Subjective wellbeing in parents during the COVID-19 pandemic in Australia

Elizabeth M. Westrupp^{1,2,3}

Mark A. Stokes¹

Matthew Fuller-Tyszkiewicz¹

Tomer S. Berkowitz¹

Tanja Capic¹

Sarah Khor¹

Christopher J. Greenwood¹

Antonina Mikocka-Walus¹

Emma Sciberras^{1,2,3,4}

George J. Youssef¹

Craig A. Olsson^{a 1,2,4}

Delyse Hutchinson^{a 1,2,4,5}

Robert A. Cummins^{a 1}

^a Joint senior authors

¹ Deakin University, Centre for Social and Early Emotional Development, School of
Psychology, Victoria, Australia

² University of Melbourne, Department of Paediatrics, Victoria, Australia

³ La Trobe University, Judith Lumley Centre, Victoria, Australia

⁴ Murdoch Children's Research Institute, Melbourne Royal Children's Hospital, Victoria,
Australia

⁵ The University of New South Wales, The National Drug and Alcohol Research Centre,
Australia

Corresponding author: Elizabeth Westrupp, School of Psychology, Deakin University, 221
Burwood Highway, Burwood, VIC 3125, Australia. Email: elizabeth.westrupp@deakin.edu.au;
Phone: +61 3 924 68974.

Word count: 4735 words.

Abstract

Objectives: To examine the subjective wellbeing of Australian parents raising children and adolescents (0-18 years) during ‘stage three’ COVID-19 restrictions (April 2020), in comparison with subjective wellbeing in parents assessed over an 18-year period prior to the pandemic. We also aimed to examine socio-demographic and COVID-19 predictors of subjective wellbeing during the pandemic.

Methods: Cross-sectional data were from: (1) the COVID-19 Pandemic Adjustment Survey (CPAS, N=2,365 parents of a child 0-18 years, 8-28th April, 2020); and, (2) a pre-pandemic database bringing together over 18-years of national data on subjective wellbeing (N=17,529 adults living with children, collected in annual surveys over 2002-2019).

Results: Levels of subjective wellbeing during the pandemic were considerably lower than ratings prior to the pandemic (Personal Wellbeing Index, mean [SD]=65.3 [17.0]; compared to [SD]=75.8 [11.9], $p<0.001$). Within the pandemic data, subjective wellbeing was lower in parents with low education, language other-than-English, receiving income assistance (i.e., a government benefit), single parents, and young parents. Subjective wellbeing was also lower in fathers, parents raising a child with a neurodevelopmental condition, parents with physical or mental health problems, and parents reporting COVID-related stressors, such as employment changes, financial strain, negative feelings/attributions about COVID-19, and supervising children while working-from-home. Unexpectedly, parent engagement with news media about the pandemic was associated with higher subjective wellbeing.

Conclusion: Subjective wellbeing in parents raising children aged 0-18 years appears to be disproportionately impacted by the COVID-19 pandemic and associated social restrictions in

Australia. Specific at-risk groups, for which government intervention may be warranted, include parents in socially disadvantaged contexts, parents with pre-existing mental health difficulties, and parents facing significant COVID-19 related work changes.

Keywords: COVID-19 pandemic, subjective wellbeing, parent, Australia, families

The global spread of SARS-Cov-2 (i.e., the virus that causes COVID-19) has led to the rapid implementation of population-wide lockdown measures which carry significant competing risks in a range of other areas of health, with widespread public health and clinical concern around impacts on mental health in particular. Results from a study in 22 countries has shown substantially elevated adult mental health symptoms from late March to early April 2020, including a two standard deviation increase above historical norms for generalised anxiety, and a one standard deviation increase above norms for depression (Nelson et al., 2020). Consistent with this, a review of 28 studies in mostly Chinese and hospital populations has shown similar increases in adult symptoms of stress, anxiety, and depression during the pandemic (Rajkumar, 2020). Less is known about broader impacts on overall subjective wellbeing in other populations; yet widespread subclinical mental health difficulties carry significant implications for the mental health of the population. This places particular importance on population studies of subjective wellbeing. The current study compares parent subjective wellbeing during a ‘stage three’ lockdown to pre-pandemic normative data from a series of cross-sectional surveys of Australian adults collected annually over 18 years (Khor et al., 2020b).

Australia had early success in slowing the infection rate of SARS-Cov-2 via social distancing measures implemented from March through May 2020, with a ‘stage three’ lockdown requiring that Australians avoid leaving their house except for four reasons: (1) shopping for food and supplies, (2) care and caregiving, (3) exercise, and (4) study or work – if unable to do so from home (Department of Health, 2020). Based on data from *Life in Australia* (~N=3000), a representative longitudinal sample of Australian residents aged 18 years and over (Kaczmirek et al., 2019), there is emerging evidence of lower rates of adult subjective wellbeing

during the pandemic (Biddle et al., 2020a; Biddle et al., 2020b). Specifically, pre-pandemic, Global Life Satisfaction, i.e., measured on a 0-10 scale where 0 is 'not at all satisfied' and 10 is 'completely satisfied', changed from **7.05** in October 2019, to **6.90** in January 2020. This period in January saw the most widespread and destructive bushfire season ever to occur in Australia. Global Life Satisfaction then dropped again to **6.51** in April 2020 (coinciding with restrictive COVID-19 social distancing measures), rising to **6.86** in May 2020, at a period when social distancing measures were on the cusp of being relaxed.

This finding was not replicated in neighbouring New Zealand over a similar time period, and under a more restrictive 'stage four' lockdown. Specifically, Sibley et al. (2020) assessed subjective wellbeing from March to April 2020, in a nationally representative sample of 1003 New Zealanders, and found no change over this period on items from both the Personal Wellbeing Index (International Wellbeing Group, 2013) or the Satisfaction With Life Scale (Diener et al., 1985). The reason for differential impacts between Australia and New Zealand remains unclear, but may be related to overall lower infection rates in New Zealand. It is also likely that impacts on subjective wellbeing are being felt in both countries, but are concentrated in more particular populations characterised by higher demands (or higher needs) prior to the pandemic, and not modelled in either study.

Families, in particular, have been hard hit by SARS-Cov-2 containment restrictions. Parent mental health, parenting practices, and the quality of the couple relationship are all fundamental to parent subjective wellbeing and healthy child development (Pinquart, 2017; Westrupp et al., 2018; Yap and Jorm, 2015). However, their protection depends on access to high quality supports, which have been substantially reduced in the pandemic; including

restricted access to co-curricular activities, as well as to clinical, community, and family supports and services (Department of Health, 2020). Parents have also had reduced opportunities for social and community connection, physical activity, and access to greenspace. Furthermore, many parents have had to work from home while supporting their children's distance education at home, which carries well established risks for both parent and child mental health problems, as well for irritable parenting, and higher couple conflict (Dinh et al., 2017; Vahedi et al., 2019; Van Der Heijden et al., 2008; Westrupp et al., 2015; Innstrand et al., 2008). Consistent with this, pandemic data from 1,500 parents of children aged 4-16 years in the United Kingdom's *Co-SPACE Study* showed that two thirds of parents reported they were not meeting the needs of both work and their child(ren) during lockdown in late March (Waite and Creswell, 2020).

In the current study, we address a pressing need to estimate the impact of the SARS-Cov-2 containment measures on parent subjective wellbeing, by comparing parent-report of subjective wellbeing using the Personal Wellbeing Index, in: (1) cross-sectional pandemic data from 2,365 parents of a child 0-18 years in the COVID-19 Pandemic Adjustment Survey (CPAS), collected in April 2020 during 'level three' restrictions; and, (2) national pre-pandemic data from 17,529 parents living with children of all ages in the Australian Unity Wellbeing Index (AUWI), collected in 36 annual cross-sectional surveys over 2002-2019 (Cummins et al., 2003; Khor et al., 2020b). Specifically, the aims of the study were threefold:

1. To compare subjective wellbeing assessed in CPAS parents during the pandemic with subjective wellbeing assessed in AUWI parents prior to the pandemic.

2. Within CPAS parents, to investigate whether subjective wellbeing in parents reporting 'high mental health risk' is lower compared to other parents, with 'high mental health risk' defined according to pre-existing or current parent physical or mental health problem, and/or having a child with a neurodevelopmental or mental health condition; all of which have been associated with lower parent subjective wellbeing in previous research (Craig et al., 2016; Lach et al., 2009).
3. Within CPAS parents, to examine the extent to which pre-pandemic factors (demographic, socio-economic, parent and child diagnosis) and COVID-related stressors (i.e., environmental risks such as financial or housing insecurity; working from home with children; food shortages; media use, as well as feelings and attitudes about COVID-19) are associated with compromised parent subjective wellbeing during the pandemic.

Method

Participants and Study Design

The COVID-19 Pandemic Adjustment Survey (CPAS).

We used baseline data from a longitudinal cohort study of Australian parents, the COVID-19 Pandemic Adjustment Survey (CPAS), N=2,365, collected over 3 weeks from the 8th of April until the 28th of April, 2020 (see study protocol, Westrupp et al., 2020a). Parents were eligible to participate if they were an Australian resident, 18 years or over, and a parent of a child aged 0-18 years. Participants were recruited via paid and unpaid social media advertisements, which contained a web link directing participants to a Qualtrics survey. The study was approved by the Deakin University Human Ethics Advisory Group (Project number: HEAG-H 52_2020).

Normed data from the Australian Unity Wellbeing Index (AUWI).

We used normative data on subjective wellbeing from 36 cross-sectional surveys collected annually over the period 2002-2019 as part of the Australian Unity Wellbeing Index (for access to cross-sectional data, see: www.acqol.com.au). We analysed data from a sub-sample of parents with one or more child living in the same household (total sub-sample, N=17,529) (Khor et al., 2020a). Data collection for the AUWI surveys was carried out via telephone interview. The sample for each survey was stratified to match the demographic distribution of the population by gender and geographic location. Participants were aged 18 years and older and fluent in English. The AUWI was approved by the Deakin University Human Ethics Advisory Group (Project number: HEAG-H 45).

Measures

The Personal Wellbeing Index (PWI) (International Wellbeing Group, 2013) (7 items) was used to measure subjective wellbeing. The PWI comprises seven domains of life, representing a first level deconstruction of the Global Life Satisfaction question: “How satisfied are you with your life as a whole?”, with each domain contributing unique variance. It correlates strongly with the Satisfaction with Life Scale (Diener et al., 1985) at .78 and has a Cronbach alpha between .70 and .85 in Australian and international samples (International Wellbeing Group, 2013). The seven domains measure satisfaction with Standard of Living, Health, Achieving in Life, Relationships, Safety, Community-Connectedness, and Future Security. Example item: “How satisfied are you with... your standard of living?”. The items are intended to be rated on an end-defined, unipolar, 11-choice scale from zero ‘no satisfaction at all’ to 10 ‘completely satisfied’. The CPAS applied a 10-choice scale, ranging from 1 ‘no satisfaction at all’ to 10 ‘completely satisfied’. For consistency with the AUWI datasets, the PWI scale used in the CPAS was transformed to a 11-point scale as per the formula described in the Personal Wellbeing Index Manual (International Wellbeing Group, 2013). The domain scores are converted to a percentage of scale maximum and summing them together to produce a PWI score on a scale from 0 to 100 percentage points. Participant data with a score 0 or 100 percentage points on the PWI were removed, as advised by the index manual.

Demographic factors (CPAS): Participants were instructed to complete the following items as they pertained to their situation prior to the pandemic: their own and their child’s age and gender, parent country of birth and Aboriginal and Torres Strait Islander status, whether a language other than English was spoken at home, geographical location (i.e., postcode), and

number of children in the household, single parent status (i.e., have no partner or not living with partner).

Social disadvantage (CPAS): Education level (i.e., non-high school completion versus completion), household income (low income defined as AU \$52,000 per year or less), receipt of government benefits. Participants were also asked about money shortages in the 12 months prior to the pandemic (e.g., unable to pay bills, mortgage or rent, unable to heat home, went without meals, pawned or sold something, asked for financial help). These 7 items were summed to form a financial deprivation index (Westrupp et al., 2020b).

Parent and child diagnosis (CPAS): Parents also reported whether they have a pre-existing physical or mental health condition, and whether their child has a neurodevelopmental or mental health condition (Attention Deficit Hyperactivity Disorder; Autism, Asperger's, or other Autism Spectrum; Oppositional Defiant or Conduct Disorder; Speech or Language Disorder; Reading or Learning Disorder; Head Injury; Epilepsy/Head Injury/Other Neurological Diagnosis; Disability).

High mental health risk (CPAS). High pre-existing mental health risk was defined as parents with any of the following risk factors: in the severe range for current anxiety or depression symptoms, reporting a previous physical or mental health diagnosis, or having a child with a pre-existing neurodevelopmental or mental health condition.

A *COVID-19 environmental risk index* was calculated using 7 measures. Four items were adapted from the CoRonavIruS Health Impact Survey (CRISIS) V1.0 (Merikangas et al., 2020) to measure: (1) COVID-19 participant or family member diagnosis, hospitalisation, self-quarantine, family member passed away; (2) financial problems; (3) housing; and (4) food

insecurity related to COVID-19. In addition, participants were asked whether they had experienced (5) job loss; (6) reduced employment; or, (7) redeployment to new roles and responsibilities in their work. Each of the 7 COVID-19 risk factors was converted to a binary variable (0=no risk; 1=risk), and then summed to form a COVID-19 environmental risk index score. Participants were also asked about the frequency of their use of media news sources (newspapers, television, social media, radio, rated on 6-point scale from ‘not at all’ to ‘multiple times per day’); two items assessed participants’ appraisals of COVID-19 as a serious health risk, whether they were likely to catch COVID-19 (both items rated on a 7-point scale from ‘strongly disagree’ to ‘strongly agree’). Participants were also asked about their feelings about COVID-19 (worry, fear, confidence, hope) rated on a 4-point scale from ‘not at all’ to ‘a great deal’. The two positive feelings were reverse coded and the 4 items were summed to a total score with higher scores reflecting more negative feelings. Participants reported on whether they were working from home, and whether children who were usually in a childcare or a formal education setting were also at home with them.

Data Procedures

Population weighting.

We derived post-stratification weights in the CPAS dataset to compensate for differences between the final sample and the national population of parents. We generated post-stratification weights through a raking approach (Kolenikov, 2014), using six demographic factors: (1) geographic location (major city, inner and outer regional areas, and remote areas); (2) child age groups (0-4, 5-9, 10-12, 13-14, and 15-18 years); (3) parent gender (male, female), (4) family structure (single parent, couple family), (5) parent education (Did not complete high

school, high school completion; and (6) parent employment status (employed, unemployed). The CPAS datasets was weighted to be equivalent to a subpopulation of Australian adults; i.e., parents of a child 0-18 years, with an estimated total population size of 8.4 million parents. Australian Bureau of Statistics population level statistics for parents of dependent children were included for comparison to the AUWI and CPAS demographic characteristics (Australian Bureau of Statistics, 2017).

Missing data.

The AUWI dataset had minimal missing data (0 to 0.8% on PWI variables), thus no missing data treatment was applied. In the CPAS dataset, item level missing data ranged from 0 to 8% on individual variables. In the CPAS dataset, multivariate multiple imputation using chained equations was performed to account for missing data. All variables from the final analytic models and weights were included in the multiple imputation model to create 100 imputed datasets. All CPAS reported results are from the multiply imputed datasets.

Data analysis.

Analyses were conducted in Stata version 16 (StataCorp, 2011). To address Aims 1 and 2, means and standard deviations were calculated for the CPAS and AUWI samples, overall, and for CPAS parents with and without high mental health risk. CPAS weighted data are presented to ensure reported outcomes are as close to population representation as possible, but we primarily focus on unweighted results in our interpretation. We conducted a series of one sample t-tests (CPAS compared to AUWI norms), and independent samples t-tests (CPAS high risk versus low risk groups) and calculated Cohen's d effect sizes to assess unweighted differences between samples/groups on each domain.

To address Aim 3, a series of unadjusted linear regression analyses were conducted (unweighted) with the total PWI score and PWI domains entered as dependent outcome variables, and pre-pandemic and COVID-related stressors separately entered as independent variables into each univariate model. Next, adjusted models were conducted to assess the unique contribution of each of these independent variables in relation to each indicator of parent subjective wellbeing, while simultaneously accounting for the contribution of all the other pre-pandemic and COVID-related stressor variables in the model. Variables were included in adjusted models where there was evidence for an unadjusted association with the outcome ($p < 0.1$). In line with Perneger (1998), we describe all results without adjusting for multiple comparisons.

Results

Sample Characteristics

Characteristics of the CPAS and AUWI samples are shown in Table 1. Parents in the CPAS sample were on average 38 years with a primary school aged child. The majority of the CPAS sample were cisgender women; and just over half of their children were cisgender boys. Parents in the AUWI norm sample were on average 46 years of age, with an even distribution of cisgender men and women. Most CPAS participants were born in Australia and completed high school. Both the CPAS and AUWI samples had a lower proportion of participants reporting a low income compared to the Australian population. One in nine CPAS participants were single parents. The distribution across geographic areas was similar for the CPAS and AUWI datasets, and fairly representative of the Australian population. CPAS had a higher proportion of parents with two or more children (72%) compared to the Australian population (58%). Seventy-two percent of the CPAS sample reported high mental health risk, i.e., current parent anxiety or depression symptoms, a pre-existing parent mental and/or physical health diagnosis, or a child neurodevelopmental or mental health condition. As such, CPAS represents a somewhat higher risk sample of parents in the Australian community relative to the AUWI normative data.

Within the CPAS cohort, 20% of parents reported experiencing at least one factor of financial deprivation in the 12 months prior to the pandemic, and 10% reported two or more. The majority of CPAS participants (72%) reported experiencing at least one risk factor on the COVID-19 environmental risk index, such as diagnosis, hospitalisation, employment changes, and financial impacts, and almost 40% reported two or more. One half of CPAS participants reported working from home while caring for or home-schooling their child. More than half of

CPAS participants reported having a pre-existing mental or physical health condition; and just under a third had a child with a neurodevelopmental or mental health condition.

Measurement Sensitivity Analysis

As explained in the attached Supplementary Analysis, we conducted two sensitivity analyses related to the measurement of parent subjective wellbeing to explore whether the estimates of subjective wellbeing were influenced by slight methodological changes in the presentation of items (see Supplementary Analysis for details). First, we assessed the placement of the PWI items after emotive measures within the CPAS survey, which may have influenced PWI scores. We found a small placement effect of 0.75 PWI units ($t=36.15$, $df=2107.60$, $p<.001$). Second, we assessed the restricted range of the CPAS PWI response scale and found that the variance had not been reduced by the reduced score range. Given the difference in the gender balance between the CPAS and AUWI samples, we conducted a third sensitivity analysis to investigate socio-demographic differences between cisgender women and men within the CPAS sample. Compared to men, we found that women were more likely to report COVID-19 diagnosis, hospitalisation, employment changes, and financial impacts, to be a single parent, and to be receiving a government benefit, and less likely to report that they had not completed high school, and were supervising a child at home while they worked from home. There were no differences in reported rates of pre-pandemic financial deprivation.

Aim 1: Comparing parent subjective wellbeing before and during the pandemic

Figure 1 and Supplementary Table 1 compares parent PWI total and individual domain scores for the AUWI norms (pre-pandemic) and CPAS results (during the pandemic). According to CPAS unweighted results, subjective wellbeing levels in parents during the

pandemic were notably lower than pre-pandemic AUWI norms. The largest difference was evident for the PWI, where CPAS results were close to one standard deviation lower than the norm data, $t(2159) = -29.92$, $p < 0.001$, Cohen's $d = -0.62$. There was evidence for differences across all domains, with small differences for Standard of Living and Personal Safety (Cohen's $d = -0.21$; -0.32 respectively, both $p < 0.001$), moderate differences for Achieving in Life, Personal Relationships, Community Connectedness, and Future Security (Cohen's $d = -0.50$ to -0.55 , all $p < 0.001$), and a large difference for Health (Cohen's $d = -0.60$, $p < 0.001$). CPAS weighted results showed consistently lower subjective wellbeing than the unweighted results, suggestive of even greater differences between pre-pandemic and pandemic figures.

Aim 2: High mental health risk

Table 2 presents comparisons for CPAS parents with high mental health risk, i.e., current parent anxiety or depression symptoms, a pre-existing mental and/or physical health diagnosis, or child neurodevelopmental or mental health conditions (72%), compared to other parents (28%). Parents with high mental health related risk consistently reported lower subjective wellbeing across all domains. The largest differences were evident for Personal Health, $t(2176) = -9.74$, $p < 0.001$, Cohen's $d = -0.47$, and the PWI, $t(2176) = -8.71$, $p < 0.001$, Cohen's $d = -0.42$, but group differences were evident across all domains ($p < 0.001$, Cohen's $d = -0.20$ to -0.33). We compared levels of subjective wellbeing in CPAS parents not reporting high mental health risk with AUWI norms, and found evidence for lower levels of subjective wellbeing across the PWI, $t(609) = -9.05$, $p < 0.001$, Cohen's $d = -0.36$) and six of the seven

domains (Cohen's d , -0.09 to -0.39), whereas no differences were evidence for Standard of Living, $t(609) = -1.50$, $p = 0.135$.

Aim 3: Parent subjective wellbeing: Associations with pre-pandemic factors and COVID-19 stressors

Tables 3-5 present results from unadjusted and adjusted regression analyses testing the associations between parent subjective wellbeing on the PWI and subdomains, and a range of demographic, socio-economic, parent and child diagnosis, and COVID-19 related stressors. Unadjusted results show evidence for one protective factor; where higher frequency of a variety of news media use was associated with higher total subjective wellbeing scores on the PWI. Otherwise, parent Aboriginal and Torres Strait Islander status, speaking a language other than English at home, receiving a government benefit, low education, single parents, younger child age, and higher financial deprivation prior to the pandemic were associated with lower subjective wellbeing. Compared to parents living in a major city, parents living in regional areas also reported lower subjective wellbeing. Child neurodevelopmental or mental health condition and parent physical or mental health diagnosis were also associated with lower subjective wellbeing. The COVID-19 pandemic-related factors were all associated with lower parent subjective wellbeing, including supervising children while working from home, higher levels of COVID-19 risk factors; i.e., diagnosis, hospitalisation, employment changes, and financial impacts; beliefs about being likely to catch COVID-19, more negative feelings about COVID-19; i.e., higher fear and worry, and low confidence and hope; and the belief that COVID-19 is a serious health risk.

These results were mostly consistent across the PWI domains, with some exceptions. Cisgender women were more likely than cisgender men to report higher subjective wellbeing on the Standard of Living, Achieving in Life, and Community Connectedness domains. The most consistent findings were evident for Aboriginal and Torres Strait Islander status, single parents, government benefits, pre-pandemic financial deprivation, the COVID-19 environmental risk index, and negative feelings about COVID-19.

Table 1: Sample characteristics for the Australian Unity Wellbeing Index (AUWI) and COVID-19 Pandemic Adjustment Survey (CPAS) samples.

	ABS	AUWI	CPAS ^{\$}
	population ^{\$}	Norms [%]	
		N (%)	%
Parent age, m(sd)	n/a	45.9 (11.8)	38.3 (7.1)
Child age, m(sd)	n/a	n/a	8.7 (5.1)
Parent gender			
Cisgender men	46%	8255 (47%)	19%
Cisgender women	54%	9274 (53%)	81%
Transgender or nonbinary	n/a	n/a	<1%
Child gender			
Cisgender boy	n/a	n/a	51%
Cisgender girl	n/a	n/a	49%
Transgender or nonbinary	n/a		<1%
Aboriginal or Torres Strait Islander	4%	n/a	2%
Language other than English	12%	n/a	5%
Parent born overseas	21%	n/a	18%
Low household income			
\$52,000 or less per year	21%		14%
\$60,000 or less per year		13%	
Receiving government benefit		n/a	6%
Did not complete high school	40%	n/a	9%
Single parent household	11%		11%

Geographic location			
Major Cities of Australia	74%		70%
Inner Regional Australia	17%		23%
Outer Regional Australia	7%		6%
Remote Australia	2%		1%
Number of children			
1 child	42%	n/a	28%
2 children	39%	n/a	46%
3 children	14%	n/a	18%
4 or more children	5%	n/a	7%
Parent mental or physical health condition	n/a	n/a	55%
Child neurodevelopmental or mental health condition	n/a	n/a	31%
COVID-19 related factors			
Deprivation index, m(sd)			0.4 (1.0)
Child home while working		n/a	50%
COVID-19 environmental risk index, m(sd)			1.4 (1.2)

Notes: m(sd) = Mean (standard deviation); ABS = Australian Bureau of Statistics; AUWI = Australian Unity Wellbeing Index; CPAS = COVID-19 Pandemic Adjustment Survey

^{\$} Data from the Australian Bureau of Statistics summarising characteristics of Australian parents living with a dependent child (usually defined as 0-14 years).

[%] Norms from 2002-2019, N=17,529 parents living with children (includes children of all ages living in the same household as their parent/s).

[§] Data collected 8th-28th April 2020, N=2,365 parents of a child 0-18 years, data are multiply imputed and thus can only be presented as percentages.

Figure 1: Means and standard deviations (i.e., error bars) for the AUWI norm and unweighted and weighted CPAS samples on the Personal Wellbeing Index (PWI) and PWI individual domains.

Table 2: Differences for CPAS participants with and without high pre-existing mental health risk: Unweighted and weighted comparisons for the Personal Wellbeing Index (PWI).

	CPAS: High risk (72%)		CPAS: Not high risk (28%)	
	Weighted	Unweighted	Weighted	Unweighted
	Mean (sd)	Mean (sd)	Mean (sd)	Mean (sd)
Personal Wellbeing Index	59.88 (18.61)	63.42 (17.50)	68.65 (14.59)	70.40 (14.80)
Standard of Living	67.76 (22.02)	71.76 (21.08)	72.98 (19.12)	75.92 (18.77)
Health	56.22 (22.39)	60.10 (21.87)	68.15 (19.52)	69.91 (18.99)
Achieving in Life	57.06 (23.33)	60.81 (22.33)	64.95 (19.91)	67.37 (20.20)
Personal Relationships	65.23 (24.83)	66.78 (23.60)	73.35 (20.09)	74.23 (20.11)
Personal Safety	69.79 (24.11)	71.76 (22.68)	78.22 (18.55)	78.80 (18.82)
Community Connectedness	50.87 (27.25)	56.12 (25.73)	60.35 (23.37)	62.45 (23.54)
Future Security	52.24 (26.63)	56.63 (25.14)	62.54 (21.48)	64.13 (22.19)

Notes: Data are multiply imputed. sd = Standard deviation; CPAS = COVID-19 Pandemic Adjustment Survey. High risk defined as parents with any of the following risk factors, including severe range for current anxiety or depression, reporting a previous physical or mental health diagnosis, or having a child with a pre-existing neurodevelopmental or mental health condition.

Table 3: Unadjusted and adjusted associations between CPAS demographic characteristics prior to the pandemic and parent subjective wellbeing domains: Personal Wellbeing Index, Standard of Living and Health.

	Personal Wellbeing Index				Standard of Living				Health			
	Unadjusted		Adjusted		Unadjusted		Adjusted		Unadjusted		Adjusted	
	B	B	LL	UL	B	B	LL	UL	B	B	LL	UL
Demographic factors												
Parent age	-0.01				0.06				-0.04			
Child age	-0.23**	-0.17*	-0.32	-0.03	-0.26**	-0.12	-0.30	0.05	-0.30**	-0.17	-0.36	0.03
Parent gender												
Cisgender women ^{\$}	0.23				1.98	3.83**	1.83	5.83	0.25			
Transgender or nonbinary ^{\$}	18.29				24.53	26.91	-7.83	61.64	7.16			
Aboriginal or Torres Strait Islander	-13.96**	-7.92**	-12.12	-3.71	-11.82**	-6.25*	-11.64	-0.87	-13.10**	-6.73*	-12.45	-1.00
Language other than English	-3.48*	-4.26**	-7.22	-1.30	-6.92**	-7.48**	-11.25	-3.70	-1.24			
Socio-economic risk factors												

Receiving government benefit	-17.34**	-3.98*	-6.99	-0.96	-20.42**	-7.47**	-11.34	-3.60	-20.42**	-3.55	-7.63	0.53
Did not complete high school	-9.73**	-3.06**	-5.19	-0.93	-9.64**	-2.45	-5.19	0.28	-10.74**	-4.35**	-7.24	-1.46
Single parent household	-13.53**	-6.72**	-8.84	-4.59	-12.34**	-4.49**	-7.27	-1.70	-9.91**	-2.60	-5.51	0.31
Geographic location												
Inner Regional Australia%	-3.15**	-1.03	-2.49	0.43	-2.90**	-0.65	-2.55	1.26	-4.95**	-3.25**	-5.21	-1.28
Outer Regional Australia%	-2.99*	-0.17	-2.67	2.34	-2.32	0.61	-2.62	3.84	-4.44*	-1.58	-4.99	1.83
Remote Australia%	2.71	2.97	-3.26	9.19	4.43	3.12	-4.76	11.01	2.14	3.03	-5.36	11.42
Number of children	-0.58				-1.17*	-0.16	-1.10	0.77	-0.60			
Financial deprivation index	-5.83**	-3.09**	-3.78	-2.41	-7.38**	-4.94**	-5.82	-4.06	-5.72**	-3.28**	-4.22	-2.35
Parent and child diagnosis												
Child neurodevelopmental diagnosis	-5.42**	-2.10**	-3.44	-0.76	-4.58**	-1.57	-3.29	0.15	-6.04**	-1.83*	-3.65	-0.01
Parent physical/mental health diagnosis	-6.35**	-1.95**	-3.23	-0.67	-3.21**	0.94	-0.72	2.59	-10.27**	-5.85**	-7.59	-4.12

COVID-19 related stressors

Child home while working	-1.70*	1.34	-0.12	2.80	-1.30				-2.69**	0.71	-1.28	2.71
COVID-19 environmental risk index	-5.00**	-2.96**	-3.48	-2.44	-5.09**	-3.35**	-4.02	-2.67	-3.91**	-1.50**	-2.22	-0.78
Believe likely to catch COVID-19	-0.89**	-0.04	-0.43	0.34	-0.25				-1.28**	-0.12	-0.65	0.40
Fear and worry about COVID-19	-10.08**	-7.04**	-8.13	-5.96	-6.57**	-4.09**	-5.50	-2.69	-9.13**	-4.92**	-6.41	-3.43
Believe COVID-19 serious health risk	-1.96**	-0.45*	-0.82	-0.07	-1.34**	-0.20	-0.67	0.27	-3.18**	-1.86**	-2.37	-1.35
Higher frequency of news media use	0.93*	0.98**	0.35	1.61	1.27**	1.25**	0.45	2.06	0.78			

Notes: Data are multiply imputed. Variables were included in adjusted models where there was evidence for an unadjusted association with the outcome (p<0.1).

B = unweighted regression coefficient; LL = lower limit of a 95% confidence interval; UL = upper limit of a 95% confidence interval; * p<0.05; ** p<0.01.

\$ Compared to cisgender men; % Compared to Major Cities of Australia.

Table 4: Unadjusted and adjusted associations between CPAS demographic characteristics prior to the pandemic and parent subjective wellbeing domains: Achieving in Life, Personal Relationships, and Personal Safety.

Demographic variables	Achieving in Life				Personal Relationships				Personal Safety			
	Unadjusted		Adjusted		Unadjusted		Adjusted		Unadjusted		Adjusted	
	B	B	LL	UL	B	B	LL	UL	B	B	LL	UL
Demographic factors												
Parent age	-0.05				-0.25**	-0.33**	-0.51	-0.15	-0.13	-0.11	-0.27	0.05
Child age	-0.30**	-0.16	-0.38	0.06	-0.36**	0.19	-0.09	0.48	-0.37**	-0.17	-0.38	0.04
Parent gender												
Cisgender women ^{\$}	1.94	4.37**	2.15	6.58	-0.61				-2.37*	1.69	-0.44	3.82
Transgender or nonbinary ^{\$}	18.72	23.67	-16.02	63.36	22.89				16.39	23.52	-13.38	60.41
Aboriginal or Torres Strait Islander	-11.52**	-5.42	-11.38	0.54	-8.96**	-2.37	-8.69	3.96	-17.37**	-10.86**	-16.49	-5.23
Language other than English	-5.53*	-6.45**	-10.68	-2.22	-0.20				-5.50*	-5.42**	-9.41	-1.43

Socio-economic risk factors

Receiving government benefit	-17.81**	-7.62**	-11.96	-3.28	-16.52**	-1.24	-5.78	3.30	-13.24**	-0.67	-4.70	3.36
Did not complete high school	-8.85**	-2.13	-5.14	0.87	-5.87**	-0.12	-3.32	3.08	-7.78**	-1.62	-4.49	1.24
Single parent household	-10.24**	-2.99	-6.07	0.10	-20.41**	-16.24**	-19.44	-13.04	-13.55**	-8.53**	-11.41	-5.65
Geographic location												
Inner Regional Australia%	-3.18**	-1.26	-3.34	0.82	-2.76*	-1.05	-3.23	1.13	-1.53			
Outer Regional Australia%	-6.03**	-3.36	-6.89	0.17	-3.67	-1.88	-5.63	1.86	-0.87			
Remote Australia%	0.82	-0.06	-8.66	8.53	-1.03	-1.53	-10.83	7.77	0.50			
Number of children	-0.87	0.25	-0.81	1.31	0.25	-0.87	-2.00	0.26	-0.16			
Financial deprivation index	-5.92**	-3.33**	-4.30	-2.36	-3.33	-2.30**	-3.34	-1.26	-4.61**	-2.11**	-3.04	-1.19

Parent and child diagnosis

Child neurodevelopmental diagnosis	-5.57**	-2.29*	-4.19	-0.40	-6.72**	-3.46**	-5.46	-1.45	-5.21**	-1.59	-3.38	0.20
Parent physical/mental health diagnosis	-5.73**	-1.89*	-3.67	-0.10	-6.83**	-2.97**	-4.88	-1.06	-6.27**	-1.69	-3.40	0.02

COVID-19 related stressors

Child home while working	-3.15**	-0.38	-2.48	1.72	-0.38	0.11	-2.14	2.36	-1.24			
COVID-19 environmental risk index	-4.91**	-3.03**	-3.76	-2.29	-3.03	-1.81**	-2.60	-1.02	-4.87**	-2.45**	-3.16	-1.75
Believe likely to catch COVID-19	-0.49	0.09	-0.45	0.63	0.09	-0.38	-0.96	0.20	-1.87**	-0.75**	-1.26	-0.23
Fear and worry about COVID-19	-8.57**	-6.59**	-8.14	-5.04	-6.59	-5.13**	-6.76	-3.51	-14.33**	-11.83**	-13.31	-10.36
Believe COVID-19 serious health risk	-1.38**	0.16	-0.37	0.69	0.16	0.44	-0.12	1.00	-2.54**	-0.28	-0.78	0.23
Higher frequency of news media use	0.60				0.66				0.26			

Notes: Data are multiply imputed. Variables were included in adjusted models where there was evidence for an unadjusted association with the outcome (p<0.1).

B = unweighted regression coefficient; LL = lower limit of a 95% confidence interval; UL = upper limit of a 95% confidence interval; * p<0.05; ** p<0.01.

\$ Compared to cisgender men; % Compared to Major Cities of Australia.

Table 5: Unadjusted and adjusted associations between CPAS demographic characteristics prior to the pandemic and parent subjective wellbeing domains: Community Connectedness and Future Security.

Demographic variables	Community Connectedness				Future Security			
	Unadjusted	Adjusted			Unadjusted	Adjusted		
	B	B	LL	UL	B	B	LL	UL
Demographic factors								
Parent age	0.28**	0.26**	0.11	0.41	0.04			
Child age	0.13				-0.17	-0.12	-0.33	0.09
Parent gender								
Cisgender women ^{\$}	2.16	6.58**	3.94	9.22	-1.77			
Transgender or nonbinary ^{\$}	29.78	34.73	-11.73	81.20	8.57			
Aboriginal or Torres Strait Islander	-16.09**	-9.82**	-16.79	-2.85	-18.86**	-11.96**	-18.11	-5.81
Language other than English	-0.67				-4.31	-3.86	-8.10	0.38

Socio-economic risk factors

Receiving government benefit	-15.17**	-2.42	-7.37	2.53	-22.44**	-6.46**	-10.85	-2.06
Did not complete high school	-13.40**	-6.99**	-10.48	-3.50	-11.82**	-3.07	-6.13	0.00
Single parent household	-11.75**	-6.90**	-10.43	-3.37	-16.53**	-7.79**	-10.86	-4.73
Geographic location								
Inner Regional Australia [%]	-3.88**				-2.88*			
Outer Regional Australia [%]	-2.11				-1.47			
Remote Australia [%]	9.08				3.00			
Number of children	-0.26				-0.02			
Financial deprivation index	-5.13**	-2.23**	-3.36	-1.09	-7.31**	-3.38**	-4.37	-2.39

Parent and child diagnosis

Child neurodevelopmental diagnosis	-4.32**	-1.91	-4.08	0.27	-5.49**	-1.44	-3.39	0.51
Parent physical/mental health diagnosis	-5.85**	-1.87	-4.00	0.26	-6.27**	-0.09	-1.94	1.77

COVID-19 related stressors

Child home while working	1.60				-1.99	1.58	-0.57	3.72
COVID-19 environmental risk index	-4.35**	-2.25**	-3.11	-1.38	-8.41**	-6.08**	-6.84	-5.31
Believe likely to catch COVID-19	-0.59	0.16	-0.47	0.80	-0.95**	0.25	-0.30	0.81
Fear and worry about COVID-19	-10.73**	-8.91**	-10.73	-7.09	-14.48**	-9.99**	-11.56	-8.42
Believe COVID-19 serious health risk	-1.69**	-0.33	-0.94	0.29	-2.61**	-0.54*	-1.08	0.00
Higher frequency of news media use	2.03**	1.89**	0.86	2.93	0.94**	1.05*	0.15	1.95

Notes: Data are multiply imputed. Variables were included in adjusted models where there was evidence for an unadjusted association with the outcome (p<0.1).

B = unweighted regression coefficient; LL = lower limit of a 95% confidence interval; UL = upper limit of a 95% confidence interval; * p<0.05; ** p<0.01.

\$ Compared to cisgender men; % Compared to Major Cities of Australia.

Discussion

We found that subjective wellbeing in CPAS parents during the April 2020 ‘level three’ lockdown in Australia was substantially lower (0.5-1 SD) than pre-pandemic levels, as assessed annually over the previous two decades in AUWI parents. The pre-pandemic to pandemic difference equated to more than a 10-point reduction in scores on the total PWI in CPAS parents compared with AUWI parents. Within the CPAS parent sample, the most profound differences in subjective wellbeing were among parents with *pre-existing challenges* that predated the pandemic; including physical or mental health problems, having a child with a neurodevelopmental or mental health condition, living in a socially disadvantaged context, and being a young parent, as well as parents reporting *current challenges*; including anxiety and depression, and direct impacts of COVID-19, such as job loss. We also found that parents from Aboriginal and Torres Strait Islander backgrounds reported lower subjective wellbeing in the CPAS sample.

We consistently found that indicators of pre-pandemic socio-economic disadvantage, such as financial deprivation, government benefit, single parent status, and low education, were associated with lower subjective wellbeing; as were Aboriginal and Torres Strait Islander background, and speaking a language other than English. Results also indicated that younger parent age was associated with lower ratings of subjective wellbeing, personal relationships, and community connectedness. These results suggest that vulnerable families already struggling with socio-economic disadvantage prior to the pandemic, or parents in disadvantaged demographic groups, are likely to have suffered the most during the April 2020 ‘level three’ restrictions in Australia. Further, parents directly impacted by the COVID-19 pandemic reported

consistently lower subjective wellbeing, over and above the influence of pre-pandemic socio-economic disadvantage. Direct COVID-19 impacts included the experience of COVID-19-related illness, job loss or employment changes, financial hardship, negative feelings and attributions about COVID-19, and juggling child supervision/remote learning whilst working from home. All of these factors are likely to have placed parents under additional strain as suggested by their low scores on indicators of subjective wellbeing. Together, these findings highlight a need for targeted supports and services for families experiencing socio-demographic risk, both in relation to pre-existing disadvantage, and in relation to risk that has occurred as a result of the pandemic and the related social distancing measures put in place to contain the virus in Australia.

We found consistent associations between lower subjective wellbeing and parent report of high mental health risk, demonstrating additional strain associated with parents having pre-existing or concurrent mental or physical health problems or having a child with a neurodevelopmental or mental health condition. These findings are in line with previous pre-pandemic research showing lower subjective wellbeing in these groups (Craig et al., 2016; Lach et al., 2009). It is also notable that more than half of CPAS parents reported having a physical or mental health problem, and almost a third reported having a child with a neurodevelopmental or mental health condition. These rates are higher than other Australian population estimates (Efron et al., 2020; May et al., 2017; Australian Bureau of Statistics, 2008; Lawrence et al., 2015), suggesting that CPAS represents a higher-risk sample of parents from the Australian community. When we compared rates of subjective wellbeing within CPAS parents, we found consistently lower wellbeing in parents with these mental health risks compared to other

parents. Yet the elevated rates of mental health risks did not account for the overall differences in subjective wellbeing evident among parents prior to and during the pandemic; when we excluded those parents with high mental health risk, differences remained evident on almost all domains of subjective wellbeing in CPAS parents compared to the AUWI normative data. These findings are suggestive of additional strains related to the pandemic that are not fully explained by pre-existing or concurrent mental health risk in families.

Unexpectedly, we found that parents engaging more with news media about the pandemic were more likely to report higher subjective wellbeing. This is counter-intuitive and requires further investigation, but it may be that being informed leads to a higher sense of control, and thus improved subjective wellbeing, in context of a crisis such as the COVID-19 pandemic. This association may also be related to the quality and type of media that parents engage with, factors that were not assessed in this study.

Taken together, the results of the current study suggest that parents are an important group of Australians that need extra government resources for support in the current (and potential future) pandemics. Results specifically suggest that parents already struggling with socio-economic adversity and/or other disadvantage may benefit from targeted support. This is consistent with well-established evidence showing that families with pre-existing social disadvantage are much more likely to experience adversity, and have fewer resources to buffer the negative impact of stressful life events, such as challenges related to the COVID-19 pandemic and social distancing measures (O'Connor et al., 2020; World Health Organisation, 2020). Our findings also support recent calls for additional government support during and beyond the pandemic (Broadway et al., 2020), such as extending income support for parents

experiencing financial stress, and additional childcare subsidies for parents managing work alongside childcare responsibilities at home.

Our study had a number of limitations. There were systematic differences between the CPAS sample and the AUWI normed sample, where parents in the normed sample were on average eight years older, more socially advantaged, and with a higher proportion of fathers. It was also not possible to limit the AUWI comparison to parents of children 0-18 years, so this sample included parents living with children of all ages. CPAS participants were recruited online, while AUWI participants were recruited via telephone. There is a precedent for greater enrolment of at-risk individuals via online research (Batterham, 2014); but there may also be emerging bias associated with telephone recruitment in an opposite direction, perhaps resulting in a disproportionately low-risk population, particularly in younger populations. We did not investigate whether these parents were also more likely to experience COVID-19 related risk factors, but this should be considered in future research given established associations between pre-existing health risks, socio-economic adversity, and vulnerability to crisis events (World Health Organisation, 2020).

In summary, results indicated substantially lower rates of subjective wellbeing in a cohort of Australian parents raising children and adolescents (0-18 years) during 'level-three' COVID-19 restrictions in April 2020, compared to pre-pandemic levels. We identified three high-risk groups of parents for whom we recommend direct assistance through government, public health, and clinical services. These include: (1) parents reporting their own or their child as having mental health risk; (2) parents experiencing socioeconomic disadvantage prior to the pandemic; and, (3) parents affected by COVID-19 related factors, such as illness, financial or

housing insecurity, changes to employment, and juggling childcare with work from home, who were also more vulnerable to the pandemic. Our findings specifically point to the need for targeted supports and services for parents and their families in these three high risk categories of Australian parents in the community.

Acknowledgements: We would like to thank all the parents who have contributed valuable data to the project.

Declaration of Conflicting Interests: The Authors declare that there is no conflict of interest.

Funding: The authors received no financial support for the research, authorship, and/or publication of this article.

References

- Australian Bureau of Statistics. (2008) National Survey of Mental Health and Wellbeing 2007: Summary of results. ABS.
- Australian Bureau of Statistics. (2017) 2016 Census of Population and Housing: General Community Profile *Catalogue number 2001.0*.
- Batterham PJ. (2014) Recruitment of mental health survey participants using Internet advertising: content, characteristics and cost effectiveness. *Int J Methods Psychiatr Res* 23: 184-191.
- Biddle N, Edwards B, Gray M, et al. (2020a) Hardship, distress, and resilience: The initial impacts of COVID-19 in Australia. Canberra: ANU Centre for Social Research and Methods, Australian National University.
- Biddle N, Edwards B, Gray M, et al. (2020b) Tracking outcomes during the COVID-19 pandemic (May 2020): Job and income losses halted and confidence rising. Canberra, Australia: ANU Centre for Social Research and Methods, Australian National University.
- Broadway B, Méndez S and Moschion J. (2020) Behind closed doors: The surge in mental distress of parents. *Melbourne Institute Research Insights*. Melbourne: Applied Economic & Social Research, University of Melbourne
- Craig F, Operto FF, De Giacomo A, et al. (2016) Parenting stress among parents of children with Neurodevelopmental Disorders. *Psychiatry Research* 242: 121-129.

- Cummins RA, Eckersley R, Pallant J, et al. (2003) Developing a national index of subjective wellbeing: The Australian Unity Wellbeing Index. *Social indicators research* 64: 159-190.
- Department of Health. (2020) *Coronavirus (COVID-19) current situation and case numbers*. Available at: <https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert/coronavirus-covid-19-current-situation-and-case-numbers>.
- Diener E, Emmons RA, Larsen RJ, et al. (1985) The satisfaction with life scale. *Journal of Personality Assessment* 49: 71-75.
- Dinh H, Cooklin AR, Leach LS, et al. (2017) Parents' transitions into and out of work-family conflict and children's mental health: Longitudinal influence via family functioning. *Social Science & Medicine* 194: 42-50.
- Efron D, Mulraney M, Sciberras E, et al. (2020) Patterns of long-term ADHD medication use in Australian children. *Arch Dis Child* 105: 593-597.
- Innstrand ST, Langballe EM, Geir AE, et al. (2008) Positive and negative work–family interaction and burnout: A longitudinal study of reciprocal relations. *Work & Stress* 22: 1-15.
- International Wellbeing Group. (2013) *Personal Wellbeing Index Manual: 5th Edition*. Melbourne: Australian Centre on Quality of Life, School of Psychology, Deakin University <http://www.acqol.com.au/instruments#measures>.
- Kaczmirek L, Phillips B, Pennay D, et al. (2019) Building a probability-based online panel: Life in Australia™. *CSRM and SRC Methods Paper*.

- Khor S, Cummins RA, Fuller-Tyszkiewicz M, et al. (2020a) Australian Unity Wellbeing Index: - Report 36: Social connectedness and wellbeing. Geelong: Australian Centre on Quality of Life, School of Psychology, Deakin University.
- Khor S, Fuller-Tyszkiewicz M and Hutchinson D. (2020b) Australian normative data for Subjective Wellbeing. In: Cummins RA (ed) *Personal Wellbeing Index Manual: 6th Edition*. International Wellbeing Group. Melbourne: Australian Centre on Quality of Life, Deakin University <http://www.acqol.com.au/publications#publications>.
- Kolenikov S. (2014) Calibrating survey data using iterative proportional fitting (raking). *The Stata Journal* 14: 22-59.
- Lach LM, Kohen DE, Garner RE, et al. (2009) The health and psychosocial functioning of caregivers of children with neurodevelopmental disorders. *Disability and Rehabilitation* 31: 741-752.
- Lawrence D, Johnson S, Hafekost J, et al. (2015) Report on the second Australian child and adolescent survey of mental health and wellbeing. Department of Health, Australia.
- May T, Sciberras E, Brignell A, et al. (2017) Autism spectrum disorder: updated prevalence and comparison of two birth cohorts in a nationally representative Australian sample. *BMJ Open* 7.
- Merikangas K, Milham M and Stringaris A. (2020) *The CoRonavIruS Health Impact Survey (CRISIS) V0.1*. Available at: <https://github.com/nimh-mbdu/CRISIS>.
- Nelson BW, Pettitt AK, Flannery J, et al. (2020) Psychological and Epidemiological Predictors of COVID-19 Concern and Health-Related Behaviors. *PsyArXiv*.

- O'Connor M, Slopen N, Becares L, et al. (2020) Inequalities in the Distribution of Childhood Adversity From Birth to 11 Years. *Academic pediatrics* 20: 609-618.
- Perneger TV. (1998) What's wrong with Bonferroni adjustments. *Bmj* 316: 1236.
- Pinquart M. (2017) Associations of parenting dimensions and styles with externalizing problems of children and adolescents: An updated meta-analysis. *Developmental Psychology* 53: 873-932.
- Rajkumar RP. (2020) COVID-19 and mental health: A review of the existing literature. *Asian Journal of Psychiatry* 52: 102066.
- Sibley CG, Greaves LM, Satherley N, et al. (2020) Effects of the COVID-19 pandemic and nationwide lockdown on trust, attitudes toward government, and well-being. *American psychologist*.
- StataCorp. (2011) Stata Statistical Software. Release 12 ed. College Station: TX: StataCorp LP.
- Vahedi A, Krug I and Westrupp EM. (2019) Crossover of parents' work-family conflict to family functioning and child mental health. *Journal of Applied Developmental Psychology* 62: 38-49.
- Van Der Heijden BIJM, Demerouti E, Bakker AB, et al. (2008) Work-home interference among nurses: reciprocal relationships with job demands and health. *Journal of Advanced Nursing* 62: 572-584.
- Waite P and Creswell C. (2020) Co-SPACE study: Report 01. Findings from the first 1500 participants on parent/carer stress and child activity. Oxford, United Kingdom: Univeristy of Oxford.

- Westrupp E, Greenwood C, Fuller-Tyszkiewicz M, et al. (2020a) Text Mining of Reddit Posts: Using Latent Dirichlet Allocation to Identify Common Parenting Issues [Pre print]. *PsyArXiv*.
- Westrupp E, Karantzas GC, Macdonald JA, et al. (2020b) Study protocol for the COVID-19 Pandemic Adjustment Survey (CPAS): A longitudinal study of Australian parents of a child 0-18 years. . *Frontiers In Psychiatry - Public Health* 11.
- Westrupp EM, Brown S, Woolhouse H, et al. (2018) Repeated early-life exposure to inter-parental conflict increases risk of preadolescent mental health problems. *European Journal of Pediatrics* 177: 419-427.
- Westrupp EM, Strazdins L, Martin A, et al. (2015) Maternal work-family conflict and psychological distress: Reciprocal relationships over 8 years. *Journal of Marriage and Family*: .
- World Health Organisation. (2020) *Coronavirus disease 2019 (COVID-19) Situation Report – 51*. Available at: <https://apps.who.int/iris/bitstream/handle/10665/331475/nCoVsitrep11Mar2020-eng.pdf>.
- Yap MBH and Jorm AF. (2015) Parental factors associated with childhood anxiety, depression, and internalizing problems: A systematic review and meta-analysis. *Journal of affective disorders* 175: 424-440.

Supplementary Analysis

Sensitivity Analysis 1

We contrasted the CPAS data to PWI data for more than 68,000 cases recorded over 36 AUWI surveys and noted that the CPAS data displayed a distribution lower (shifted left) than the AUWI data for the entire distribution (See Supp Figure 1). The mean PWI over 36 surveys of the AUWI norm data was 75.34 (SD=0.751), while the mean for the CPAS at 61.86 was 17.94 standard deviations below the value expected from the AUWI. We recognised that two issues may have biased scores. First, that we had asked an emotional question prior to the PWI, which may have influenced scores, and second that we collected the PWI data using a restricted range. To establish if there was bias introduced by using emotionally-laden questions prior to introducing the PWI, we evaluated this in a set of AUWI data where this was possible. One AUWI survey from 2010 with 2110 participants placed emotional questions before the PWI in about half of the surveys ($n=1011$), and after for about another half ($n=1099$). Emotional questions asked before the PWI led to small reduction in scores, of about 0.75 PWI units ($t=36.15$, $df=2107.60$, $p<.001$). Both sets fell within the others' 95% confidence intervals except between 50 and 60 PWI points (See Supp Figure 2).

Sensitivity Analysis 2

As we also collected data using a range of 1 to 10, instead of 0 to 10, it meant 0 was not available for respondents to choose forcing them to choose 1. This would lead to score compression, pushing respondents up from the lower end up the scale, with push back from the high end; those who would've chosen 9 are unlikely to be pushed into a 10, and so resist this upward compression. This compresses variance. To assess this, first, we rescaled all scores to a

0 to 100 range, in line with PWI scoring. Then we compared the variance from the CPAS data to the AUWI data. The CPAS data had an SD of 18.05, while the SD for AUWI PWI scores was 12.59, giving an F-Max ratio of 2.05 greater than criteria (i.e.: 1.67). Hence, while the two estimates of variance differ, the larger variance, unexpectedly was in the CPAS data, suggesting the variance had not been reduced by the reduced score range.

Sensitivity Analysis 1

Given the difference in the gender balance between the CPAS and AUWI samples, we conducted a third sensitivity analysis to investigate socio-demographic differences between cisgender women and men in the CPAS sample. Within the CPAS sample, and compared to men, we found that women were more likely to report COVID-19 diagnosis, hospitalisation, employment changes, and financial impacts, to be a single parent, and to be receiving a government benefit, and less likely to report that they had not completed high school, and were supervising a child at home while they worked from home. There were no differences in reported rates of pre-pandemic financial deprivation.

Supp Figure 1: Cumulative density for PWI data for the CPAS data contrasted with normative PWI data from the AUWI for 68011 cases.

Supp Figure 2: Cumulative density for PWI data for normative PWI data from the ACQOL for 2110 cases where one group were administered the PWI with emotionally leading questions ($n=1011$; $M=73.75$, $SD=.496$), and the other were not ($n=1099$; $M=74.50$, $SD=0.463$).

Supplementary Table 1: Unweighted and weighted comparisons between the AUWI norm and CPAS samples on the Personal Wellbeing Index (PWI) and PWI individual domains.

	AUWI Norms	CPAS	
	(N=17,529, 2002-2019)	(N=2,365, Mid-April 2020)	
		Weighted	Unweighted
	Mean (sd)	Mean (sd)	Mean (sd)
Personal Wellbeing Index	75.79 (11.90)	62.00 (18.07)	65.28 (17.03)
Standard of Living	77.32 (16.03)	69.08 (21.42)	72.93 (20.48)
Health	75.60 (18.14)	59.15 (22.29)	62.75 (21.50)
Achieving in Life	73.44 (17.35)	58.87 (22.72)	62.49 (21.87)
Personal Relationships	80.81 (19.41)	67.23 (23.98)	68.77 (22.84)
Personal Safety	80.50 (16.41)	71.84 (23.04)	73.63 (21.80)
Community Connectedness	71.67 (18.41)	53.32 (26.61)	57.92 (25.19)
Future Security	70.78 (18.80)	54.58 (25.77)	58.46 (24.50)

Notes: Data are multiply imputed. sd = Standard deviation.