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Research article

Surviving the COVID-19 pandemic: An examination of adaptive coping strategies



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HIGHLIGHTS

- The use of more adaptive coping strategies was shown to be beneficial.
- This was associated with improved resilience and reduced depression.
- People without mental illness favoured self-help strategies such as exercise.
- However, "using the time to do things around the house" was beneficial for all.
- Focusing on "what one is grateful for" also helped to alleviate negative emotions.

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ABSTRACT

The mental health consequences of the COVID-19 pandemic have been significant in Australia. The aim of this study was to investigate coping strategies that individuals have adopted to assist them through this stressful period. Survey data collected in September and December 2020 as part of a larger study (the COLLATE project) were analysed.

The number of adaptive coping strategies endorsed by respondents had a significant negative relationship with depression and a significant positive relationship with resilience. Females tended to use more of these strategies than men, as did people who said their mental health had improved rather than deteriorated because of the COVID-19 restrictions imposed by government.

Specific adaptive coping strategies differed for those with and without a mental illness. People with a mental illness were more likely to seek professional and online help, while people without a mental illness were more likely to use self-help. Focusing on what one is grateful for and keeping oneself productively occupied ("using the time to do things around the house") were the most beneficial coping strategies in terms of alleviating depression, anxiety and stress.

Public health messaging promoting adaptive coping strategies may be useful in bolstering the mental health of individuals during lockdown periods. In particular, the promotion of coping flexibility should be recommended rather than the frequent use of the same coping strategies.

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1. Introduction

The novel coronavirus disease (COVID-19) pandemic emerged in China in late 2019 and rapidly spread across the globe. One of the main methods of combating the virus has been to limit human contact through the introduction of lockdowns. Within Australia, the longest and strictest lockdown in 2020 was imposed on the state of Victoria. At the start of September 2020, Victoria was in strict lockdown with "5km from home" travel limits and only a handful of reasons allowed for leaving the home. The rest of Australia, on the other hand, remained relatively open. At the beginning of December 2020, Victoria's restrictions were more similar to the rest of Australia when lockdown was lifted.

1.1. Mental health and coping in times of adversity

Social isolation at a time of adverse events has long been linked to considerable negative mental health impacts (Hawryluck et al., 2004), with evidence from the severe acute respiratory syndrome (SARS) health crisis pointing to long-term behavioural changes (Reynolds et al., 2008), including symptoms of post-traumatic stress disorder. Similar long-term mental health impacts are expected for the COVID-19 pandemic, especially for those with pre-existing mental health conditions. As blogged by Kousoulis et al. (2020), "There will be no vaccine for these mental health impacts of the COVID-19 pandemic".

People have chosen various strategies for coping with the difficulties of lockdown (e.g. Elkayal et al., 2022; Fluharty and Fancourt, 2021; Sampogna et al., 2021). For instance, a study conducted in Spain has found that focusing on certain tasks, such as "not listening to the news" or "drinking alcohol and watching TV" to avoid thinking about the situation, was the most popular mechanism (65%), while turning to social networks was a distant second (17%). Other responses, such as wishing that the situation would disappear, criticizing one's inability to cope, withdrawal, admitting one's emotions to others or self, re-engaging with the positive elements of life or making plans to allow better coping, were less commonly prioritised (Munoz-Violant et al., 2021). This particular study found that emotion-focused coping strategies were associated with higher anxiety scores, especially for people who were criticising themselves for not coping well. For people placed in confinement/quarantine coping options were clearly more restricted. Another Spanish study (Ló pez-Bueno et al., 2020) has investigated the association between coping mechanisms relating to levels of health risk behaviours over extended periods of confinement, finding that only one of these behaviours, excessive screen time, showed a sustained increase over the period of confinement.

The effects of social isolation during the COVID-19 pandemic have been of particular concern for people who live alone and those who are vulnerable to mental health problems (Tan et al., 2020; Rossell et al., 2021; Van Rheenen et al., 2020). The internet and its related social media platforms have been promoted to combat social isolation, with support programs using virtual reality and humanoid robotics recommended (Kato et al., 2020). However, many vulnerable populations have limited digital literacy, including those of lower socio-economic status and limited health literacy (Beaunoyer et al., 2020), making alternative support measures a priority for these people. Self-help and self-care have also been espoused, with the suggestion that exercise and other health behaviours should be vigorously promoted (Matias et al., 2020). Such measures can be described as adaptive coping, adopted to build resilience in the context of significant adversity. However, this is a reciprocal relationship in that resilience can also be expected to promote more adaptive coping, given that resilience has been found to decrease stress sensitivity and increase stress adaptability (Waugh and Koster, 2015).

1.2. Resilience and coping

A recent German study (Munk et al., 2020) considered adaptive coping and resilience in the context of COVID-19. Using the German version of the Brief Resilience Scale (Smith et al., 2008; Chmitorz et al.,

2018), this study found significantly lower levels of depression and anxiety among those with higher perceived resilience. Additionally, adaptive coping (as indexed by the Positive Focus sub-scale of the Brief Coping Orientation to Problems Experienced [COPE] scale), was significantly associated with lower depression and anxiety. The number of adaptive coping strategies employed has been linked to the ability of an individual to modify and change coping strategies, dependent on context. Such coping flexibility has been associated with more positive adjustment and less suicidal ideation over time, whereas more frequent use of the same coping strategies has been found to be less successful in this respect (Heffner and Willoughby, 2017).

Resilience has been identified as particularly important for people who live with a mental illness (Perlman et al., 2017), and increasing resilience is recommended as a cost-effective method that may provide some protection against the development of mental illness in healthy populations (Robinson, 2011). In general, people with lived experience of a mental illness tend to report lower levels of resilience, which has been associated with internalised stigma (Boyd et al., 2014), resulting in psychological adversity, hopelessness, distress and increased maladaptive coping (Lysaker et al., 2009). As such, the strength of the relationships of adaptive coping and resilience with depression, anxiety and stress, may differ in people with a mental illness. Supporting this suggestion are findings from Robilotta et al. (2010), who found that an initial use of avoidance coping in people with severe mental illness was frequently followed by problem-centred coping strategies in response to most types of stressors.

1.3. The current study

Given evidence for elevated levels of psychological distress and stressors relating to the COVID-19 pandemic in Australia (Rossell et al., 2021; Toh et al., 2021; Van Rheenen et al., 2020; Phillipou et al., 2021), the current study sought to examine which of 21 adaptive coping strategies were endorsed by an Australian sample. In addition, we aimed to determine how the number and the types of adaptive coping strategies employed related to mental illness, resilience and negative emotions, hypothesising that the number and types of adaptive coping strategy used would differ for people with and without mental illness and would be related to levels of resilience and negative emotions.

2. Materials and methods

2.1. Data collection

This study utilised data from our COvid-19 and you: mentaL heaLth in AusTralia now survEy (COLLATE) project for September 2020 and December 2020, as this is when coping data were collected. The project design for COLLATE has been described elsewhere (Tan et al., 2020). In short, members of the Australian general public were invited to participate in anonymous monthly online surveys, completed at their convenience and taking approximately 15–20mins. Online consent was obtained for the use of the personal and health information provided for the purposes explained. Each survey was active for 72 h from 9am on the first day of the month to 8:59am on the fourth day of the month. Only data directly related to the research questions in this paper will be presented here. Seventy-seven people completed both these surveys. However, the responses of these people were retained only for September (the first time such participants responded), leaving a total sample size of 716 independent responses.

The COLLATE project received ethics approval from the Swinburne University Human Ethics Review Committee (approval number: 20202917-4107) and complied with the Declaration of Helsinki.

2.2. Measures

Engagement with *adaptive coping* was measured by asking participants to endorse their use of up to 21 adaptive coping strategies. These

strategies were compiled based on insights obtained from qualitative data in previous COLLATE surveys, a variety of news reports and online observations, as well as suggestions found in Brophy (2020) and Fullana et al. (2020) (See Table 3 for a full list of these strategies). Participants were asked to select all strategies that applied to them, and the total number of strategies endorsed was calculated for each participant.

Perceived psychological resilience was measured with the *Brief Resilience Scale*. This is a six-item scale; each response was recorded from 1 = strongly agree to 5 = strongly disagree. This scale was developed by Smith et al. (2008) and had good reliability in this (α =0.923) and many other studies (e.g. Smith et al., 2008 (α > .80); Chmitorz et al., 2018 (α = .85)).

Depression, anxiety and stress were measured with the *Depression Anxiety Stress Scales* (DASS-21). This is a 21-item self-report measure developed by Lovibond and Lovibond (1995), with individual items scored on four-point Likert scales, 0 (did not apply to me at all) to 3 (applied to me very much or most of the time). The DASS-21 is a well-established measure with excellent reliability in this study for the subscales involving depression ($\alpha=0.933$), anxiety ($\alpha=0.873$) and stress ($\alpha=0.898$).

A self-reported endorsement of mental illness obtained as a "Yes/No" response to the question "Are you a person with a mental illness?" was also considered in this study. There is evidence that individuals self-identifying as having a mental illness, for example bipolar disorder or depressive disorder, typically meet criteria for each respective diagnosis (Kupfer et al., 2002; Sanchez-Villegas et al., 2008), suggesting that such self-reported measures have validity.

2.3. Statistical analysis

Analyses were conducted using SPSS v27. The hypotheses were addressed by comparing the number of adaptive coping strategies for people with and without a mental illness, while controlling for demographic factors. This was done using a Poisson regression allowing for over-dispersion, because the variance for the number of adaptive coping strategies endorsed exceeded the mean. In addition, Spearman correlations were used to compare correlations between the number of adaptive coping strategies, resilience and negative emotions, for people with and without a mental illness.

A comparison of the 21 adaptive coping strategies that were employed by people with and without a mental illness was then conducted using chi-squared tests of association with a Bonferroni correction applied for multiple comparisons. In addition, all the endorsed coping strategies were used in regression analyses predicting depression, anxiety, stress and resilience. Bonferroni corrections were again applied and square root transformations were used for depression, anxiety and stress to ensure that the regression assumptions were supported.

3. Results

3.1. Demographics

As shown in Table 1, the sample was biased in favour of women (68%), with only 15% of the sample aged 18–24 years and one quarter of the respondents reporting a mental illness. The majority of respondents (71.0%) were university educated. Among those reporting a current mental illness, depression was the most common illness (14.2% of the entire sample) followed by generalised anxiety disorder (13.1%), social

anxiety disorder (9.3%), posttraumatic stress disorder (6.0%) and panic disorder (3.6%). Eating disorders, alcohol and substance use disorders, bipolar disorder and obsessive-compulsive disorder were amongst the other mental illnesses reported in low numbers.

3.2. Comparisons for the number of adaptive coping strategies (coping flexibility)

The average number of adaptive coping strategies endorsed was 9.2 across the entire sample, with a standard deviation of 4.3. As shown in Table 1, significantly more adaptive coping strategies were used in September than December, with significantly more adaptive coping strategies for females than males. In addition, people with a university education used significantly more adaptive coping strategies than those with other education levels. Finally, we found that a perception of a very negative effect from government restrictions was significantly associated with fewer adaptive coping strategies. However, there was no significant difference in the number of strategies endorsed for people with and without a mental illness, and no significant difference for people living in and outside of Victoria. The effects of age, employment status, working from home and cash savings were also not significant, in terms of the number of adaptive coping mechanisms used.

However, as shown in Table 2, for people with and without a mental illness, there were significant but weak positive correlations for resilience, and some significant but weak negative correlations for negative emotions, with the number of adaptive coping mechanisms used. The use of more adaptive coping strategies, suggesting greater coping flexibility, was significantly associated with more resilience and less negative emotion, especially for those with mental illness.

3.3. Adaptive coping strategy comparisons

Table 3 provides a list of the 21 adaptive coping strategies considered, while exploring the frequency of their use among people with and without a mental illness. The most popular adaptive coping strategies involved normalisation of anxiety around COVID-19 and protection of the community and family by complying with restrictions, while also trying to look after one's health by eating well, following a good routine and exercising. Using virtual apps was the least popular option, with seeing a mental health professional not far behind. There were several significant differences in the use of these strategies between people with and without a mental illness. People with a mental illness were more likely to see a health professional and more likely to access virtual help from apps to manage their mental health, compared to those without a mental illness. Compared to people with a mental illness, people without a mental illness were more likely to exercise when possible and to focus on what they were grateful for, rather than on what they wished would change or go away.

Table 3 also presents regression analyses for the entire sample, to identify the characteristics of people choosing various adaptive coping strategies. A regression explaining 19.5% of the variation in resilience showed a significant negative relationship between resilience seeking virtual help from apps or seeing a mental health professional. However, a significant positive association with resilience was found for exercise, challenging negative thoughts and counting blessings rather than focusing on what they wanted to change or go away.

For depression, anxiety and stress scores, there was a significant negative relationship with counting one's blessings and doing things around the house, but a significant positive relationship with visits to a mental health professional. In addition, a significant negative association was found for depression with exercise and reaching out to loved ones, with a significant positive association for doing their bit to safeguard the community by staying home. Stress had a significant positive association with knowing it was okay to feel anxious about COVID-19, while anxiety had a significant positive association with trying to reduce unhealthy habits.

¹ (DASS-21 scores should be multiplied by two for descriptive interpretation of severity ratings, where *depression*: normal 0–9, mild 10–13, moderate 14–20, severe 21–27, extremely severe > 28); anxiety: normal 0–7, mild 8–9, moderate 10–14, severe 15–19, extremely severe > 20; and stress: normal 0–14, mild 15–18, moderate 19–25, severe 26–33, extremely severe > 34).

Table 1. Relationship between the number of adaptive coping strategies endorsed and demographic factors (Poisson regression results).

Variable	Categories	N	%	Mean	Standard Error	Wald χ^2	df	<i>p</i> -value
Survey	September	337	47	9.36	0.39	4.92*	1	Reference
	December	380	53	8.56	0.33			0.027
Gender	Male	223	32	8.40	0.37	10.91***	1	Reference
	Female	480	68	9.53	0.35			< 0.001
Highest Level Education	School	91	13	8.05	0.45	10.99*	3	Reference
	TAFE/Diploma	117	16	8.81	0.47			0.180
	Undergrad	315	44	9.25	0.37			0.013
	Postgrad	194	27	9.79	0.44			0.002
Age	18–24	100	15	8.73	0.50	1.54	3	Reference
	25-49	414	60	8.71	0.33			0.976
	50–64	118	17	9.20	0.45			0.440
	65 plus	55	8	9.18	0.69			0.595
Employment status	Unemployed	88	12	8.65	0.52	1.51	3	Reference
	Student	97	14	8.80	0.52			0.815
	Employed	439	62	9.19	0.36			0.296
	Homemaker/Volunteer	88	12	9.18	0.54			0.435
Working from home	No	387	54	8.90	0.31	0.08	1	Reference
	Yes	329	46	9.00	0.40			0.772
Current Cash savings	< \$5,000	198	28	9.18	0.39	8.53	6	Reference
	< \$10,000	81	11	9.81	0.54			0.256
	< \$20,000	76	11	8.94	0.53			0.667
	< \$30,000	54	7	8.94	0.62			0.695
	< \$40,000	44	6	8.92	0.63			0.687
	> \$40,000	163	23	8.79	0.43			0.384
	Prefer not to say	100	14	8.16	0.45			0.034
Mental Illness	No	538	75	8.96	0.31	0.01	1	Reference
	Yes	179	25	8.94	0.41			0.943
Victoria	No	295	41	8.67	0.39	2.71	1	Reference
	Yes	421	59	9.24	0.32			0.098
Have current restrictions affected your Metal Health?	Very positively	31	4	10.31	0.85	28.09***	4	0.268
	Somewhat positively	106	15	9.75	0.49			0.414
	Not at all	258	36	9.35	0.35			Reference
	Negatively	253	35	8.83	0.37			0.179
	Very negatively	69	10	6.93	0.47			< 0.001

*p < .05, **p < .01, ***p < .001.

Table 2. Spearman correlations for resilience and negative emotions with the number of coping strategies utilised by respondents with mental illness (N = 179: Bold) and without mental illness (N = 538: Italics).

		1	2	3	4	5	
	Mean (SD)	9.64 (4.21)	3.49 (.83)	8.42 (8.66)	4.17 (5.66)	10.03 (7.56)	
1.Number Adaptive Coping Strategies	9.47 (4.00)		.15***	-0.16***	-0.09*	-0.02	
2.Resilience	2.69 (.89)	0.21***		-0.47***	-0.38***	-0.37***	
3. Depression	18.67 (11.64)	-0.35***	-0.30***		0.54***	0.65***	
4. Anxiety	12.22 (9.04)	-0.11	-0.23***	0.49***		0.64***	
5. Stress	18.68 (10.14)	-0.19*	-0.29***	0.67***	0.66***		
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*p < .05, **p < .01, ***p < .001, SD = Standard Deviation.

4. Discussion

This study involved two independent self-selected samples of Australian respondents to an online survey, which was completed in September 2020 and in December 2020. It was found that fewer adaptive coping strategies were significantly associated with higher depression and lower resilience, supporting the work of Heffner and Willoughby (2017), who have suggested that individuals who use a greater number of positive coping strategies when stressed may be better able to regulate their emotions in a more positive manner. This provides a strong

argument for the promotion of the use of more positive coping strategies during the pandemic in order to encourage coping flexibility. On the other hand Kato (2012) has defined coping flexibility as the ability to discontinue an ineffective coping strategy and implement an alternative coping strategy, so it might by this capability rather than the number of coping strategies per se that is associated with lower depression and higher resilience.

This study identified some of the most common adaptive coping strategies adopted by individuals during the Australian COVID-19 pandemic. Knowing that feeling anxious about COVID-19 was

Table 3. Frequencies for adaptive coping strategy endorsement with regressions for resilience and negative emotions.

		% Responses	Responses		Standardised Regression Coefficients			
Adaptive coping Strategies (ranked in order of popularity)	N	No Mental Illness (N = 538)	With Mental Illness (N = 179)	V(p)	Resilience	Depression (SQRT)	Anxiety (SQRT)	Stress (SQRT)
I know that feeling anxious about COVID-19 is OK and normal	595	81.6	87.2	.064 (.087)	093*	.023	.043	.114**
I do my best to protect myself and my family by practising excellent hygiene and social distancing	536	73.6	78.2	.046 (.219)	.010	013	017	013
I try to eat healthily (e.g. ensuring I have included fruit and vegetables in my diet)	513	72.1	69.8	.022 (.557)	.020	.004	052	023
I am doing my part in protecting my community by staying home whenever I can	509	68.8	77.7	.085 (.023)	072	.133***	.040	.046
I exercise when possible	438	63.9	52.5	.101 (.007)	.116**	125***	039	056
I attempt to maintain a routine or structure around my day (e.g. sleeping, waking, eating at regular times)	429	61.0	56.4	.040 (.283)	.048	054	064	.013
I reach out to loved ones	393	56.9	48.6	.072 (.054)	.040	124***	095*	050
I challenge my negative thoughts	387	54.1	53.6	.004 (.915)	.115**	080*	053	026
I focus on what I am grateful for rather than focusing on what I wish would change or go away	347	54.3	30.7	.204 (<.001)	.163***	176***	168***	166***
I limit my media exposure	345	47.6	49.7	.019 (.620)	052	.024	.002	.059
I tell myself that some things in my life are still certain	336	49.3	39.7	.083 (.026)	.022	037	022	008
I am using this time to do things around the house (e.g. renovating, gardening)	291	42.0	36.3	.050 (.179)	.033	126***	109**	127***
I am using this time to re-evaluate areas of my life	267	37.7	35.8	.018 (.635)	.030	003	003	.027
I am using this time to start a new hobby or resume an old hobby	263	37.2	35.2	.018 (.634)	.051	.023	.068	.042
I am using this time to learn about something that interests me	254	37.4	29.6	.070 (.060)	.008	073	.024	048
I try to reduce unhealthy habits (e.g. smoking)	236	33.1	32.4	.006 (.866)	.006	.075*	.105**	.057
I've been taking vitamins/supplements to boost my immune system	201	27.0	31.3	.042 (.264)	061	.083*	.063	.054
I have reconnected with old friends	195	27.7	25.7	.019 (.603)	.001	015	.001	038
I've been seeing a mental health professional (in person or online)	142	11.7	44.1	.352 (<.001)	237***	.317***	.259***	.235***
I practise meditation	141	20.3	17.9	.026 (.487)	.044	.010	.031	004
I get virtual help from apps to help me manage my mental health	66	7.2	15.1	.117 (.002)	110**	001	.067	.040
R-Squared					19.5%	28.2%	18.4%	15.7%

*p < .05, **p < .01, ***p < .001.

Cramer's V (V < 0.1weak association; 0.1 < V < 0.25 moderate association; V > 0.25 Strong association), V(p) bolded for p < 0.01.

acceptable was the most common coping mechanism, followed by complying with health directives to protect oneself and one's family. Activities designed to address the health implications of the pandemic, such as eating well, following a good routine and exercising were also popular, as found in other studies (Mariani et al., 2020; Ogueji et al., 2021).

Although the *number* of adaptive coping mechanisms identified was similar for people with and without a mental illness, there were as expected significant differences in the specific methods used (also reported in Robilotta et al. (2010) and Meyer (2021)). People with a mental illness were more likely to do their bit to protect the community by staying home when they could, while people without a mental illness were more likely to tell themselves some things were still certain, more likely to exercise when possible and to focus on things for which they were grateful rather than on the things they did not like. However, further research is recommended to establish replication and to explore the factors associated with the variation in choices within each of these groups.

Significant associations with resilience and negative emotions were evident for several adaptive coping strategies in the entire sample. In line with previous work, greater resilience was significantly associated with more exercise (Hu et al., 2020) and self-help (Matias et al., 2020). Self-help strategies included focusing on the things for which they could be grateful and challenging negative thoughts, rather than visiting a

mental health professional or seeking virtual help of this nature from apps (Boyd et al., 2014). Biological mechanisms for the beneficial effects of physical exercise on resilience have been proposed (Arida and Teixeira-Machado, 2021) and self-care is regarded as one of the key ways for building resilience (Cullen and Rawat, 2020), however, in the short-term it may be more reasonable to assume that resilient people are more likely to choose exercise and self-help over other coping mechanisms. "Doing things around the house" was not associated with resilience, but had a significant negative relationship with depression, anxiety and stress. A variety of reasons have been suggested to explain the link between the process of organising one's living space and mental health, including a link between clutter and fatigue and the calming effects of gaining control of one's environment (Saxbe and Repetti, 2010).

This study does have some limitations. It was a cross sectional study conducted at two time points (September and December 2020), which meant that no causal relationships can be assumed. A longitudinal study would provide greater certainty about the relationships that have been observed in this study. In particular, one would expect that a longitudinal study would show whether more adaptive coping strategies would act to improve resilience in the longer term, thereby reducing depression, anxiety and stress, while also identifying the coping strategies of most benefit in the longer term.

Other limitations in this study included the use of an unvalidated COVID-specific measure for adaptive coping due to the non-existence of

such a validated measure at this time. Also, the absence of any measure for maladaptive coping meant that no comparisons between the use of adaptive and maladaptive coping, or any compensatory effects, could be conducted. In addition, the sample was weighted in favour of women who are known to use different styles of coping than men (Kelly et al., 2008) and the overall sample was relatively well-educated, suggesting that the results may not be valid for the Australian (or other) population as a whole.

5. Conclusion

This study found that using more adaptive coping strategies, as opposed to fewer adaptive coping strategies, was associated with lower depression and greater resilience. Due to the cross-sectional nature of the data at two time points, recommendations regarding the use of adaptive coping strategies during lockdown need further validation. However, it does seem that accessing a wider selection of adaptive coping strategies is beneficial. In addition, it seems that adaptive coping strategies associated with resilience (e.g. exercise, focusing on what one is grateful for) may be more protective for people without a mental illness, than for people with a mental illness. However, focusing on what one is grateful for and doing things around the house were the most beneficial coping strategies associated with depression, anxiety and stress. But whether this will apply in countries where adverse COVID-19 health impacts have been more severe than in Australia needs further investigation.

Declarations

Author contribution statement

Denny Meyer; Tamsyn E. Van Rheenen; Erica Neill; Andrea Phillipou; Eric J. Tan; Wei Lin Toh; Philip J Sumner; Susan L. Rossell: Conceived and designed the questionnaire; Analyzed and interpreted the data; Wrote the paper.

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Data included in article/supp. material/referenced in article.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

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