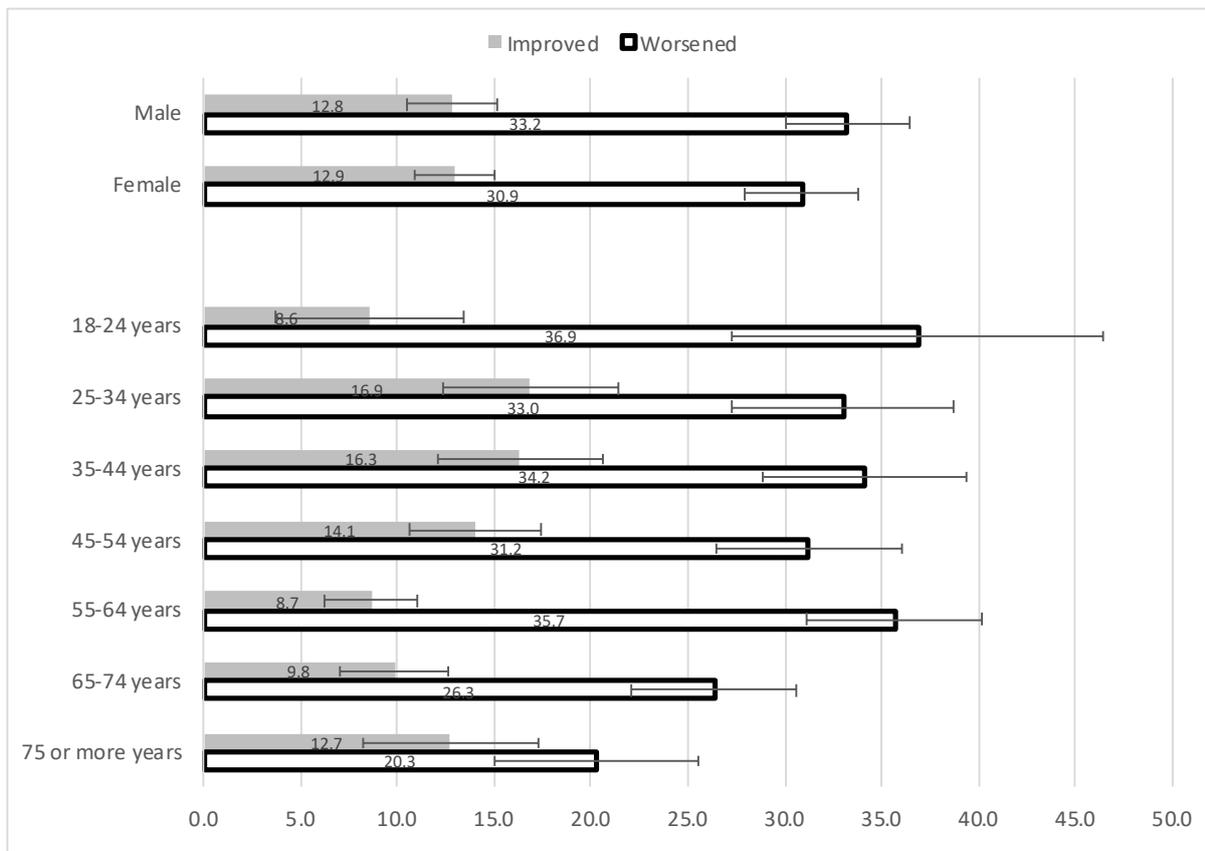
## 3.3    Association between financial stress and change in relationship quality

Some of the more common sources of stress in a relationship are financial challenges. As has been shown a number of times in our analysis of ANUpoll, as well as analysis of other data collections, what started as a public health crisis has quickly turned into an economic and financial crisis. People have been losing their jobs and incomes to a greater extent than any time since the Great Depression, with the pace of change even faster now than it was in the 1930s (Biddle et al. 2020a). This financial stress appears to be one of the factors that is predicting changes in relationship quality during the COVID-19 period.

Slightly later in the survey after asking about relationship quality (and employment status), we asked respondents 'In the last 3 months, have your household finances improved, remained the same or worsened because of the COVID-19 outbreak?' Across all adult Australians, 12.9 per cent think that their finances have improved since the spread of COVID-19 with 32.0 per cent saying that it worsened. This subjective measure correlates quite strongly with the more objective measure of income change, with per person after tax income declining by $125 per week for those who said their finances worsened, compared to $39.3 per week for those who said their finances improved and $40.1 for those who said their finances stayed the same. The benefit of the subjective measure though is that it captures both changes in income, as well as changes in expenditure.

There are very few differences in self-reported financial change for males compared to females, though the former is slightly more likely to say that their finances worsened than the latter, though the difference is not statistically significant (33.2 per cent compared to 30.9 per cent, p-value = 0.29). Young Australians (particularly those aged 18 to 24 years) appear to be more likely to say that their finances worsened, and significantly less likely to say that their finances improved.

The ANU Centre for Social Research and Methods

Figure 7    Self-reported change in financial status during COVID-19 – May 2020, by age and sex



Legend: ■ Improved   ▯ Worsened

| Category | Improved | Worsened |
|---|---|---|
| Male | 12.8 | 33.2 |
| Female | 12.9 | 30.9 |
| 18-24 years | 8.6 | 36.9 |
| 25-34 years | 16.9 | 33.0 |
| 35-44 years | 16.3 | 34.2 |
| 45-54 years | 14.1 | 31.2 |
| 55-64 years | 8.7 | 35.7 |
| 65-74 years | 9.8 | 26.3 |
| 75 or more years | 12.7 | 20.3 |

Source:        ANUpoll, May 2020.

As mentioned earlier, there was a strong relationship between changes in relationship quality and changes in finances. Those who reported that their finances improved are significantly and substantially more likely to report that their relationship improved (36.2 per cent) compared to those whose finances stayed the same (25.6 per cent) or worsened (28.5 per cent). Moving in the opposite direction, those respondents who said that their finances worsened were almost as twice as likely to say that their relationships worsened (24.9 per cent) compared to those whose finances stayed the same (14.3 per cent) or improved (13.5 per cent).

A potential explanation for this correlation is that people who report a worsening in one direction for one variable are more likely to report a worsening for other variables, and vice-versa. That is, it may be capturing underlying traits related to pessimism and optimism (Myers and Steed 1999) rather than any direct effect of financial stress on relationship status. While there is a consistent literature that shows a causal relationship between financial stress and relationship status (Cobb-Clark and Ribar 2012), that does not necessarily mean we are picking it up in our dataset. However, we do have some supportive evidence for there being a more direct relationship from a regression analysis of the relationship status index discussed in the previous section.

Specifically, in the model we control for education and a range of demographic characteristics (including age and sex), as well as partnering and parenting status in February 2020. Remembering that higher values on the index mean that the person's relationship with their partner is of a higher quality, we find that those who reported that their finances worsened

The ANU Centre for Social Research and Methods

during the COVID-19 period were significantly and substantially less likely to have a high value on the relationship quality index (Table 1).

Many of the other variables in the model are also interesting. Keeping in mind that all respondents who were asked these questions had a partner living with them in May 2020. Those who did not have a partner in February 2020 had a lower value on the quality index, giving some indication that those who moved in with their partner during the COVID-19 period may have done so under economic pressure. Those with young children in the household did not have a significantly different value on the relationship quality index, whereas those with older children had a lower relationship quality than those without children. Finally, the main demographic characteristics that had an association with relationship quality were sex (females had a lower relationship quality) and age (the base case category of those aged 35 to 44 years had the lowest quality).

Table 1          Factors associated with relationship quality, May 2020

| Coefficient | Coeff. | Signif. |
|---|---|---|
| Did not have a partner in February 2020 | -1.327 | * |
| Parent of a child in the household – Youngest child 0 to 9 | 0.197 | |
| Parent of a child in the household – Youngest child 10 years and over | -1.006 | ** |
| Finances reported to have worsened | -0.679 | ** |
| Female | -0.531 | * |
| Aged 18 to 24 years | 1.834 | * |
| Aged 25 to 34 years | 1.161 | ** |
| Aged 45 to 54 years | 1.053 | * |
| Aged 55 to 64 years | 0.797 | |
| Aged 65 to 74 years | 1.507 | *** |
| Aged 75 years plus | 1.791 | *** |
| Indigenous | -2.210 | |
| Born overseas in a main English-speaking country | 0.107 | |
| Born overseas in a non-English speaking country | -0.566 | |
| Speaks a language other than English at home | 0.078 | |
| Has not completed Year 12 or post-school qualification | -0.256 | |
| Has a post graduate degree | -0.666 | |
| Has an undergraduate degree | 0.077 | |
| Has a Certificate III/IV, Diploma or Associate Degree | -0.100 | |
| Lives in a non-capital city | -0.302 | |
| Constant | 25.427 | *** |
| Sample size | 1,854 | |

Notes:     Linear Regression Model. The base case individual is female; aged 35 to 44; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; and lives in a capital city.

Coefficients that are statistically significant at the 1 per cent level of significance are labelled ***; those significant at the 5 per cent level of significance are labelled **, and those significant at the 10 per cent level of significance are labelled *.

Source:  Life in Australia[TM] February 2020, and ANUpoll, May 2020.

## 3.4    Fear of relationship violence

An extreme measure of being in a negative relationship is fearing for one's own safety. There is a growing policy and societal recognition of the ongoing impact of domestic violence, particularly but not exclusively for women, as well as the direct effect domestic violence has on children who are exposed to it (Hill 2019). Exposure to domestic violence is quite difficult to ask on a social survey like ANUpoll. However, a common type of question that is used to predict the potential for or the fear of domestic violence (taken in our survey from the

The ANU Centre for Social Research and Methods

Longitudinal Study of Australian Children (LSAC)) is 'Have you ever been afraid of your spouse/partner?' While the sample design and data collection of the LSAC is too different to make direct comparisons and therefore we do not have any data on changes in fear of relationship violence during the COVID-19 period, answers to this question do give some insights into the experience during the period and the extent to which any COVID-19 specific measure might be correlated with fear of violence.

Across the sample with a partner, 9.5 per cent were estimated to have been afraid of their spouse or partner at some point. While Figure 8 shows that females have a slightly higher percentage than males (10.5 per cent compared to 8.5 per cent respectively) this difference is not statistically significant (p-value = 0.27). There were, however, some differences by age, with the highest rate amongst those aged 25 to 34 years (15.7 years) but very low rates amongst those aged 65 years and over.

Figure 8         Being afraid of partner or spouse – May 2020, by age and sex
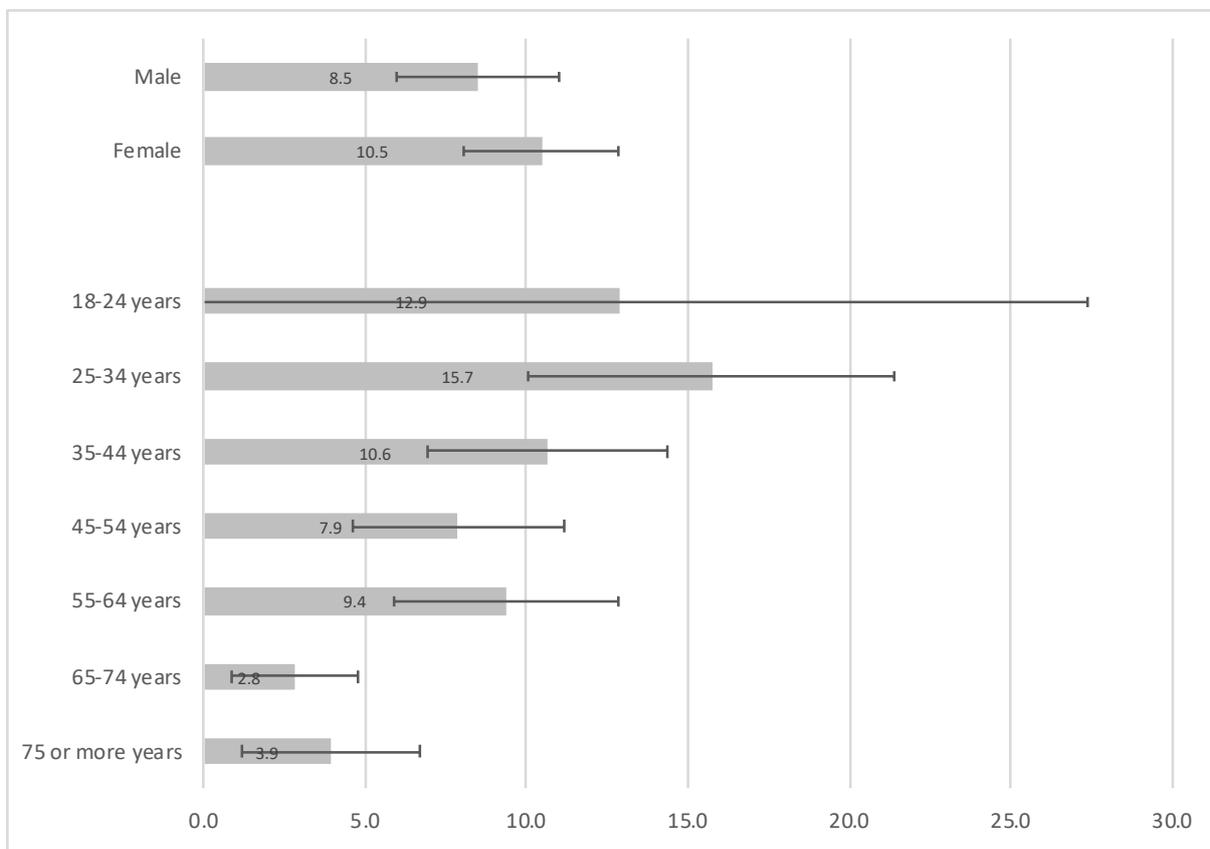


Source:  ANUpoll, May 2020.

It would appear from the age distribution that respondents are interpreting the question as being about recent fear, or that fear that occurred a long time ago is less salient now than more recent experiences. Either way, we can cautiously interpret the question as being at least somewhat sensitive to the COVID-19 period. There is some additional evidence for this with a person's current index value for their relationship status being much higher for those who did not report a fear of their spouse/partner (25.7) compared to those who did (20.6).

Parents who live with children under 19 years old in the household are more likely to have said that they had been afraid of their partners than those who were not parents or who had older children (p-value = 0.098). While the standard errors are reasonably large and it is not possible

The ANU Centre for Social Research and Methods

to be too definitive, it would appear that the difference is somewhat larger for females than males. Around 13.4 per cent of female parents reported they had been afraid compared to 9.2 per cent of those who were not parents of a child under 20, a difference of 4.2 percentage points. For males, on the other, the differences by parenting status were somewhat smaller – 2.2 percentage points (10.6 per cent for parents and 8.4 per cent of non-parents).

There is also a relationship between fear of one's spouse/partner and changes in finances. Specifically, those who reported that their finances have worsened during the COVID-19 period were significantly more likely to report that they were afraid of their spouse/partner (12.4 per cent) compared to those whose finances improved (8.8 per cent) or stayed the same (7.7 per cent).

## 4    Loneliness, stress and hope for the future during COVID-19

### 4.1    Loneliness

One of the potential determinants of poor mental health outcomes during the COVID-19 pandemic is the social isolation that individuals have experienced due to physical distancing requirements. It is of course not the only explanation, as the anxiety and worry due to risk of infection and economic uncertainty is also likely to be important. However, it is one potential explanatory factor. Indeed, even before the spread of COVID-19, loneliness was reported to be at epidemic proportions in industrialised countries (Cacioppo and Cacioppo 2018)

In the April 2020 ANUpoll, we asked respondents whether 'In the past week, how often - Have you felt lonely?' Analysis summarised in Biddle et al. (2020b) showed that those who did experience loneliness had higher rates of psychological distress than those who did not. Between April and May, however, there was a significant decline in experiences of loneliness, with 36.1 per cent of the sample saying that they experienced loneliness at least some of the time, compared to 45.8 per cent in April.

There were reasonably consistent declines in loneliness by age and sex, with one exception (Figure 9). Despite starting from a higher base (63.3 per cent reporting loneliness at least some of the time in April), there was a much smaller decline in loneliness between April and May for those aged 18 to 24 years compared to any other age groups. Indeed, this is the only group in Figure 9 for which the difference between April and May 2020 is not statistically significant.

Figure 9        Being lonely at least some of the time – April and May 2020, by age and sex
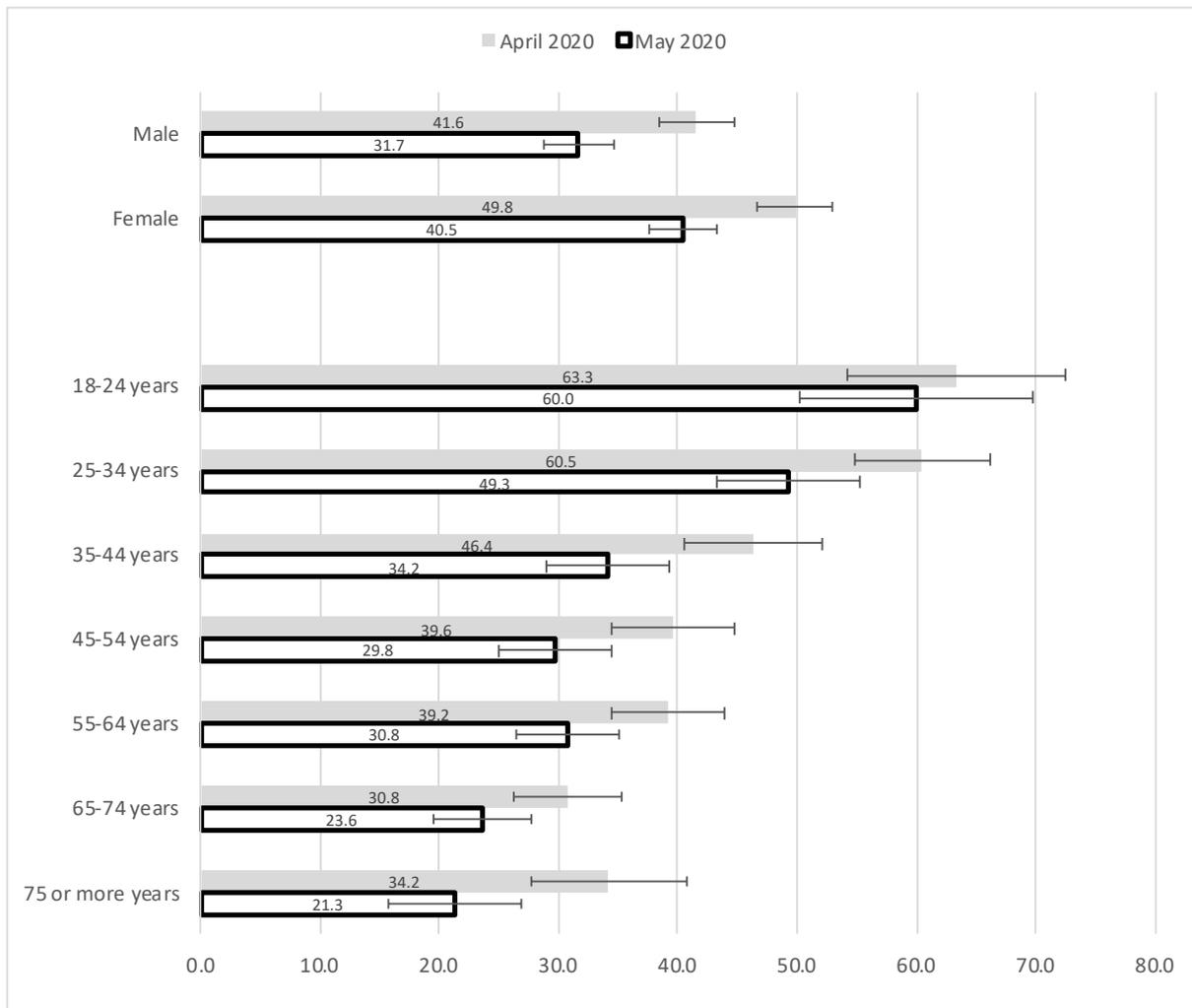


Source:  ANUpoll, May 2020.
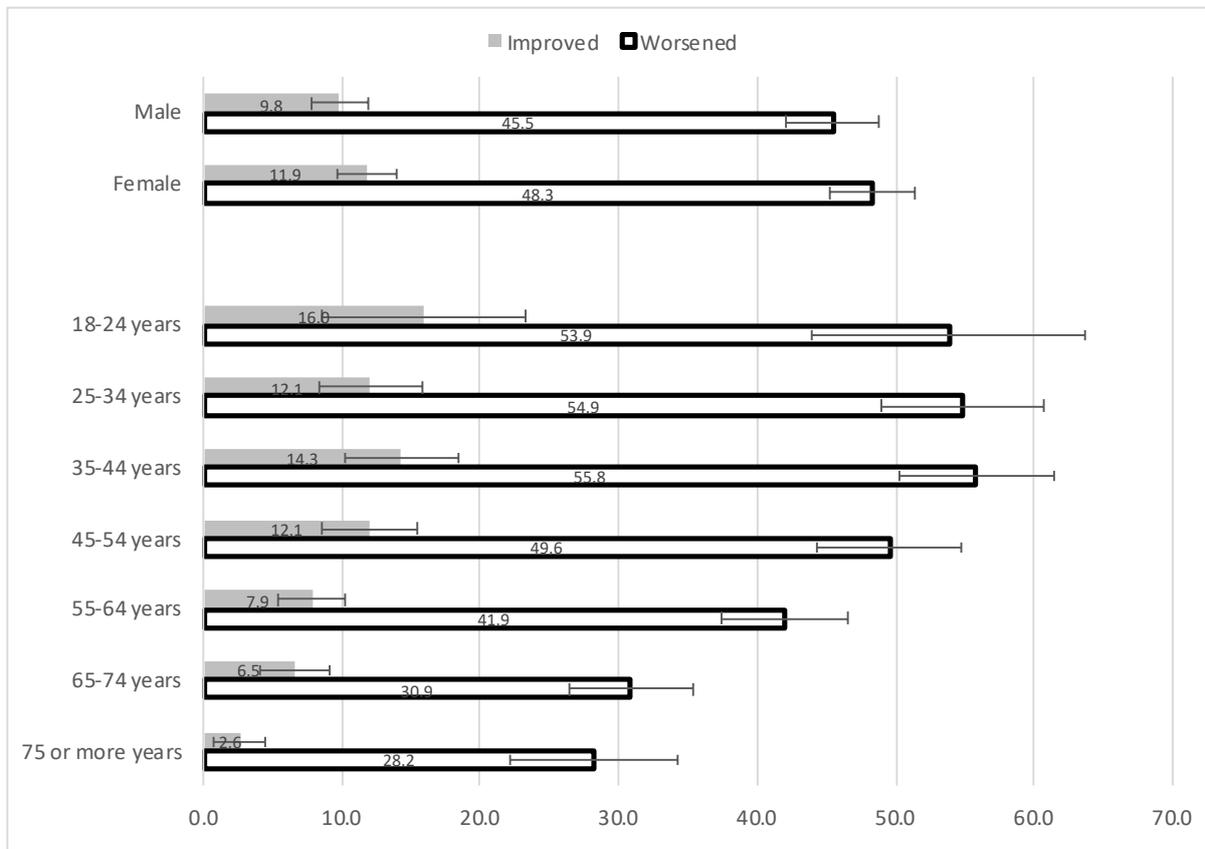
## 4.2   Stress

Another factor that has changed during COVID-19 is the level of stress that individuals are under. For those with caring responsibility, demands on time increased substantially, especially for those with school-age children while schools were shut down. A number of people saw their working hours increase as they needed to take on more responsibility at work, whereas those whose working hours have decreased are likely to feel increased financial pressure. Social interaction has been curtailed for some, and artificially increased for others who needed to manage interaction within the home.

We asked respondents 'How has the level of stress you typically feel day-to-day changed since the spread of COVID-19?'. While only 7.5 per cent of the sample responded that they feel a lot more stressed, 39.4 per cent said that they felt a little more stressed. Far fewer people reported that their stress levels declined – 8.2 per cent said it went down by a little compared to 2.7 per cent who said it went down by a lot.

Females were slightly more likely than men to both say that their stress levels improved and that they worsened than men, though neither of these differences by sex were statistically significant. There were differences by age though with higher rates of change amongst the young compared to the old. The highest rate of net worsening (per cent worsened minus per

18

cent improved) occurred amongst 25 to 34 year olds (42.8 percentage difference) and 35 to 44 year olds (41.5 percentage difference).

Figure 10        Self-reported change in stress during COVID-19 – May 2020, by age and sex
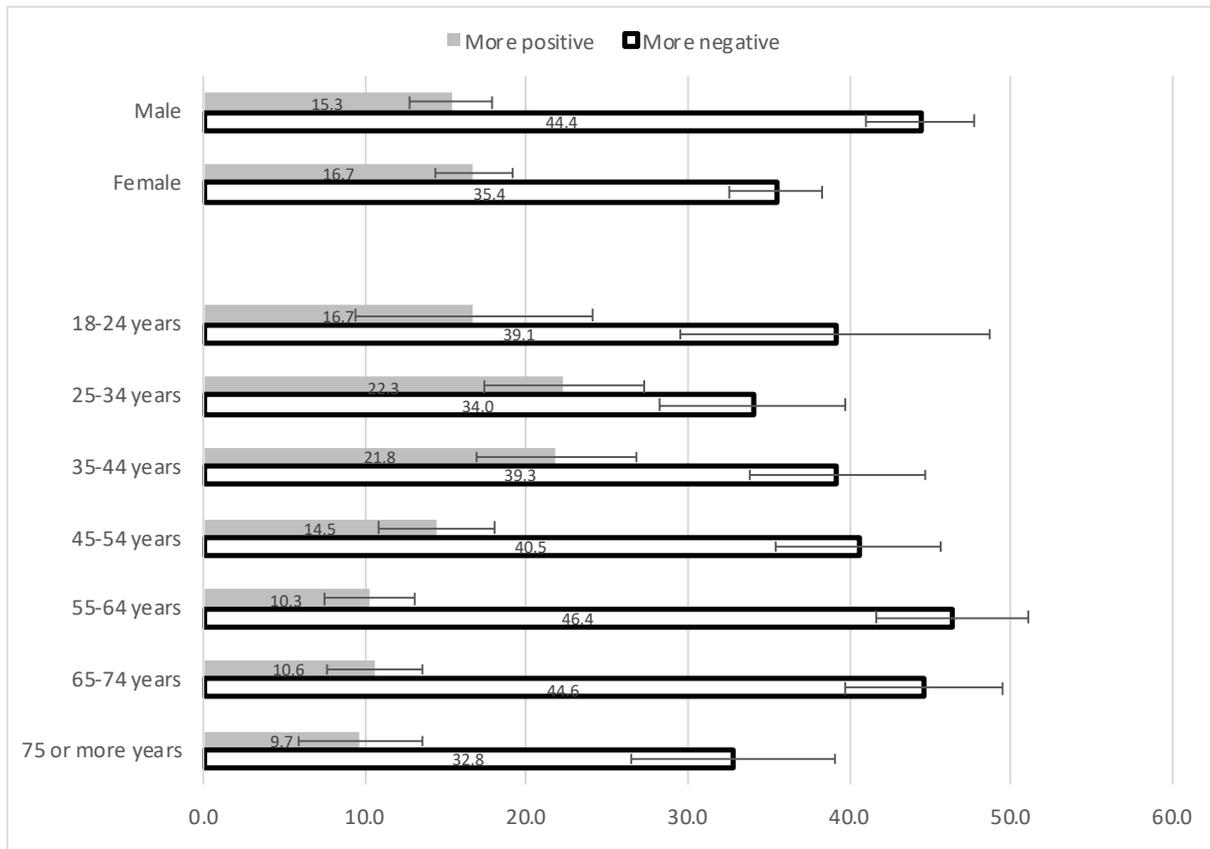


Source:  ANUpoll, May 2020.

There is a very strong observed relationship between changes in stress levels and both self-reported changes in financial position and, even more so, self-reported changes in relationship quality. Specifically, amongst those who said that their finances worsened, 58.0 per cent said that their stress levels worsened, compared to 41.9 per cent of those who did not say that their finances worsened. Furthermore, amongst those who said that their relationship worsened, 70.3 per cent said that their stress levels worsened, compared to 41.9 per cent of those who did not say that their finances worsened.

## 4.3    Outlook for the future

In the final measure of subjective change that we consider in this section, we look at people's responses to the following question: 'How has your outlook for your longer-term future, i.e. 5-10 years from now, changed since the spread of COVID-19?' Only 2.9 per cent of respondents said that they felt a lot more positive towards the future, with a further 13.2 per cent saying that they felt a little more positive. A far higher percentage said that their outlook was a lot more negative (5.2 per cent) or a little more negative (34.8 per cent).

Males were significantly more likely to say that their outlook for the future had worsened than females (44.4 per cent compared to 35.4 per cent) with a net worsening of 29.0 percentage points for males compared to females (Figure 11). The age group with the greatest net worsening was those aged 55 to 64 years, with 46.4 per cent saying that their outlook for the future had worsened compared to only 10.3 per saying that it had improved.

19

Figure 11    Self-reported change in outlook for the future due to COVID-19, by age and sex, May 2020



Source:  ANUpoll, May 2020.

By definition, we did not ask respondents about how COVID-19 has impacted a person's outlook for the future prior to the spread of COVID-19. We did, however, ask a more general question about expectations for the future in January 2020. Specifically, we asked respondents 'In five years, do you think that your life in Australia will be…?' with potential responses being Much improved; A little improved; Same as now; a little worse; and Much worse. When asked in January, 38.7 per cent of respondents said that they think their life will be improved and 30.7 per cent said that their life will have worsened.

When we link the January 2020 data with the May 2020 data, we find a strong relationship between hope for the future as reported prior to the spread of COVID-19 and self-reported change in outlook as reported in May 2020. For example, of those who thought in January that their life would be worse over the next five years, 54.1 per cent said that their outlook for the future had been worsened by the spread of COVID-19, compared to 36.5 per cent of those who thought their circumstances would stay the same and 32.1 per cent who thought their circumstances would improve.

## 5    The measured effect of worsened life circumstances on psychological distress

The previous sections have shown that a very large proportion of people feel that at least one aspect of their lives have worsened during the spread of COVID-19. This includes 17.5 per cent who feel their relationships have worsened; 32.0 per cent who feel their finances have

The ANU Centre for Social Research and Methods

worsened; 47.0 per cent who think their stress has worsened; 40.0 per cent who feel their outlook for the future has worsened; and 40.3 per cent who think the amount of time their feel lonely and isolated has increased. There are, of course, a number of people who feel these aspects of their lives have improved, but on balance across the measures there tends to be a net worsening in these subjective outcomes (the exception being changes in relationships).

Indeed, only 22.5 per cent of the population are estimated to have not experienced any of these **worsening** life circumstances during the COVID-19 period compared to 51.6 per cent who reported no **improvements** in life circumstances.

While people are not always very good at articulating how their own circumstances have changed, these subjective measures have correlated strongly with longitudinal data where it is available. There is important information in these measures. It raises the question, therefore, as to which of these measures is most predictive of the change in mental health discussed in Section 2 of this report. In order to answer this question, we undertake a regression analysis of the K6 measure of psychological distress as of May 2020, controlling for a range of cross-sectional and longitudinal measures, and including the above subjective changes measures as additional explanatory variables.

We do not have a measure of psychological distress immediately prior to the spread of COVID-19. However, it is possible to get some information on the potential effect of COVID-19 on psychological distress by first controlling for other related variables in February 2020, as well as demographic, socioeconomic, and geographic variables, and then measuring the relationship with the direct COVID-19 measures from May 2020. We estimate five models, as described below.

The February 2020 control variables we include for each of the models are:

- All things considered, how satisfied are you with your life as a whole nowadays? (scale of 0 to 10);
- Taking all things together, how happy would you say you are? (scale of 0 to 10); and
- How is your health in general? Would you say it is...? (Very good; Good; Fair; Bad; Very bad).

In Model 2 we introduce the change through time measures described above. In Model 3, we also control for employment change between February 2020 and May 2020 and a COVID-19 specific measure of whether or not the person experienced anxiety or worry due to COVID-19 (described in detail in Biddle et al. 2020a). In Model 4, we control for the K6 measure of psychological stress as of February 2017. While this allows for a more precise longitudinal analysis with the lagged dependent variable controlled for, it does come at the cost of reducing the sample to those linked through time over a longer time period and excludes the boosted sample from late 2019. The final model, estimated for those employed in May 2020 only, includes a person's own expected probability of losing their job over the next 12 months. This variable was also analysed and described in detail in Biddle et al. (2020a)

Using life satisfaction and happiness as continuous variables, as well as general health as a series of binary variables, we show (in Table 2) a very strong association between some of the COVID-19 related variables and psychological distress. This relationship also holds (albeit with larger standard errors) when we also control for the K6 measure for the same individuals in February 2017 using the linked sample (in Model 4) and for the employed sample (Model 5).

Regardless of whether we control for psychological distress in February 2017 (at the cost of substantially reducing our sample) or control for February 2020 baseline data only, the self-reported change in outcomes that has the strongest association with psychological distress is a person saying that their stress has worsened. This is perhaps not surprising, as stress is a key predictor of poor mental health outcomes across the literature (Stead et al. 2010) and consistent with the findings that subjective perceptions of economic pressure are associated with higher levels of psychological distress (Masarik and Conger, 2017). It is important to show, however, that this relationship holds even when controlling for prior mental health outcomes.

The variable with the next strongest association is changes in loneliness, followed by changes in relationships. Changes in hope for the future is also important, but a person reporting that their finances have worsened only has an association with psychological distress at the 5 per cent level in Model 1, and is not significant at all in Models 2 to 5. That does not mean that the financial impact of COVID-19 is not important. It may be that the effect of financial stress is being mediated by the effect it appears to have had on relationships and stress levels. What it does show, however, is that economic measures may not be enough to reduce the mental health burden experienced during the COVID-19 period, and that interventions that directly support relationships and social isolation may also be necessary.

The other variables in the table are interesting themselves, not just as control variables. Those who were not employed in May 2020 have higher levels of psychological distress than those who were employed (the base case). However, there is a larger association for those who lost their job over that time period than those who were not employed in either period. In addition, when we focus on those who were employed in May 2020, a higher expectation of job loss over the next 12 months is associated with a higher rate of psychological distress. The effect might appear small in magnitude, though it should be kept in mind that this variable ranges from 0 to 100 rather than 0 to 1 for most of the other variables (or 0 to 10 for life satisfaction and happiness). The labour market effects of COVID-19 appear to be having a large effect on mental health outcomes.

Looking at the other control variables, there are a number of other highly policy relevant findings. Controlling for baseline (February 2020) characteristics only, females, young Australians and Indigenous Australians have a higher rate of psychological distress than males, those aged 35 to 44 years and non-Indigenous Australians respectively. When other characteristics and particularly when employment change is controlled for, these differences become insignificant. Whatever characteristics we control for though, those who live outside capital cities and those who live in relatively advantaged areas have relatively low rates of psychological distress. This would suggest that there are geographic determinants of the mental health effects of COVID-19 that extend beyond changes in employment, relationships, finances, stress, future outlook, and loneliness.

Table 2 Factors associated with psychological distress

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | Signif. | Coeff. | Signif. | Coeff. | Signif. | Coeff. | Signif. | Coeff. | Signif. |
| Relationship worsened | | | 1.218 | *** | 1.245 | *** | 0.685 | * | 1.140 | *** |
| Finances worsened | | | 0.430 | ** | 0.311 | | 0.039 | | 0.441 | |
| Stress worsened | | | 1.830 | *** | 1.687 | *** | 1.618 | *** | 1.740 | *** |
| Outlook for the future worsened | | | 0.564 | *** | 0.531 | *** | 0.687 | *** | 0.725 | *** |
| Loneliness increased | | | 1.776 | *** | 1.635 | *** | 1.382 | *** | 1.808 | *** |
| Not employed in February or May 2020 | | | | | 1.088 | *** | | | | |
| Employed in February but not May 2020 | | | | | 1.634 | *** | | | | |
| Anxious or worried about COVID-19 | | | | | 0.897 | *** | | | | |
| K6 in February 2017 | | | | | | | 0.416 | *** | | |
| Expected probability of losing job for those employed | | | | | | | | | 0.024 | *** |
| Life satisfaction in February 2020 | -0.501 | *** | -0.433 | *** | -0.406 | *** | -0.097 | | -0.328 | *** |
| Self-reported happiness in February 2020 | -0.384 | *** | -0.292 | *** | -0.301 | *** | -0.393 | *** | -0.323 | *** |
| Health good in February 2020 | 0.839 | *** | 0.588 | ** | 0.572 | ** | 0.083 | | 0.500 | |
| Health fair in February 2020 | 1.544 | *** | 1.048 | *** | 0.910 | *** | 0.170 | | 0.774 | * |
| Health bad in February 2020 | 3.268 | *** | 2.776 | *** | 2.316 | *** | 1.501 | ** | 1.135 | |
| Health very bad in February 2020 | 4.392 | *** | 3.494 | *** | 2.975 | *** | 2.651 | | 2.996 | *** |
| Female | 0.473 | ** | 0.294 | | 0.255 | | 0.324 | | 0.324 | |
| Aged 18 to 24 years | 1.250 | ** | 1.031 | * | 0.863 | | 0.721 | | 0.940 | |
| Aged 25 to 34 years | 0.863 | ** | 0.752 | ** | 0.805 | ** | 0.011 | | 0.886 | ** |
| Aged 45 to 54 years | -1.277 | *** | -1.096 | *** | -0.998 | *** | -0.954 | ** | -0.977 | *** |
| Aged 55 to 64 years | -2.066 | *** | -1.701 | *** | -1.774 | *** | -1.221 | *** | -1.448 | *** |
| Aged 65 to 74 years | -2.798 | *** | -2.337 | *** | -2.892 | *** | -1.549 | *** | -1.929 | *** |
| Aged 75 years plus | -2.606 | *** | -2.014 | *** | -2.663 | *** | -1.729 | *** | -1.669 | * |
| Indigenous | 1.694 | ** | 1.537 | * | 1.370 | | -0.243 | | -0.475 | |
| Born overseas in a main English-speaking country | -0.113 | | -0.264 | | -0.274 | | -0.239 | | -0.702 | ** |
| Born overseas in a non-English speaking country | 0.454 | | 0.256 | | 0.217 | | -0.370 | | -0.460 | |
| Speaks a language other than English at home | 0.374 | | 0.213 | | 0.059 | | 0.568 | | 0.233 | |
| Has not completed Year 12 or post-school qualification | -0.767 | ** | -0.260 | | -0.370 | | -0.401 | | -1.131 | ** |
| Has a post graduate degree | -0.597 | | -0.552 | | -0.416 | | -0.589 | | -0.671 | |
| Has an undergraduate degree | -0.688 | ** | -0.515 | | -0.401 | | -0.328 | | -0.563 | |
| Has a Certificate III/IV, Diploma or Associate Degree | -0.347 | | -0.135 | | -0.140 | | -0.247 | | -0.433 | |
| Lives in the most disadvantaged areas (1st quintile) | -0.417 | | -0.362 | | -0.319 | | -0.433 | | -0.114 | |

The ANU Centre for Social Research and Methods

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lives in next most disadvantaged areas (2nd quintile) | 0.209 | | 0.221 | | 0.164 | | -0.003 | | -0.124 | |
| Lives in next most advantaged areas (4th quintile) | -0.723 | ** | -0.487 | | -0.445 | | 0.058 | | -0.304 | |
| Lives in the most advantaged areas (5th quintile) | -0.922 | *** | -0.808 | *** | -0.748 | ** | -0.756 | * | -0.904 | ** |
| Lives in a non-capital city | -0.594 | *** | -0.490 | ** | -0.424 | ** | -0.496 | * | -0.185 | |
| Constant | 17.797 | *** | 14.557 | *** | 13.806 | *** | 9.246 | *** | 13.562 | *** |
| Sample size | 2,820 | | 2,801 | | 2,786 | | 1,441 | | 1,467 | |

Notes: OLS Regression Model. The base case individual is female; aged 35 to 44; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb ( third quintile); and lives in a capital city. In addition, the base case did not report worsening for any of the outcome measures.

Coefficients that are statistically significant at the 1 per cent level of significance are labelled ***; those significant at the 5 per cent level of significance are labelled **, and those significant at the 10 per cent level of significance are labelled *.Source: Life in Australia[TM], February 2017 and February 2020, ANUpoll, May 2020 .

The ANU Centre for Social Research and Methods

# 6  Concluding comments

The aim of this paper is to explore the links between mental health outcomes and relationship quality during the COVID-19 period. Given the size of the economic and social impacts of COVID-19 it is not surprising that there have been equally dramatic changes in mental health outcomes and the quality and structure of people's relationships.

We find that after a worsening in mental health outcomes between February 2017 and April 2020, there was strong evidence for improvements between April and May 2020 and weaker evidence for a further improvement between May and the end of June/start of July. However, for those Australians under the age of 45, psychological distress is still at a higher level than it was prior to the spread of COVID-19. The mental health impacts of the pandemic may have eased somewhat, but they are still present.

We find that a number of people have reported negative changes to their subjective circumstances. Although some people reported improvements, it is important to note that 17.5 per cent of Australians feel their relationships have worsened; 32.0 per cent feel their finances have worsened; 47.0 per cent think their stress has worsened; 40.0 per cent feel their outlook for the future has worsened; and 40.3 per cent think the amount of time their feel lonely and isolated has increased. Only 22.5 per cent of the population are estimated to have not experienced any of these negative changes during the COVID-19 period compared to 51.6 per cent who reported no improvements in the same measures.

We find a very strong relationship between self-reported changes in outcomes and psychological distress, even when controlling for pre-COVID mental health outcomes. There is a particularly strong relationship between changes in stress, loneliness and relationships and mental health outcomes.

Australia has been very fortunate during the COVID-19 period with low rates of infection and mortality. That does not mean that there have not been large negative effects on other important outcomes, with young Australians particularly in need of additional support.

# References

Amato, P. R. (2007). *Alone Together: How Marriage in America Is Changing*. Harvard University Press, Cambridge.

Balzarini, R., A. Muise, G. Zoppolat, A. Di Bartolomeo, D. Rodrigues, M. Alonso-Ferres et al. (2020). "Love in the time of Covid: Perceived partner responsiveness buffers people from lower relationship quality associated with Covid-related stressors." *PsyArXiv*. doi:10.31234/osf.io/e3fh4

Biddle, N., B. Edwards, M. Gray, and K. Sollis (2020a). "Hardship, distress, and resilience: The initial impacts of COVID-19 in Australia." *COVID-19 Briefing Paper*, ANU Centre for Social Research and Methods, Australian National University, Canberra.

Biddle, N., B. Edwards, M. Gray, and K. Sollis (2020b). "Initial impacts of COVID-19 on mental health in Australia." *COVID-19 Briefing Paper*, ANU Centre for Social Research and Methods, Australian National University, Canberra.

Biddle, N., and M. Gray, (2020). "Service usage and service gaps during the COVID-19 pandemic." *COVID-19 Briefing Paper*, ANU Centre for Social Research and Methods, Australian National University, Canberra.

Broderick, A.V., G.M. Brelsford, and M.E. Wadsworth (2019). "Interparental relationships among low income, ethnically diverse, two-parent cohabiting families." *Journal of Child and Family Studies*, 28(8): 2259-2271. doi:10.1007/s10826-019-01442-4

Cacioppo, J.T. and S. Cacioppo (2018). "The growing problem of loneliness." *The Lancet*, 391(10119): 426.

Carlson, M.J., N.V. Pilkauskas, S.S. McLanahan and J. Brooks-Gunn(2011). "Couples as partners and parents over children's early years." *Journal of Marriage and Family*, 73(2): 317-334.

Chung, G., P. Lanier, amd P.Wong (2020). "Mediating effects of parental stress on harsh parenting and parent-child relationship during Coronavirus (COVID-19) Pandemic in Singapore." *OSF Preprints*. doi:10.31219/osf.io/vnf4j

Cobb-Clark, D.A. and D.C. Ribar (2012). "Financial stress, family relationships, and Australian youths' transitions from home and school." *Review of Economics of the Household*, 10(4): pp.469-490.

Conger, R.D., K.J. Conger, and M.J. Martin (2010). "Socioeconomic status, family processes, and individual development." *Journal of Marriage and Family*, 72(3): 685-704.

Cutrona, C.E., D.W. Russell, W.T. Abraham, K.A. Gardner, J.N. Melby, C. Bryant and R.D. Conger (2003). "Neighborhood context and financial strain as predictors of marital interaction and marital quality in African American couples." *Personal Relationships*, 10(3): 389-409. doi:10.1111/1475-6811.00056

Dakin, J. and R. Wampler, R. (2008). "Money doesn't buy happiness, but It helps: Marital satisfaction, psychological distress, and demographic differences between low- and middle-income clinic couples." *The American Journal of Family Therapy*, 36(4): 300-311. doi:10.1080/01926180701647512

Garriga, A., J. Martínez-Lucena, A. Moreno (2019). "Parents' relationship quality and children's externalizing problems: The moderating role of mother–child relations and family socio-demographic background." *Child and Adolescent Social Work Journal*, 36(2): 137-154. doi:10.1007/s10560-018-0558-0

Groves, R.M. and L. Lyberg (2010). "Total survey error: Past, present, and future." *Public Opinion Quarterly*, 74(5): 849-879.

Goldberg, J.S. and M.J. Carlson (2014). "Parents' relationship quality and children's behavior in stable married and cohabiting families." *Journal of Marriage and Family*, 76(4): 762-777. doi:10.1111/jomf.12120

Hardie, J.H. and A. Lucas (2010). "Economic factors and relationship quality among young couples: Comparing cohabitation and marriage." *Journal of Marriage and Family*, 72(5): 1141-1154.

Hill, J. (2019). *See What You Made Me Do: Power, Control and Domestic Abuse*. Black Inc, Melbourne.

Kessler, R.C., G. Andrews, LJ. Colpe,E. Hiripi, D.K. Mroczek, S.L. Normand, E.E., Walters and A.M. Zaslavsky, (2002). "Short screening scales to monitor population prevalences and trends in non-specific psychological distress." P*sychological Medicine*, 32(6): 959-976.

Krumpal, I. (2013). "Determinants of social desirability bias in sensitive surveys: a literature review." *Quality & Quantity*, 47(4): 2025-2047.

Marchand-Reilly, J.F. and R.G. Yaure (2019). "The role of parents' relationship quality in children's behavior problems." *Journal of Child and Family Studies*, 28(8): 2199-2208. doi:10.1007/s10826-019-01436-2

Masarik, A.S. and R.D. Conger (2017). "Stress and child development: a review of the Family Stress Model." *Current Opinion in Psychology*, 13: 85-90. http://dx.doi.org/10.1016/j.copsyc.2016.05.008

Myers, L.B. and L. Steed (1999). "The relationship between dispositional optimism, dispositional pessimism, repressive coping and trait anxiety." *Personality and Individual Differences*, 27(6): 1261-1272.

Prochaska, J., H-Y. Sung, W. Max, Y. Shi and M. Ong (2012). "Validity study of the K6 scales as a measure of moderate mental distress based on mental health treatment need and utilization." *International Journal of Methods in Psychiatric Research*, 21(2): 88-97.

Relationships Australia (2020). *COVID-19 and its Effects on Relationships*. Retrieved from https://www.relationships.org.au/what-we-do/research/online-survey/MaySurveyResults.pdf

Sanga, S. and J. McCrary (2020). "The impact of the Coronavirus lockdown on domestic violence." SSRN. doi:10.2139/ssrn.3612491

Sheikh, M.A., B. Abelsen, and J.A. Olsen (2016). "Differential recall bias, intermediate confounding, and mediation analysis in life course epidemiology: an analytic framework with empirical example." *Frontiers in Psychology*, 7: 1828.

Shim, J., R. Lee, and J. Kim (2016). "Hard times and harder minds: Material hardship and marital well-being among low-income families in South Korea." *Journal of Family Issues*, 38(18): 2545-2566. doi:10.1177/0192513X16653432

Stead, R., M.J. Shanahan and R.W. Neufeld (2010). ""I'll go to therapy, eventually": Procrastination, stress and mental health." *Personality and Individual Differences*, 49(3):175-180.

## Endnotes

1    https://www.srcentre.com.au/services/life-in-australia-panel

2    In order to monitor the impacts of COVID-19, the ANU Centre for Social Research and Methods has established a COVID-19 impact monitoring survey program. It builds upon data collected in January and February 2020 prior to COVID-19 restrictions being implemented, thereby following the same group of individuals prior to and through the COVID-19 pandemic period. This program provides population level estimates of the impact of COVID-19 and allows measurement of the variation in and the determinants of the change in outcomes for Australians. The surveys include a core set of questions on attitudes to COVID-19, labour market outcomes, household income, financial hardship, life satisfaction and mental health. In addition, each survey contains some specific questions of particular policy interest at the particular point in time in which the data was collected. The first wave of the COVID-19 monitoring surveys was conducted in April and the most recent survey conducted in May 2020. A number of additional waves of data will be collected throughout 2020 and 2021, with data from these surveys made available from the Australian Data Archive as soon as possible after the data collection has finished.

3    Data for this survey is available through the Australian Data Archive in unit record form (doi:10.26193/GNEHCQ).

4    Of those who completed the May 2020 wave of data collection, 2,986 individuals (91.9 per cent) also completed the April 2020 ANUpoll (the 37th wave of data collection). Of those who completed both the April and May surveys, 2,810 respondents (94.1 per cent) also completed the February 2020 survey (35th wave of data collection).

The ANU Centre for Social Research and Methods