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

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ABSTRACT

Objectives: To examine (1) the subjective wellbeing of Australian parents raising children and adolescents (0–18 years) during April 2020 'stage three' COVID-19 restrictions, in comparison with parents assessed over 18-years prior to the pandemic; and (2) socio-demographic and COVID-19 predictors of subjective wellbeing during the pandemic.
Methods: Cross-sectional data were from the COVID-19 Pandemic Adjustment Survey (CPAS, N = 2365 parents of a child 0–18 years, 8-28th April 2020); and a pre-pandemic national database containing 18 years of annual surveys collected in 2002–2019 (N = 17,529 parents).
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). During the pandemic, lower subjective wellbeing was associated with low education (adjusted regression coefficient, 95% confidence interval [95% CI] = −5.19, −0.93), language other-than-English (95% CI = -7.22, −1.30), government benefit (95% CI = -6.99, −0.96), single parents (95% CI = -8.84, −4.59), child neuro-developmental condition (95% CI = -3.44, −0.76), parent physical/mental health problems (95% CI = -3.23, −0.67), COVID-environmental stressors (95% CI = -3.48, −2.44), and fear/worry about COVID-19 (95% CI = -8.13, −5.96). Unexpectedly, parent engagement with news media about the pandemic was associated with higher subjective wellbeing (95% CI = 0.35, 1.61).
Conclusion: Subjective wellbeing in parents raising children aged 0–18 years appears to be disproportionately impacted by the COVID-19 pandemic and 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.

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 have raised widespread public health and clinical concern about impacts on health, and mental health, in particular. Evidence describing the impact of the pandemic has indicated increased rates of mental health problems in Australia [20,37] and internationally [36,41]. A review of 68 studies (N = 288,830 participants, 19 countries) found the prevalence of adult anxiety and depression during the pandemic to be 30–33%, with women, younger adults, and low socio-economic status most vulnerable to experiencing higher levels of psychological distress [49]. Less is known about broader impacts on overall subjective wellbeing; yet widespread subclinical mental health difficulties carry significant implications for the subjective wellbeing of the population particularly in the absence of sufficient resources [12,21]. The population level of subjective wellbeing is relatively stable and positive, yet vulnerable population groups such as carers or single parents typically report lower than normal levels [11,27]. One notable group missing from COVID research undertaken so far is that of the

family unit. This is despite families representing one of the largest demographics of any given population, one of the most resource-intensive periods of the life course, and a key point of exchange between generations that can have intergenerational consequences (both positive and negative). The current study thus compares parent subjective wellbeing during lockdown to pre-pandemic normative data from a series of cross-sectional surveys of Australian adults collected annually over 18 years [27].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 [15]. In the first week of lockdown (and of our data collection), on the 5th April 2020, Australia had experienced 5687 cases, including 34 deaths; by the end of our data collection on 28th April 2020, Australia had a total of 6731 cases, including 84 deaths. Although the stay-at-home orders were applied nationally, individual states lowered lockdown restrictions at different rates progressively throughout early May to mid-June 2020 [14]. The period of lockdown and restrictions was accompanied by a rapid increase in job losses and unemployment, with two-thirds of Australians having their employment affected (Roy [35]).

Based on data from *Life in Australia* (~$N = 3000$), a representative longitudinal sample of Australian residents aged 18 years and over [24], there is emerging evidence of lower rates of adult subjective wellbeing during the pandemic [4,5]. 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. [44] 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 [23] or the Satisfaction With Life Scale [17]. 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 lockdowns and restrictions. Parent mental health, parenting practices, and the quality of the couple relationship are all fundamental to parent subjective wellbeing and healthy child development [40,54]. However, their protection depends on access to high quality supports, which have been substantially reduced in the pandemic. During lockdown, playgrounds and campus-based schooling were closed, requiring that parents supervise children and/or manage children's distance education from home, often while juggling their own paid work [15]. Emerging findings from Australian and USA research suggest that many parents, and particularly mothers, were forced to reduce their paid work hours during lockdown [9,31,43]. Further, pandemic data from 1500 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 [48]. Data from Singapore also shows associations between work-family conflict, parenting stress and couple conflict in parents juggling work while supervising children during lockdown [8].

Despite being at high risk, research specifically examining parents' wellbeing and functioning throughout the pandemic has been limited

[16], and has tended to focus on child outcomes. Data from the first lockdown in Spain demonstrates links between higher levels of parenting distress, less structured parenting, and child mental health problems [42]. A study in the USA showed that parent anxiety and depression were associated with parent stress and child abuse potential [7]. However, these studies examined associations at the time of the pandemic, and did not estimate whether there were changes in family functioning prior to, compared to during, the pandemic. Just one pre-print has examined this to-date; findings from the *Born in Bradford* study ($N = 1860$) show increases in parent depression and anxiety assessed before and during the first COVID-19 lockdown in the United Kingdom, and also that parent loneliness, financial insecurity, lack of physical activity poor partner relationship were predictors of poorer mental health functioning [16].

Here, we address a 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 2365 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 [13,28]. Specifically, our aims 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 [10,30].
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.

1. Method

1.1. Participants and study design

1.1.1. 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, $N = 2365$). Data were collected over 3 weeks from the 8th to the 28th of April 2020 (see study protocol, [50]). Parents were eligible to participate if they were a parent of a child aged 0–18 years, an Australian resident, and 18 years or over. Parents 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).

1.1.2. 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, $N = 17,529$) [26]. 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).

1.2. Measures

Please see Table 1 for a summary of parent, socio-demographic and COVID-19 risk measures used in this study.

1.3. Data procedures

1.3.1. Overview

The aims of the present study emphasize comparison of several datasets (Aims 1 and 2) and further modelling of wellbeing outcomes for the CPAS dataset (Aim 3). Accordingly, datasets were not pooled, and preparatory steps for intended analyses were conducted for each dataset separately.

1.3.2. 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 [29], 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 [2].

1.3.3. 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.

1.3.4. Data analysis

Analyses were conducted in Stata version 16 [45]. 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. Data from the two studies were not pooled but rather analysed separately. 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

Table 1

Study measures in the COVID-19 pandemic adjustment survey (CPAS).

Construct	Measure
Parent subjective wellbeing	The Personal Wellbeing Index (PWI) [23] (7 items) comprises seven domains measuring 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 PWI correlates strongly with the Satisfaction with Life Scale [17] ($r = 0.78$; $\alpha = 0.70$–0.85) [23]. 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 CPAS version of the PWI scale was transformed to a 11-point scale. 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 [23].
Demographic factors (CPAS only)	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 only)	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 [51].
Parent and child diagnosis (CPAS only)	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 only)	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.
COVID-19 environmental risk index	Four items were adapted from the CoRonaVIruS Health Impact Survey (CRISIS) V1.0 [34] 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

(continued on next page)

Table 1 (*continued*)

Construct	Measure
	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.

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 [39], we describe all results without adjusting for multiple comparisons.

2. Results

2.1. Sample characteristics

Characteristics of the CPAS and AUWI samples are shown in Table 2. 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. The CPAS sample was broadly representative of the Australian parent population in terms of geographic location, number of children, parents born overseas, and single parent households, but was somewhat under-representative of families with a low income and low education [2].

2.2. 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 ($t = 36.15$, $df = 2107.60$, $p < 0.001$). 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 sociodemographic 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.

2.2.1. Aim 1: comparing parent subjective wellbeing before and during the pandemic

Fig. 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

Table 2

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

	Australian population[$]	AUWI Norms[%]	CPAS[§]
		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	n/a	<1%
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%
Single parent household	11%		11%
Parent born overseas	21%		18%
Aboriginal or Torres Strait Islander	4%		2%
Did not complete high school	40%		9%
Receiving government benefit	n/a	n/a	6%
Low household income			
$52,000 or less per year	21%		14%
$60,000 or less per year		13%	
Parent mental health condition	n/a	n/a	37%
Parent chronic health condition	n/a	n/a	30%
Child neurodevelopmental or mental health condition	n/a	n/a	31%
COVID-19 related factors			
Deprivation index, m(sd)	n/a	n/a	0.4 (1.0)
Child home while working	n/a	n/a	50%
COVID-19 environmental risk index, m(sd)	n/a	n/a	1.4 (1.2)

Notes: m(sd) = Mean (standard deviation); 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 to 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, $N = 2365$ parents of a child 0–18 years, data are multiply imputed and thus can only be presented as percentages.

deviation lower than the norm data, $t(2159) = -29.92$, $p < 0.001$, Cohen's d =

-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.

2.2.2. Aim 2: associations with parent and offspring physical and mental health

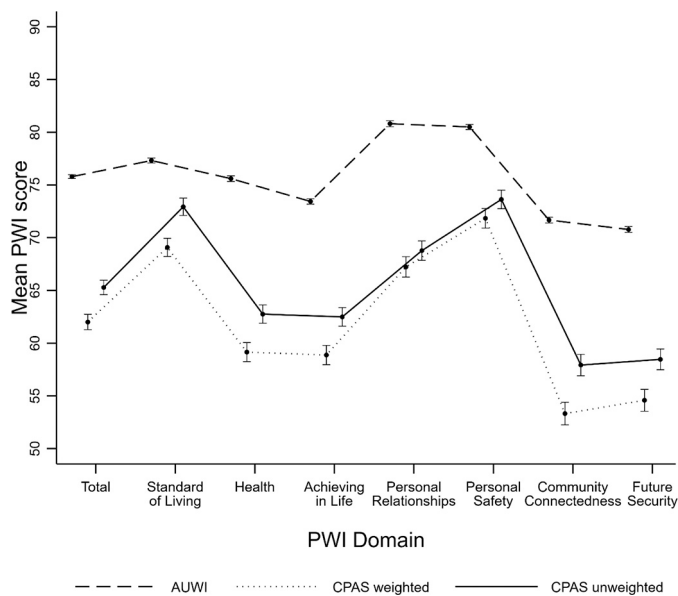Table 3 presents comparisons for CPAS parents with heightened risk

Fig. 1. Means and standard deviations (i.e., error bars) for the Australian Unity Wellbeing Index (AUWI) norm and unweighted and weighted COVID-19 Pandemic Adjustment Survey (CPAS) samples on the Personal Wellbeing Index (PWI) and PWI individual domains.

Table 3

Differences for COVID-19 Pandemic Adjustment Survey (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.

for compromised subjective wellbeing, 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 at 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, $t(609) = -1.50$, $p = 0.135$.

2.2.3. Aim 3: associations with socioeconomic and COVID-19 stressors

Tables 4–6 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. 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 all associated with lower subjective wellbeing. Parents living in regional areas, raising a child with a neuro-developmental or mental health condition, and having a physical or mental health diagnosis themselves, were also associated with lower subjective wellbeing. The one protective association was with higher frequency of a variety of news media use. The COVID-19 pandemic-related factors were all associated with lower parent subjective well-being, 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.

3. Discussion

We found that subjective wellbeing in CPAS parents during the April 2020 'level three' lockdown in Australia was lower (0.5–1 SD) than pre-pandemic levels, as assessed annually over the previous two decades in AUWI parents. Pre-pandemic to pandemic differences 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 in 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, speaking a language other than English, and low education, were associated with lower subjective wellbeing. Results also indicated that younger parent age was associated with lower ratings of subjective wellbeing, personal relationships, and community connect-edness. These results suggest that already vulnerable families 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 consis-tently 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

Table 4

Unadjusted and adjusted associations between COVID-19 Pandemic Adjustment Survey (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.

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 sociodemographic 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 [10,30]. It is also notable that rates of child neurodevelopmental or mental health conditions were higher than other Australian population estimates [1,19,32,33], 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 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 in parents prior to and during the pandemic; that is, when we excluded parents with high mental health risk, differences remained evident for CPAS and AUWI data on almost all domains of subjective wellbeing. 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.

3.1. Policy implications and future research

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 socioeconomic adversity and/or other disadvantage may benefit from

Table 5

Unadjusted and adjusted associations between COVID-19 Pandemic Adjustment Survey (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.

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 [38,53]. Our findings also support recent calls for additional government support during and beyond the pandemic [6], such as extending income support for parents experiencing financial stress. Further, given our findings indicating that juggling child supervision with work was associated with parent depression and irritability, and the documented negative impact of poor parent mental health and irritable parenting on children's future outcomes [25,40,55], steps to alleviate the stress of working parents are likely to be beneficial. This could include leave entitlements for parents juggling work with home-schooling or caring for children [6], alongside workplace interventions including flexible work arrangements or workload assistance during the pandemic.

Research and policy is often, and understandably, focussed on mental illnesses such as depression and anxiety, but these can be viewed as end-states of more mild symptoms that may be captured in measures of general wellbeing. Longitudinal studies could be useful to confirm whether lower than usual (or lower than normal) subjective wellbeing scores are an early marker for later mental health problems. Such information could help with prevention and early intervention efforts, which have been argued to be more cost-effective than treating once full blown disorder is present. Further, prospective studies are needed to improve understanding of family outcomes longitudinally. Our data are suggestive of negative impacts associated with the COVID-19 pandemic for parents, children, and families. In particular, the state of Victoria in Australia has experienced one of the world's most stringent and lengthy periods of social distancing restrictions. It is imperative that future research investigate the longer-term impact of the COVID-19 pandemic on families, with a focus on how impacts vary relative to the nature and

Table 6

Unadjusted and adjusted associations between COVID-19 Pandemic Adjustment Survey (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.

duration of social distancing measures worldwide.

3.2. Limitations

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 [3]; 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 [53].

4. 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.

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Declaration of Competing Interest

All authors have completed the Unified Competing Interest form at http://www.icmje.org/coi_disclosure.pdf and declare that the authors have no competing interests to report.

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