Australian Government
National Emergency Management Agency

Australian Institute for Disaster Resilience

SPOT LIGHT SERIES

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Acknowledgement of Country

AIDR acknowledges the Traditional Custodians of the various lands on which you all join us from today and the Aboriginal and Torres Strait Islander people participating in this event.

We pay our respects to Elders past and present and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters across Australia.

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Housekeeping

- You will remain muted and your camera will not be activated for the duration of today's event.
- Today's event will be recorded and made available after the event.
- Please enter questions for our speakers in the Q&A function, not the chat box.
- Please use the chat box to share any thoughts or reflections during the presentation
- Please be respectful to each other when posting your comments or questions.

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Welcome

John Richardson

Executive Director

Australian Institute for Disaster Resilience (AIDR)

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Engaging with webinar content

As you listen to today's presenters, we invite you to consider:

- What this content means for you
- How you could apply your learnings to your role
- One action you feel inspired to take

You are welcome to share your thoughts in the chat to inspire others

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Speaker Introduction

Konstantina Vasilakopoulou

Vice Chancellor's Research Fellow

RMIT

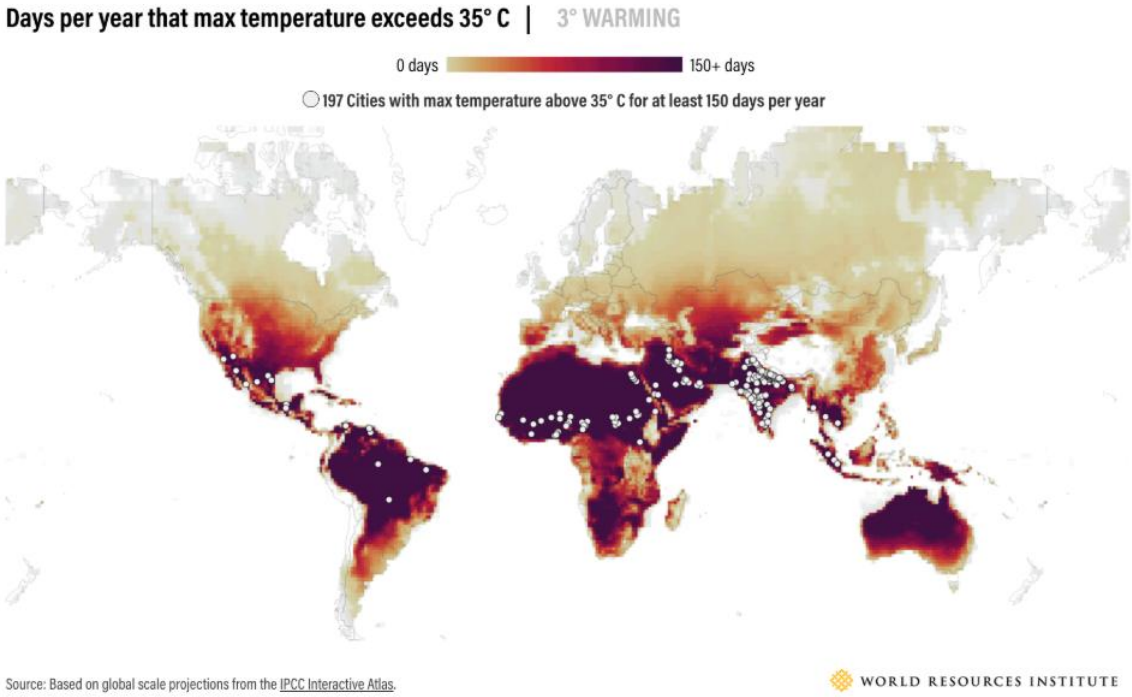
Cumulative exposure to heat and student cognitive performance

Konstantina Vasilakopoulou
Vice Chancellor’s Research Fellow

What's next...

RMIT UNIVERSITY

Climate change and Heat impacts



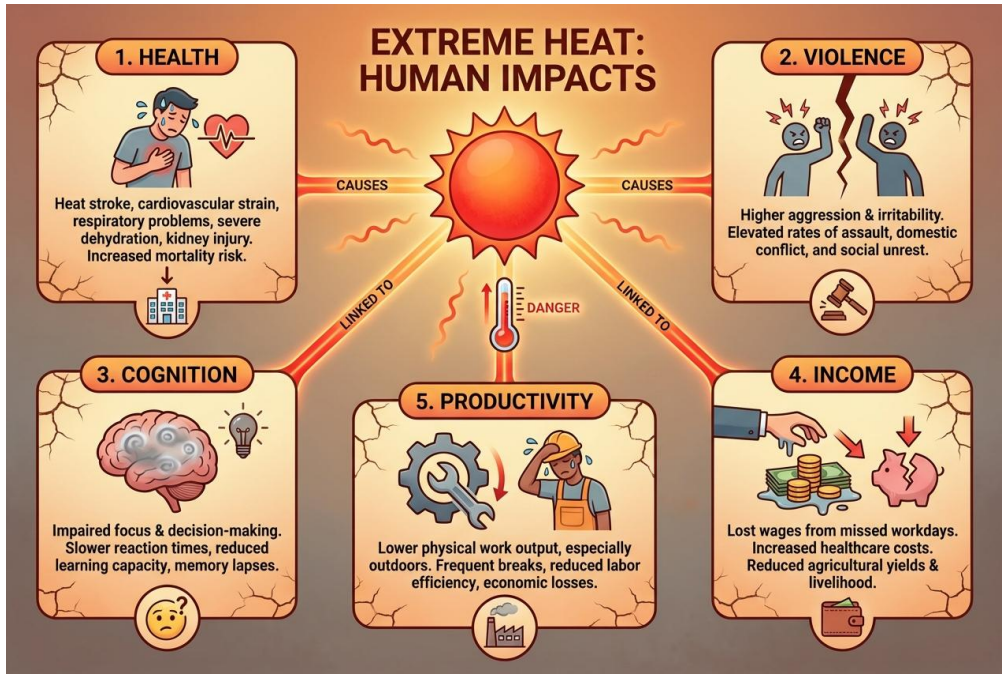
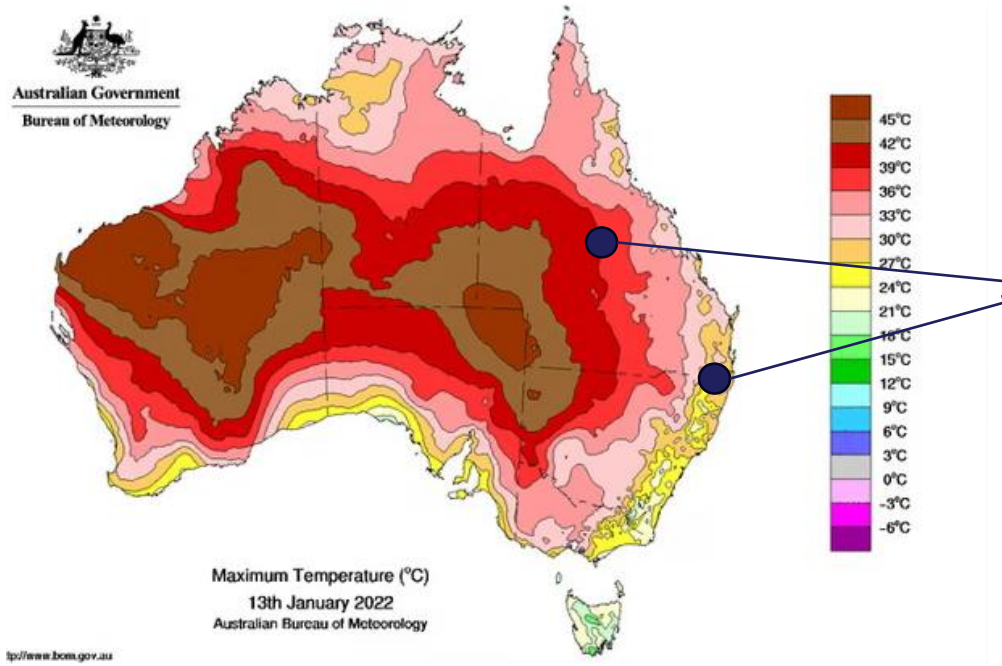


Image source: World Resources Institute

Evidence on the effects of high temperatures on academic performance

Short- or medium-term exposure to high (and maybe low) temperatures

Experimental studies



Difference in average performance

Image source: The Guardian.

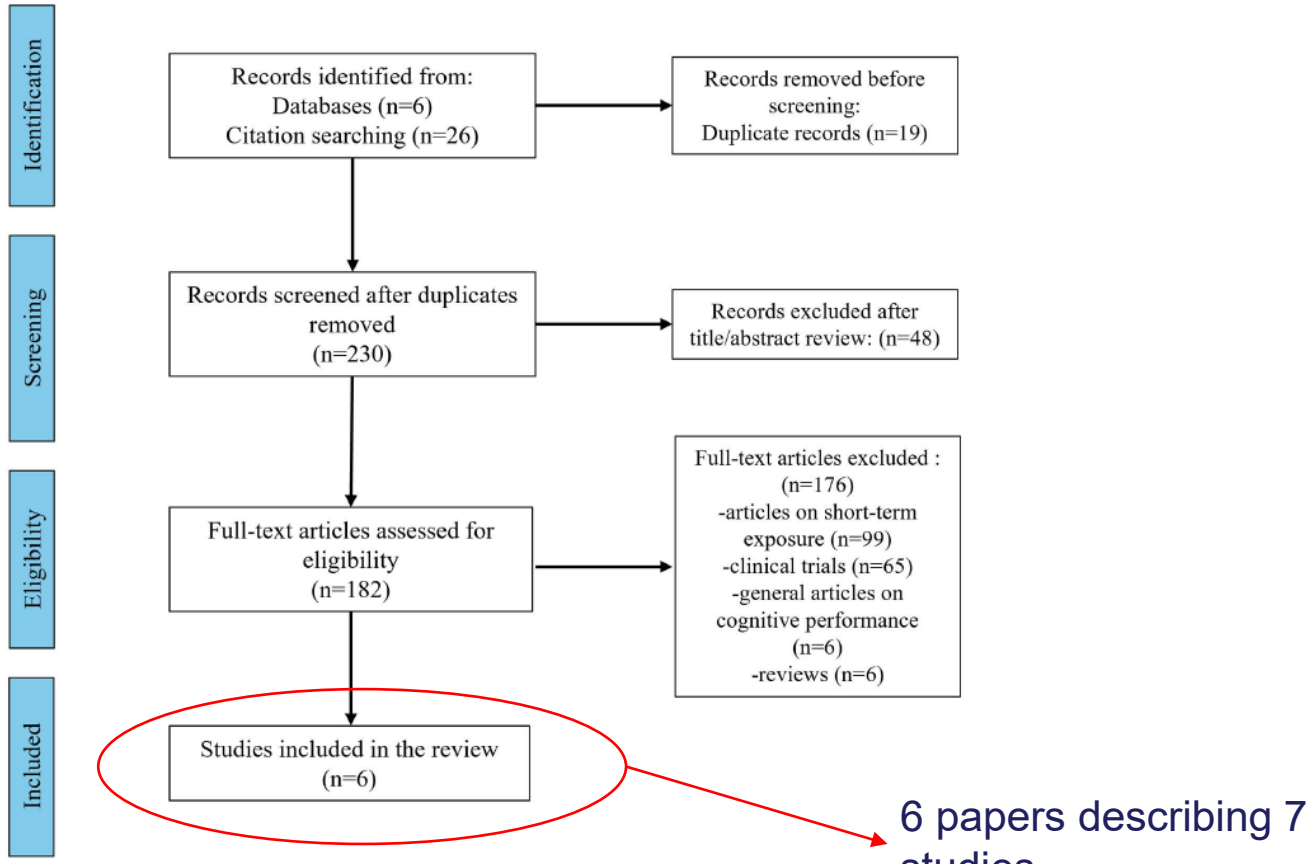
Statistical/Epidemiological studies

Evidence on the effects of high temperatures on academic performance

Long-term exposure to high temperatures: sustained impacts of heat exposure across one or more school years

Review research questions:

- Effects on academic performance;
- Who is affected;
- Adaptation strategies;
- Future projections.



6 papers describing 7 studies

Evidence on the effects of high temperatures on academic performance

Studies included in the systematic review

	Population size	Period	Assessment type	Country	Considered period
1	10 million	2001-2014	PSAT exam (Maths, English)	US	Up to 4 years before tests
2	4.5 million	2006-2014 or 2002-2011	National maths and reading tests	India	Up to 1 year before tests
3a	500K	2000-2015	PISA (Maths, Reading, Science)	58 countries (including poorer tropical countries and richer temperate countries)	Up to 3 years before tests
3b	270 million test scores	2009-2015	District-level annual English, Arts and Maths tests scores (SEDA)	US	Up to 1 year before tests
4	8k	1987-2006	Maths	US	Time between successive tests (~2 years) and time from birth until the test
5	Over 800k	2008-09 – 2014-15	English, Arts and Maths tests scores	US	Following the same cohort throughout the study period
6	1.6 million	2009-2013	Maths, Reading, English language	Korea	Up to 1 year before tests

Over 13 million students

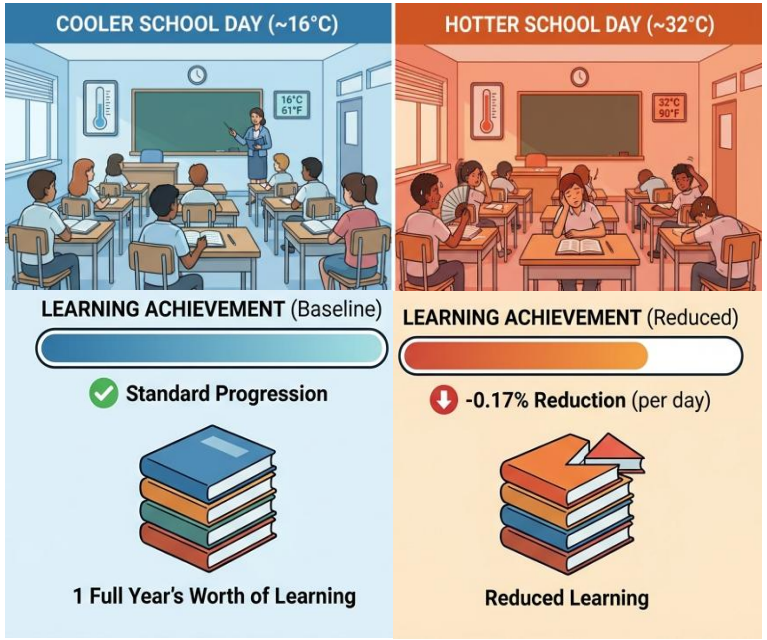
Standardised tests

1-5 years before the tests

Evidence on the effects of high temperatures on academic performance

What are the main effects of cumulative exposure to high ambient temperatures on academic performance? (1)

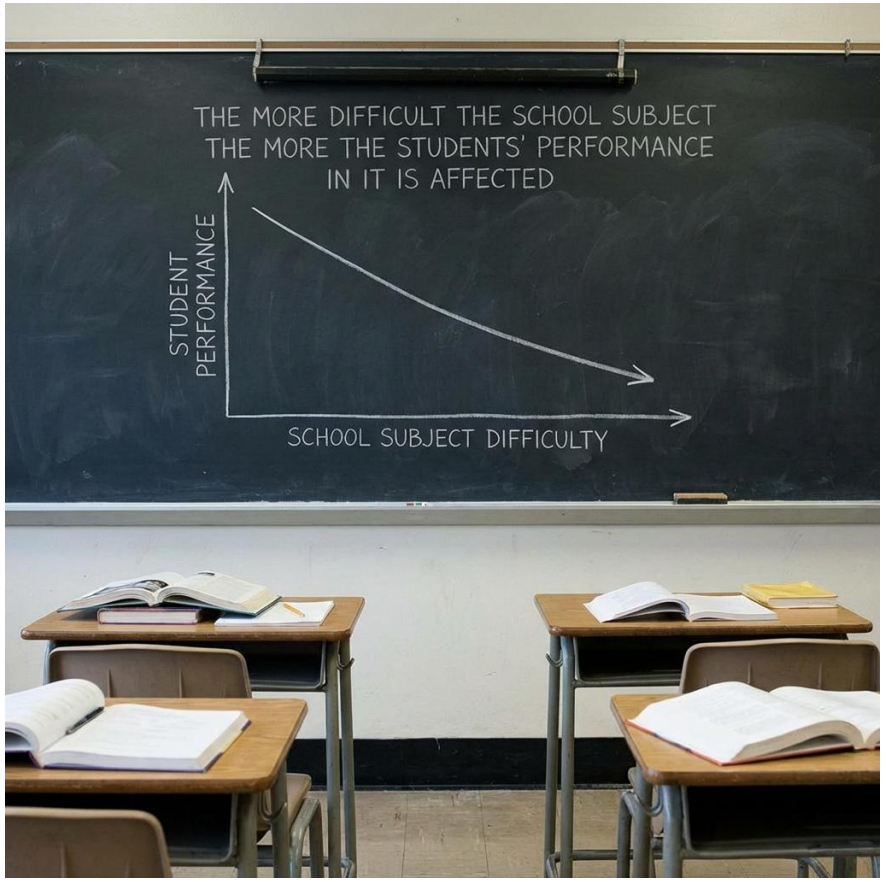
- If the school year prior to the year of a test is 1F (0.55ºC) hotter, it can lower scores by approximately 0.2% of a standard deviation, or slightly less than 1% of an average student's learning gain over a school year.
- Each additional school day with temperature around 32ºC reduces achievement by 0.17% of year's worth of learning, relative to school days with temperatures around 16ºC.
- Hot school days two, three and four years prior to the test also lower scores. The cumulative effect of elevated temperatures over multiple school years is substantially larger than that of a single school year.
- Hot summers and weekends have little impact on achievement and controlling for such exposure does not shrink the magnitude of impact of hot school days.



Evidence on the effects of high temperatures on academic performance

What are the main effects of cumulative exposure to high ambient temperatures on academic performance? (2)

- Each additional school day with average daily temperature higher than 29°C in the previous year reduces Reading and Mathematics performance by 0.002 and 0.003 standard deviations, respectively, in the current year, relative to school days with temperatures around 15-17ºC.
- The impact of high temperatures on the learning performance of the students was larger for the harder questions on both math and reading tests.
- There was a serious negative impact on paragraph- and story-reading skills, but statistically insignificant impact on word- or letter-reading skills.



Evidence on the effects of high temperatures on academic performance

What are the main effects of cumulative exposure to high ambient temperatures on academic performance? (3a)

- Students in school during hotter periods score worse on the PISA exams than their peers who were schooled in the same country during cooler periods.
- Each additional day above 26.7 °C during the 3 years preceding an exam lowered scores by 0.18% of a standard deviation.
- Heat on school days before PISA exams lowers test scores while heat on non-school days (for example, weekends and summer vacation) has little effect.

- US students in school during hotter years score worse than peers in the same district schooled during cooler periods.
- Each additional day with a temperature of 26.7 °C or hotter during the year before the test reduces achievement by approximately 0.07% of a standard deviation (0.11% for math, 0.04% for ELA).
- The impact of heat on mathematics achievement is about three times larger than its impact on ELA achievement.
- Heat on non-school days, such as weekends and summers, had no statistically significant impact on achievement.
- The effect of heat exposure on achievement is larger for younger students. This could be due to physiology, behaviour or lower prevalence of AC in school for younger children.

Evidence on the effects of high temperatures on academic performance

What are the main effects of cumulative exposure to high ambient temperatures on academic performance? (4)

No significant effect between increased temperatures and long-term effects was observed

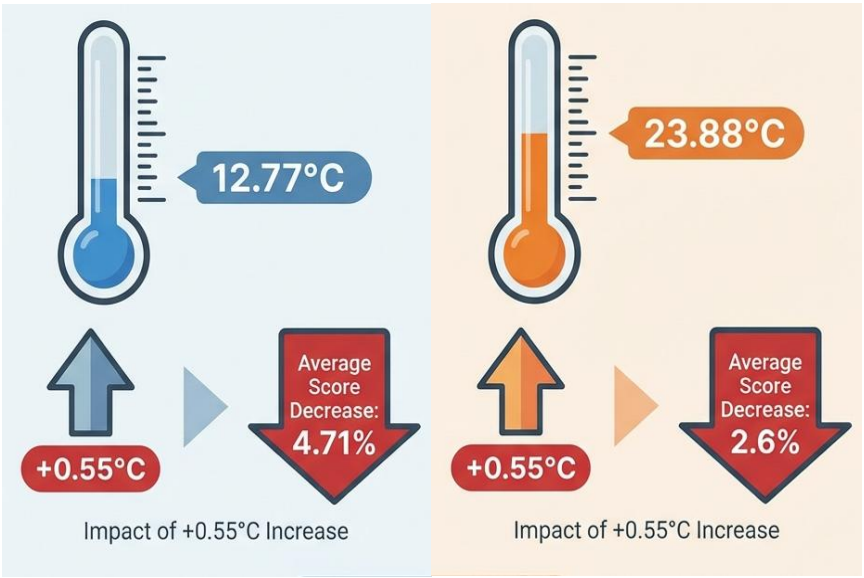
- Different measures of climate (instead of average maximum temperature during the school period, the authors took the number of degree days above 21C during the relevant period, percentage of days in 2C bins, mean temperatures in specific periods when tests were taken).

- The study found a significant short-term effect of high temperatures on math performance.

Evidence on the effects of high temperatures on academic performance

What are the main effects of cumulative exposure to high ambient temperatures on academic performance? (5)

- In areas with an average maximum temperature of 55°F (12.77°C), an increase in temperature by 1°F (0.55°C) decreased the average score by 4.71%.
- In areas with an average maximum temperature of 75°F (23.88°C), an increase in temperature by 1°F (0.55°C) decreased the average score by 2.6%.
- For each additional day above 100°F (37.77°C), the mean student achievement was found to decrease by 2.3% and that more days below 60◦F (15.55°C), are associated with higher scores.



Evidence on the effects of high temperatures on academic performance

What are the main effects of cumulative exposure to high ambient temperatures on academic performance? (6)

- An additional summer day with a maximum daily temperature above 34°C, compared to a summer day with temperatures between 28–30°C, resulted in a decrease in mathematics and English language scores by 0.0042 and 0.0064 standard deviations, respectively. No significant effects were found on the reading test score. The effect size is equivalent to increasing class size by 2–3 students during grades 4–6.

- Hot summers had greater effects on the test scores of students who lived in relatively cool cities.

Evidence on the effects of high temperatures on academic performance

What adaptation strategies have been identified as effective in mitigating the impact of high temperatures on academic outcomes?

Environmental control

Air conditioning, optimized airflow rates, personalized ventilation systems, clothing control techniques, and urban heat mitigation measures.

Mixed results

1. One classroom maintained at 22.5 °C and the other at 26 °C, for 6-8 weeks. The students of the cooler classroom presented 7.7% higher performance in simple and complex tasks. *Could gradual frustration due to the study length play a role?*
2. One classroom maintained at 21.6±1.6°C and the other at 24.9±1.7°C. The students of the cooler classroom presented increased speed in subtraction and addition and decrease in errors in subtraction. No effect on logical thinking, acoustic proof reading, reading comprehension. *Could the temperatures be comparable?*
3. University students in India. One classroom maintained at 24.5 °C and the other at 28-30 °C. Similar performance. *Could acclimatization explain it?*
4. Students in Costa Rica. One classroom maintained at 24-26°C and the other at 30°C. Students were dissatisfied due to overcooling in the first classroom. On average, students in the lower temperature classroom showed almost 7.5% better performance in speed and 0.6% in accuracy for each 1°C decrease in classroom temperature. The decrease in indoor temperature was found to improve the performance of less able students more than that of the most able ones.

Evidence on the effects of high temperatures on academic performance

The role of ventilation

Low ventilation rate and high CO2 concentration in classrooms is associated with reduced cognitive performance.

Increase of the ventilation rate and substantial decrease of the CO2 concentration improves significantly the performance of students.

Murakami et. al. found that high ventilation rates were associated with a significant improvement of the students learning performance varying between 5.4% to 8.7%, depending on the cognitive task.

Bako Biro et. al. found that compared to low ventilation rates, higher airflow contributed to increased scores in word recognition by 15%, picture memory by 8%, colour word vigilance by 2.7% and choice reaction by 2.2%.

Haverinen et. al. found that there is a linear association between classroom airflow rate and student's academic achievement. An increase in the ventilation rate by 1 l/sec corresponded to an increase in mathematics and reading performance by 2.9% and 2.7%, respectively.

Petersen et. al. found that for all types of tests performed, students exposed to higher ventilation rates and lower CO2 levels showed better performance compared to those exposed to higher CO2 concentrations and lower ventilation rates. Specifically, performance improves by 7.4% in reading and comprehension, 6.3% in the addition test, 4.8% in number comparison and 3.2% in grammatical reasoning.

Evidence on the effects of high temperatures on academic performance

What adaptation strategies have been identified as effective in mitigating the impact of high temperatures on academic outcomes?

- Skin and/or head/brain cooling (reduction of endogenous heat accumulation).
- Cultural changes designed to buffer against the effects of climate.
- Subsequent investments that partially or fully offset short-run effects, thus minimizing their enduring impact.

→ Cold packs, cooling collars, cold air exposure of the torso, ice slushies, slurries, cooling the blood in the common carotid artery, cooling vests, ice towels, cool showers, menthol mouth rinses, and water cooling of the face.

↓ Task-specific effect: E.g., head-cooling can improve working memory but not visual recognition.

Evidence on the effects of high temperatures on academic performance

Does environmental overheating disproportionately affect the academic performance of specific social groups?

- Substantially lower access to school and home air conditioning for minorities and low-income students.
- Higher ambient temperatures in neighborhoods where minorities and low-income students live.
- The lack of capacity for disadvantaged families to compensate for cognitive loss due to overheating, such as through private tutoring.
- Advantaged students may attend schools where teachers can compensate for lost learning.

Disadvantaged households in the USA, Australia, and Europe live in warmer neighborhoods where the urban heat island effect can be up to 6°C higher, have a lower density of green spaces, public goods, and environmental amenities, than the areas where wealthier people live.

Lower-income students in the USA are 6.2% more likely to attend schools with inadequate air conditioning compared to higher-income students.

Cognitive losses due to cumulative heat exposure seem to explain between 3% and 7% of the gap in PSAT scores between white, Black, and Hispanic students in the US.

Brazilian students may learn 6% less than their South Korean counterparts due to much higher heat exposure, which accounts for almost 33% of the differences in exam performance.

Evidence on the effects of high temperatures on academic performance

What are the future projections regarding the effects of environmental overheating on academic performance?

Using median climate change scenarios, the average warming of US will be approximately 5F by 2050. The estimate is that this will cause a 0.03 standard deviation lower achievement, or approximately 10% of the average learning achieved in a school year.

By applying a “business-as-usual” scenario, in Korea, the math and English test scores will decrease by 0.0760 and 0.1158 standard deviations, respectively, at the end of this century (2100).

Based on future climatic projections for the years 2075–2099 the expected temperature increase would decrease reading and mathematics scores by 0.03 and 0.04 standard deviations (SD) each year, respectively in Southern India. Over the course of a student’s education, this corresponds to a schooling loss equivalent of nearly two years. If an increase in literacy skills by one standard deviation corresponds to 51% increase in wages, it is estimated that a potential rise in hot days by 10 could result in a 3% decrease in wages.

Evidence on the effects of high temperatures on academic performance

What we know…

- Temperature during school time plays a decisive role in academic performance.
- Temperature during weekends or school holidays has little impact on academic performance.
- Long-term exposure to heat appears to have a greater impact on the cognitive performance of younger students compared to older ones.
- Performance to complex tasks is more affected than that to simpler tasks.
- Individuals living in warmer climates are better acclimatized to heat compared to those in colder regions, making them more adept at managing heat exposure. This adaptation arises from behavioural, cultural, and environmental responses to heat stimuli, such as enhanced sweating efficiency, improved blood circulation, and other cardiovascular adjustments.
- The cognitive and academic performance of people living in poorer counties or areas is more affected from short-, medium- and long-term heat exposure than that of people living in wealthier areas/countries.

What we don't know…

- Research on the physiological responses and heat adaptability of individuals working under natural ventilation (NV) and air conditioning (AC) conditions has demonstrated that those in NV environments exhibit superior physiological acclimatisation and a greater ability to cope with heat compared to their AC counterparts. This raises questions about whether reliance on AC is the most effective adaptation strategy for climate change. Consequently, the potential risks and negative impacts of prolonged AC usage in classrooms -particularly when not accompanied by substantial improvements in students' cognitive performance- should be thoroughly evaluated and documented.
- The confounding impact of perceived indoor environmental characteristics on students' cumulative cognitive performance remains unaddressed.

Thank you

konstantina.vasilakopoulou@rmit.edu.au

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Speaker Introduction

Professor Lisa Gibbs

Director of the Disaster, Climate and Adversity Unit

Melbourne School of Population and Global Health

University of Melbourne

DISASTER, CLIMATE & ADVERSITY

Long term disaster impacts on education outcomes

Professor Lisa Gibbs

THE UNIVERSITY OF MELBOURNE

Content

Evidence

- Black Saturday bushfires (2009)
- Black Summer bushfires (2019/20)
- COVID-19 pandemic

Support strategies & resources

- Schools
- Families

What we know

Most people will **recover** from disasters after an initial period of distress

However, a significant number of children and adults will need **additional support** to prevent long term impacts

LEARNING

WELLBEING

Evidence

International evidence about disaster impacts on learning is inconsistent

Evidence about **long term post disaster academic impacts**

Analyses of statewide **Victorian NAPLAN data** for students in schools affected by Black Saturday bushfires compared to their peers:

Learning delays in reading and maths 4 years post Black bushfires

Poorer **academic scores** in all domains 8 years post-bushfires

Gibbs et al 2019. Delayed Disaster Impacts on Academic Performance of Primary School Children

Factors influencing learning outcomes

Student focus

"I remember changes all the time after the fires, things changing, doing things on different days and stuff like that"

Child and Adult Post-Disaster Mental Health Trajectories

PTSD: Children improved at the same rate as adults

Depression: Children reported elevated symptoms but significant improvements

Anxiety: Elevated symptoms but no improvement

Newnham et al. (2022) Long term mental health trajectories after disasters and pandemics

Community cohesion

Potential exposure to anger & violence

Cowlishaw et al (2021)
Molyneaux et al. (2020)

Home disruption and parent stress

Impacts on school staff

> “[Self-care is] so hard to do when you're thrust into that position because you know that you should be looking after yourself but you know your prime thing is to look after everybody else.”

Student and Staff Wellbeing Surveys in Bushfire Affected Victorian Schools

ABOUT

In 2019-20, the **Eastern Victoria Bushfires** affected large parts of Victoria and were almost immediately followed by the **COVID-19 pandemic**. This research was commissioned by the Victorian Department of Education and Training (DET) Recovery and Resilience Team and carried out by a research team from the University of Melbourne and Phoenix Australia Centre for Posttraumatic Mental Health.

METHODS

125 staff and **525** students participated

Across **Outer Gippsland** & **Ovens Murray**

Surveys were administered from **October - November 2021**

There were **127 schools in bushfire-affected areas** that were eligible to participate. School staff included principals, assistant principals, teachers, and those in student support roles or administrative roles. Descriptive statistics were used to examine wellbeing levels for staff and students, drawing on established scales.

Staff and students were ranked using school-level data on bushfire impact, and were compared across levels of impact (low, medium, high), while schools were also compared with relevant normative data (where available).

Key findings for bushfire affected schools

Secondary students had the lowest wellbeing and the lowest school connectedness scores

School staff showed higher levels of psychological distress compared to pre-pandemic Australian norms.

School staff showed slightly higher scores on two wellbeing subscales, indicating a heightened sense of supportive relationships and purpose in life.

Strategies & resources

Providing support in the short term

(Hobfoll et al 2007)

A sense of safety

Calming

A sense of self– and community efficacy

Connectedness

Hope

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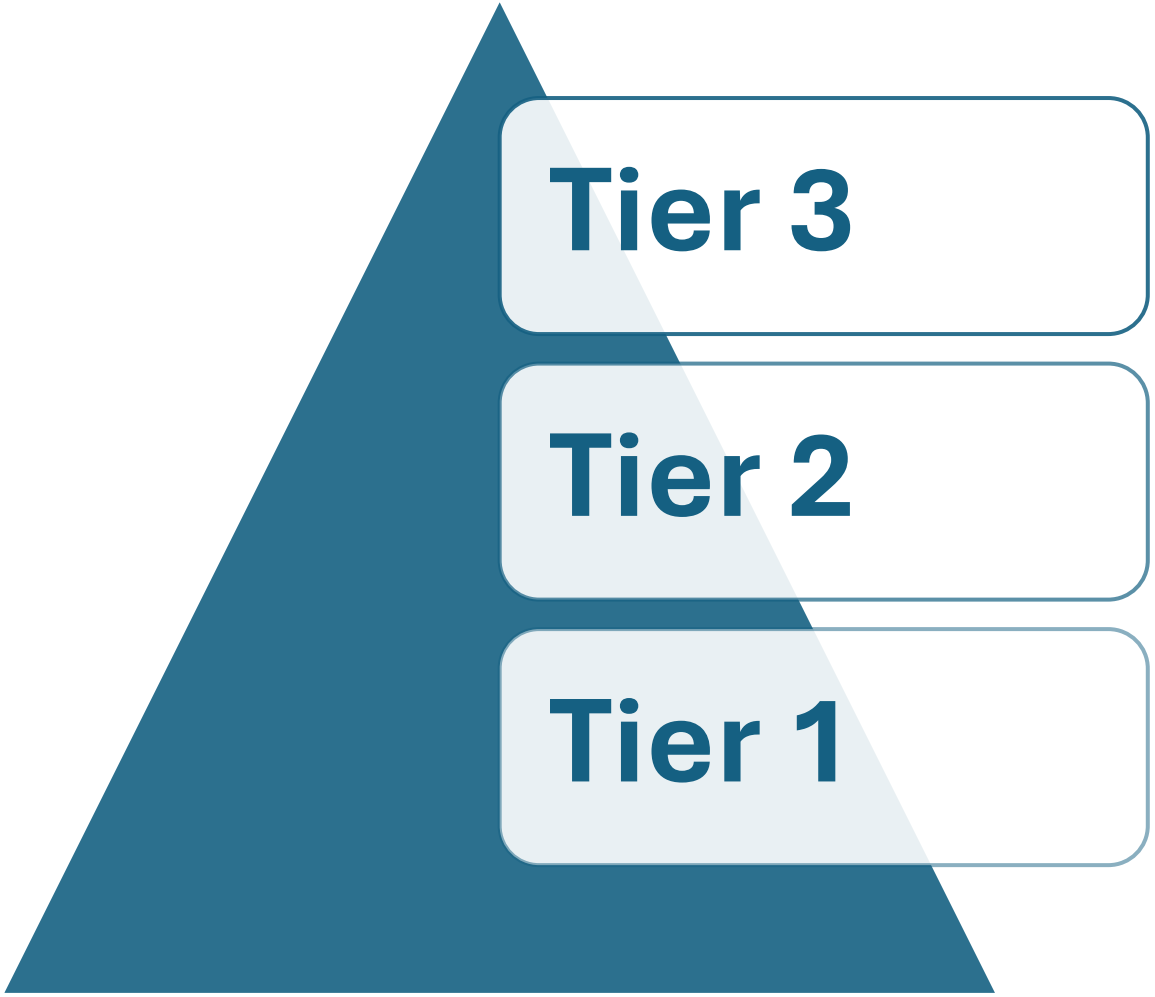
GIVING STUDENTS TIME FOR RECOVERY AND LEARNING

Over the next years, our focus shouldn't be to rapidly return schools to the old 'normal', but to provide students with adequate time and support to enjoy learning and retain knowledge and skills

By Professor Lisa Gibbs, Jane Nursey, Professor Helen Cahill and Professor Jim Watterston, University of Melbourne

Stepped care approach within education system



External specialist mental health providers
(low prevalence, serious conditions)

Primary care providers/School Counsellors/Recovery support
(medium prevalence, moderate severity)

Teachers and school wellbeing staff
(high prevalence, low severity)

Current Psychiatry Reports (2021) 23: 82
https://doi.org/10.1007/s11920-021-01293-1

CHILD AND FAMILY DISASTER PSYCHIATRY (B PFEFFERBAUM, SECTION EDITOR)

Child and Adolescent Psychosocial Support Programs Following Natural Disasters—a Scoping Review of Emerging Evidence

Gibbs L.[1,2] · Marinkovic K.[1] · Nursey J.[3] · Tong L. A.[4] · Tekin E.[5,6,7] · Ulubasoglu M.[4] · Callard N.[8] · Cowlishaw S.[3] · Cobham V. E.[9,10]

Accepted: 5 September 2021 / Published online: 15 October 2021

Abstract

Purpose of Review This review aimed to identify and describe evidence published in the past 3 years from trials of psychosocial support programs for children and adolescents affected by natural disasters.

Recent Findings Previous reviews have indicated these programs are beneficial overall. Positive impacts were documented in school-based programs conducted by trained teachers and paraprofessionals with stronger effects achieved by more qualified professionals.

Summary The review found supporting evidence for positive impacts of post-disaster psychosocial programs. However, the strength of evidence is limited due to heterogeneity in interventions and evaluations. The stepped care model was found to be useful in differentiating between programs and level of available evidence. Hobfoll's five essential elements of mass trauma intervention provide an additional means of guiding program content and assessments, particularly for universal programs. Identified gaps in evidence included groups likely to be at most risk: preschool children, ethnically diverse groups, those with disability, and social disadvantage. There were promising indications of program benefits for groups with repeated exposure to natural disasters.

Keywords Child · Adolescent · Disaster · Mental health · Recovery · Intervention

Gaps in evidence for pre-schoolers (0-5 years), children with disability, and children from minority ethnic groups

Appraise

Tools to guide selection of school-based post-disaster psychosocial programs

Child and Community Wellbeing, Centre for Health Equity, Melbourne School of Population and Global Health, University of Melbourne.

Developed for the Trauma Recovery Team, Schools and Regional Services, Victorian Department of Education and Training

VICTORIA State Government | Education and Training

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5.1 Appraisal Tool for Principals

These appraisal tools have been designed to assist principals, school communities and potential service providers to assess the suitability of psychosocial recovery programs for their school community following exposure to a disaster or mass trauma event, such as a bushfire. Choosing a psychosocial support program that may be most suited to the needs of your unique educational community may be an overwhelming task for principals due to the many ongoing bushfire-related impacts on the school community. Therefore, this appraisal criteria tool has been designed to be simple, easy-to-use and able to provide principals with some level of guidance and reassurance about what it is they should be considering when procuring psychosocial support programs for students from external providers.

This checklist has been designed for principals to document their unique school needs to support the psychosocial recovery of their students post experience of a disaster or mass trauma event. This can then be cross-checked with the Appraisal tool for Providers tool completed by individual service providers to aid in informing the decision of which program to procure.

		Information and examples	Comments
1.	**Program feature**		
1.1	Which time frame best fits your school's current need to support psychosocial recovery? May select all that apply	☐ Immediate (days-weeks) ☐ Medium term (months/up to a year) ☐ Long term recovery and resilience (>1 year)	
2.	**Participants and scale**		
2.1	Which group of students do you want the program to target?	☐ Primary School ☐ Specialist School ☐ Secondary School	
2.1.1	What scale of program is appropriate and feasible?	☐ School-wide ☐ Classroom based. Specify age or year groups: ☐ Individual/small group based. Specify:	
2.2	Do you want the program to include teacher and staff professional development?	☐ Yes ☐ To support their own wellbeing ☐ To upskill teachers to deliver components of the program ☐ To upskill teachers to better understand and so respond appropriately to students who may be struggling psychologically ☐ To assist in making the program sustainable ☐ Other: ☐ No	

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Appraisal Tool for Providers

ppraisal tools have been designed to assist principals, school communities and potential service providers to the suitability of psychosocial recovery programs for their school community following exposure to a disaster or auma event, such as a bushfire

g a psychosocial support programs that may be most suited to the needs of unique school communities may erwhelming task for principals due to the many ongoing bushfire-related and pandemic impacts they have ced. Therefore, this appraisal criteria tool has been designed for program providers to provide information in a ensive and consistent way, to enable principals to choose the psychosocial support programs that suits their needs best.

ogram features	
ram and provider names:	
program delivered by a or external provider to hool?	☐ Yes, Local provider ☐ Yes, External (only for initial training) ☐ Yes, External (ongoing)
time frame post- r is this program e for?	☐ Immediately post-disaster (days-weeks) ☐ Medium term (months/up to a year post-disaster) ☐ Long term recovery (>1 year post disaster)
the duration of the n?	Please specify duration for each participant category (e.g. one-off, 4 weeks, N/A): Students Staff Parents/caregivers
gram based on ethods, existing ks, and/or theory?	☐ Yes > Details: ☐ No
gram been	☐ No > (please skip to section 2) ☐ Yes > please specify year, location, and age groups
e research d the evaluation t?	

Education and Training

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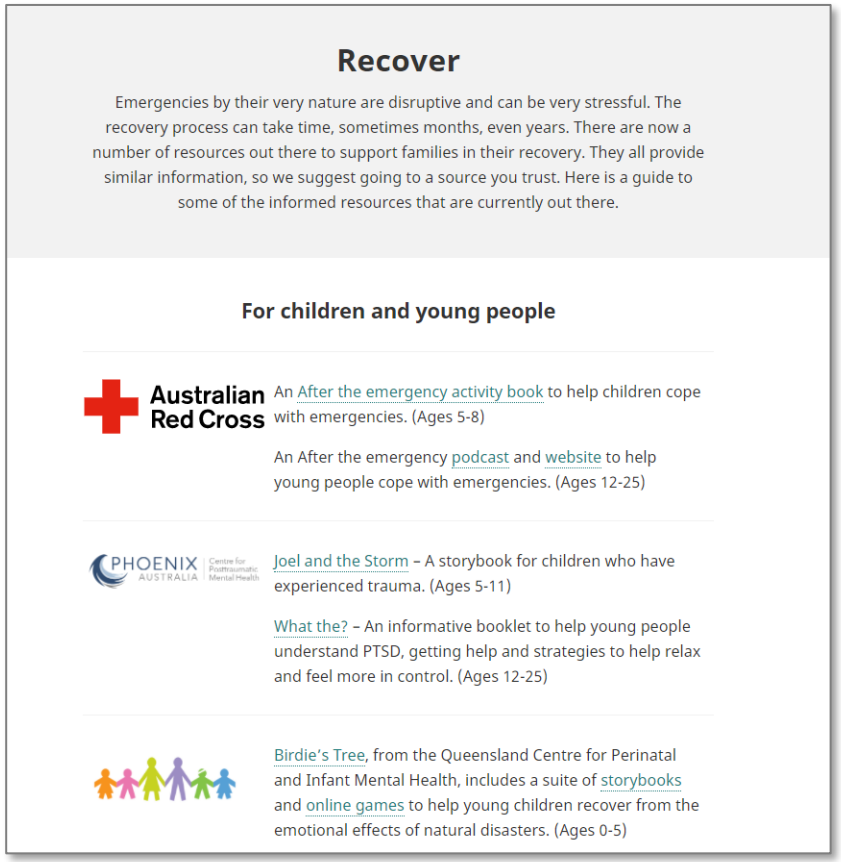
Funded by the Victorian Department of Education and Training 2020

https://mspgh.unimelb.edu.au/__data/assets/pdf_file/0019/3525022/Appraise-report_combined.pdf

Red Cross guide to available resources for students and parents



Recover

Emergencies by their very nature are disruptive and can be very stressful. The recovery process can take time, sometimes months, even years. There are now a number of resources out there to support families in their recovery. They all provide similar information, so we suggest going to a source you trust. Here is a guide to some of the informed resources that are currently out there.

For children and young people

Australian Red Cross

An After the emergency activity book to help children cope with emergencies. (Ages 5-8)

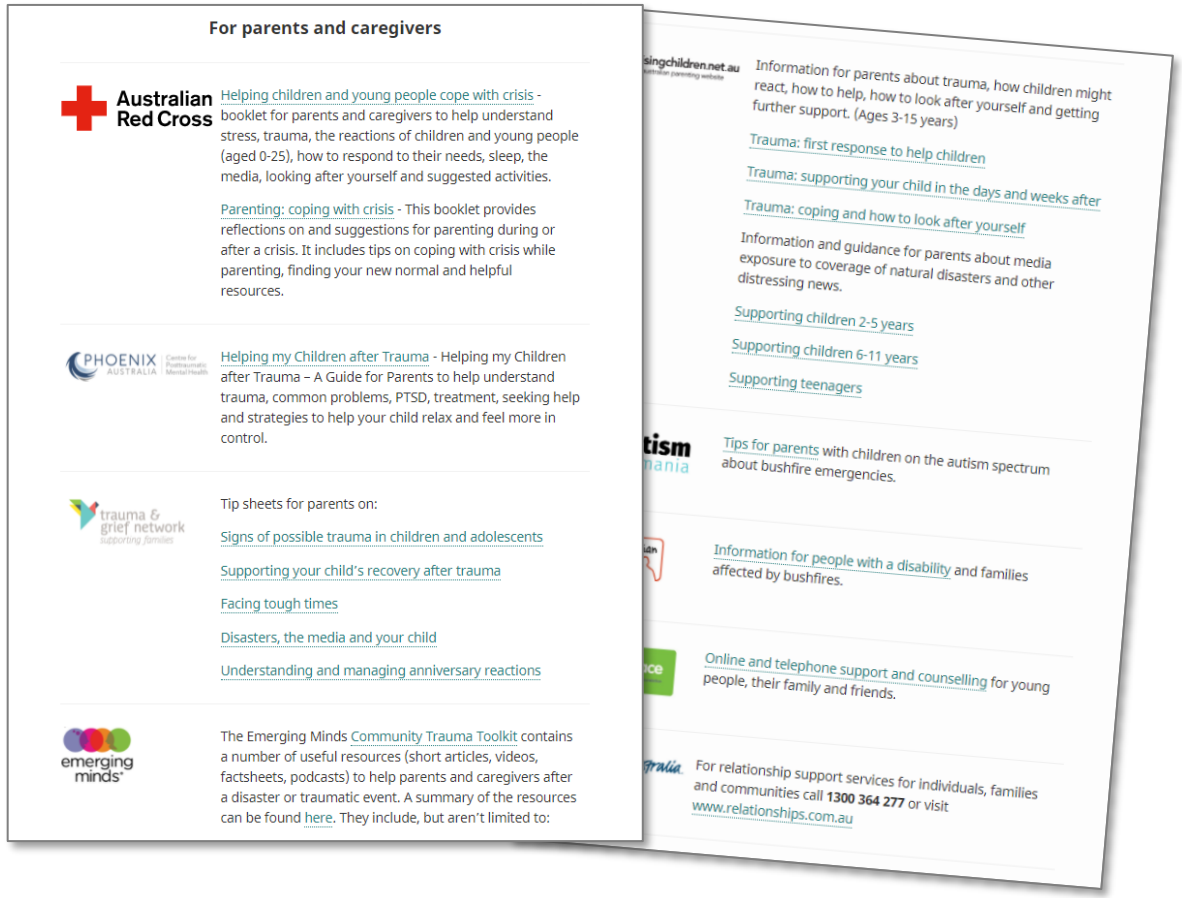
An After the emergency podcast and website to help young people cope with emergencies. (Ages 12-25)

PHOENIX AUSTRALIA Centre for Posttraumatic Mental Health

Joel and the Storm – A storybook for children who have experienced trauma. (Ages 5-11)

What the? – An informative booklet to help young people understand PTSD, getting help and strategies to help relax and feel more in control. (Ages 12-25)

Birdie's Tree, from the Queensland Centre for Perinatal and Infant Mental Health, includes a suite of storybooks and online games to help young children recover from the emotional effects of natural disasters. (Ages 0-5)



For parents and caregivers

Australian Red Cross

Helping children and young people cope with crisis - booklet for parents and caregivers to help understand stress, trauma, the reactions of children and young people (aged 0-25), how to respond to their needs, sleep, the media, looking after yourself and suggested activities.

Parenting: coping with crisis - This booklet provides reflections on and suggestions for parenting during or after a crisis. It includes tips on coping with crisis while parenting, finding your new normal and helpful resources.

PHOENIX AUSTRALIA Centre for Posttraumatic Mental Health

Helping my Children after Trauma - Helping my Children after Trauma – A Guide for Parents to help understand trauma, common problems, PTSD, treatment, seeking help and strategies to help your child relax and feel more in control.

trauma & grief network supporting families

Tip sheets for parents on:

Signs of possible trauma in children and adolescents

Supporting your child's recovery after trauma

Facing tough times

Disasters, the media and your child

Understanding and managing anniversary reactions

emerging minds

The Emerging Minds Community Trauma Toolkit contains a number of useful resources (short articles, videos, factsheets, podcasts) to help parents and caregivers after a disaster or traumatic event. A summary of the resources can be found here. They include, but aren't limited to:

singchildren.net.au

Information for parents about trauma, how children might react, how to help, how to look after yourself and getting further support. (Ages 3-15 years)

Trauma: first response to help children

Trauma: supporting your child in the days and weeks after

Trauma: coping and how to look after yourself

Information and guidance for parents about media exposure to coverage of natural disasters and other distressing news.

Supporting children 2-5 years

Supporting children 6-11 years

Supporting teenagers

tism mania

Tips for parents with children on the autism spectrum about bushfire emergencies.

Information for people with a disability and families affected by bushfires.

Online and telephone support and counselling for young people, their family and friends.

For relationship support services for individuals, families and communities call **1300 364 277** or visit www.relationships.com.au

https://www.redcross.org.au/get-help/emergencies/resources-about-disasters/resources-for-parents#recover

Recommendations

Support strategies & resources for staff

Social, emotional, learning and vocational programs for students

Resources & referrals for families
(including family violence related)

For further information

Professor Lisa Gibbs

Disaster, Climate & Adversity Unit

Melbourne School of Population and Global Health

The University of Melbourne

lgibbs@unimelb.edu.au

DISASTER, CLIMATE & ADVERSITY

THE UNIVERSITY OF MELBOURNE

SPOT LIGHT SERIES

Speaker Introduction

Dr Sharleen Keleher

Early Childhood Education & Care Infant Mental Health Statewide Coordinator

Qld Centre for Perinatal and Infant Mental Health (QCPIMH)

Children's Health Queensland

Alisha Chand

Principal Partnership Manager – Disaster Resilience and Country

Queensland Kids Partnership

Queensland Kids Partnership
every child thriving

Children's Health Queensland Hospital and Health Service

Queensland Government

Dr Sharleen Keleher
Qld Centre for Perinatal &
Infant Mental Health
Children's Health Queensland

Alisha Chand
Principal Partnership Manager
Disaster Resilience & Country
Queensland Kids Partnerships

What children tell us about learning after disasters

When we create the conditions to hear them

"Big clouds, rainy…flood?"

2yo girl, ECEC setting, Qld

"My friend isn't here, is he safe?"

4yo boy, ECEC setting, NSW

"Sometimes at the school the air con breaks down. …We can't open windows because they're boarded up. Then sometimes the bubblers don't work."

School student, Kowanyama

"We live in a container house. It's too hot to do anything, so we go outside. It's too hot to concentrate or do homework. I do that at school."

Primary school student, Western Downs

"My examples include a student who could not bear seeing clouds in the sky, would go under the table if it rained, cried and would not go out to play if there was a cloud in the sky. She did receive therapy but it was a long journey for her."

"Another example of a student being separated from his mother which [makes him] feel triggered or exacerbate[some really challenging behaviours. He had some existing complex needs and from that point of separation we noted the escalation. He does not attend school full time."

*"The last is the community response. This is where if there are forecasts of flooding, storms etc there is a drop in attendance – **we haven't officially tracked that but staff [are] noticing over time."***

State School Deputy Principal

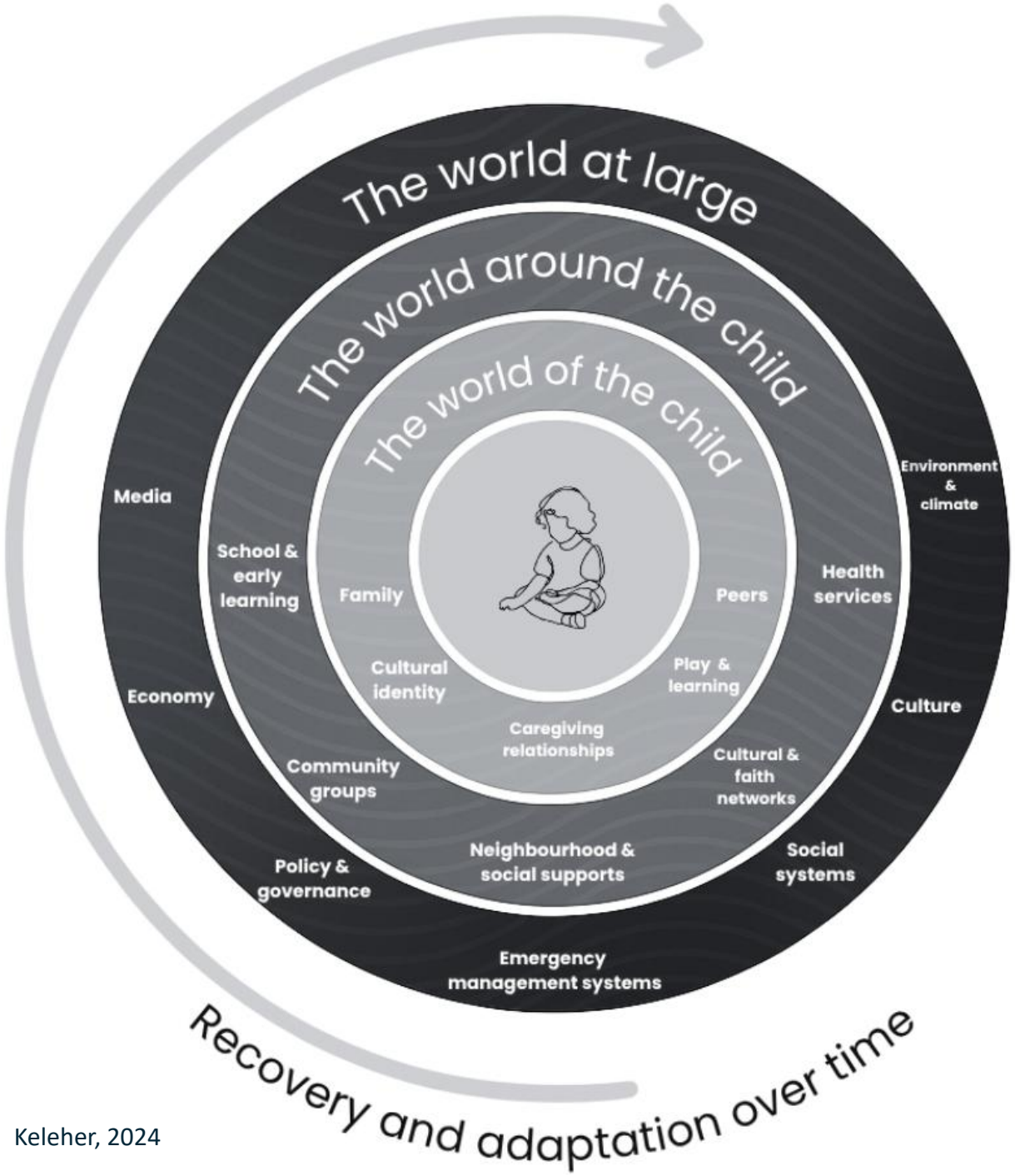
From a rural community regularly impacted by severe flooding, storms and bushfires.

Children in Disasters: Seen & Unseen Impacts

Disaster systems respond to what is visible.

This is what is unseen...

Disasters affect every layer of a child's world - and the impacts closest to the child are often the last to be seen.



Keleher, 2024

The earliest years: foundations under stress

Prenatal

- QF2011 study – prenatal flood stress has measurable effects on infant/early childhood cognitive, motor and language development

Early childhood

- Educators consistently describe the same patterns: increased anxiety and difficulty settling, changed behaviour and learning engagement, sleep and routine disruption flowing directly into children's readiness to learn

Right now

- Cascading and cumulative events – floods, cyclones, increased financial pressures (housing crisis, increasing fuel prices)
- AEDC - ⬆ developmental vulnerability

"Anecdotally, when children in Ipswich who had been exposed to devastating floods during their infancy started preschool years later, educators reported a larger than typical number of students finding school challenging due to seemingly delayed or impaired executive functioning skills — including challenges in emotional regulation."

Dr Nikki Triggell, Guidance Officer & researcher

What the evidence shows us

Children who have grown up since 2011 have experienced floods, Black Summer, COVID-19, and more - compounding exposures our data systems were not built to measure.

SEEN - What disaster systems typically notice and respond to	**UNSEEN** - What gets missed
• School closures & damaged buildings • Children evacuated or absent (during or immediately after event) • Temporary classrooms, infrastructure disruption • Globally: 242 million students' schooling disrupted by climate events in 2024 (UNICEF) • School participation rates tracked & reported	• Prenatal stress affecting infant cognitive, motor and language development (QF2011) • Anxiety, behavioural change and sleep disruption in ECEC settings – visible to educators, invisible to systems • Executive functioning disruption – emerging at preschool, years after the event (Triggell, AEDC 2024) • Learning loss in literacy and numeracy – greatest impact 1-4 years post-disaster (Triggell, 2023; Gibbs et al., 2019) • Reduced school engagement, mental health impacts persisting throughout childhood and adolescence • Long-term outcomes: lower academic achievement, employment and wellbeing – evidence up to 20 years (McFarlane & Van Hooff, 2009)

BUT: child-centred DRR education can reduce anxiety and build resilience in disaster-affected communities (e.g., Towers et al. 2018)

The opportunity: we are not starting from zero

What does a coordinated, systems-level response to disasters look like?

In Queensland, we are developing one

About Queensland Kids Partnership

We are a growing partnership of people and organisations committed to every young Queenslander thriving

QKP is a Queensland-based systems change collaborative initiated and hosted by ARACY – Australian Research Alliance for Children and Youth.

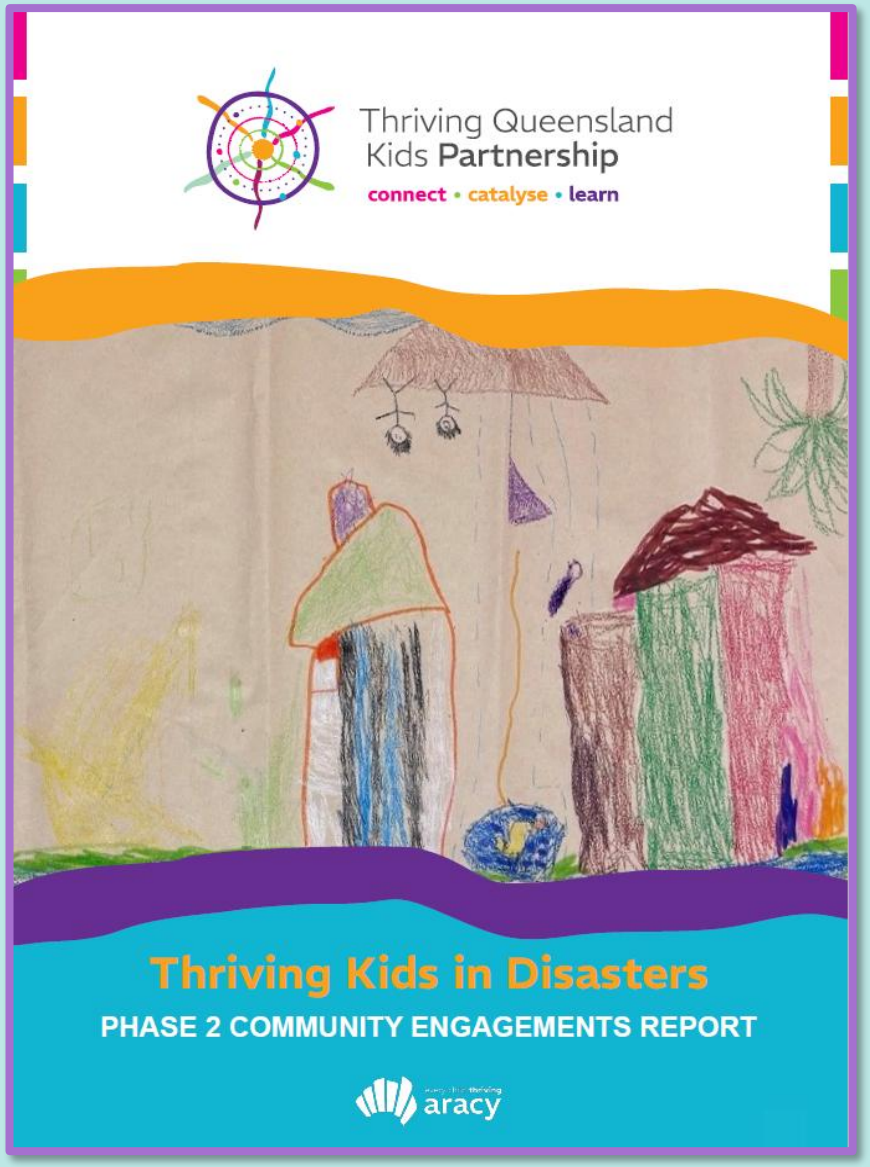
qkp.org.au

Join the movement!

Meilla, 16, observes floodwaters near her home in Cairns, wet season 2024

Thriving Kids in Disasters (TKiD) Evidence

Building evidence, collaboration, and system stewardship



TKiD Action & Investment Plan 2025

Queensland's Thriving Kids in Disasters Action and Investment Plan 2025 remains the most comprehensive, system-level, child-centred plan within Australia.

Example 1 TKiD in Places and Kids & Disaster Coaches

Dalveen Emergency Services Wellbeing Day, March 2026

“It would be better if young people could be more involved like this. It would help them get knowledge about serious disasters…with that knowledge they can show the community what is needed.”

– School student, Kowanyama 2025

What kids tell us they need to keep learning during extreme weather

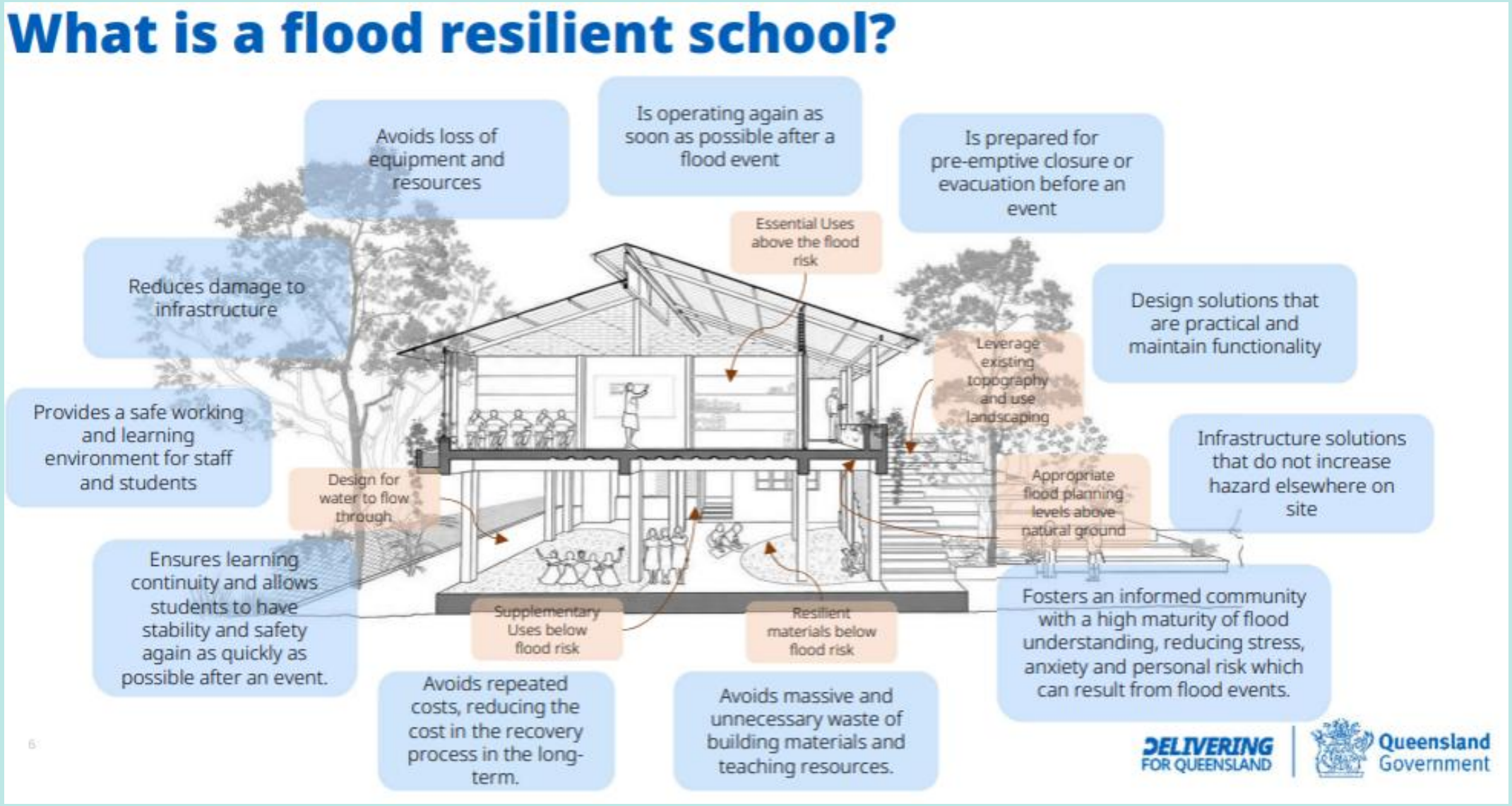
Western & Southern Downs Balonne, Kowanyama, Logan & Western Qld

- Boarding school students need support and contact during disasters.
- Involve kids in designing and upgrading comfortable and resilient places, including schools e.g. UX and journey mapping over the lifetime of the asset.
- Kids can get involved in creating local disaster training and community induction for new teachers – *Kowie Kids initiative, funded by FRRR*.
- Training pathways for young people in disaster management in SES and PCYC ES cadets.
- Emergency kits designed by kids, in partnership with groups like the Red Cross Pillowcase Project.
- Local disaster communications strategy and actions co-designed with kids - *Balonne flood resilience videos, Flagstaff State Community College disaster preparedness (Walk the Fence).*

Flagstaff State Community College disaster preparedness (Walk the Fence) 2025

Balonne flood resilience video 2025

Example 2 Flood Resilience Schools Program | Qld Gov



Example 3 UNICEF & ARACY Deep Dive Paper

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qkp.org.au

Join the movement!

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Q&A

Don’t forget to put your questions in the Q&A function.

SPOT LIGHT SERIES

Event concludes

Thank you for attending today's webinar.

Next event:

Resilience Matters webinar series:

The role of local government in disaster risk reduction

Tuesday 14 April 2026,
1.00pm-2.00pm AEST

Register now.

Australian Government
National Emergency Management Agency

Australian Institute for Disaster Resilience

Australian Government
National Emergency Management Agency

Australian Institute for Disaster Resilience

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