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RESEARCH ARTICLE

A pilot study of a brief and scalable psychosocial intervention for children and adolescents following disasters

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Abstract

Objectives: Following disaster exposure, a significant proportion of children/adolescents will develop levels of post-traumatic stress symptoms (PTSS) that do not meet diagnostic threshold for PTSD, but which cause ongoing distress. This paper describes the development and pilot testing of a brief, scalable, psychosocial intervention. SOLAR-Kids/Teens has been designed to be delivered by non-mental health professionals ('coaches') to children/adolescents experiencing moderate levels of PTSS following disasters.

Methods: An international collaboration of experts developed The Skills fOr Life Adjustment and Resilience (SOLAR) for Kids and Teens programs. The programs were piloted—using a pre-post mixed methods design—with 10 children and adolescents (8–18 years), with the aims of examining the feasibility of the program's delivery model as well as the program's potential usefulness.

Results: The pilot data indicated that after 1 day of training and with ongoing supervision, the SOLAR program was safe and feasible for coaches to deliver to children/adolescents experiencing PTSS. Coaches reported increased knowledge ($p = .001$), confidence ($p = .001$) and skills ($p = .006$). The programs were acceptable to coaches, children/adolescents and parents. Parents and children/adolescents reported reductions in trauma and anxiety symptoms from pre- to post-treatment, with moderate to large effect sizes.

Conclusions: The preliminary findings demonstrate that the SOLAR-Kids/Teens program is feasible, acceptable and safe to be delivered by trained non-mental health professionals to children and adolescents experiencing PTSS and anxiety following disaster exposure. Randomized controlled trials are required to evaluate the efficacy of the SOLAR-Kids/Teens programs.

KEYWORDS

adolescents, children, disaster, post-traumatic stress, psychosocial intervention, scalable intervention, sub-clinical, trauma

Practitioner points

- SOLAR-Kids/Teens is a brief, trauma-informed, skills-based intervention for children and adolescents who experience adjustment difficulties in the aftermath of disasters. We established that it was a safe, acceptable program for children/adolescents and their parents and found indications that it could reduce post-traumatic stress and anxiety symptoms.
- It was feasible to train non-mental health professionals in the delivery of the SOLAR-Kids/Teens program.
- The SOLAR-Kids/Teens program may be a beneficial low-intensity child/adolescent mental health intervention within a stepped-care approach in post-disaster contexts, though larger controlled studies are required.

INTRODUCTION

Children and adolescents are a vulnerable cohort in the face of natural disasters. By mapping the physical consequences of exposure and the lack of essential services in the context of climate crises and stressors, UNICEF (2021) highlighted the differential impact of disasters on children. Research into the psychological ramifications of disasters has led to the wide recognition of children and adolescents' unique susceptibility to experience psychological distress and functional impairment in the aftermath of disasters (Le Roux & Cobham, 2022). As the frequency of natural, political and technological disasters affecting the well-being of children and adolescents has increased, so too has the interest in interventions that mitigate risk and promote resilience and recovery (Masten, 2014).

Recovery trajectories of children and adolescents post-disaster show that a small, but significant proportion continue to be affected over time (Gibbs et al., 2021; Le Roux & Cobham, 2022). They are at risk of developing mental health problems such as depression and anxiety disorders with post-traumatic stress disorder (PTSD) being the most commonly observed presentation (Le Roux & Cobham, 2022). While disaster recovery support programs and trauma-focused psychological interventions to support children and adolescents in post-disaster settings have been increasingly developed and implemented over the past two decades, many lack an evidence base (Gibbs et al., 2021; Le Roux & Cobham, 2022).

A recommended framework in disaster mental health service delivery is an integrated and stepped model of care consisting of increasing levels of specialization and intensity of intervention (Inter-Agency Standing Committee, 2007; National Emergency Management Agency, 2023; NATO Joint Medical Committee, 2008). A three-tiered model of psychological interventions developed in Australia through expert consensus following the Black Saturday bushfires guides this paper (see Figure 1, Wade

FIGURE 1 Stepped care approach to psychosocial interventions for survivors of disasters based on Wade et al. (2012).

et al., 2012). Level 1 consists of early, universal care (e.g., education and resources) that benefits all children/adolescents in the affected community, whereas Level 2 interventions are indicated when, months after the disaster, children/adolescents experience ongoing distress and adjustment problems or present with sub-clinical mental health disorders (and require basic psychosocial and emotional regulation skills training). Interventions in the third and last level are specialized psychological treatments by qualified mental health professionals addressing post-traumatic mental health disorders.

McDermott and Cobham (2014) argue that such models of care, which have also been found to be the most cost-effective in disaster contexts (Cohen et al., 2017), most adequately meet the clinical needs of children and adolescents who present with post-disaster mental health problems. The status of each of these three levels (in terms of development of interventions and evidence base) can be summarized as follows. Several level one post-disaster interventions exist, such as Psychological First Aid (e.g., Brymer et al., 2012) and Child-Friendly Spaces (e.g., Metzler et al., 2019), yet the evidence supporting their effectiveness has been slow to develop (Gibbs et al., 2021; Varker et al., 2023). The last decade has seen a few meta-reviews for broad and disaster-specific universal programs emerge (e.g., Durlak et al., 2011; Fu & Underwood, 2015). Most program effectiveness studies to date have been conducted for Level 3 post-disaster mental health interventions, which include Trauma-Focused Cognitive Behavioural Therapies (TF-CBT), Eye Movement Desensitization and Reprocessing Therapy (EMDR) and Exposure and Strict Cognitive Behavioural Therapies (CBT) (Gibbs et al., 2021). There has been minimal development and evaluation of Level 2 interventions designed specifically for children and adolescents.

An existing psychological, skills-based and targeted level two intervention that can be delivered by both mental health professionals and non-mental health professionals with structured training, is the 'Skills for Psychological Recovery' program (SPR; Berkowitz et al., 2010; Heinz et al., 2022). Notably, the adult and child versions of SPR are identical in relation to their structure and the mechanisms they target. Given the differential impact of trauma across developmental stages, it seems likely that a level two post-trauma intervention for children and adolescents should be tailored to their specific needs. Moreover, although parents could technically be given the adult version of SPR, the child version does not include parental involvement, even though parental support has been found to be critical in mediating children's responses to natural disasters (Cobham & McDermott, 2014). With only one study conducted in the digital self-guided app version for adolescents, the evidence base of SPR remains low and its suitability for disaster contexts is unknown (Varker et al., 2023).

Given their role in the stepped approach to mental health care, Level 2 interventions are intended to minimize the involvement of mental health specialists. As a result, they commonly consist of brief, group, self-help, digital and/or task-shifting (i.e., deliverable by non-specialist) formats (Sijbrandij et al., 2020). These characteristics facilitate the scalability of level two interventions; an important consideration for psychological interventions in communities affected by disaster where the social and healthcare system is disrupted and mental health professionals are a scarce resource (World Health Organization, 2017). Rossouw et al. (2022) argue that task-shifting (whereby mental health care is shifted to lay community providers or non-specialist healthcare workers) can be an effective way to increase access to interventions for children and adolescents with PTSD. For example, task-shifting strengthens and expands the health workforce by allocating tasks to workers with shorter training and non-specialized qualifications in order to make more efficient use of the available human resources (World Health Organisation, 2008). In addition to increasing access to mental health care, upskilling non-specialists also builds the local capacity to respond effectively to community needs (Rossouw et al., 2022). Although this model has primarily been advanced as a key strategy to address child and adolescent mental health in low- and middle-income countries (Petagna et al., 2023; Rossouw et al., 2022; World Health Organisation, 2016, 2018), task-shifting can also be relevant in underserved communities or vulnerable populations in high-income countries (Barnett et al., 2018; Fiskin et al., 2018; Singla et al., 2017). Post-disasters settings represent an important context in which task shifting has great potential (Cunningham et al., 2021).

Since schools play a critical role in disaster resilience, they have been promoted as an important implementation site for mental health interventions for children and adolescents (Jaycox et al., 2010; Masten, 2021). Notably, a review by Gibbs et al. (2021) found that almost all post-disaster interventions were delivered in schools. Several benefits of school contexts have been highlighted such as local embeddedness and acceptability (Masten, 2021) as well as possibility for mass screening and high attendance/low attrition rates (Rossouw et al., 2022). Schools have been proposed as the most effective location to deliver post-trauma interventions because they provide opportunities for treatment and monitoring of a large population of children and adolescents, offer continuity and stability of treatment and peer support while also being natural and effective sites to bypass common treatment barriers (Le Roux & Cobham, 2022). Several school-based programs have been developed for children and adolescents in disaster contexts, yet none of them specifically target children and adolescents presenting with mild-to-moderate levels of distress or adjustment difficulties following disaster events (e.g., 'Journey of Hope', Powell & Bui, 2016; Powell & Holleran-Steiker, 2017; Powell & Leytham, 2014; Powell & Thompson, 2016; 'Stress Inoculation Training Based Intervention', Wolmer et al., 2011; and 'Extended Enhancing Resiliency Amongst Students Experiencing Stress (ERASE- Stress)' program, Berger et al., 2012; Berger & Gelkopf, 2009; Gelkopf & Berger, 2009).

In summary, there is a need for effective, scalable, brief, low-intensity and indicated post-traumatic mental health interventions for children and adolescents affected by disaster that can be delivered by non-mental health professionals in a variety of settings, including schools. The 'Skills fOr Life Adjustment and Resilience' (SOLAR) program seeks to address this gap for children (defined here as aged 8–12 years; SOLAR-Kids) and adolescents (defined here as aged 13–18 years; SOLAR-Teens). This paper briefly describes the development, content and structure of the SOLAR-Kids/Teens programs. The findings of a pilot evaluation are then reported. The primary outcome of the study is the feasibility of program delivery by non-mental health professionals, which is conceptualized as encompassing program acceptability by coaches, training acceptability by coaches, effectiveness of the training model and likelihood of future implementation. The secondary outcomes are indicators of the program's usefulness, conceptualized as program acceptability by children/adolescents and parents; safety for children/adolescents and potential mental health benefits. The ways these constructs have been operationalized are detailed in the 'Measures' section of the paper.

METHOD

Program description

Development of the SOLAR-Kids/Teens programs

Formation of an International Expert Group

In 2017, a group of 19 international experts in child and adolescent trauma (from Australia, Canada, Norway, Germany, USA and UK) was formed to participate in a 2-day roundtable led by Phoenix Australia, in collaboration with Princes Trust Australia and supported by then HRH Prince of Wales. The group was tasked with achieving consensus on an intervention model that met the following criteria:

- brief, indicated, psychosocial intervention targeting sub-clinical (as opposed to diagnosable) levels of distress in children and adolescents exposed to trauma and disaster;
- able to be delivered by non-mental health professionals and
- able to be evaluated.

From the outset, the emphasis was on a range of symptoms, rather than just post-traumatic stress. It was envisioned that, although there could be some flexibility depending on circumstances, the intervention would be delivered in the medium-term recovery phase following the disaster.

Identification of recovery mechanisms and iterative ranking process

Prior to the roundtable meeting, members were asked to identify mechanisms to be targeted within the intervention. Thirteen mechanisms were identified and members then ranked each one in terms of importance. Six mechanisms central to trauma recovery were identified and formed the basis for consensus building (see Table 1).

International roundtable meeting

The roundtable involved a structured timetable of issues and questions to be addressed. The first day focused on general topics such as 'who is this intervention for?' 'how will this intervention be delivered?' and 'what mechanisms of recovery will the intervention target?' The second day focused on specific components of a child-oriented version and an adolescent-oriented version of the intervention (with each featuring discussion of parent[1] involvement). The roundtable's work was guided by a Background Briefing Paper prepared by Phoenix Australia. This included a background literature review of efficacious interventions for trauma-impacted children and adolescents and key questions to guide the discussion. In general, cognitive behavioural and attachment frameworks guided the discussions. Following the roundtable, a core group led by the senior author, developed child, adolescent and parent versions of the intervention that became SOLAR-Kids/SOLAR-Teens as well as the parent companion intervention. These were revised based on roundtable members' iterative feedback.

Structure and treatment components of the SOLAR-Kids/Teens programs

As a level two intervention, SOLAR targets children and adolescents who are experiencing mild-to-moderate distress or psychological symptoms following disaster, by helping to develop new skills to manage feelings of distress, while encouraging re-engagement in helpful activities.

[1]The term 'parent' is used to describe the broad range of people who might be in the role of primary caregiver to a child.

TABLE 1 The trauma recovery mechanisms for children and adolescents.

1. Parenting	Refers to parenting through a crisis, enhancing parent child relationship; understanding the responses of the child, not promoting avoidance (including, parenting traps such as increased over-protectiveness; communication strategies, engaging the parent in assisting and reinforcing what the child is learning)
2. Increasing control	Refers to having knowledge about the potential impacts of trauma (psychoeducation), which restores a sense of control and instils hope for recovery
3. Emotion regulation	Refers to a broad range of strategies in cognitive, behavioural and physiological domains designed to understand emotions, reduce arousal and moderate unpleasant emotions such as anxiety, depression and anger
4. Emotional processing	Ensuring that the young person has an opportunity to organize the memory of the disaster event in a safe and controlled manner and to generate alternative and updated appraisals and interpretations of the experience
5. Support and safety	Refers to having access to a safe environment, as well as multiple types of potentially beneficial social support, including emotional and instrumental support
6. Restoring adaptive developmental progression	By actively focussing on re-engagement with developmental goals. This may be achieved through behavioural activation and reducing disaster related avoidance, as well as practical, behavioural strategies designed to promote a return to positive aspects of the young person's pre-trauma life

The program is intended to be delivered by non-mental health professionals—referred to as 'Coaches'—who have experience and interest in working with children and adolescents (e.g., teachers, sports coaches) but are not trained mental health professionals.

The program consists of two parent modules and five child modules, each of 1-h duration and delivered weekly (see Table 2 for details). Both parents and children/adolescents receive a workbook to support integration of learnings when at home. Parents are updated through weekly check-ins and session summaries. The parent and child sessions are individually conducted by a single coach. Drawing from the evaluation of the SOLAR program for adults (Cowlishaw et al., 2023) it is anticipated that the SOLAR-Kids/Teens program would be compatible with both in-person and video conferencing delivery methods without necessitating further modifications.

In creating a program for children (8–12 years) and adolescents (13–18 years), developmental considerations were carefully integrated—both in the development of the resources and in the training for coaches. For children, strategies imparted during the Coach training included employing clear, simple, jargon-free language; regularly checking understanding; avoiding assumptions about prior knowledge; being aware of children's tendency to engage in magical thinking in disaster contexts; providing concrete explanations; using visual aids for teaching new skills and emphasizing skill repetition to boost confidence and competence. For adolescents, adjustments discussed in training involved using more sophisticated language tailored to their cognitive abilities, recognizing their ongoing identity formation and possible social sensitivities (e.g., concerns over social comparisons) and acknowledging their cognitive and emotional developmental stages (e.g., testing limits and making disclosures). Workbook adaptations reflected these developmental insights, featuring age-appropriate visuals and texts, with a greater focus on text-based activities for adolescents to cater for their advanced capacity for abstract thinking.

Study design

Study aims

The first aim was to establish that the SOLAR-Kids/Teens programs could be feasibly delivered by non-mental health professionals (i.e., coaches) in government school settings. Feasibility of program delivery was conceptualized as (1) program acceptability by coaches, operationalized through coaches' perceived

TABLE 2 SOLAR-Kids/Teens program modules and the recovery mechanisms informing them (numbers refer to the list in Table 1).

Module	Description	Component skills and activities
Parent 1: 'SOLAR and your role'	Introduces parents to the SOLAR program content and their role within in	Strategies to support their child to engage with home practice tasks and rewarding them (4, 6) Building a collaborative partnership with the coach Maintaining healthy habits for their families (6)
Parent 2: 'Parenting after something bad happens'	Provides parents with important tips and strategies to support their child	Understanding children/adolescents' reactions to distressing events and the impact on families (6) Identifying parental coping strengths and self-care practices (6) Ideas for managing changes and improving family communication (6)
Child 1: 'Getting started'	Orients the child to the SOLAR program and the workbook and begins to establish the child's strengths and understanding of their thoughts, feelings, body sensations and behaviours	Starting a skills toolbox (2) Making a strengths bank (1) Learning about clues (thoughts, feelings, body sensations and behaviours or actions) (1) Using a feelings thermometer to monitor tension levels (2) Talking about practice and rewards (5)
Child 2: 'Feelings and behaviours'	Educates the child about common reactions after disaster events, teaches skills to notice and cope with strong feelings and helps the child develop a plan to get back into activities	Learning more about feelings and behaviours (1) Talking about tools for dealing with feelings (2) Practising slow breathing (2) Discussing and listing enjoyable activities (4, 5) Talking about getting back into activities (5)
Child 3: 'Your disaster memory—your memory after something scary'	Explains the importance of processing experience and organizing memories after a disaster and offers a safe space for the child to recount their story	Learning about difficult memories after distressing events (3) Sharing their disaster story (3, 4)
Child 4: 'Helpful thinking'	Provides more information about the impact of disaster events on thoughts and teaches skills to manage unhelpful thinking patterns	Learning more about the links between thoughts, feelings and behaviours (1) Learning about helpful thinking (3) Learning how to become a thought detective (3)
Child 5: 'You've come so far… and the places you'll go'	Celebrates the child's SOLAR journey, reinforces their preferred skills and helps prepare the child for future challenges	Reviewing all the tools learned and identifying the most helpful tools for the child (2) Anticipating, normalizing and planning for setbacks (1) Identifying the child's support network of safe adults (4)

program usefulness and self-reported program fidelity; (2) training acceptability by coaches, measured by coach satisfaction with the training and supervision; (3) effectiveness of the training model, represented by the level of knowledge about the program, self-reported degree of confidence and skill uptake and (4) likelihood of future implementation according to coaches' perspective. To this end, coach assessments were conducted pre-training, post-training and post-delivery of the program.

The second aim was to study whether the SOLAR-Kids/Teens programs could be useful for addressing the psychological needs of disaster-affected students in government schools. It was recognized that while this pilot was not resourced to establish the effectiveness of the program in reducing children and adolescents' distress associated with disaster, it could provide early indicators of usefulness including (1) program acceptability by parents and children/adolescents, operationalized through attendance and dropout rates; (2) program safety, measured by the number of reported adverse events experienced by children and adolescents as a result of participation and (3) potential benefits, evidenced by reductions

TABLE 3 Summary of outcomes.

Feasibility of SOLAR's delivery model	Indicators of SOLAR's usefulness
Program acceptability by coaches • Coaches' perceived program usefulness • Self-reported program fidelity	Program acceptability by parents and children/adolescents • Attendance rates of parents and children/adolescents • Dropout rates of parents and children/adolescents
Training acceptability by coaches • Coach satisfaction with the training and supervision	Program safety for children/adolescents • Reported adverse events experienced by children/adolescents as a result of participation
Effectiveness of the training model • Level of knowledge about the program • Self-reported degree of confidence • Self-reported skill uptake	Potential mental health benefits • PTSS scores of children/adolescents • Anxiety symptom scores of children/adolescents • Depression symptom scores of children/adolescents
Likelihood of future implementation • Coaches' perceived likelihood of future use	

Abbreviation: PTSS, post-traumatic stress symptoms.

in children and adolescents' distress (see Table 3). For this purpose, a single group study design was adopted and parent and self-report assessments were conducted at pre-intervention and post-intervention.

Coach recruitment, training and supervision

Following a needs assessment conducted in the region impacted by bushfires and the Covid-19 pandemic, the Victorian Department of Education and Training identified that schools were requesting skills to support children and adolescents manage their distress (Leppold et al., 2021). As such, information about the project was distributed in June–July 2022 by the Department of Education and Training to government schools in Victoria, Australia affected by bushfires and/or the Covid-19 pandemic. Schools self-selected to participate in the project. They designated a member of school staff to become a coach if they (1) were able to support staff to complete training, identify suitable students and deliver the program; (2) had systems in place to ensure student privacy and child safety and (3) were able to provide appropriate facilities to deliver the program.

Fourteen staff members participated in the SOLAR didactic training and completed both pre- and post-training surveys. Out of these, nine staff members proceeded to implement the program with at least one child or adolescent under supervision, thereby completing the SOLAR training in its entirety. Coaches were mostly female (89%), teachers (44%) and only a minority had formal qualifications in mental health, counselling or well-being (11%). Eight coaches each delivered the program to one participant and one coach delivered the program to two participants, completing the program with the first participant before starting with the second (Table A1).

The training program for coaches included self-paced introductory e-learning modules (2.5 h), followed by a live online training delivered by psychologists with expertise in child and disaster mental health (6 h). The training covered a wide range of topics, including the impacts of disasters on children and adolescent mental health, common responses to disasters and trajectories, as well as program content, coaching strategies and coach responsibilities in the pilot study. An optional live online workshop on basic counselling skills (2 h) was offered to all coaches and the decision to participate in this workshop was entirely at their discretion. Finally, weekly group supervision sessions, facilitated by expert psychologists, were organized to ensure program fidelity and safe program delivery (1 h/week). Safe program delivery was monitored by coaches' discussion of their individual sessions, participant engagement and progress as well as parental feedback. Additionally, the research team monitored the safety of program delivery through the assessment of returned fidelity checklists after each session. It is important to underscore that the training and supervision provided to coaches were designed to enable them to monitor and effectively manage any distress

experienced by participants. Although the likelihood of the program inducing undue stress or triggering trauma responses was considered low—given that it targets children and adolescents experiencing mild-to-moderate distress—the program was designed with the safety of participants in mind. For instance, the trauma module was developed to prioritize safety and containment, offering a supportive environment and a non-coercive approach to discussing the trauma story. This module is strategically positioned after sessions in which children have learned to monitor their stress levels and engage in calming and grounding exercises, providing them with resources that they can call upon with the coach in this module if needed. Successful completion of the training program involved attending compulsory components of the didactic training, delivering the program to at least one student and regular attendance and active participation in supervision.

Participant recruitment

Students were recruited directly by coaches in their schools between August and October 2022, rather than through an open call. This targeted recruitment approach was deliberately chosen to manage the process within the school's capacity, ensuring that the demand did not exceed what could feasibly be supported. Inclusion criteria were as follows: (1) aged between 8 and 18 years, (2) fluency in English of both young person and parents, (3) reading ability of grade 2 or above, (4) willingness to participate in the program, (5) access to videoconference technology to attend an online intake appointment and an internet-enabled device to complete online questionnaires (either at home or in school) and (6) mild-to-moderate sub-clinical symptoms of post-traumatic stress, as determined by cut-off scores on a screening measure (Child Revised Impact of Events Scale-13, CRIES-13, 1–29). Exclusion criteria included (1) currently receiving professional mental health treatment (psychological therapy or medication), (2) a diagnosed neurodevelopmental disorder or (3) symptoms within the clinical range for externalizing disorders as determined by cut-off scores on a screening measure (externalizing scale of the Paediatric Symptom Checklist-17, PSC-17, ≥7). Of the 14 children/adolescents screened, two students were ineligible due to high scores on the CRIES-13 or PSC-17 and were referred to professional mental health support.

A total of 11 children/adolescents and their parents attended an online intake appointment with a researcher for informed consent and assessment purposes. One child did not commence the program after their coach withdrew from the project. Nine primary school children and one secondary school student participated in the study (see Table A2 for their demographic characteristics). All participants had been exposed to bushfires and/or the Covid-19 pandemic. Additionally, two of the children reported having been exposed to floods while living in another state. They all received the program individually, in English, through face-to-face sessions at their school, scheduled during school hours and on a weekly basis (provided coach and participant were not absent due to sickness or school trips for example).

A total of nine parents participated in the program, comprising eight mothers and one father. Each attended the parent sessions individually. One mother, who had two children participating in the program separately, was not required to repeat the parent sessions. All parents spoke English at home and none identified as Aboriginal or Torres Strait Islander.

Measures

Assessment of study eligibility

Whether a child was receiving mental health treatment or had been diagnosed with a neurodevelopmental disorder, was confirmed by parents during screening. PTSS was assessed with the Children's Revised Impact of Events Scale (CRIES-13, Perrin et al., 2005). The CRIES-13 is a brief,

child-friendly screening measure with 13 items rated by children and adolescents by considering their experiences over the past 7 days, for which acceptable psychometric properties have been described (Deeba et al., 2014; Giannopoulou et al., 2006; Lau et al., 2013; Smith et al., 2003). A higher total CRIES-13 score indicates higher PTSD symptoms. If the child responded in the clinical range (≥30) (Perrin et al., 2005; Verlinden et al., 2014) or reported no symptoms (=0), they were ineligible to participate. Symptoms of externalizing disorders were assessed by parents' (for children) or self-report (for adolescents) responses on the externalizing subscale of the Paediatric Symptom Checklist (PSC-17) for which acceptable psychometric properties have been described (Murphy et al., 2016). Students with scores indicating an increased likelihood of an externalizing behavioural health disorder (≥7) were ineligible (Murphy et al., 2016).

Assessment of the feasibility of the program's delivery model

Feasibility outcomes were assessed through coach surveys. The first survey (T1) was completed prior to receiving any SOLAR training and included items about demographics, knowledge about the program, confidence and skills in delivering the program, which provided a baseline for the feasibility outcomes. To assess *knowledge*, coaches were asked 15 multiple-choice questions consisting of five options about the content of the SOLAR-Kids/Teens program. The number of correct items was summed to give a score out of 15 and a percentage of correct items was calculated. *Confidence* in delivering the program components was rated on a 5-point Likert scale (1 = 'not confident' to 5 = 'extremely confident') and included 10 items. An overall confidence score was created by adding the confidence ratings across all 10 items. Coaches assessed their level of *skill* in delivering the program on a 5-point Likert scale where they rated their agreement as to whether they had a specific skill (1 = 'strongly disagree' to 5 = 'strongly agree'). This set of 24 items included nine items related to general counselling skills, 10 items about skills engaging with children/adolescents and five items about skills working with parents. An overall skills score was created by summing the skills ratings scores for each of the 24 items.

The second survey (T2) was completed after receiving the didactic components of the training (i.e., online and live training components) and repeated questions regarding knowledge, confidence and skills in delivery. Items on training and program satisfaction, including perceived program usefulness, were added. *Satisfaction with the training* consisted of one item rating satisfaction (5-point Likert scale; 1 = 'not satisfied' to 5 = 'extremely satisfied'), another item rating usefulness of the training (5-point Likert scale, where 1 = 'not useful' to 5 = 'extremely useful') and one open-ended question. *Perceived usefulness of the SOLAR-Kids/Teens program* included five questions: one item rating usefulness of the program (5-point Likert scale; 1 = 'not useful' to 5 = 'extremely useful'), three dichotomous items (yes/no) and one open-ended item.

Lastly, after delivering the program, coaches completed the third survey (T3) which repeated items from the second survey and included items about satisfaction with supervision and views on future implementation. *Satisfaction with supervision* had a similar format as the satisfaction with training set (three items). *Likelihood of future implementation* was assessed through five items: two rating items (5-point Likert scale; 1 = 'not likely' to 5 = 'extremely likely') and three open-ended questions.

Finally, to assess fidelity, coaches completed a brief checklist after each coaching session asking whether they delivered the key program elements and the time duration of each session.

Assessment of indicators of program's usefulness

The following outcomes were used to determine the potential usefulness of SOLAR-Kids/Teens:

1. Attendance and dropout rates (program acceptability by parents and children/adolescents);

2. The number of reported adverse events experienced by children/adolescents (program safety for children/adolescents). Adverse events were defined as any reported instances of prolonged deterioration in mood, escalation of child distress, sustained increase in school absenteeism, and any harm to self or others. Adverse events were monitored through weekly supervision and logged in the supervision register and
3. Symptom scores (potential benefits), which was assessed through two validated instruments at two time points (pre- and post-intervention). All measures inquired about the frequency of symptoms over a 2-week period prior to completing the survey and were completed by students and their parents.

PTSS was measured using the Child and Adolescent Trauma Screen-2 (CATS-2; Sachser et al., 2022). The event screen was omitted and replaced with a preamble that focussed responses on natural disasters and/or COVID-19 pandemic. In the self-report version, one question referring to unsafe behaviour was removed on ethical grounds due to the survey being administered remotely. The CATS-2 has proven to have good to excellent reliability, medium–to-strong convergent validity with depression and anxiety and low–to-medium discriminant validity with externalizing symptoms (Sachser et al., 2017).

Anxiety and depressive symptoms were assessed using the Revised Child Anxiety and Depression Scale-25 (RCADS-25, Chorpita et al., 2000; Ebesutani et al., 2012, 2017). It has demonstrated adequate to excellent internal consistency and good convergent validity (e.g., Donnelly et al., 2019) as well as good concurrent validity with other depression and anxiety measures (Chorpita et al., 2005). Items that inquired about feeling worthless or thinking about death were removed due to the same aforementioned ethical considerations. Scores for depression (nine items for self-report version and 10 items for parent version) and anxiety (nine items) items were summed separately to create a total score for each subscale.

Pre-intervention and post-intervention surveys were completed by all participating parents. While all 10 participating students completed surveys prior to the SOLAR intervention, seven completed the surveys following the program and one child partially completed the post-intervention survey.

Data analysis

Analyses of coach data

Frequencies for responses across all survey items were calculated. Due to the small sample size ($n < 15$), non-parametric paired samples Wilcoxon-signed rank tests were used to examine within-groups change in survey scores regarding staff knowledge, confidence and skills between (a) pre-training and post-training and (b) post-training and post-delivery. Median scores were reported for at each time point. Missing data from Coaches who completed the pre-training survey but not the post-training survey ($n = 10$) was handled using pairwise deletion.

Analyses of participant data (Children/adolescents and parents)

Due to small samples of parents and children/adolescents ($n < 15$), non-parametric paired samples Wilcoxon-signed rank tests were used to examine within-group change in outcome between the pre-SOLAR and post-SOLAR reports. Median scores were produced for each group and time point, while repeated measures versions of Cohen's *d* were produced to quantify the overall magnitude of change over time (Lakens, 2013). Given the small *n*'s, statistically significant effects were not expected, therefore, point estimates for the effect size were the primary consideration. In addition, reliable change indices were calculated for each of the pre- and post-SOLAR measures to identify the proportion of children/adolescents who experienced reliable change (Jacobson & Truax, 1991). Missing data from children who completed the pre-intervention survey but not the post-intervention survey ($n = 2$) was addressed using pairwise deletion. Data preparation was conducted using SPSS Version 23, while statistical tests

and *d* estimates were produced in Program R (version 4.3.2) using the package 'effectsize' (Ben-Shachar et al., 2020). For both parent and child measures, change score plots were generated using the package 'ggplopt2' (Wickham et al., 2022) across pre- and post-SOLAR timepoints depicting individual and overall (mean) change trajectories.

RESULTS

Feasibility of the program's delivery model

Acceptability of the program model

After delivering the program, 88.9% ($n = 8$) of coaches rated the program as 'very' or 'extremely useful' for students impacted by a disaster or stressful event, 100% ($n = 9$) of coaches agreed both the level of complexity of the program and the time allocated for each session were appropriate. Further, 77.8% believed the number of parent and child sessions was appropriate. A review of the fidelity checklists revealed that 92.9% of coaching sessions included all core components and 95.7% of sessions were delivered within 15 min of the recommended duration. Open-ended feedback about the program highlighted its value within a school setting, both in terms of supporting students as well providing personal and professional development to school staff. For example

> I feel like I have been able to make a positive difference in their lives and also to do something to help the wider community. I have also personally embedded some of the SOLAR information.
>
> (Coach)

Acceptability of training and supervision

After delivering the program, 88.9% ($n = 8$) of coaches were 'very' or 'extremely satisfied' with training, while 100% rated the training as being 'very' or 'extremely useful' in preparing them for their role. All 100% ($n = 9$) of coaches were 'very' or 'extremely satisfied' with supervision and 100% ($n = 9$) rated sessions as 'very' or 'extremely useful' in supporting their learning and delivery of SOLAR. Open-ended feedback about the training noted the value of the program materials and regular supervision sessions in supporting program delivery, for example

> The training program for coaches was so well thought out, engaging and effective. The supervision sessions were engaging, helpful, insightful, kept us on track and provided immediate advice and feedback and was a lovely way to network with other coaches.
>
> (Coach)

Training effectiveness

Knowledge

The median percentage of correct items on the knowledge questions before and after training was 53.8% and 65.4% ($n = 14$), respectively, whereas the median percentage of correct items on the knowledge questions after program delivery was 69.2% ($n = 9$). Related samples Wilcoxon signed-rank tests revealed a significant increase in correct knowledge scores from T1 to T2 ($n = 14$, $Z = 3.14$, $p = .001$), but no significant change between T2 and T3 ($n = 9$, $Z = .12$, $p = .903$) (Table A3).

Confidence

Wilcoxon signed-rank tests revealed a significant increase in coaches' total confidence scores from T1 to T2 ($n = 14$, MedianT1 = 24.5, MedianT2 = 37.0, $Z = 3.21$, $p = .001$) and T2 and T3 ($n = 9$, MedianT2 = 37.0, MedianT3 = 44.0, $Z = 2.62$, $p = .008$).

Skills

Wilcoxon signed-rank tests indicated that coaches' self-rated skills significantly increased from T1 to T2 ($n = 14$, MedianT1 = 86.0, MedianT2 = 96.0, $Z = 2.61$, $p = .006$). There was no significant difference between scores at T2 and T3 ($n = 9$, MedianT2 = 96.0, MedianT3 = 100.0, $Z = 1.31$, $p = .227$) (Tables A4–A6).

Likelihood of future implementation

After delivering the program, 88.9% ($n = 8$) of coaches reported they would be either 'very likely' or 'extremely likely' to deliver the SOLAR-Kids/Teens program in the future. All 100% ($n = 9$) reported it was 'very likely' or 'extremely likely' they would continue to use the skills gained as a SOLAR Coach in their future work. Written responses to open-ended questions also supported these findings of clear intentions to make further use of the skills developed in the SOLAR-Kids/Teens programs, while also highlighting barriers to implementation associated with the allocation of time and resources to support continued delivery, including ongoing access to support via supervision, for example

> Funding for time release to conduct the program would be wonderful! Continued access to supervision would also be incredibly helpful, as each child brings a slightly different scenario with them.
>
> (Coach)

Indicators of the program's usefulness

Acceptability of the program by parents and children/adolescents

All participants that started SOLAR-Kids/Teens completed the program in full (attendance rate = 100%, dropout rate = 0%).

Safety of the program for children/adolescents

No adverse events experienced by children and adolescents as a result of participation were reported throughout the delivery phase.

Potential of benefits of the program

Trajectory plots highlight individual variability in outcomes reported by students (Figure A1). Corresponding plots based on parent reports of child data are depicted in Figure A2. Notwithstanding the different patterns of change across individuals, the analyses indicated that students on average reported reductions in trauma and anxiety symptoms from pre- to post-intervention, with effect size estimates suggesting moderate-to-large overall changes in scores (see Table A7). These differences were not statistically significant ($p > .05$), which was expected given the small samples. In contrast, the effect

size estimates indicating a change from pre- to post-SOLAR-Kids/Teens in child reports of depression were small or approaching zero, suggesting minimal changes. There were similar patterns of findings observed when based on parental reports of child outcomes. The reliable change analysis revealed that one parent reported an increase in trauma symptoms for their child, the majority reported no change, while a small proportion (between 10 and 20%) of children/adolescents experienced a decrease in symptoms following the intervention (see Table A8).

DISCUSSION

The pilot evaluation of the SOLAR-Kids/Teens intervention sought to examine the feasibility of the program's delivery model as well as the program's potential usefulness. The findings indicate that implementing the SOLAR-Kids/Teens program in school settings, in which the delivery of the program is shifted to trained school staff, is feasible. Coaches regarded the program as very to extremely useful for children and adolescents impacted by disasters and reported high fidelity ratings in delivering the program, suggesting high levels of program acceptability. However, the low uptake in secondary schools warrants further study into the feasibility of the SOLAR-Teens program in its current format. For example, a self-paced, digital SOLAR-Teens program could have greater appeal with the older cohort of students. Illustrating this point is the adaptation of the SOLAR program for adults into a smartphone application for emergency service workers. This adaptation, which is under evaluation in a controlled trial, was developed through co-design with stakeholders who prefer remote delivery of psychosocial interventions over traditional face-to-face methods (Metcalf et al., 2023). Another example involves the co-designing and feasibility testing of an app-based SOLAR intervention for women veterans and emergency services personnel during their transition process and the COVID-19 pandemic (Dell et al., 2022). Feasibility of the delivery model was further demonstrated by high acceptability of the training and supervision reported by coaches. School staff received the equivalent of a full day of training with an additional, optional 2 h counselling skills workshop to get across the content of the program and the skills needed to deliver it. Coaches' knowledge, confidence and practical skills increased with training, indicating that the training was effective. These learnings were maintained after delivering the program and receiving supervision and, in the case of confidence, further consolidated. Evidence in implementation research on the supportive role of supervision for long-term sustainability of evidence-based practices (Bond et al., 2014), underscores the value coaches placed on supervision in their feedback. Although the post-program delivery survey acknowledges experiential learning that can take place whilst delivering the program and receiving supervision, there is scope to include longitudinal data to investigate whether SOLAR-Kids/Teens training of non-mental health professionals builds knowledge, confidence and skills long-term in trauma-informed care for disaster-affected children and adolescents (Chafouleas et al., 2015; Citraningtyas et al., 2017). The feedback from coaches aligned with other research in which child mental health professionals valued learning from and networking with other professionals in post-disaster contexts (Citraningtyas et al., 2017). This could point to the benefits of ongoing supervision for sustained implementation when disaster responses involve task-shifting psychosocial interventions to non-mental health specialists. Feasibility of the SOLAR-Kids/Teens delivery model was reinforced by the extreme likelihood that coaches would use the skills learned in their future work. It also highlights the transferability of trauma-informed strategies for non-mental health specialists to their work more generally. This is highly relevant when the need for local capacity building in trauma awareness and responsiveness is great, both in preventative and post-disaster contexts. The trauma-informed strategies (as outlined in thinking; see Table 2 for details) were not presented as stand-alone techniques. Instead, the training of coaches encompassed a comprehensive discussion on trauma, child and adolescent mental health and trajectories of recovery. This approach facilitates the development of broader trauma-informed perspectives among non-mental health providers, which can have applicability beyond the program. It is worth noting that the program content itself was integrated with both trauma-informed strategies and an understanding of how trauma affects mental health. This

allowed children and adolescents to grasp the rationale behind the trauma-informed strategies and skills they were acquiring, emphasizing not just the 'what' but also the 'why' behind these practices.

The present findings also provide preliminary evidence that SOLAR-Kids/Teens was a beneficial post-traumatic mental health intervention for children and adolescents who presented with adjustment problems and/or sub-clinical levels of mental health disorders following a natural disaster event such as bushfires or the Covid-19 pandemic. While the initial findings are promising, it is important to note the small sample size of the pilot study. Therefore, caution should be exercised when interpreting these preliminary findings and further research with larger sample sizes is warranted to validate the current observations. Additionally, as a result of removing risk related items from the measures for ethical reasons, it was not possible to make use of the clinical cut-off scores for normative comparisons. The preliminary findings suggest that participating in the SOLAR-Kids/Teens program was somewhat effective in reducing trauma and anxiety symptoms whilst minimal changes were observed in depression symptoms. More research is needed to determine whether this is a program-specific pattern, potentially linked to a greater focus on trauma and anxiety symptoms rather than depression symptoms. Individual trajectories indicated that some students maintained symptom levels at the end of the program which could suggest the need for ongoing or more tailored support after receiving SOLAR-Kids/Teens. The stepped model of care approach assumes that children and adolescents can transition up or down an intensity level of support if their needs change. As such, a program like SOLAR-Kids/Teens can facilitate early detection and referral of children and adolescents who stand to benefit from more specialized services. No children/adolescents or parents dropped out or reported adverse events during the SOLAR-Kids/Teens program, suggesting a high degree of acceptability. Although a limitation of the study is the absence of a formal assessment of program acceptability by children and parents, the observations regarding acceptability justify more research in this space. In this regard, the applied research model of the current study in which program implementation and evaluation were successfully trialled in real-world settings highlights the relevance action-research can have in post-disaster contexts.

This pilot study engaged a range of stakeholders: children, adolescents, parents, teachers, non-teaching school staff and principals. It is a limitation of the SOLAR-Kids/Teens program development process that these stakeholders were not involved from the outset. While their direct input was not initially sought, the pilot phase incorporated coaches' feedback about their own and their students' experience of the program to refine it. This feedback was facilitated through supervision, session fidelity checklists and the coach surveys. This approach has provided valuable insights and prompted specific modifications, such as refining the method by which coaches can support the child in recounting the memory of a distressing event through note-taking. An important future direction for the SOLAR-Kids/Teens program is to engage young participants in ongoing development efforts to ensure the program's relevance and effectiveness.

The scalability of the present, individual-based iteration of the SOLAR-Kids/Teens program is notably enhanced by several factors discussed below, including involvement of non-mental health professionals; delivery within schools; the brief, low-intensity nature of both the intervention and the training program and the use of technology.

The ability of the SOLAR-Kids/Teens program to involve non-mental health professionals in its delivery mechanisms, especially within educational environments, not only enhances the program's accessibility but also addresses critical implementation barriers identified in the introduction of this paper. Strategically deploying it in schools and leveraging professionals from various backgrounds highlight the program's adaptability and potential for widespread impact in post-disaster contexts, ensuring it can effectively cater to diverse needs in different settings.

Further amplifying SOLAR's scalability potential is the program's design, which is both brief and low-intensity, consisting of seven 1-h sessions. This concise format facilitates easier implementation and wider dissemination across various settings. Relatedly, another significant marker of scalability is the program's straightforward training requirements. With a minimum of 8.5 h and a maximum of 10.5 h of training needed, coaches can quickly become competent and confident in delivering the intervention. This efficiency in training not only accelerates the program's deployment but also ensures

that implementation can be scaled up rapidly to meet high demand. Finally, the scalability of this intervention is also enhanced by its integration of technology. Utilizing video conferencing platforms for training coaches (with the possibility of program delivery via video conferencing) effectively reduces barriers to access. This enables the program to extend its reach to a wider audience, including those in remote or underserved areas, provided they have access to the internet. It also allows for the program's outreach in situations where traditional, in-person interactions are not feasible (e.g., because of lockdown regulations during a pandemic).

In terms of future directions and considerations related to scalability, two key issues were identified. To begin with, Level 2 child trauma-responsive interventions in schools are typically delivered in group format (Fondren et al., 2020), with research showing that post-disaster school-based group delivery of psychological treatments not only reached non-treatment-seeking children but also achieved higher uptake and completion rates than individual treatment in a clinic setting (Jaycox et al., 2010). With this in mind, future implementation and evaluation studies of SOLAR-Kids/Teens should consider using a group delivery modality to investigate a mechanism that would maximize the program's scalability potential and demonstrate its versatility. Importantly however, Jaycox et al. (2010) showed a greater effect size for the individual treatment than the group treatment, suggesting a possible "trade-off between uptake and effectiveness" (Phoenix Australia, 2020, p. 23). The high completion rates in the current study (i.e., all parents and children/adolescents who started the program, also completed it) could suggest that individual interventions in school may better address the barriers that nontreatment-seeking families encounter. This is an important empirical question to be investigated – whether group delivery of SOLAR-Kids/Teens would yield similar benefits to the individual format in terms of symptom reduction.

The second issue relates to resourcing. From a disaster management perspective, it is important to note that implementing scalable level two interventions, characterized by task-shifting and capacity building such as the SOLAR-Kids/Teens program, require resources for non-mental health specialists to be supported in ways that allow them to access appropriate training and supervision, conduct screening and deliver the program. For example, participating school staff needed to get authorization from their school leadership to spend time being involved in the program, which meant that they could not attend to other assigned tasks. Importantly, a significant proportion of school staff reported in supervision that they carried out many preparation tasks outside of school hours. This highlights the need to build organizational competencies and supporting infrastructure if trauma-informed approaches are to be implemented effectively in schools (Chafouleas et al., 2015). The lack or absence of foundational infrastructure and support could be a significant barrier to achieving greater scalability of the SOLAR-Kids/Teens programs in post-disaster contexts. Although principals of participating schools in this pilot agreed to the time commitments required for their staff to complete the training, recruit participants children/adolescents and deliver the program, in reality, coaches struggled to access this 'protected' time. In this study, school capacity was assumed based on principals' agreement to have their staff involved. However, coach feedback indicated that a formal analysis of school capacity would have been a useful first step.

Once more evidence is gathered about the effectiveness of the SOLAR-Kids/Teens programs, future directions could include formally evaluating the program's scalability, examining how effectively it can be expanded and adapted across various contexts while maintaining its impact. Additionally, conducting a cost/benefit analysis from a health economics standpoint would be most valuable in post-disaster contexts. Such an analysis would allow the evaluation of the program's economic viability, considering both the direct and indirect costs associated with its implementation against the tangible and intangible benefits it delivers.

In summary, although further randomized control research is needed, the preliminary evidence suggests that SOLAR-Kids/Teens represents an acceptable, safe and potentially beneficial option for indicated intervention for children and adolescents in a stepped model of care approach in post-disaster contexts.

AUTHOR CONTRIBUTIONS

Sarah Strauven: Writing – original draft; investigation; writing – review and editing; project administration; conceptualization; methodology; supervision. **Meg J. Dennison:** Conceptualization; methodology; writing – review and editing; project administration; data curation; investigation; formal analysis. **Meaghan L. O'Donnell:** Conceptualization; investigation; funding acquisition; writing – review and editing; methodology. **Sean Cowlishaw:** Conceptualization; investigation; funding acquisition; writing – review and editing; methodology; formal analysis. **Kari Gibson:** Methodology; investigation; writing – review and editing; supervision. **David J. Pedder:** Investigation; writing – review and editing; methodology; supervision. **Jenelle Baur:** Formal analysis; writing – review and editing; data curation. **Jane Nursey:** Investigation; conceptualization; methodology; writing – review and editing. **Vanessa E. Cobham:** Conceptualization; investigation; writing – original draft; writing – review and editing; methodology; supervision.

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CONFLICT OF INTEREST STATEMENT

None to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ETHICS STATEMENT

The evaluation was approved by the Health Sciences Human Research Ethics Sub-Committee at the University of Melbourne. Further approval from the Victorian Department of Education and Training was obtained via the Research in Victorian government schools and early childhood settings process.

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APPENDIX 1

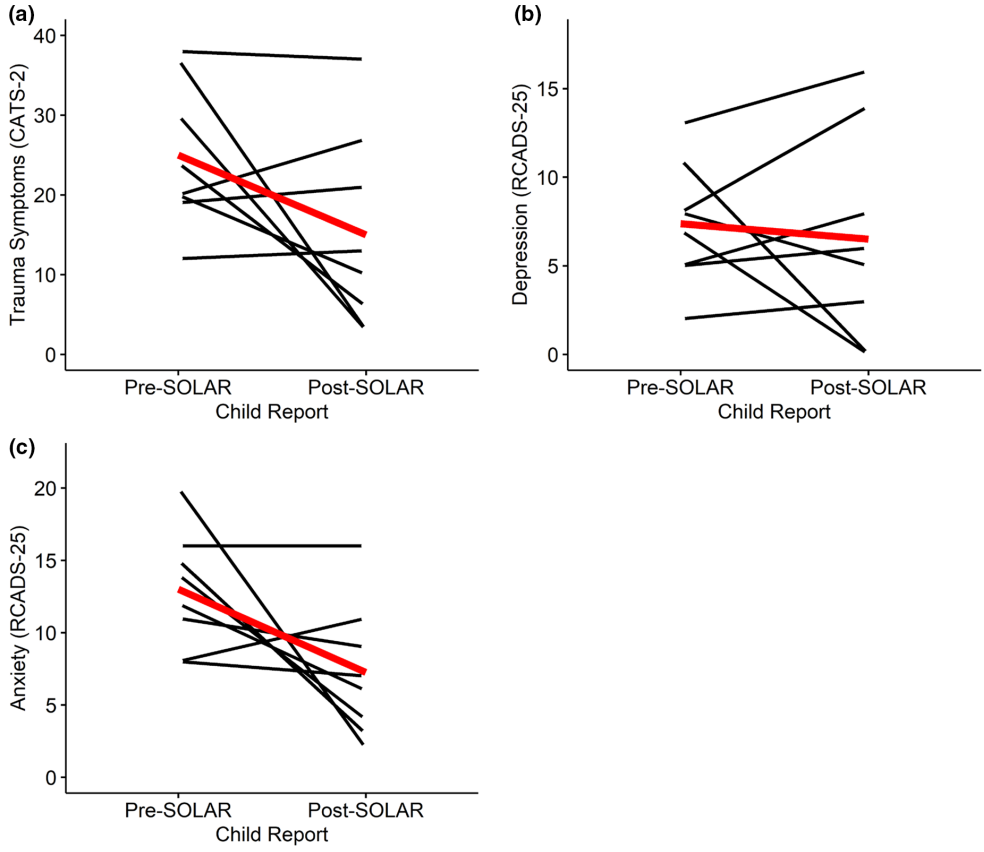

FIGURE A1 Change score plots for trauma (a), depression (b), anxiety (c) outcomes among students from pre- to post-SOLAR. Black lines depict individual trajectories ($n = 8$), and the red line depicts the mean trajectory. For all outcome measures, higher scores are associated with greater symptoms (a, b, c).

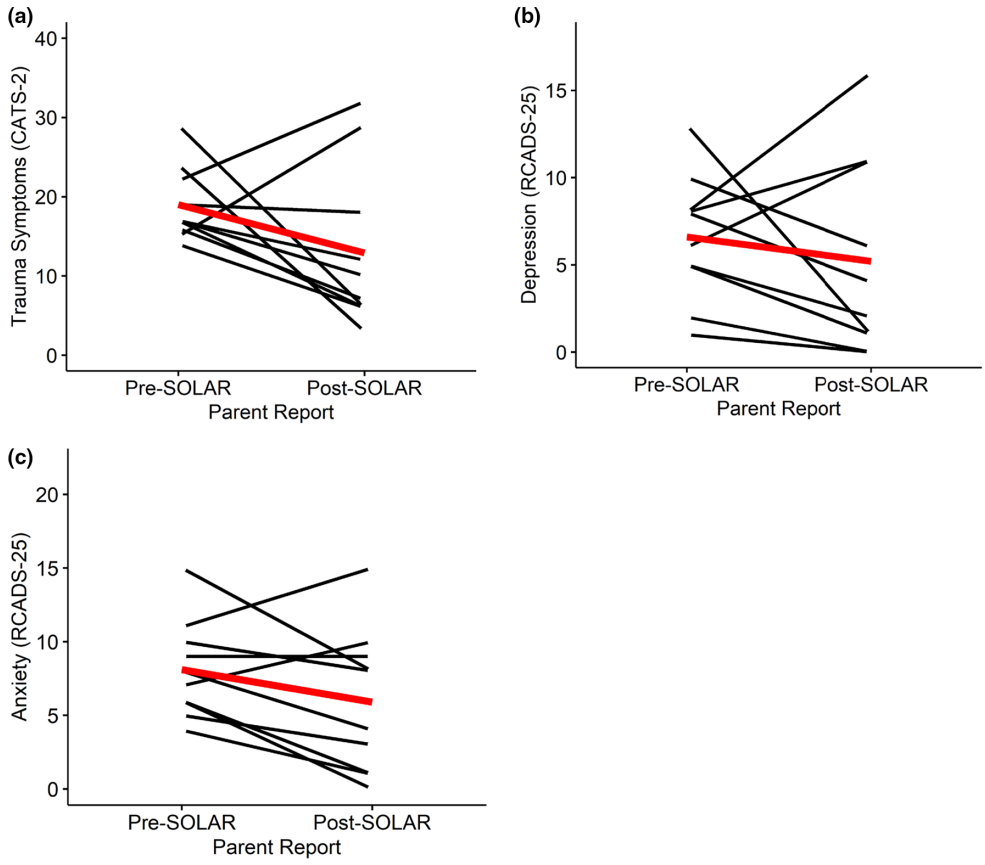

FIGURE A2 Change score plots for trauma (a), depression (b), anxiety (c) outcomes among parents from pre- to post-SOLAR. Black lines depict individual trajectories ($n = 10$), and the red line depicts the mean trajectory. For all outcome measures, higher scores are associated with more symptoms (a, b, c).

TABLE A1 Demographic characteristics of coaches ($n=9$).

	Delivered SOLAR program ($n=9$) (Coaches)	
Characteristic	***n***	**%**
Aboriginal or Torres Strait Islander person	0	.0
English as first language	8	88.9
Culturally and linguistically diverse (CALD) background	2	22.2
Gender		
Female	8	88.9
Male	1	11.1
Non-binary, indeterminate/intersex, unspecified	0	.0
School region type[a]		
Metro	6	66.7
Regional	3	33.3
School type		
Primary	7	77.8
Secondary	1	11.1
Both Primary and Secondary	1	11.1
Occupation		
Well-being Officer	1	11.1
Nurse	0	.0
Chaplain	0	.0
Primary school teacher	4	44.4
Secondary school teacher	0	.0
Year level coordinator	1	11.1
Principal	1	11.1
Assistant Principal	1	11.1
Allied health	1	11.1
Other	0	.0
Formal qualification relating to mental health, psychosocial well-being or counselling	1	11.1
Previously received training to provide mental health or psychosocial support	2	22.2
Previously provided mental health and/or psychosocial support services	1	11.1
Previously provided mental health and/or psychological support services to a child or adolescent	1	11.1

[a]Determined used the Modified Monash Model (MMM) classification—'regional' in this context refers to the combined rural and remote classifications specified by the MMM; see https://www.health.gov.au/topics/rural-health-workforce/classifications/rrma.

TABLE A2 Demographic characteristics of children and adolescents participating in the SOLAR-Kids and Teens Programs ($n = 10$).

Characteristic	Mean (SD)	Range
Child age	110.7 (2.8).108	88–18
	n	**%**
Child school year		
Year 2	1	10.0
Year 3	1	10.0
Year 4	3	30.0
Year 5	4	40.0
Year 12	1	10.0
Child gender		
Female	4	40.0
Male	6	60.0
Non-binary, indeterminate/intersex, unspecified	0	.0
Home region[a]		
Metro	7	70.0
Regional	3	30.0
Aboriginal or Torres Strait Islander person		
Yes	0	.0
Language spoken at home		
English	10	100.0

[a]As above, determined using the Modified Monash Model (MMM) classification—'regional' in this context refers to the combined rural and remote classifications specified by the MMM; see https://www.health.gov.au/topics/rural-health-workforce/classifications/rrma.

TABLE A3 Percentage of training participants who responded 'very confident' or 'extremely confident' at each stage of the training process.

Item	Reponses from trainees ($n=14$)[a]		Responses from coaches ($n=9$)[b]		
How confident are you in….?	Pre-training	Post-training	Pre-training	Post-training	Post-program delivery
Assisting participants to identify their strengths following disasters or adverse events?	21.4 ($n=3$)	64.3 ($n=9$)	11.1 ($n=1$)	66.7 ($n=6$)	88.9 ($n=8$)
Teaching participants ways to manage their emotions (e.g., using a feelings thermometer, practicing slow breathing)?	14.3 ($n=2$)	85.7 ($n=12$)	.0 ($n=0$)	77.8 ($n=7$)	88.9 ($n=8$)
Assisting participants to tell their story of a disaster or stressful situation they have experienced?	14.3 ($n=2$)	57.1 ($n=8$)	11.1 ($n=1$)	55.6 ($n=5$)	66.7 ($n=6$)
Helping participants plan ways to get back into activities they used to enjoy (e.g., Doing Things 'Just for Fun'/ Making Time For Fun)?	14.3 ($n=2$)	64.3 ($n=9$)	11.1 ($n=1$)	55.6 ($n=5$)	88.9 ($n=8$)
Assisting participants to set goals and address barriers related to practicing SOLAR skills between sessions?	14.3 ($n=2$)	64.3 ($n=9$)	11.1 ($n=1$)	55.6 ($n=5$)	88.9 ($n=8$)
Teaching participants how to deal with unhelpful thoughts and generate more helpful thoughts?	7.1 ($n=1$)	71.4 ($n=10$)	.0 ($n=0$)	77.8 ($n=7$)	88.9 ($n=8$)
Helping participants to identify and mobilize their social connections and supports?	7.1 ($n=1$)	64.3 ($n=9$)	.0 ($n=0$)	66.7 ($n=6$)	88.9 ($n=8$)
Respectfully inquiring about a potentially distressing event a young person has been through?	7.1 ($n=1$)	50.0 ($n=7$)	.0 ($n=0$)	44.4 ($n=4$)	88.9 ($n=8$)
Your overall ability to support school students following a disaster or stressful event?	7.1 ($n=1$)	50.0 ($n=7$)	.0 ($n=0$)	55.6 ($n=5$)	88.9 ($n=8$)
Your ability to look after your own well-being following a disaster or stressful event?	57.1 ($n=8$)	71.4 ($n=10$)	44.4 ($n=4$)	66.7 ($n=6$)	88.9 ($n=8$)

[a]Responses from anyone who completed surveys following the online and live training.

[b]Responses from Coaches—that is, completed online/live training, supervision and delivered SOLAR.

TABLE A4 Percentage of training participants who responded 'agree' or 'strongly agree' to be able to perform the identified general counselling skill at each stage of the training process.

Item	Reponses from trainees ($n=14$)[a]		Responses from coaches ($n=9$)[b]		
'I can…'	Pre-training	Post-training	Pre-training	Post-training	Post-program delivery
Use reflective listening during conversations (i.e., acknowledge what the young person has said, reflect back my understanding and check I have interpreted them correctly)	100.0 ($n=14$)	100.0 ($n=14$)	100.0 ($n=9$)	100.0 ($n=9$)	88.9 ($n=8$)
Adapt my language to suit the developmental stage of a child/teenager	100.0 ($n=14$)	100.0 ($n=14$)	100.0 ($n=9$)	100.0 ($n=9$)	100.0 ($n=9$)
Build a strong, one-to-one therapeutic working relationship with a child/teenager	100.0 ($n=14$)	100.0 ($n=14$)	100.0 ($n=9$)	100.0 ($n=9$)	88.9 ($n=8$)
Convey respect, empathy, warmth and genuineness during professional conversations	100.0 ($n=14$)	100.0 ($n=14$)	100.0 ($n=9$)	100.0 ($n=9$)	100.0 ($n=9$)
Give constructive feedback without causing offence or causing children/teenagers or parents to become defensive	78.6 ($n=11$)	85.7 ($n=12$)	77.8 ($n=7$)	88.9 ($n=8$)	88.9 ($n=8$)
Manage challenging behaviours (e.g. inattention, interrupting, being talked over, lack of responsiveness) when interacting with students or parents to effectively deliver information	85.7 ($n=12$)	85.7 ($n=12$)	100.0 ($n=9$)	88.9 ($n=8$)	88.9 ($n=8$)
Safely interact with children/teenagers and parents experiencing emotional distress	57.1 ($n=8$)	92.9 ($n=13$)	55.6 ($n=5$)	88.9 ($n=8$)	88.9 ($n=8$)
Safely respond to a child/teenager or parent's disclosure of self-harm, suicidal thoughts or interpersonal abuse, violence or harm	64.3 ($n=9$)	78.6 ($n=11$)	55.6 ($n=5$)	88.9 ($n=8$)	100.0 ($n=9$)
Provide guidance and referral information to a child/teenager or parent in need of professional mental health or crisis support	71.4 ($n=10$)	92.9 ($n=13$)	66.7 ($n=6$)	100 ($n=9$)	100.0 ($n=9$)

[a]Responses from training participants who completed surveys following the online and live training.

[b]Responses from coaches—that is, completed online/live training, supervision and delivered SOLAR.

TABLE A5 Percentage of training participants who responded 'agree' or 'strongly agree' that they can perform the identified child/teenager-related skill at each stage of the training process.

Item	Reponses from trainees ($n=14$)[a]		Responses from coaches ($n=9$)[b]		
'I can…'	Pre-training	Post-training	Pre-training	Post-training	Post-program delivery
Help children/teenagers understand common psychosocial reactions to disasters	57.1 ($n=8$)	100.0 ($n=14$)	55.6 ($n=5$)	100.0 ($n=9$)	100.0 ($n=9$)
Teach children/teenagers what feelings are, why they matter and how they influence us	78.6 ($n=11$)	100.0 ($n=14$)	77.8 ($n=7$)	100.0 ($n=9$)	100.0 ($n=9$)
Teach children/teenagers strategies to manage difficult feelings	71.4 ($n=10$)	100.0 ($n=14$)	66.7 ($n=6$)	100.0 ($n=9$)	100.0 ($n=9$)
Teach and show children/teenagers how to slow down their breath to reduce the intensity of their emotions	78.6 ($n=11$)	100.0 ($n=14$)	66.7 ($n=6$)	100.0 ($n=9$)	100.0 ($n=9$)
Help children/teenagers re-engage, step-by-step, in activities that assist with recovery after a disaster	35.7 ($n=5$)	92.9 ($n=13$)	22.2 ($n=2$)	100.0 ($n=9$)	100.0 ($n=9$)
Explain, with metaphors if necessary, how trauma affects our memory, and why traumatic memories can be difficult to deal with	28.6 ($n=4$)	85.7 ($n=12$)	22.2 ($n=2$)	88.9 ($n=8$)	88.9 ($n=8$)
Assist a child/teenager to organize and deal with difficult, trauma-related memories to help them feel less distressing	28.6 ($n=4$)	85.7 ($n=12$)	22.2 ($n=2$)	88.9 ($n=8$)	88.9 ($n=8$)
Explain the difference between unhelpful and helpful thoughts and their impact on well-being	64.3 ($n=9$)	100.0 ($n=14$)	55.6 ($n=5$)	100.0 ($n=9$)	100.0 ($n=9$)
Offer a child/teenager several strategies to deal with unhelpful thoughts	50.0 ($n=7$)	92.9 ($n=13$)	44.4 ($n=4$)	100.0 ($n=9$)	100.0 ($n=9$)
Help a children/teenager anticipate and respond to potential setbacks in their recovery journey	35.7 ($n=5$)	92.9 ($n=13$)	22.2 ($n=2$)	100.0 ($n=9$)	100.0 ($n=9$)

[a]Responses from training participants who completed surveys following the online and live training.

[b]Responses from coaches—that is, completed online/live training, supervision and delivered SOLAR.

TABLE A6 Percentage of training participants who responded 'agree' or 'strongly agree' to be able to perform the identified parent-related skill at each stage of the training process.

Item	Reponses from trainees ($n=14$)[a]		Responses from coaches ($n=9$)[b]		
'I can…'	Pre-training	Post-training	Pre-training	Post-training	Post-program delivery
Explain to parents common reactions that children/teenagers have in response to disasters	42.9 ($n=6$)	85.7 ($n=12$)	33.3 ($n=3$)	77.8 ($n=7$)	100.0 ($n=9$)
Assist parents to reflect on how a disaster or highly stressful event has impacted their child, their family and themselves	50.0 ($n=7$)	85.7 ($n=12$)	33.3 ($n=3$)	88.9 ($n=8$)	100.0 ($n=9$)
Teach parents about healthy habits that help families cope after a disaster	42.9 ($n=6$)	100.0 ($n=14$)	33.3 ($n=3$)	100.0 ($n=9$)	100.0 ($n=9$)
Help parents reflect on their family communication style and find helpful ways to talk with their children after a disaster	42.9 ($n=6$)	85.7 ($n=12$)	33.3 ($n=3$)	100.0 ($n=9$)	100.0 ($n=9$)
Help parents prepare their child/children for upcoming disasters	42.9 ($n=6$)	71.4 ($n=10$)	33.3 ($n=3$)	77.8 ($n=7$)	100.0 ($n=9$)

[a]Responses from training participants who completed surveys following the online and live training.

[b]Responses from Coaches—that is, completed online/live training, supervision and delivered SOLAR.

TABLE A7 Descriptive statistics and effect size measures for child- and parent-reported scores on the CATS-2 and RCADS-25 at pre- and post-SOLAR-kids/teens delivery phase.

	Child report ($n=8$)					Parent report ($n=10$)				
	Pre-SOLAR	Post-SOLAR			Effect size (95% CI)	Pre-SOLAR	Post-SOLAR			Effect size (95% CI)
Outcome (Measure)	**Median**	**Median**	Z	p	d_{RM}	**Median**	**Median**	Z	p	d_{RM}
Child and Adolescent Trauma Screen-2 (CATS-2)	22.0	11.5	−1.33	.211	−.67 (−1.42, .12)	17.0	8.5	−1.38	.193	−.52 (−1.17, .16)
Revised Child Anxiety and Depression Scale (RCADS-25)										
Depression subscale	7.5	5.5	−.14	.922	−.15 (−.85, .55)	7.0	3.0	−.72	.510	−.25 (−.87, .39)
Anxiety subscale	13.0	6.5	−1.90	.063	−.81 (−1.60, .02)	7.5	6.0	−1.64	.109	−.60 (−1.27, .09)

Note: Related-samples Wilcoxon signed-rank test. Effect size is given by repeated measures d (d_{RM}), where .2 = small effect, .5 = moderate effect and .8 = large effect.

TABLE A8 Percentage/number of children/adolescents with increased, no change or decreased symptoms on the CATS-2 and RCADS based on reliable change indices.

	% Increase (*n*)	% No change (*n*)	% Decrease (*n*)
CATS-2-Trauma			
Child	.0 (0)	75.0 (6)	25.0 (2)
Parent	10.0 (1)	70.0 (7)	20.0 (2)
RCADS-Depression			
Child	0.0 (0)	87.5 (7)	12.5 (1)
Parent	0.0 (0)	90.0 (9)	10.0 (1)
RCADS-Anxiety			
Child	0.0 (0)	75.0 (6)	25.0 (2)
Parent	0.0 (0)	80.0 (8)	20.0 (2)

Abbreviations: CATS-2, Child and Adolescent Trauma Screen-2; RCADS, Revised Child Anxiety and Depression Scale.