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A longitudinal study on impact of emergency cash transfer payments during the COVID pandemic on coping among Australian young adults

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The coronavirus (COVID-19) pandemic has caused financial hardship and psychological distress among young Australians. This study investigates whether the Australian Government's emergency cash transfer payments—specifically welfare expansion for those unemployed prior to the pandemic (known in Australia as the Coronavirus Supplement) and JobKeeper (cash support for those with reduced or stopped employment due to the pandemic)—were associated with individual's level of coping during the coronavirus pandemic among those with and without mental disorders (including anxiety, depression, ADHD and autism). The sample included 902 young adults who participated in all of the last three waves (8, 9C1, 9C2) of the Longitudinal Study of Australian Children (LSAC), a nationally representative cohort study. Modified Poisson regression models were used to assess the impact of emergency cash transfer payments on 18–22-year-old's self-rated coping level, stratifying the analysis by those with and without mental disorders. All models were adjusted for gender, employment, location, family cohesion, history of smoking, alcohol intake, and COVID-19 test result. Of the 902-person sample analysed, 41.5% (n = 374) reported high levels of coping, 18.9% (n = 171) reported mental disorders, 40.3% (n = 364) received the Coronavirus Supplement and 16.4% (n = 148) received JobKeeper payments. Analysing the total sample demonstrated that participants who received the JobKeeper payment were more likely to have a higher level of coping compared to those who did not receive the JobKeeper payment. Stratified analyses demonstrated that those with pre-existing mental disorder obtained significant benefit from the JobKeeper payment on their level of coping, compared to those who did not receive JobKeeper. In contrast, receipt of the Coronavirus Supplement was not significantly associated with higher level of coping. Among those with no mental health disorder, neither the Coronavirus Supplement nor JobKeeper had a statistically significant impact on level of coping. These findings suggest the positive impacts of cash transfers on level of coping during the pandemic were limited to those with a pre-existing mental disorder who received JobKeeper.

Keywords Social protection, Cash transfer payments, Welfare, JobKeeper, JobSeeker, COVID-19, Pandemic, Mental health, Adolescents, Young adults, Youth, Well-being, Employment, Coping

The World Health Organization (WHO) declared the COVID-19 outbreak as a public health emergency of global concern on 30 January 2020 and a pandemic on 11 March 2020¹. The COVID-19 pandemic preventive measures such as nationwide lockdowns, social distancing, limited access to public spaces, and closure of workplaces and educational institutions were useful in slowing the spread of infection prior to the development of vaccines but unfortunately these preventative steps also worsened poverty, mental health and social cohesion^{2–4}. Cash transfer

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programs were most used ‘tool’ for social protection used globally during the pandemic⁵. Evidence suggests large-scale, government-run cash transfer programmes may have positive impact on poverty, economic autonomy, and health outcomes^{6–8}. A recent World Bank report in 2022, listed 672 out of 962 cash transfer programmes in 203 countries were initiated during the pandemic^{9,10}. Moreover, it has been estimated that globally, cash transfers were delivered to 1.36 billion people throughout the pandemic period^{5,10}.

Despite a relatively low case load in the early stages of the COVID-19 pandemic compared to other developed nations such as the USA, UK and Italy¹¹; Australia adopted an aggressive suppression strategy in pursuit of zero community transmission, with some of the most stringent public health measures in the world¹². Additionally, the Australian Government introduced COVID-19 emergency cash transfer payments, the ‘Coronavirus Supplement’ and ‘JobKeeper’ to help businesses and individuals who were adversely affected financially by the stringent public health measures put in place to slow the spread of COVID-19¹³. To distribute emergency cash transfer payments the Australian Government followed strict measures and certain criteria. For instance, the ‘Coronavirus Supplements’ were automatically added by the Australian Government as additional top-up payments to individuals who were already in receipt of certain government welfare payments prior to the pandemic, such as ‘JobSeeker Payment’, ‘Youth Allowance’, ‘Parenting Payment’, ‘Austudy’, ‘ABSTUDY Living Allowance’, ‘Farm Household Allowance’, or ‘Special Benefit’¹⁴. The Coronavirus Supplement began on 27 April 2020 at a rate of \$225 per week in addition to pre-existing welfare payments¹⁴. Recipients of the Coronavirus Supplement, largely made up of Australia’s lowest income earners, experienced an increase in their total welfare payments compared to pre-pandemic welfare and many were lifted above the poverty line¹⁵. For international reference, AUD\$225 is equivalent to \$325 purchasing power parities (PPP)¹⁶. From 24 September 2020, the value of the Coronavirus Supplement reduced and was eventually ceased on 31 March 2021, though the original pre-pandemic welfare payments remain¹⁴.

In comparison, ‘JobKeeper’, also an emergency cash transfer payment from the Australian Government, was paid to businesses, not-for-profit organisations, and sole traders to give employers financial support to retain the employment of their workforce and to maintain connection with their employees through the ‘lockdown’ phases of the pandemic to prevent job losses and then the need to rehire staff^{17,18}. These payments were conditional upon demonstrating a drop in employer income compared to pre-pandemic. The JobKeeper payments were available to employers whose aggregated turnover was less than \$1 billion (for income tax purposes) and the company’s estimated turnover reduced by 30% or more; or whose annual turnover was \$1 billion or more (for income tax purposes) but estimated turnover declined by 50% or more; and who were not subject to the Major Bank Levy^{17,18}. Moreover, eligible employees had to be permanent full-time, part-time, or long-term casual employees, employed by the eligible employer on 1 March 2020 or before, an Australian resident or New Zealander on a Special Category visa, and at least 18 years old¹⁸. The first phase of JobKeeper extended from 30 March 2020 until 27 Sept 2020. Eligible businesses received \$750 per employee each week to cover the cost of wages equivalent to \$1,084 PPP¹⁶. The second phase of JobKeeper extended from 28 Sep 2020 until 28 March 2021 and payment rates gradually declined over this period¹⁸. The program concluded by the end of 2021 and current evidence suggests that JobKeeper likely supported nearly 4 million employees, and 1 million businesses at a total cost of \$88.9 billion and prevented over 700,000 job losses¹⁸.

The pandemic impacted society far beyond the economy. To date, there have been more than 768 million reported cases and 6.9 million deaths reported worldwide to date (June 28, 2023)¹⁹. In addition to the devastating morbidity and mortality related to infection, the COVID-19 pandemic has caused a high burden of psychological distress and worsening mental health²⁰. Younger persons, those with pre-existing mental health disorders, females and those of lower socioeconomic status were most impacted by the effects of COVID-19 on mental health^{20–25}.

Regarding data on the share of Australians eligible for these emergency cash transfer payments who failed to receive either, this information is best obtained from new Australian Bureau of Statistics (ABS) data which assessed inequality during 2020 and 2021. The ABS data shows that inequality declined (i.e. improved) in the initial phases of the pandemic even through 17% unemployment and recession caused by the pandemic. Inequality is said to have improved due to these emergency cash transfers—or public income supports—the Coronavirus Supplements. When these Coronavirus financial Supplements were reduced in 2021 (only 20% still eligible to receive) and then removed, it was observed that inequality in Australia rose again and increased even beyond pre-pandemic levels²⁶.

Loss of employment and financial stress are associated with negative impacts on mental health^{27,28}. This was well known prior to the pandemic, and this finding remained throughout the pandemic. For instance, a study examining 8559 adults across 17 countries found distress due to change in employment during the pandemic was associated with higher levels of psychological distress and fear²⁵. Results from the COVID-19 Impact Survey conducted in the United States found economic uncertainty and unemployment was associated with substantially increased mental distress²⁹. Moreover, studies in the UK found that high and/or regular basic income reduces mental stress in young people^{30,31}. In Australia, young adults have been disproportionately impacted by job losses due to the COVID-19 pandemic³². Young people, aged 15–24 years, make up 14% of the Australian workforce, yet during the first lockdown, between March and June 2020, young people represented 39% of job losses. This figure rose during the latter Australian lockdowns, between June and September 2021, when young people experienced 55% of job losses³³. The disproportionate loss of paid employment for young Australians has been attributed to the fact that young people are more likely to hold casual employment and employment in industries most disrupted by the pandemic, such as hospitality, leisure, and retail^{32,33}.

There is evidence that cash transfer payment programmes implemented during the pandemic had a positive impact on mental health. Botha et al. analysed data from a nationally representative longitudinal study of 3843 unemployed Australians across the coronavirus period and found the Coronavirus Supplement payment significantly reduced financial stress and this was associated with reduced mental distress³⁴. A study of 8 million helpline calls relating to the COVID-19 crisis, across 19 countries, investigated whether calls relating to suicide

decreased when income support was extended. They found a reduction in help-line calls with income support³⁵. This study supported that cash transfer payments may protect mental health in the setting of the pandemic and associated economic adversity. Moreover, evidence suggests that measures taken to support employment during the pandemic had positive impacts on mental health. A South African survey found adults who continued paid employment had better mental health when compared to adults who lost employment during the COVID-19-related lockdown³⁶. A study of the COVID-19 Impact Survey conducted in the United States found economic policies that support employment constitute health interventions as well as providing economic security²⁹.

There are likely multiple mechanisms by which cash transfer payment programmes during the pandemic could improve mental health. One hypothesis is that cash transfer payments mediate one's ability to cope which in turn impacts mental health. To cope is to use cognitive or behavioural strategies to successfully manage a challenging situation³⁷. Positive coping strategies can reduce the impact of stressful situations on an individual's mental health³⁸. A meta-analysis by Kato et al. examined the relationship between coping strategies and mental health outcomes such as psychological distress, symptoms of depression and anxiety, negative affect, and well-being³⁹. The meta-analysis found that positive coping strategies were significantly associated with improved measures of mental health and wellbeing. Examples of positive coping strategies include seeking social support, positive reinterpretation and growth and acceptance. In contrast, negative coping strategies, such as denial, self-blame and alcohol or drug use, were significantly correlated with poorer measures of mental health³⁹.

However, there is limited evidence regarding the impact of cash transfer payments during a pandemic such as COVID-19, and in high income countries, such as Australia, and in relation to mental health in adolescents and young people. Therefore, in this study we aimed to assess the impact of Australian Government emergency cash transfer payments (Coronavirus Supplements and JobKeeper) on levels of coping in Australian young adults, with and without pre-existing mental health disorders.

Methods

Our report follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement⁴⁰.

Data source and participants

This study uses data collected by Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC). LSAC is a nationally representative, population-based cross-sequenced cohort study that has been collecting biennial data from two cohorts (younger B-cohort: 0–1 year at baseline and older K-cohort: 4–5 years at baseline) since 2004 using a multi-stage cluster sampling technique to provide comprehensive, longitudinal data on the impact of social, cultural, and economic contexts on child health and wellbeing. In LSAC data, the term 'wave' refers to the collection of data from the entire sample using a particular set of questions at a given time. For example, 'Wave 8' refers to the set of data collected from all study participants in 2018. For the current study, data were collected from parents and 902 young Australian adults aged 18–22 years through face-to-face interviews, telephone interviews and/or self-reported computer-assisted or online questionnaires. Precisely, Wave 8 data was collected from the K-cohort using a combination of online surveys, computer surveys and face-to-face interviews. During wave 9C1, early in the COVID-19 pandemic, a shorter, 30-min online survey was used, and interviewers were not permitted to undertake home visits due to pandemic restrictions. The data collection instruments used in wave 9C2 included a combination of online surveys and computer-assisted telephone interviews to maximise response rates. More about the LSAC study design, sampling technique and data collection procedures have been described elsewhere⁴¹.

This study used data from three recent LSAC longitudinal waves conducted between 2018 and 2021 involving the same participants linked between waves using unique identifier numbers—Wave 8 (i.e., data collected in 2018 before the COVID-19 pandemic), Wave 9C1 (i.e., data collected between October and December 2020 during the COVID-19 pandemic) and Wave 9C2 (i.e., data collected during COVID-19 times in between June and September 2021) to incorporate 902 respondents from K-cohort of the LSAC database. In this study, data on previous mental disorders comes from LSAC wave 8 but that same individual is then linked to their own individual data in following waves 9C1 and 9C2 for other variables of interest (e.g. Coping level, cash transfer payments and sociodemographic variables). Our analysis only used young adults' (K-cohorts) self-reported data relating to mental disorders and not parental reports. Further, participants who did not respond to questions related to the outcome variable (i.e., level of coping) and/or explanatory variables (e.g., Coronavirus Supplement, JobKeeper Payment, smoking, alcohol consumption) were excluded from the analysis. Since we have observed variables such as demographic information, economic status, and data on previous mental health conditions that are typically associated with both the likelihood of missing data and with coping levels, and these variables are recorded in the LSAC dataset, we reasoned that the missing data are likely missing at random, we conducted a complete case analysis (CCA) meaning we excluded a case completely if one or more of the variables of interest were missing. We used raw data instead of imputing for missing variables because CCA usually generates unbiased estimates in regression models⁴². Figure 1 shows the selection of final analytical sample.

Measures

To achieve the study objectives, a range of socio-demographic and COVID-specific variables were examined in relation to the level of coping during the pandemic among Australian young people. The variables included in this study are listed in Table 1.

The primary outcome was the 'level of coping' measured during the COVID-19 period (data collected from two latest waves 9C1 and 9C2). The LSAC survey assessed participants 'level of coping', using an item based on the Australian Temperament Project⁴³. The survey question asks, "How well do you think you are coping?" with

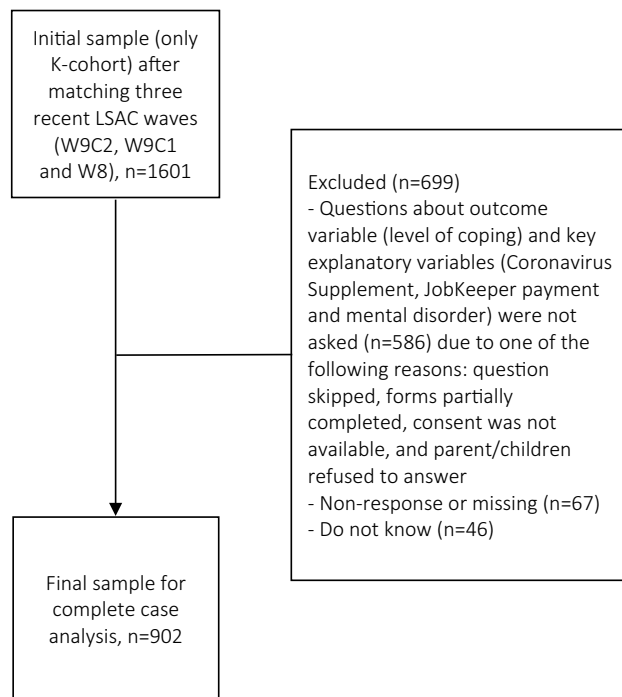


Figure 1. Flow diagram for sample selection.

a 5-point response scale ranging from “1 = not at all” to “5 = extremely well”. For our analysis, we created a binary variable ‘level of coping’—scores 1–3 ‘not at all’, ‘a little’ and ‘fairly well’ categorised as ‘low’ (coded 0); and scores 4–5 ‘very well’ and ‘extremely well’ categorised as ‘high’ (coded 1).

While the exposure of interest was the receipt of COVID-19 government financial support ‘Coronavirus Supplement’ and ‘JobKeeper’, and these variables came from wave 9C1 and 9C2 of the dataset for each subject. History of the mental disorder prior to the onset of the COVID-19 pandemic was drawn from wave 8 for all subjects. We created a binary (yes/no) variable, ‘presence of mental disorders’, was generated from each self-reported mental disorders including anxiety, depression, ADHD and autism. We included anxiety, depression, ADHD as this three are topmost common mental disorders among Australian children, and the prevalence of autism has significantly increased in Australian children in recent years^{44,45}.

Data regarding risk factors that may influence an individual’s ability to cope during the COVID-19 pandemic including gender; area of residence, socioeconomic status; employment status, smoking and drinking alcohol, and family dynamics were drawn from the most recent data available, wave 9C2.

Statistical analysis

Frequencies (n) and proportions (%) were computed for the description of the total study population. A correlation matrix was created to estimate the relationship between selected variables. Modified Poisson models were used to assess impact of COVID-19 payments on coping level during the pandemic among the study sample with and without mental disorders, adjusted for potential covariates. We used Modified Poisson models because it is commonly used for providing robust estimates for both common and rare outcomes, and binary outcomes in medical and public health research^{46,47}. Variables with $p < 0.05$ in the unadjusted model were considered for the adjusted model. Results were presented in the form of Incidence rate ratios (IRR) with 95% confidence intervals and statistical significance was set at a p-value of < 0.05 . The sampling weights given by the LSAC team were employed to ensure the validity of our study findings. The use of sample weights assisted in accounting for unequal probability sampling in different strata and ensuring the survey findings were nationally representative. Data cleaning, validation and all statistical analyses were conducted in Stata/SE 14.1 (Stata Corp, College Station, TX, USA).

Ethics

The LSAC study has been ethically approved by the Human Research Ethics Committee of the Australian Institute of Family Studies (AIFS) (Application number 20-09). All study participants provided written informed consent and voluntarily participated. Additionally, our authorship team obtained approval from the National Centre for Longitudinal Data (NCLD) and the Australian Data Archive (ADA) Dataverse (Reference No. 263493) to use the LSAC data for research and publications. All the investigations were carried out in accordance with appropriate ADA Dataverse guidelines and regulations in using the LSAC datasets.

Variables	Description
Outcome variable	
Level of coping	'Level of coping' was assessed using the survey question "How well do you think you are coping?" with a 5-point response scale ranging from "1 = not at all to 5 = extremely well" with higher scores indicating a greater degree of coping. From the responses, we created a binary variable: Scores 1–3 'not at all', 'a little' and 'fairly well' (coded as 0, 'low') and scores 4–5, 'very well' and 'extremely well' (coded as 1, 'high')
Main explanatory variables—cash transfer payments	
Coronavirus supplement	Whether the respondent received any financial support from the Australian Government during the pandemic in Australia. Responses were 'Yes' (coded as 1) and 'No' (coded as 0). Note that the Coronavirus Supplements were additional payments for people on various forms of welfare prior to the pandemic
JobKeeper payment	Whether the participant received the JobKeeper payment during the pandemic. Responses were 'Yes' (coded as 1) and 'No' (coded as 0). Note that the JobKeeper Payment scheme supported Australian businesses, NGOs and sole traders to support employees' salaries, on the condition that the organisation could demonstrate reduced income over certain periods.—The JobKeeper payment finished on 28 March 2021
Co-variables	
Gender	Gender was categorized into 'Female' (coded as 0) and 'Male' (coded as 1)
Employment status	Employment was categorized into 'unemployed' (coded as 0) and 'employed' (coded as 1)
Area	From the responses, we created a binary variable 'Area'- 'inner regional', 'outer regional', 'remote' and 'very remote' were combined as 'regional/remote' (coded as 1), while 'major cities' were coded as '0'
IRSAD quintiles	The Index of Relative Socioeconomic Advantage and Disadvantage (IRSAD, in quintiles, Q1-Q5) from the Socioeconomic Indices for Areas (SEIFA) was used to estimate area-level SES. A lowest IRSAD index (Quintile 1, 0–20%) signifies most disadvantaged, and highest IRSAD index (Quintile 5, 80–100%) indicates most advantaged
Household members	Number of household members were categorised into: 'minimum 2 members' (coded as 0), '3+ members' (coded as 1)
Family cohesion	Family cohesion was estimated by the following item—"Does [study child's] family get along well with each other?" In this study, we created a binary variable 'family cohesion'. Those who responded, 'very good' or 'good' were classified as 'High' (coded as 1), while 'fair' or 'poor' were termed as 'Low' (coded as 0)
Smoking	Whether the respondent smoked in the last 4 weeks: 'Yes' (coded as 1) and 'No' (coded as 0)
Alcohol	Whether the respondent consumed alcohol in the last 4 weeks: 'Yes' (coded as 1) and 'No' (coded as 0)
Pre-existing mental disorders	Whether the participant has any of the following self-reported mental disorder ADHD, Anxiety, Depression and/or Autism. From Yes/No responses, we created a new binary variable—"Pre-existing mental disorders", and coded 'No' as 0 and 'Yes' as 1
COVID-19 tested	Whether the respondent ever tested positive for COVID-19. The response categories were 'Yes' (coded as 1) and 'No' (coded as 0)
Isolation during COVID-19 pandemic	Whether the study participant was in isolation during the pandemic. Responses were 'Yes' (coded as 1) and 'No' (coded as 0)

Table 1. List of variables.

Results

We report data from 902 eligible participants from LSAC's K cohort. Sample characteristics were obtained from three recent LSAC waves (8, 9C1 and 9C2) are represented in Table 2. Most participants were female ($n = 545$, 60.4%), and more than three-quarters of participants lived in major cities ($n = 707$, 78.4%), rather than rural or remote areas ($n = 195$, 21.6%). As defined by the Index of Relative Socio-Economic Advantage and Disadvantage, respondents tended to have higher socioeconomic status, more than 75% ($n = 699/902$) of the participants were from high quintiles (combination of Q3, Q4 and Q5). About 57% ($n = 518$) of the sample were living with more than 2 household members, and almost 90% ($n = 808$) reported high family cohesion. About 10% ($n = 91$) of the participants smoked in the previous 4 weeks, while the percentage was doubled (20%, $n = 187$) for alcohol intake in the last 4 weeks. Nineteen per cent ($n = 171$) of respondents reported having a mental or neurodevelopmental disorder at the time of LSAC's wave 8. About 40% ($n = 364$) of participants had received a Coronavirus Supplement, and 16.4% ($n = 148$) had received JobKeeper during the COVID-19 pandemic.

Of the 902 participants, 528 (58.5%) reported 'low levels of coping' and 374 (41.5%) of all participants reported 'high coping levels'. The proportion of the level of coping by cash transfer payments for the study sample is shown in Table 3. Among those who received Coronavirus Supplement ($n = 364$), more than half (55.5%, $n = 202/364$) reported low coping levels; while the percentage of low coping level among those who received JobKeeper payment ($n = 148$) was slightly low 51.4% ($n = 76/148$).

Variables	n (%)
Gender	
Female	545 (60.4)
Male	357 (39.6)
Employment	
Unemployed	74 (8.2)
Employed—part time	608 (67.4)
Employed—full time	220 (24.4)
Area	
Major cities	707 (78.4)
Regional/remote	195 (21.6)
IRSAD Quintiles	
Q1 (0–20%)—Most disadvantaged	82 (9.1)
Q2 (20–40%)	121 (13.4)
Q3 (40–60%)	178 (19.7)
Q4 (60–80%)	211 (23.4)
Q5 (80–100%)—Most advantaged	310 (34.4)
Household members	
Min. 2	384 (42.6)
3 +	518 (57.4)
Family cohesion	
Low	94 (10.4)
High	808 (89.6)
Smoking in last 4 weeks	
No	811 (89.9)
Yes	91 (10.1)
Alcohol in last 4 weeks	
No	715 (79.3)
Yes	187 (20.7)
Pre-existing mental disorder*	
No	731 (81.0)
Yes	171 (19.0)
Tested COVID-19 positive	
Yes	501 (55.5)
No	401 (44.5)
Isolation during COVID-19 pandemic	
Yes	244 (27.1)
No	658 (72.9)
Coronavirus Supplement**	
No	538 (59.7)
Yes	364 (40.3)
JobKeeper payment**	
No	754 (83.6)
Yes	148 (16.4)

Table 2. Sample characteristics (n = 902). *Data from LSAC wave 8. **Data from LSAC waves 9C1 and 9C2. Rest of the variables were taken from LSAC wave 9C2.

Cash transfer payments	Low coping	High coping
Coronavirus Supplement (n = 364)	202 (55.5)	162 (44.5)
JobKeeper payment (n = 148)	76 (51.4)	72 (48.6)

Table 3. Level of coping by emergency cash transfer payments. Of the total sample (n = 902), 58.5% (n = 528) reported low coping level, and 41.5% (n = 374) reported high coping level. *Row percentages for coping levels are inserted for Coronavirus Supplement and JobKeeper payments.

Table 4 shows the incident rate ratios (IRR) from the Modified Poisson regression model (unadjusted and adjusted) for factors associated with the level of coping during COVID-19 (i.e., October 2020 to September 2021) for the total sample (n = 902). Males compared to females, while holding the other variable constant in the model, are expected to have a rate 1.11 (95% CI 1.04–1.19, p = 0.001) times greater for high level of coping. The rate ratio of strong family cohesion compared to poor family cohesion for higher level of coping was increased by a factor of 1.48 (95% CI 1.25–1.75, p ≤ 0.001), while holding all other variables in the model constant. Participants who smoked in the past 4-weeks prior to the survey have a rate 1.16 times (95% CI 1.02–1.33, p = 0.023) greater for high level of coping compared to those who did not smoke in the same period. Moreover, we revealed that the participants with mental disorders compared to those who did not have any mental disorders for high coping level was decreased by a factor of 0.77 (95% CI 0.68–0.86, p ≤ 0.001). The adjusted model also found that the participants who received JobKeeper payment have a rate 1.09 times (95% CI 1.00–1.18, p = 0.041) greater for a higher level of coping compared to those who did not receive the JobKeeper payment.

Determinants of the level of coping during COVID-19, stratified by mental disorder, are summarized in Table 5. Among those with a pre-existing mental health disorder (n = 171), there was a significant improvement in the level of coping for those in receipt of JobKeeper (adjusted IRR = 1.09, 95% CI 1.00–1.18, p = 0.041) compared to those who did not receive JobKeeper payment. The Coronavirus Supplement was not found to be significantly associated with a higher level of coping during the pandemic when compared to those who did not receive the Coronavirus Supplement using the crude analysis. A 48% increase in rate of high level of coping was noted if participants (with mental disorder) were reported strong family cohesion compared to those who had poor family cohesion (adjusted IRR 1.42, 95% CI 1.18–1.69, p ≤ 0.001). Being male was associated with an increased rate of coping level (adjusted IRR 1.07, 95% CI 1.00–1.15, p = 0.040) compared to females.

While among the individuals with no mental health disorder (n = 731), both Coronavirus Supplement and JobKeeper payment were not found to be significantly associated with higher levels of coping compared to their counterparts, respectively. However, among participants without mental disorders, male had higher rates

	Level of coping	
	Unadjusted IRR (95% CI)	Adjusted IRR (95% CI)
Gender (Ref. female)		
Male	1.14*** (1.06, 1.23)	1.11** (1.04, 1.19)
Employment (Ref. unemployed)		
Employed—part time	1.03 (0.89, 1.19)	–
Employed—full time	1.12 (0.96, 1.31)	–
Area (Ref. major cities)		
Regional/remote	1.06 (0.98, 1.15)	–
IRSAD Quintiles (Ref. Q1 (0–20%)—most disadvantaged)		
Q2 (20–40%)	0.95 (0.82, 1.10)	–
Q3 (40–60%)	0.98 (0.86, 1.12)	–
Q4 (60–80%)	0.89 (0.78, 1.02)	–
Q5 (80–100%)—most advantaged	0.96 (0.85, 1.08)	–
Household members (Ref. Min 2 members)		
3 + members	1.00 (0.93, 1.08)	–
Family cohesion (Ref. poor)		
Strong	1.52*** (1.28, 1.81)	1.48*** (1.25, 1.75)
Smoking in last 4 weeks (Ref. No)		
Yes	1.21** (1.05, 1.39)	1.16** (1.02, 1.33)
Alcohol in last 4 weeks (Ref. No)		
Yes	0.95 (0.86, 1.04)	–
Pre-existing mental disorder (Ref. No)		
Yes	0.74*** (0.66, 0.84)	0.77*** (0.68, 0.86)
Tested COVID positive (Ref. Yes)		
No	1.01 (0.94, 1.09)	–
Isolation during COVID (Ref. Yes)		
No	1.01 (0.93, 1.10)	–
Coronavirus Supplement (Ref. No)		
Yes	1.04 (0.97, 1.12)	–
JobKeeper payment (Ref. No)		
Yes	1.10* (1.01, 1.21)	1.09* (1.00, 1.18)

Table 4. The incident rate ratios (IRR) from the Modified Poisson regression model for factors associated with level of coping during COVID-19, the total sample analysis. Level of significance: *p < 0.05, **p < 0.01, ***p < 0.001; IRR: Incidence rate ratio, CI: Confidence Interval.

	Mental disorder—yes (n = 171)		Mental disorder—no (n = 731)	
	Unadjusted IRR (95% CI)	Adjusted IRR (95% CI)	Unadjusted IRR (95% CI)	Adjusted IRR (95% CI)
Gender (Ref. female)				
Male	1.08* (1.01, 1.16)	1.07* (1.00, 1.15)	1.38** (1.11, 1.72)	1.45*** (1.18, 1.79)
Employment (Ref. unemployed)				
Employed—part time	1.00 (0.86, 1.16)	–	0.94 (0.65, 1.35)	–
Employed—full time	1.02 (0.87, 1.02)	–	1.41 (0.97, 2.04)	–
Area (Ref. major cities)				
Regional/remote	1.08* (1.00, 1.17)	–	0.93 (0.71, 1.22)	–
IRSAD quintiles (Ref. Q1 (0–20%)—most disadvantaged)				
Q2 (20–40%)	0.97 (0.83, 1.13)	–	0.90 (0.61, 1.32)	–
Q3 (40–60%)	0.97 (0.85, 1.11)	–	0.89 (0.57, 1.38)	–
Q4 (60–80%)	0.90 (0.78, 1.03)	–	0.87 (0.61, 1.25)	–
Q5 (80–100%)—most advantaged	0.96 (0.84, 1.09)	–	0.98 (0.71, 1.35)	–
Household members (Ref. Min 2 members)				
3 + members	0.99 (0.92, 1.07)	–	0.98 (0.78, 1.24)	–
Family cohesion (Ref. poor)				
Strong	1.43*** (1.19, 1.71)	1.42*** (1.18, 1.69)	1.81* (1.15, 2.87)	1.88** (1.21, 2.93)
Smoking in last 4 weeks (Ref. No)				
Yes	1.16* (1.01, 1.34)	1.12 (0.98, 1.29)	1.36 (0.86, 2.17)	–
Alcohol in last 4 weeks (Ref. No)				
Yes	0.96 (0.87, 1.05)	–	0.90 (0.66, 1.23)	–
Tested COVID positive (Ref. Yes)				
No	1.03 (0.95, 1.10)	–	0.91 (0.72, 1.16)	–
Isolation during COVID (Ref. Yes)				
No	1.04 (0.95, 1.13)	–	0.84 (0.66, 1.06)	–
Coronavirus supplement (Ref. No)				
Yes	1.03 (0.95, 1.10)	–	1.13 (0.90, 1.43)	–
JobKeeper payment (Ref. No)				
Yes	1.14** (1.04, 1.24)	1.13** (1.04, 1.23)	0.81 (0.57, 1.16)	0.78 (0.55, 1.10)

Table 5. The incident rate ratios (IRR) from the Modified Poisson regression model for factors associated with level of coping during COVID-19, stratified analysis by the presence of mental disorder. Level of significance: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; IRR: Incidence rate ratio, CI: Confidence Interval.

of coping (adjusted IRR: 1.45, 95% CI 1.18–1.79, $p \leq 0.001$) compared to females. Moreover, participants with strong family cohesion were associated with a 88% higher rate of high coping level (adjusted IRR: 1.88, 95% CI 1.21–2.93, $p = 0.005$) compared to those with poor family cohesion (Table 5).

Discussion

In analysis of the total sample, we found that participants who received JobKeeper payment were more likely to have a higher level of coping compared to those who did not receive the JobKeeper payment. In contrast, receipt of the Coronavirus Supplement was not significantly associated with higher level of coping.

After stratification of JobKeeper effect by pre-existing mental health disorder, only those participants with a pre-existing mental disorder had a statistically significant benefit with receiving JobKeeper on level of coping during the COVID-19 pandemic. The significance of this effect was sustained after adjusting for all other variables found significant in the crude analysis. Our stratified analyses demonstrated that in participants with no pre-existing mental disorder, receipt of JobKeeper had no significant effect on coping. These findings suggest that the beneficial impacts of emergency COVID-19 cash transfer payments on level of coping were limited to individuals with a pre-existing mental health disorder in receipt of JobKeeper payment, which was the payment intended to keep people employed through the initial pandemic months/years.

Among those who had no pre-existing mental health disorder, two factors were significantly associated with a higher level of coping during the pandemic in both non-adjusted and adjusted logistic models: male gender and strong family cohesion. These findings are consistent with existing literature documenting determinants of mental health outcomes during the COVID-19 pandemic. As reported by Tham et al. and Lindau et al. males have experienced lower levels of psychological distress compared to females during the COVID-19 pandemic^{23,29}. A survey in Italy found family support mitigated depressive symptoms during the pandemic⁴⁸. A literature review on family resilience during the COVID-19 pandemic by Gayatri et al. found family cohesion was associated with family resilience which in turn reduced worries and corresponding anxiety and depression⁴⁹.

Our results partially support our hypothesis that young Australian adults with pre-existing mental health disorders in receipt of pandemic-specific cash transfers would have improved levels of coping, compared to

those not receiving any pandemic-specific cash transfer payments. Partially, because the effect was significantly beneficial for JobKeeper but not Coronavirus Supplement. So, a significantly beneficial effect on coping was found for those youth who received emergency cash transfer payments helping to keep them employed where they were employed prior to the pandemic, but no significant effect on coping was found for expanded welfare-type payments for youth who were receiving these payments prior to the pandemic. Existing literature indicates that government cash transfer payments for income and employment during the COVID-19 pandemic have broadly resulted in improved mental health and well-being^{29,34–36}. Botha et al. found the Coronavirus Supplement in Australia (i.e. additional welfare funds) significantly reduced the experience of financial distress and this was associated with reduced mental distress for adults who were unemployed prior to, and during, the pandemic³⁴. Similar findings regarding the positive mental health impacts of income support have been documented in a multinational analysis of helpline calls³⁶. However, these studies do not stratify the impact of coronavirus emergency cash transfer payments by pre-existing mental health disorder in adolescents and young adults, as our study did. As well, our study was able to examine cash transfer payments which were part of vertical expansion programs (i.e. more cash to those already receiving welfare payments prior to the pandemic) as well as job protection cash transfers (i.e. JobKeeper for employed adults experiencing reduced hours or job security due to the pandemic).

It is possible that our study did not identify more widespread positive impacts of emergency cash transfer payments on level of coping because our study design did not capture the peak positive effects of the JobKeeper and Coronavirus Supplement. A recent report published by the Australian Council of Social Service (ACOSS) in partnership with University of New South Wales in Australia found “income inequality and poverty declined during the [March–May 2020] wave of the pandemic despite the deepest recession in a century and an ‘effective unemployment rate’ reaching 17%, due to robust public income supports—JobKeeper Payment and Coronavirus Supplement”⁵⁰. The report found that the Coronavirus Supplement reduced poverty among individuals on income support and, between the months of March to December 2020 where average social security payments increased. Similarly, average private income increased across the March to December 2020 period, which was in part due to JobKeeper. By March 2021 Coronavirus Supplement and JobKeeper had ceased. A report published by the Australian Council of Social Service (ACOSS) found income inequality and poverty had risen to pre-pandemic levels by mid-2021⁵¹.

It can be assumed that any potential positive effect of the Coronavirus Supplement and JobKeeper on level of coping would have been maximal when payment was at its highest, from March 2020 until September 2020. As such, wave 9C1, collected between October and December 2020, is most likely to have captured positive effects of the COVID-19 cash transfer payments. By contrast, wave 9C2 data were collected between June and September 2021, by which time the payments and potential positive contributions of the financial benefits had ceased. By extension, any potential positive effect of the cash transfers on level of coping may have been exhausted by this time.

Our study found that, among those who reported at least one mental or neurodevelopmental disorder, the JobKeeper payment had a statistically significant benefit on level of coping during the pandemic. The COVID-19 pandemic continues to have a complex and far-reaching impact on mental health and well-being. A study of 2036 young people (aged 13–25 years) with a history of mental health needs in the United Kingdom found that 83% reported a deterioration in their mental health due to the COVID-19 pandemic. This was in part due to factors inherent to the pandemic, including widespread loss of life, fear of acquiring the disease and stress relating to limited health resources²⁴. The strict public health measures further impacted mental health with loss of social connectedness, infringement on personal freedoms, economic hardship, and disruption to daily routine with the closure of workplaces and educational institutes^{22,25}. These findings suggest individuals with mental health disorders were susceptible to many variables leading to reduced level of coping during the pandemic. Given the many influences, the net effect may have been mixed, and our study may have lacked the necessary power to detect the impact of the Coronavirus Supplement, the second COVID-19 pandemic-specific emergency payment examined in this study, on level of coping in individuals with a pre-existing mental disorder.

Our study is complicated by endogeneity bias due to reverse causality when analysing the relationship between coping, mental health outcomes, employment, and socioeconomic status. Poor mental health is known to be both a risk factor for and consequence of unemployment⁵². That is, the relationship is bidirectional. A longitudinal population study found pre-existing mental health conditions are associated with increased risk of unemployment⁵². Meanwhile a scoping review summarising how recession-related socioeconomic stressors translate into poorer mental health found unemployment and economic hardship led to poorer mental health and wellbeing, including maladaptive coping⁵³. Reverse causality similarly may exist among adaptive coping, cash payments and mental health disorders. For instance, JobKeeper payments were received by a wide range of employers/industries. This included industries anticipated to be affected detrimentally by the pandemic such as tourism, retail, recreation, and transport. However, some of the largest amounts of JobKeeper payments received in Australia were by industries not likely to be particularly detrimentally affected financially, or indeed, hypothesised to be in a financially improved position because of the pandemic. These industries included: clinical laboratories and testing, clinical and other technologies, and media companies. As well, there were large industries which were heavily impacted by the pandemic, but which were not eligible to receive JobKeeper—such as the public university sector and other public education providers¹⁷. The employees within industries receiving and not receiving JobKeeper have feasibly sufficient reasons for different coping levels through the pandemic. We know that coping levels through the pandemic were affected by job security, income changes, the nature of work, the work environment, exposure to COVID-19, personality, past experiences, health and family risk factors and access to support services⁵⁴. These factors varied within and between industries receiving and not receiving JobKeeper. A randomised trial design or a longitudinal study design with the variables of interest collected in several different waves and able to be assessed over time, will further help tease out the relationships between receiving JobKeeper/Coronavirus Supplement on level of coping.

There are a range of coping strategies, some adaptive and others maladaptive—these are known to be related to various psychological symptoms and mental health outcomes⁴⁰. Use of adaptive coping strategies is associated with improved mental health⁵⁵. Our study used self-reported level of coping and it is possible that an individual's perception of their coping may not correlate with objective measures of coping. Much of the pre-existing literature correlating coping and mental health outcomes is based upon adaptive and maladaptive coping strategies, rather than level of coping⁵⁵. A meta-analysis of frequently used coping scales, the commonly described tools analyse an individual's coping strategies, such as problem-focused coping, emotion-focused coping, avoidant coping, turning to substance use to cope and so on—which can then be correlated to mental health outcomes⁴¹. Furthermore, an individual's perceived level of coping is likely to be altered by previous exposure to acute and chronic stressors. A study of 8559 adults in different countries found Australian adults reported the greatest difficulty coping with the COVID-19 pandemic, despite relatively low community transmission of the virus when compared to the 16 other countries²⁸. By contrast, participants from 12 countries included in the study, (Jordan, Egypt, Saudi Arabia, Kuwait, Hong Kong, UAE, Palestine, Thailand, Oman, Nepal, Indonesia and Syria) demonstrated statistically significant higher levels of coping compared to participants in Australia and this finding further demonstrates that resilience to stressors is influenced by previous life experiences⁵⁶.

This study had limitations. Firstly, this study used, 'level of coping' data from LSAC waves 9C1 (October–December 2020) and 9C2 (June–September 2021) for analysis (i.e. whether the participant received the cash transfer payments in any waves during COVID times) and this may have caused an unintentional dilution of effect on level of coping caused by receipt of Coronavirus Supplement and JobKeeper. This may have obscured significant results. From the initial K-cohort we excluded a large proportion of participants due to non-response of one or more variables of interest, which may have introduced non-response bias. The responses regarding mental disorders and cash-transfers were self-reported and hence, maybe there is chance of social desirability bias. Also, the sample size is not too large, and findings may lack generalizability for other sample populations (e.g. adults or other age-groups or with other disease conditions). Further, we had to rely on the participants' responses regarding cash transfer payments and could not be able to check whether there was any measurement error or not. Another limitation is assessing an intervention (cash transfer payments during COVID-19) using data from a longitudinal cohort study design which is not the ideal method to assess interventions. A randomised trial would be the ideal study design for this question however it would not be ethical to randomize individuals to receive financial supports or to a control arm (no financial supports). Also, as this was a policy decision made nationally there was no opportunity to use a wait-list control or similar as the program rolled out simultaneously across the country. A further limitation that our survey participants were primarily from higher IRSAD quintiles (i.e. were wealthier). It is possible that we may have found a significant impact of the Coronavirus supplement on level of coping had the data included more participants from lower IRSAD quintiles. Moreover, some key variables such as conduct disorder (one of the most common mental disorders in Australian children⁴⁴), detail information regarding smoking, alcohol consumption, COVID-incidence and COVID-related measures were missing due to data limitation.

In conclusion, we found there was a positive impact of emergency cash transfer payments during the COVID-19 pandemic on level of coping, but this was limited to people with a pre-existing mental disorder receiving JobKeeper. These findings differ from existing literature which reports significant positive impacts for the general population of all forms of government cash transfers provided during the initial months and years of the pandemic. We suggest further research could investigate the effect of emergency cash transfers for those without mental health conditions as this A that we further our understanding of emergency cash transfer programs, not just for pandemics but also because global destabilisation due to fallout of the pandemic, the impacts of the Ukraine conflict and inflation are leading to new needs for social protection.

Data availability

The de-identified LSAC datasets that support the findings of this study are currently available free of cost on request from the National Centre for Longitudinal Data (NCLD), Australian Government Department of Social Services and The Australian Data Archive (ADA) Dataverse (<https://dataverse.ada.edu.au/dataset.xhtml?persistentId=doi:https://doi.org/10.26193/QR4L6Q>), but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Instructions for accessing LSAC datasets are available at <https://growingupinaustralia.gov.au/data-and-documentation/accessing-lsac-data>.

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Author contributions

Conception was by ML, EL and AM. Quantitative analyses were conducted by MI. Outputs of quantitative analyses were considered by all authors. Manuscript was drafted and finalised by all authors.

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Competing interests

The authors declare no competing interests.

Additional information

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