Child and youth post-disaster emotional responses: the Cyclone Larry Children's Project

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Many thanks to….

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SPECIAL thanks to FNQ collaborators:
- Kevin Freele and Team from MHCairns CathEd teachers, counselors and staff
- EdQ teachers, counselors and staff

AND

2967 students who participated and parents who gave consent.
Overview

Public health perspective

Screening

Results from Cyclone Larry

Intervention: “Cyclone Larry and Me”

Future directions
Public Health perspective

Universal Screening & case identification

Early Intervention

Treatment

Recovery

Continuing Care

Mental Health Promotion

Prevention

Indicated

Selective

Universal

Symptom Identification

Early Treatment

Standard Treatment

Engagement with longer-term treatment and support (including relapse prevention)

Long-term Care
<table>
<thead>
<tr>
<th>grade</th>
<th>EdQ n</th>
<th>Cath n</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>513</td>
<td>193</td>
<td>706</td>
</tr>
<tr>
<td>4-7</td>
<td>569</td>
<td>235</td>
<td>804</td>
</tr>
<tr>
<td>8-12</td>
<td>913</td>
<td>543</td>
<td>1457</td>
</tr>
</tbody>
</table>

18 Primary schools and 2 high schools from Ed QLD, 6 primary schools and 1 high school from Catholic Ed.
In the service provision arena:
sole purpose of screening is case identification
followed by provision of a ‘treatment’
(otherwise = cross-sectional research)
screen only if:
is supported by the community
informed consent is given
is economically viable
if the science is sound
there is a treatment benefit from early
identification & intervention
## Science of Screening

### Gold Standard

<table>
<thead>
<tr>
<th>Screening test</th>
<th>PTSD</th>
<th>Not PTSD</th>
<th>Sensitivity: screen +ve and are +ve</th>
<th>Specificity: Screen –ve and are –ve</th>
<th>PPV = a/a+b</th>
<th>Accuracy = a+b/a+b+c+d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>a</td>
<td>b</td>
<td>a/a+c</td>
<td>d/b+d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>c</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a+c</td>
<td>b+d</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a+b+c</td>
<td>b+d+c+d</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Screening instruments

Child report
- PTSD-RI
  - exposure questions
  - social connectiveness questions

Parent report
- SDQ-Em
  - exposure questions
  - social connectiveness questions

Family Adjustment Device or Family Resiliency Scale

Delivered through schools & with local resources
Uniform PTSD rates would be unexpected immediately following event a high proportion of survivors validate PTSD symptoms.

100% ‘psychic disturbance’ post chowchilla (Terr)
94% PTSD post school sniper attack (Pynoos & Nader)
41% Post-trauma distress post shipping disaster (Yule)
12% PTSD post bushfire (McDermott & Palmer)
11% post MVA (McDermott & Cvitanovich)
5% Hurricane Hugo (Shannon et al) 5% Hurricane Andrew (Vernberg et al)
Bushfire Disasters

Sutherland (NSW) 1995
above cut-off for PTSD
12% (n = 2379)
complex relationship with age

Canberra 2003
Prevalence PTSD:
Mild 15.8%
Moderate 3%
Severe 1%
CLCP: PTSD by Age

Mean PTSD by Gender

- **Grade 4-7**
- **Grade 8-12**

Logistic regression                               Number of obs =       2252

| Variable | Odds Ratio | Std. Err. | z    | P>|z|   | [95% Conf. Interval] |
|----------|------------|-----------|------|------|----------------------|
| age      | 0.7766798  | 0.0280567 | -7.00| 0.000| 0.7235913 - 0.8336633 |
CLCP: PTSD by Age

Severity of PTSD by School Grade

![Graph showing the percentage of PTSD by age and school grade.](image)

Logistic regression

<table>
<thead>
<tr>
<th>PTSD Category</th>
<th>Gr 8-12</th>
<th>Gr 4-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>mild</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>moderate</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>severe</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>very severe</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

Logistic regression

Number of obs = 2250

<table>
<thead>
<tr>
<th>Ptsdcat1</th>
<th>Odds Ratio</th>
<th>Std. Err.</th>
<th>z</th>
<th>P &gt; z</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>.7813282</td>
<td>.0281957</td>
<td>-6.84</td>
<td>0.000</td>
<td>.7279746 .838592</td>
</tr>
<tr>
<td>sex</td>
<td>2.718803</td>
<td>.5265757</td>
<td>5.16</td>
<td>0.000</td>
<td>1.86002 3.974091</td>
</tr>
</tbody>
</table>
CLCP: Past emotional problems

Logistic regression

| Variable  | Odds Ratio | Std. Err. | z    | P>|z|   | [95% Conf. Interval] |
|-----------|------------|-----------|------|-------|---------------------|
| age       | .6841896   | .0790246  | -3.29| 0.001 | .5455842 .8580077   |
| sex       | 3.290168   | 1.029591  | 3.81 | 0.000 | 1.78177 6.075532    |
| prevdiff  | 1.162246   | .4215896  | 0.41 | 0.679 | .5708682 2.366249   |

Number of obs = 588
CLCP: Threat perception

Logistic regression

Perception of threat (self)

Number of obs = 2176

| Variable   | Odds Ratio | Std. Err. | z     | P>|z|  | [95% Conf. Interval] |
|------------|------------|-----------|-------|-----|----------------------|
| age        | 0.8377633  | 0.0319305 | -4.64 | 0.000 | 0.7774611  0.9027427 |
| sex        | 2.322045   | 0.4859811 | 4.03  | 0.000 | 1.540716  3.499603  |
| selfdie    | 8.23893    | 1.592652  | 10.91 | 0.000 | 5.640617  12.03414  |
Explanatory models

Take to the Event:

- Younger age
- Female
- Thought would die
- NOT past emotional problem

Event related factors

Outcomes

PTSD

CULTURE - SOCIETY
<table>
<thead>
<tr>
<th></th>
<th>Grade 4 to 7 (n= 818)</th>
<th>Grade 8 to12 (n = 1456)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PTSD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevalence (%)^</td>
<td>11.9</td>
<td>3.5</td>
</tr>
<tr>
<td>Mean PTSD-RI*</td>
<td>21.3</td>
<td>13.8</td>
</tr>
<tr>
<td><strong>Disaster Experience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saw flying debris</td>
<td>71</td>
<td>80</td>
</tr>
<tr>
<td>Evacuated from home</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Home was damaged</td>
<td>67</td>
<td>62</td>
</tr>
<tr>
<td>Home lost roof</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Perceived threat to self</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>Perceived threat to family</td>
<td>32</td>
<td>19</td>
</tr>
</tbody>
</table>

^ PTSD-RI cut off of 40

*Posttraumatic Stress Disorder Reaction Index, Max score = 80, Min score = 0
CLCP: Disaster-related event

Mean Odds Ratios for PTSD by event-related variable

<table>
<thead>
<tr>
<th>Event</th>
<th>OR</th>
<th>X²</th>
<th>p</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw debris</td>
<td>1.54</td>
<td>3.15</td>
<td>.074</td>
<td>.95 – 2.51</td>
</tr>
<tr>
<td>Home damage</td>
<td>2.23</td>
<td>14.88</td>
<td>.000</td>
<td>1.47 – 3.39</td>
</tr>
<tr>
<td>Lose part roof</td>
<td>2.18</td>
<td>20.46</td>
<td>.000</td>
<td>1.51 – 3.09</td>
</tr>
<tr>
<td>Lose whole</td>
<td>3.62</td>
<td>22.01</td>
<td>.000</td>
<td>2.03 – 6.43</td>
</tr>
<tr>
<td>Live else</td>
<td>3.15</td>
<td>14.02</td>
<td>.000</td>
<td>1.74 – 7.09</td>
</tr>
</tbody>
</table>

Logistic regression

| Variable       | Odds Ratio | Std. Err. | z    | P>|z|   | [95% Conf. Interval] |
|----------------|------------|-----------|------|-------|---------------------|
| Age            | .8392253   | .0328517  | -4.48| 0.000 | .7772452 – .906148  |
| Sex            | 2.19586    | .4668416  | 3.70 | 0.000 | 1.447566 – 3.33097  |
| Selfdie        | 7.652293   | 1.527584  | 10.19| 0.000 | 5.174531 – 11.3165  |
| Losewhol       | 1.947753   | .659642   | 1.97 | 0.049 | 1.002903 – 3.78276  |

Number of obs = 2113
Explanatory model

Take to the Event:
- Younger age
- Female
- Thought would die
- NOT past emotional prob

Event related factors

Exposure
- Home damage
- Roof damage
- Evacuation experience

outcomes
- PTSD

CULTURE - SOCIETY
CLCP: Social connectedness

Figure: Fitted one-factor congeneric model of child connectedness.
CLCP: Social connectedness

ANOVA
F 38.37, p = .0000

Logistic regression

| Variable  | Odds Ratio | Std. Err. | z    | P>|z|  | [95% Conf. Interval] |
|-----------|------------|-----------|------|------|----------------------|
| Age       | .772099    | .0895928  | -2.23| 0.026| .615037 .9692699     |
| Sex       | 2.585571   | .8160471  | 3.01 | 0.003| 1.392848 4.799645    |
| Selfdie   | 5.568321   | 1.590838  | 6.01 | 0.000| 3.180832 9.747825    |
| Evacda    | 3.208041   | 1.286584  | 2.91 | 0.004| 1.461726 7.040671    |
| Schigh    | 3.201682   | 1.264983  | 2.95 | 0.003| 1.475941 6.945244    |
Social connectedness & gender

Logistic models:

Boys
only threat remains significant (p = 0.000)

Girls
Several significant factors: age (.048), threat (.000), evacuation (.003), social connect (.011)
Traditional drivers of continuation of mental health:
   eg. family factors, past mental health are related to post disaster dep/anx

Drivers of PTSD are very different:
   include: exposure variables, perception threat and social connectiveness.
Interventions
Treatment of first choice is a trauma focused cognitive behavioural intervention (TF-CBT).

For effectiveness therapy must address the specific trauma memories and ameliorate their with exposure and habituation and/or cognitive restructuring.

Early presentations may require brief 5 session interventions.

Later presentations or if plus co-morbid traumatic bereavement, disability, & past history of other trauma may require longer intervention, i.e. 8-12 sessions.

May be equally effective by group or individual therapy.
The Bushfire and Me

A Story of What Happened to ME and My Family
Victor Storm, Brett McDermott and Don Finlayson
Illustrations by Gerald Sertdemir

SBTP therapy for primary age children: a guided therapy workbook.
Workbook structure

3 sections: parent – child – parent

Children:
8 chapters
CBT
Fairly relentless re-telling and re-examining of trauma story

In a (hopefully) engaging child format and lots of opportunity for parent involvement
FACTBOX: Changing stories like typing on a computer

If you’re *typing something* on the computer, you can **underline** certain words or sentences or **put them in bold** to make them **stand out**. And you can delete words and sentences as well – just as **though they were never there**.

How we deal with memories is a little like this.
Intruder thoughts: What are they?

Do you remember Peter from last session? This is what Peter had to say about one of the problems he was having after the fires:
HINT

You may not even realise it yourself – but your friends and family may think of something you have been avoiding.

One common avoidance example is YOUR STORY
So let's go over it again
Conclusion

Public health approaches:
- are possible
- usually met with approval by majority of parents
- and identify children will elevated MH symptoms

Screening:
- could be improved
- better standardisation, briefer instruments

Interventions:
- require more research
- & more sophistication with mixture of universal
  and selective reflecting Rx intensity.
Future Directions GxE: 5-HTT
Functional polymorphism in promoter region of serotonin gene.

Caspi et al., Science, 2003
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