

## Original Article

# Mental health impact for adolescents living with prolonged drought

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## Abstract

**Background:** A 2004 study showed adolescents living in rural Australia were aware of the impact of drought on self, family and community, but did not report levels of emotional distress higher than adolescents of similar age and gender in the Australian community. It was proposed that the rural lifestyle had helped adolescents build resilience for managing this environmental adversity.

**Objective:** To re sample adolescents from the same rural area and determine if this resilience remained after ongoing drought three years later.

**Design:** A mixed methods approach using focus groups and a self-report questionnaire.

**Setting:** Government Central Schools within the Riverina region of New South Wales.

**Participants:** Male and female adolescents (n = 111) aged 11–17 years completed the self-report questionnaires, while some adolescents (n = 61) within this group also participated in focus groups.

**Main outcome measure:** The Strengths and Difficulties Questionnaire and a Drought and Community Survey for Children comprised the self-report survey.

**Results:** Adolescents reported significantly higher levels of emotional distress than those in the previous study ( $t(191) = 2.80$ ,  $P < 0.01$ ) and 12% of adolescents scored in the clinical caseness range. Thematic analysis showed consistency with the previous study as well as new themes of grief, loss and the impacts of global climate change.

**Conclusions:** Results indicate a reporting of lesser well-being than was reported by a comparable group of young people four years earlier. A preventative intervention with a focus on family and community is recommended to address the mental health of adolescents

*enduring a chronic environmental adversity such as drought.*

**KEY WORDS:** *distress, drought, environmental adversity, rural adolescent.*

## Introduction

In recent decades regions around the world have experienced regular droughts with significant economic and social impacts.<sup>1</sup> Cumulative stress because of drought, depressed commodity prices and extremes of weather has been associated with increased mental health problems.<sup>2</sup> The strong attachments rural people develop to their lifestyle and farming occupation, the merging of the farming occupation with identity, and a perception of being powerless in the face of government and global forces, intensify the emotional outcomes when the rural way of life is under threat.<sup>3</sup> Rates of suicide in Australian rural locations are higher than in comparable populations worldwide.<sup>4</sup> The threat of climate change suggests a continuing challenge for Australian rural families.<sup>5</sup>

The slower onset and gradual compounding impacts of drought have been recognised as quite distinct to the sudden impact of other natural disasters.<sup>6</sup> A study of a chronic drought region in Brazil found higher levels of anxiety for women than men in the same region and also both men and women in a non-drought region.<sup>7</sup> Recent research indicates that the physical impacts of natural disasters have been overemphasised compared with social impacts.<sup>3</sup> Canadian research has acknowledged the chronicity of drought as compared with other natural disasters and report significant emotional, spiritual and physical impacts on rural residents.<sup>8</sup>

Surprisingly, there have been few reports of the impact of drought on families and particularly on children and adolescents. An earlier study by the authors showed strong associations between family-related issues connected to drought and levels of emotional distress among children.<sup>9</sup> Economic crisis in farming communities has been shown to have a direct impact on

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*What is already known on this subject:*

- The mental health of farming families is influenced by their emotional connection to the land and the financial stress of farming.
- While drought-related literature is growing, there is a lack of research on the impact of drought on children.
- Previous research by the authors identified associations between drought-related factors and emotional well-being. However, the adolescents involved also demonstrated resilience to more significant emotional distress.

*What this study adds:*

- Adolescents confirmed the impact of prolonged drought on their own emotional well-being, family functioning and community dynamics.
- Adolescents reported a significantly higher level of distress than reported by adolescents three years earlier in the same region and also that of their peers in the Australian community.
- These are important findings for addressing the mental health of rural families.

adolescents in farm families by raising uncertainty over their future and self-identity.<sup>6</sup>

This study returns to these issues with adolescents in the same region of New South Wales (NSW) in an attempt to answer two questions:

1. Is there a cumulative effect of drought on adolescent emotional well-being? and
2. What are the perceived significant impacts of prolonged drought on their selves, family and community?

Method

Ethics approval was obtained from the Greater Southern Area Health Service Ethics Committee (No. 2007/03) and the NSW Department of Education and Training (SERAP no. 2007028).

Qualitative information from focus groups was integrated with quantitative measures from self-report surveys.<sup>10</sup> The surveys contained the Drought and Community Survey for Children (DACSC-C), developed in the previous research<sup>9</sup> and the youth self-report version of the Strengths and Difficulties Questionnaire (SDQ).<sup>11</sup> The SDQ has four difficulties subscales (Emotion Symptoms, Peer Problems, Hyperactivity and Conduct Problems) and one strengths subscale (Prosocial). Difficulties subscales are summed to provide a Total Difficulties Score (Table 1).

Adolescents aged 11–17 years were recruited from five Central Schools in the rural south-west region of NSW. Information statements and consent forms were provided for adolescents’ parents ( $n = 420$ ), and 111 adolescents were allowed to participate (response rate of 26%). All surveys were completed and returned. The demographics of the sample are shown in Table 2. The quantitative data were analysed with the Statistical Package of Social Sciences (SPSS, Chicago, IL, USA) software program.

School principals nominated adolescents for focus groups ( $n = 61$ ) that used the interview schedule from study I.<sup>9</sup> A thematic analyses was applied to the focus group data.<sup>12</sup> Obstacles to this process such as projection, sampling and mood or style were avoided by following recognised conventions and through the involvement of two supervisors.<sup>13</sup>

TABLE 1: Interview schedule for student focus groups

1. What does the word drought mean to you?
2. We are going through (have gone through) a very severe drought over the last two years. Tell me how you knew this was such a severe drought?
3. Can you tell me if there are things that have happened in the drought that you don’t think your family will forget?
4. Can you tell me ways that drought can be bad for people other than what it does to the crops and the animals?
5. Can you tell me ways that drought can be good for families?
6. What is good about living in the country?

TABLE 2: Sample demographics

Age group	Gender % (n)		Residence % (n)	
	Male	Female	Farm	Town
Early adolescence (11–13 years, $n = 61$ )	56 (34)	44 (27)	62 (38)	38 (23)
Mid adolescence (14–17 years, $n = 50$ )	48 (24)	52 (26)	66 (33)	34 (17)
Total adolescents ( $n = 111$ )	52 (58)	48 (53)	64 (71)	36 (40)

## Results

For comparison with the SDQ normative data, participants were grouped in two age ranges – 11–13 years (Early Adolescence) and 14–17 years (Mid Adolescence).

## Strengths and difficulties

For the SDQ there was a significant main effect for gender ( $F(6102) = 7.54, P < 0.001$ ) and age ( $F(6102) = 2.81, P < 0.05$ ) and a significant interaction effect ( $F(6102) = 2.63, P < 0.05$ ). Multiple comparisons for the subscales showed significant gender effects for the Emotion ( $F(1107) = 8.48, P < 0.01$ ), Peer Problems ( $F(1107) = 6.79, P < 0.01$ ) and Prosocial ( $F(1107) = 19.58, P < 0.001$ ) subscales only. The girls reported significantly higher levels of prosocial behaviours than boys. Boys showed lower levels of emotional difficulties than girls, while boys reported more peer problems than did girls.

The adolescents in this study scored significantly higher on Total Difficulties than the normative population ( $t(152) = 4.34, P < 0.01$ ). Younger boys ( $t(47) = 3.10, P < 0.01$ ) reported higher levels of overall difficulties than their peers. Overall the girls showed more difficulties than their peers with older girls ( $t(32) = 2.90, P < 0.01$ ) more significantly affected.

Similarly, there were significant group differences on all subscales between the current research and the Australian norms. The Emotion subscale scores for this study were significantly higher than both the previous study ( $t(191) = 2.80, P < 0.01$ ) and Australian norms ( $t(140) = 3.86, P < 0.01$ ). Comparisons of students' scores across age and gender with Australian norms on all subscales are presented in Table 3.

Adolescents living in town ( $n = 40, M = 13.75, SD = 6.61$ ) reported significantly higher levels of total difficulties on the SDQ than students living on farms ( $n = 71, M = 10.42, SD = 5.20, t(66) = 2.74, P < 0.01$ ). Cut-off scores for the SDQ have been established indicating those children at risk of clinical significant problems, those children who might be at risk of problems and those unlikely to be at risk. In this research, higher percentages of students across all the difficulty subscales have fallen in the 'at risk of clinically significant problems' category than found in the normal population.<sup>11</sup> There was a higher percentage of adolescents with Total Difficulties in the 'at risk of clinically significant problems' range (12%) than found in the normal population (10%).

## Drought survey

Results on the DACS-C were analysed in relation to the six factors previously identified and on the basis of

TABLE 3: Adolescent SDQ mean scores (and standard deviations) for current study and Australian norms

SDQ scale	Male				Female			
	Early adolescence $n = 34$		Mid adolescence $n = 24$		Early adolescence $n = 27$		Mid adolescence $n = 26$	
	Current	Norms	Current	Norms	Current	Norms	Current	Norms
Emotion	2.76 (2.31)	1.99 (1.92)	2.67 (2.50)	2.07 (2.00)	4.11 (2.79)*	2.60 (2.10)	4.00 (1.96)**	2.85 (1.94)
Conduct	2.94 (1.91)**	1.96 (1.82)	1.79 (1.72)	2.38 (1.93)	1.93 (1.90)	1.31 (1.50)	1.85 (1.62)	1.71 (1.50)
Hyper	4.00 (1.95)*	3.15 (2.25)	3.42 (2.21)	4.01 (2.37)	2.93 (1.84)	2.63 (2.23)	4.65 (2.24)**	3.13 (2.17)
Peer	2.44 (1.54)	1.70 (1.59)	2.92 (2.06)**	1.62 (1.60)	1.67 (1.80)	1.40 (1.62)	1.92 (1.74)	1.38 (1.40)
Total difficulties	12.15 (5.73)**	8.80 (5.46)	11.13 (6.83)	10.12 (5.98)	10.63 (5.90)*	7.96 (6.09)	12.42 (5.52)**	9.08 (4.80)
Prosocial	6.53 (2.51)*	7.75 (1.88)	6.79 (2.00)*	7.75 (1.88)	8.44 (1.28)	8.56 (1.38)	8.15 (1.52)	8.36 (1.58)

\* $P < 0.05$ , \*\* $P < 0.01$ . SDQ, the Strengths and Difficulties Questionnaire.

TABLE 4: *The themes and relevant quotes from the focus groups*

Theme	Quote
The environmental impacts of the drought	<p>'Our house tank is empty and we have to cart water all the time'</p> <p>'There is so much dirt'</p> <p>'It gets really windy – hot winds'</p> <p>'I would like to see something growing – we only see dead stuff'</p>
The impact of the drought on the local community	<p>'We are resilient people – we could leave, but we are determined – the community turns into a family'</p> <p>'Young people are moving out and not coming back – there is nothing to come back to'</p> <p>'The school is getting packages or deals because we are drought kids – we are underprivileged – we haven't got lots of stuff at school'</p>
The impact of the drought on family life	<p>'The drought can help you realise that a lot of money is not so important – there are other priorities'</p> <p>'The stress of the drought can pull families apart – divorce'</p>
The impact of the drought on country lifestyle	<p>'You can stick to your religion – you can go to church easily – it is nearby'</p> <p>'The schools are smaller and the classes are smaller and you get more help'</p> <p>'In the country you just feel safer – can walk about even at night'</p>
The impact of the drought on mental health	<p>'People need to think about the big plans ahead – it's scary – a lot of opportunities have gone – people are deciding to leave the farm or not'</p> <p>'It's mental – people might feel depressed because things might go – they might lose things because of the drought'</p>
Issues that might relate to climate change	<p>'Global warming could be having an effect'</p> <p>'People are wondering if it is climate change – starting to think it is – everybody talks about it'</p>

individual items.<sup>9</sup> There was a significant main effect for age ( $F(6102) = 1.33$ ,  $P < 0.05$ ) but not for gender ( $F(6102) = 1.33$ ,  $P = 0.25$ ), and there was no interaction effect ( $F(6102) = 0.72$ ,  $P = 0.64$ ). Multiple comparisons showed an age effect on factor 6 'loss of friends' ( $F(1110) = 9.52$ ,  $P < 0.01$ ) with mid adolescents being more sensitive than early adolescents to the issue of friends leaving their district because of the drought.

For both age groups, total scores on the DACS-C were significantly correlated with both the SDQ total (early adolescent:  $r = 0.40$ ,  $P < 0.001$ ; mid adolescent:  $r = 0.33$ ,  $P < 0.05$ ) and the Emotion subscale (early adolescent:  $r = 0.38$ ,  $P < 0.01$ ; mid adolescent:  $r = 0.29$ ,  $P < 0.05$ ) scores. There were significant associations between responses on some of the individual items of the DACS-C and the SDQ Total Difficulties score.

Not surprisingly, lower scores on the SDQ Total Difficulties scale showed significant correlations with positive responses to:

1. 'Community Spirit is important when there is drought' ( $r = -0.26$ ,  $P < 0.01$ ).
2. 'I like living in the country' ( $r = -0.34$ ,  $P < 0.01$ ).
3. 'I feel safer in the country' ( $r = -0.28$ ,  $P < 0.01$ ).

## Focus groups

For the data collected from the focus groups the themes previously identified were used as codes to guide the

initial data analysis.<sup>9</sup> Many students discussed the *environmental impact of drought* including that of having little or no water. Both positive and negative *community impacts* were identified. *Impacts on family life* were also included from positive, negative and financial perspectives. The adolescents spoke of the positive aspects of their *country lifestyle* including having freedoms at an early age and feelings of safety. They also identified many *mental health impacts* of the drought such as the stress of making difficult decisions, depression, grief and loss. A new issue that emerged was that of *climate change*. These themes and relevant quotes are presented in Table 4.

## Discussion

The results provide evidence for drought having a cumulative effect on the ability of adolescents to cope with the stress of a natural disaster. These adolescents have shown significantly higher levels of distress and behavioural difficulties than adolescents in the general population. They reported increased emotional distress to that reported in earlier research conducted in the same region.

The results show a positive relationship between perceived experience of the drought and emotional distress for this sample of adolescents. Thus for these young people, increased experience of drought was associated

with increased emotional difficulties. Higher levels of problematic behaviour, peer relationships and hyperactivity were associated with drought-related factors such as family concerns, financial stress, climate change, mental health impacts and an environment where death and loss is perceived. Distress levels for older adolescents were more affected by loss of friends from the area than the younger adolescents.

In need of further research is the finding of higher levels of emotional difficulties for youth living in town rather than on farms. Many of these youth live in families reliant on agriculture-related employment. Others live in families who have moved from cities seeking a more relaxed rural lifestyle.

Resilience for rural adolescents includes strong positive feelings about their communities and family connections.<sup>9</sup> For rural residents, being able to sustain a rural lifestyle is a major factor for individual and community resilience.<sup>14</sup> Residence within small towns is associated with a strong attachment to place.<sup>15</sup> In this current research these strong positive feelings to living in a small rural community are still evident, but the reported levels of distress indicate that the chronicity of the drought might be challenging this resilience. These adolescents considered the drought in the context of more global influences such as climate change. Children are seen as being particularly vulnerable to both the physical and mental threats of climate change.<sup>16</sup> While this vulnerability is more obvious in developing countries, families in rural Australia are likely to be challenged by a more variable climate that will include more frequent droughts.<sup>16</sup> This situation might accelerate rural restructuring thus putting more pressure on the resilience of rural and remote families.

## Study limitations

A higher participation rate similar to that of the initial study would have greatly enhanced these results. However, the reluctance of parents to allow their children to participate might be an indication of the chronic impact that drought has had on their own attitudes to these issues. The results would have been enriched by a longitudinal rather than cross-sectional design, but this possibility was not envisioned at the time of the first study and thus consent was not obtained from participants. However, unmatched group comparisons were possible between the two studies and showed significantly higher levels of distress for adolescents in the second study.

## Conclusion

The adolescents in this research showed significantly higher levels of distress and behavioural difficulties than

the general population and the adolescents in the earlier research conducted in the same region. Further impacts of the ongoing drought in relation to behaviour and peer relationships are suggested. These difficulties were associated with family concerns, financial stress, climate change, mental health impacts and an environment where death and loss is perceived.

The social and emotional impacts of this drought have been shown to be similar to the effects of other natural disasters. It has also been discussed that the emotional connection of farming families to their land and their way of life exacerbates these emotional impacts when losing that land and lifestyle becomes a real threat. Understanding drought in this way provides a robust framework for responding to the needs of rural and remote families during these tough times. Evidenced-based health promotion programs have been used in response to natural disasters. Such interventions should include practical support followed by emotional and social support that approaches community cohesion and connections for adolescents to their families and with key community structures such as schools.

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## Author contributions

John G. Dean contributed 60%; Helen J. Stain contributed 40%.

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