

# Australian school-based prevention and early intervention programs for anxiety and depression: a systematic review

Alison L Neil and Helen Christensen

The meeting of the Council of Australian Governments (COAG) in July 2006 confirmed its investment in school-based mental health prevention and early intervention programs.<sup>1</sup> The role of general practitioners in schools will be enhanced through programs such as MindMatters Plus GP, which promoted opportunities to link schools and general practice, to provide seamless referral, and to allow GPs to engage directly in prevention and early intervention. Given this commitment to school-based intervention, it is timely to review the programs currently used in Australian schools, their efficacy and effectiveness, and to evaluate whether there is sufficient evidence to support their dissemination.

Here we report an audit of Australian programs, a review of trials of efficacy and effectiveness, and our conclusions about which programs are potentially useful in combating depression and anxiety in children and adolescents. The need for such programs is evident in the prevalence rates of adolescent depression and anxiety in Australia (5%–14%)<sup>2,3</sup> and internationally (3.5%–36%).<sup>3</sup>

## METHODS

### Definitions

Prevention and early intervention programs are normally classified into four types: universal, selective, indicated, and treatment programs.<sup>4</sup> Although definitions differ somewhat, universal programs are presented to all students regardless of symptoms; selective programs target children and adolescents who are at risk of developing a disorder by virtue of particular risk factors, such as being children of a depressed parent; indicated programs are delivered to students with early or mild symptoms of a disorder; and treatment programs are provided for those diagnosed with the disorder.<sup>4</sup> We use this classification system in this review.

### Data sources

The Cochrane, PsychInfo and PubMed databases were searched in June 2006, with the key search terms “school-based OR

## ABSTRACT

**Objective:** To establish the nature and efficacy of Australian school-based prevention and early intervention programs for anxiety and depression.

**Data sources:** Cochrane, PsychInfo and PubMed databases, and the Primary Mental Health Care Australian Resource Centre database, were searched in June 2006. Additional materials were obtained from program websites, reference lists and authors.

**Study selection:** Programs that were developed in Australia or trialled in Australia and addressed anxiety, depression, or resilience were included.

**Data synthesis:** 24 efficacy or effectiveness trials of 9 intervention programs were identified. Most were based on cognitive behaviour therapy, interpersonal therapy or psychoeducation. Six were universal interventions, two were indicated programs and one was a treatment program. Most were associated with short-term improvements or symptom reduction at follow-up.

**Conclusions:** A number of schools programs produce positive outcomes. However, even well established programs require further evaluation to establish readiness for broad dissemination as outlined in the standards of the Society for Prevention Research.

MJA 2007; 186: 305–308

school\*”, “depression OR anxiety”, and “Australia\*”. Programs were included if they addressed symptoms of anxiety or depression in a school context, or increased student resilience through the development of positive coping skills. Only programs developed in Australia and overseas programs that had been trialled in Australia were included in the review. No other restrictions were placed on program inclusion. In the light of recent COAG reforms in mental health, our explicit aim was to review tested programs with established efficacy or effectiveness in the Australian school environment.

A search of the Primary Mental Health Care Australian Resource Centre database was also undertaken using the terms “school setting” and “youth”. This search was conducted to identify unpublished studies. Once programs were identified, additional materials were obtained from program websites, reference lists and authors. The authors of each program were contacted via email and invited to provide unpublished outcome data to be included in the review.

Data abstraction was completed independently and the process was not blinded.

### Study quality

As poor quality intervention studies overestimate the size of intervention effects,<sup>5</sup> study

quality was assessed using a validated measure that assesses quality against three key criteria: randomisation, double-blinding, and withdrawals and dropouts.<sup>6</sup> Quality ratings can range from 0 to 5, although intervention trials of mental health programs within schools, which often cannot achieve double-blind conditions or full randomisation, rarely receive scores above 3.

### Outcome measures

Trials were considered efficacious or effective if significant differences were apparent between the control and treatment groups’ mean levels of anxiety and depression at post-test or follow-up. For trials without a control group, efficacy was based on significant differences being present from pre-test to post-test and follow-up.

### Analysis

Where data were available and extractable, effect size was estimated using Cohen’s *d*,<sup>7</sup> which was calculated by subtracting the mean intervention score from the mean control score, and dividing the result by the pooled standard deviation.

A formal meta-analysis was not conducted because of the heterogeneity of programs, small number of trials with follow-up times, and available data quality.

**Australian school-based prevention and early intervention programs for anxiety and depression**

Program*	Trial	Design	Program type	Number in intervention group	Wait-list control	Anxiety (effect size <sup>†</sup> )	Depression (effect size <sup>†</sup> )	Quality rating
CWD-A (Aust)	Ralph and Nicholson <sup>8</sup>	CT	Treatment	9	Yes	—	No (0.44)	1
ACE	Hannan et al <sup>9</sup>	NCG	Indicated	19	—	Yes (1.36)	Yes (0.96)	1
	Kowalenko et al <sup>10</sup>	CT	Indicated	87	Yes	—	Yes (0.55)	1
	Sheffield et al <sup>11</sup>	RCT	Indicated	134	No	No (0.04)	No (0.16)	3
Aussie Optimism	Quayle et al <sup>12</sup>	RCT	Universal	24	Yes	—	Yes <sup>‡</sup> (0.66)	2
	Roberts et al <sup>13,14</sup>	RCT	Indicated	90	No	Yes (0.24)	No (0.14)	2
	Roberts et al (unpublished)	RCT	Universal	237	Yes	No	No	1
Cool Kids	Mifsud and Rapee <sup>15</sup>	RCT	Indicated	50	Yes	Yes <sup>‡</sup> (0.57)	—	2
FRIENDS	Dadds et al <sup>16,17</sup>	RCT	Indicated	61	No	Yes <sup>§</sup>	—	2
	Lowry-Webster et al <sup>18,19</sup>	RCT	Universal	432	No	Yes (0.63)	Yes <sup>¶</sup> (0.49)	2
	Barrett and Turner <sup>20</sup>	RCT	Universal	188	No	Yes (0.41)	No (0.09)	2
	Barrett et al <sup>21</sup>	CT	Universal	121	No	Yes (0.83)	Yes (0.82)	0
	Barrett et al <sup>22</sup>	CT	Universal	166	No	Yes	Yes	0
	Lock and Barrett, <sup>23</sup> Barrett et al <sup>24</sup>	RCT	Universal	442	Yes	Yes (0.32)	Yes <sup>‡</sup> (0.21)	2
	Barrett et al <sup>25</sup>	RCT	Universal	408	No	Yes <sup>‡</sup> (0.38)	No	2
MoodGYM	O’Kearney et al <sup>26</sup>	CT	Universal	35	No	—	No (0.29)	1
	Kang (unpublished)	CT	Universal	67	No	—	Yes <sup>‡</sup> (0.30)	1
PPP (Aust)	Pattison and Lynd-Stevenson <sup>27</sup>	RCT	Universal	16	No	No (0.38)	No (0.73)	1
PSFL	Spence et al <sup>28,29</sup>	RCT	Universal	751	No	—	Yes <sup>§</sup> (0.36)	2
	Sheffield et al <sup>11</sup>	RCT	Universal	621	No	No (0.07)	No (0.08)	3
RAP	Shochet et al <sup>30</sup>	CT	Universal	124	No	—	Yes (0.48)	1
	Harnett and Dadds <sup>31</sup>	CT	Universal	96	No	No	No	1
	Shochet et al (unpublished)	CT	Universal	522	No	—	Yes (0.30)	1
	Shochet and Ham <sup>32</sup>	RCT	Universal	1629	No	—	Yes	1

\*The Best of Coping program,<sup>33-36</sup> *beyondblue* schools program,<sup>37</sup> MindMatters<sup>38</sup> and the NSW School-Link program<sup>39,40</sup> were identified in the review, but were not included in the table because no effectiveness or efficacy studies have been published with anxiety and depression outcomes. †Some effect sizes could not be calculated because of a lack of appropriate data. Where multiple effect sizes were possible, the largest effect size is reported. All calculations are between-group effect sizes, except Hannan et al,<sup>9</sup> which is a within-group effect size. ‡Follow-up only. §Post-test only. ¶Depression reduced in participants with high anxiety only. ACE = Adolescents Coping with Emotions. CT = controlled trial. CWD-A (Aust) = Adolescent Coping with Depression Course — Australian version. NCG = no control group. PPP (Aust) = Penn Prevention Program — Australian version. PSFL = Problem Solving For Life. RAP = Resourceful Adolescent Program. RCT = randomised controlled trial. ◆

**RESULTS**

Overall, 24 efficacy or effectiveness trials were identified, pertaining to nine Australian prevention or early intervention programs. Six of these programs were universal, two were indicated, and one was a treatment program. Based on the published descriptions of each program, Australian prevention and early intervention programs tend to be based on cognitive behaviour therapy (CBT), interpersonal therapy (IPT) or psychoeducation. Programs based on CBT tended to focus on the development of problem-solving and social skills, cognitive restructuring, relaxation, and assertiveness. The few programs based on IPT focused on improving social networks, role transitions, perspective-taking and conflict resolution.

The Box presents each program and its associated efficacy, effectiveness, and quality

data. Four additional programs were identified (*beyondblue* schools program, Best of Coping, MindMatters, and New South Wales School-Link program), but these have not yet released outcome data on measures of anxiety and depression. Thus, the effectiveness of these programs cannot yet be determined. Of the identified programs, most had been evaluated more than once: for example, Adolescents Coping with Emotions (3 trials); Aussie Optimism (3 trials); FRIENDS (7 trials); MoodGYM (2 trials); Problem Solving For Life (2 trials); and Resourceful Adolescent Program (RAP; 4 trials).

The single treatment program (Adolescent Coping with Depression Course) was methodologically weak (a controlled trial with a sample size of nine), and did not demonstrate a significant reduction in depression.

Of the six indicated trials, five targeted anxiety, and four of these were associated with short-term or long-term reductions in anxiety symptoms. Between-group effect sizes could be extracted from two of the four positive trials, and ranged from 0.24 to 0.57. Four indicated trials targeted depression, and of these, two were associated with significant reductions in depression. Seventeen trials were universal intervention trials, of which 10 targeted anxiety and all targeted depression. Of those targeting anxiety, six trials (all evaluating the FRIENDS program) reported lower anxiety immediately or at follow-up ( $d = 0.32-0.83$ ;  $n = 5$ ). Four trials of four other programs found no significant reductions. For depression, 10 of the 17 universal trials reported positive outcomes for depression ( $d = 0.21-0.82$ ;  $n = 8$ ), and seven did not.

Programs initially found to be unsuccessful tended to show improvements at follow-up. Twenty-one studies examined follow-up data, and of these, 14 were effective. The follow-up period ranged from 4 months to 4 years, with most trials only collecting follow-up data at one time point (6 or 12 months). Seven of the eight trials that reported 6-month follow-up results were successful ( $d = 0.24-0.66$ ;  $n = 4$ ), and six of the 11 studies that reported long-term follow-up results were effective ( $d = 0.21-0.63$ ;  $n = 4$ ). The programs with the strongest evidence for effectiveness were the FRIENDS program and RAP. The FRIENDS program, which includes booster sessions at 1 and 3 months after the conclusion of the program, accounted for four of the six successful 12-month follow-up trials. Two trials reported effectiveness for anxiety beyond 24 months — the FRIENDS (36 months)<sup>24</sup> and Aussie Optimism (30 months)<sup>14</sup> programs.

Findings did not vary systematically as a function of the quality of the trial, at least with respect to universal outcomes. If randomised controlled trials (RCTs) of universal programs alone are considered, 50% of trials targeting depression and 57% of trials targeting anxiety were associated with positive outcomes. Among indicated RCTs, 75% of trials for anxiety programs found positive effects, but no trials for depression programs reported symptom reduction.

Effectiveness did not appear to be influenced by the type of instructor. Six of the nine universal teacher-led trials were successful in reducing symptoms of anxiety or depression, compared with six of the eight researcher-led trials.

One trial (Penn Prevention Program — Australian version) had an attention control group, consisting of group activities that focused on an environmental problem important to the local community; this study did not find an effect on anxiety or depression. The remaining trials either had a wait-list control, in which control participants completed the program after the study, or a control group that did not participate in the intervention. Participants in these control groups tended to complete “usual” classes during the trial period. Such activity might be considered equivalent to an attention control condition, depending on the exact demand characteristics or type of material presented.

Overall, study quality was poor, with few studies reaching ratings of 3 or above (Box).

## DISCUSSION

### Summary of findings

A large proportion of Australian-based programs reported positive outcomes either immediately or at follow-up. The effect sizes for controlled trials varied from small (0.18) to moderate (0.83). About 80% of indicated anxiety programs and 50% of depression programs were associated with reductions in, respectively, anxiety and depression symptoms. Results for universal programs were similar, with improvements associated with 60% of programs for anxiety and 58% of those for depression. Effectiveness persisted for at least 6 months for some programs. Programs such as FRIENDS, which included booster sessions, reported positive outcomes at 12 months. Although the effect size and trial quality were variable, our findings provide strong support for mental health prevention and early intervention programs. Both indicated and universal approaches appear to produce short- to mid-term small to moderate reductions in anxiety and depression in schools.

Our conclusion differs somewhat from the more cautious support for prevention programs voiced by some researchers, based on Australian and international trials. These researchers have highlighted the need to establish effectiveness in routine practice.<sup>41</sup> However, our conclusion is consistent with that in a review of international research,<sup>42</sup> in which the findings from depression prevention programs were encouraging and similar for both targeted and universal prevention programs.

### Are we ready to disseminate these programs more widely?

Prevention and early intervention programs need to be assessed and evaluated against the standards issued by the Society for Prevention Research (SPR).<sup>43</sup> According to these standards, programs must fulfil particular requirements before they can be considered efficacious, effective or ready for broad dissemination.

The FRIENDS program appears to stand up well against the SPR standards. Seven Australian school-based trials of this program consistently showed efficacy and effectiveness across a range of samples, with successful implementation by both program developers and classroom teachers. The quality of the trials has also been very high, with five of the seven trials being RCTs. Psychometrically sound outcome measures were used in these trials,<sup>18,23</sup> as well as

parent and clinician ratings.<sup>16,18,23</sup> The FRIENDS program is further supported by its successful implementation with migrant students<sup>21,22</sup> and maintenance of treatment effects for up to 36 months.<sup>24</sup> It also offers extensive training and a variety of program manuals and evaluation tools.<sup>22</sup>

Some other programs approach the standards, but require more evaluation. The RAP has had several positive efficacy and effectiveness trials, with students' symptoms of depression successfully reduced. Long-term outcomes up to 12 months have been published. However, most trials have not been RCTs, so the efficacy of the program requires consolidation.

### Limitations

A number of the studies in our review were underpowered, with the consequence that effects may have been missed. Some of these non-significant interventions were associated with small to medium effect sizes, supporting this interpretation and indicating that outcomes may be more positive than the Box suggests. Many of the trials collected follow-up measurements at one time point only, so the longer-term effectiveness of these programs is unclear. In some cases, positive effects were evident at 6 months but, as no further data were collected, it is unclear how long these effects persisted.

We have grouped programs under the titles provided by the researchers, but the content and quality of these programs may have changed during their development. We were also unable to evaluate the effectiveness of newer “whole of school” approaches, as data from these programs have not yet been published.

### Conclusions

Australian researchers have developed various school-based prevention programs. A few highly developed programs, such as MindMatters and the *beyondblue* schools program, have yet to be evaluated for their effects on anxiety or depression. Nevertheless, programs exist on which to build interventions that are scalable and capable of wide dissemination. Trials of senior school-based programs are particularly needed, and must include adequate attention placebo comparisons. Indeed, there may be an opportunity to dovetail research on school-based alcohol and drug programs with the research on mental health programs, with each serving as an attention placebo control condition for the other. A further area of

## SYSTEMATIC REVIEW

investigation is the use of educational content to improve mental health. Although CBT programs constitute the bulk of the interventions, some psychoeducational materials might also be preventive.<sup>42</sup>

### COMPETING INTERESTS

Helen Christensen is a co-author of the MoodGYM program.

### AUTHOR DETAILS

Alison L Neil, BAppPsych(Hons), PhD  
Candidate

Helen Christensen, PhD, Professor and Director  
Centre for Mental Health Research, Australian  
National University, Canberra, ACT.

Correspondence: alison.neil@anu.edu.au

### REFERENCES

- 1 Council of Australian Governments (COAG). National action plan on mental health 2006–2011. [http://www.coag.gov.au/meetings/140706/docs/nap\\_mental\\_health.rtf](http://www.coag.gov.au/meetings/140706/docs/nap_mental_health.rtf) (accessed Jan 2007).
- 2 Sawyer MG, Arney FM, Baghurst PA, et al. Mental health of young people in Australia. Canberra: Australian Government Department of Health and Aged Care, 2000.
- 3 Boyd CP, Kostanski M, Gullone E, et al. Prevalence of anxiety and depression in Australian adolescents: comparisons with worldwide data. *J Genet Psychol* 2000; 161: 479-492.
- 4 Mrazek PJ, Haggerty RJ, editors. Reducing risks for mental disorders: frontiers for preventive intervention research. Washington, DC: National Academy Press, 1994.
- 5 Moher D, Jones A, Cook DJ, et al. Does quality of reports of randomised trials affect estimates of intervention efficacy reported in meta-analyses? *Lancet* 1998; 352: 609-613.
- 6 Jadad AR, Moore RA, Carroll D, et al. Assessing the quality of reports of randomized clinical trials: is blinding necessary? *Control Clin Trials* 1996; 17: 1-12.
- 7 Cohen JD. Statistical power analysis for the behavioral sciences. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum Associates, 1988.
- 8 Ralph A, Nicholson L. Teaching coping skills to depressed adolescents in high school settings. *Behav Change* 1995; 12: 175-190.
- 9 Hannan AP, Rapee RM, Hudson JL. The prevention of depression in children: a pilot study. *Behav Change* 2005; 17: 78-83.
- 10 Kowalenko N, Rapee RM, Simmons J, et al. Short-term effectiveness of a school-based early intervention program for adolescent depression. *Clin Child Psychol Psychiatry* 2005; 10: 493-507.
- 11 Sheffield JK, Spence SH, Rapee RM, et al. Evaluation of universal, indicated, and combined cognitive-behavioural approaches to the prevention of depression among adolescents. *J Consult Clin Psychol* 2006; 74: 66-79.
- 12 Quayle D, Dziurawiec S, Roberts C, et al. The effects of an optimism and lifeskills program on depressive symptoms in preadolescence. *Behav Change* 2001; 18: 194-203.
- 13 Roberts C, Kane R, Thomson H, et al. The prevention of depressive symptoms in rural school children: a randomized controlled trial. *J Consult Clin Psychol* 2003; 71: 622-628.
- 14 Roberts C, Kane R, Bishop B, et al. The prevention of depressive symptoms in rural school children: a follow-up study. *Int J Ment Health Promotion* 2004; 6(3): 4-16.
- 15 Mifsud C, Rapee RM. Early intervention for childhood anxiety in a school setting: outcomes for an economically disadvantaged population. *J Am Acad Child Adolesc Psychiatry* 2005; 44: 996-1004.
- 16 Dadds MR, Spence SH, Holland DE, et al. Prevention and early intervention for anxiety disorders: a controlled trial. *J Consult Clin Psychol* 1997; 65: 627-635.
- 17 Dadds MR, Holland DE, Laurens KR, et al. Early intervention and prevention of anxiety disorders in children: results at 2-year follow-up. *J Consult Clin Psychol* 1999; 67: 145-150.
- 18 Lowry-Webster HM, Barrett PM, Dadds MR. A universal prevention trial of anxiety and depressive symptomatology in childhood: preliminary data from an Australian study. *Behav Change* 2001; 18: 36-50.
- 19 Lowry-Webster HM, Barrett PM, Lock S. A universal prevention trial of anxiety symptomatology during childhood: results at 1-year follow-up. *Behav Change* 2003; 20: 25-43.
- 20 Barrett P, Turner C. Prevention of anxiety symptoms in primary school children: preliminary results from a universal school-based trial. *Br J Clin Psychol* 2001; 40: 399-410.
- 21 Barrett PM, Sonderegger R, Sonderegger NL. Evaluation of an anxiety-prevention and positive-coping program (FRIENDS) for children and adolescents of non-English-speaking background. *Behav Change* 2001; 18: 78-91.
- 22 Barrett PM, Sonderegger R, Xenos S. Using Friends to combat anxiety and adjustment problems among young migrants to Australia: a national trial. *Clin Child Psychol Psychiatry* 2003; 8: 241-260.
- 23 Lock S, Barrett PM. A longitudinal study of developmental differences in universal preventive intervention for child anxiety. *Behav Change* 2003; 20: 183-199.
- 24 Barrett PM, Farrell LJ, Ollendick TH, Dadds M. Long-term outcomes of an Australian universal prevention trial of anxiety and depression symptoms in children and youth: an evaluation of the friends program. *J Clin Child Adolesc Psychol* 2006; 35: 403-411.
- 25 Barrett PM, Lock S, Farrell LJ. Developmental differences in universal preventive intervention for child anxiety. *Clin Child Psychol Psychiatry* 2005; 10: 539-555.
- 26 O'Kearney R, Gibson M, Christensen H, Griffiths KM. Effects of a cognitive-behavioural internet program on depression, vulnerability to depression and stigma in adolescent males: a school-based controlled trial. *Cogn Behav Ther* 2006; 35: 43-54.
- 27 Pattison C, Lynd-Stevenson RM. The prevention of depressive symptoms in children: the immediate and long-term outcomes of a school-based program. *Behav Change* 2001; 18: 92-102.
- 28 Spence SH, Sheffield JK, Donovan CL. Preventing adolescent depression: an evaluation of the Problem Solving For Life program. *J Consult Clin Psychol* 2003; 71: 3-13.
- 29 Spence SH, Sheffield JK, Donovan CL. Long-term outcome of a school-based, universal approach to prevention of depression in adolescents. *J Consult Clin Psychol* 2005; 73: 160-167.
- 30 Shochet IM, Dadds MR, Holland D, et al. The efficacy of a universal school-based program to prevent adolescent depression. *J Clin Child Psychol* 2001; 30: 303-315.
- 31 Harnett PH, Dadds MR. Training school personnel to implement a universal school-based prevention of depression program under real-world conditions. *J Sch Psychol* 2004; 42: 343-357.
- 32 Shochet IM, Ham D. Universal school-based approaches to preventing adolescent depression: past findings and future directions of the Resourceful Adolescent Program. *Int J Ment Health Promotion* 2004; 6(3): 17-25.
- 33 Cotta A, Frydenberg E, Poole C. Coping skills training for adolescents at school. *Aust J Educ Dev Psychol* 2000; 17: 103-117.
- 34 Bugalski K, Frydenberg E. Promoting effective coping in adolescents 'at-risk' for depression. *Aust J Guid Coun* 2000; 10: 111-132.
- 35 Luscombe-Smith N, Frydenberg E, Poole C. Broadening social networks for girls and particularly boys: outcomes of a coping skills program. *Aust J Guid Coun* 2003; 13: 22-35.
- 36 D'Anastasi T, Frydenberg E. Ethnicity and coping: what young people do and what young people learn. *Aust J Guid Coun* 2005; 15: 43-59.
- 37 Burns J, Hickie I. Depression in young people: a national school-based initiative for prevention, early intervention and pathways for care. *Australas Psychiatry* 2002; 10: 134-138.
- 38 Wyn J, Cahill H, Holdsworth R, et al. MindMatters, a whole-school approach promoting mental health and wellbeing. *Aust N Z J Psychiatry* 2000; 34: 594-601.
- 39 Jones JE, Scanlon K, Raphael B, et al. Health and education working together: the New South Wales School-Link initiative. *Int J Ment Health Promotion* 2002; 4(4): 36-43.
- 40 Maloney D, Walter G. The contribution of "School-Link" to an Area Mental Health Service. *Australas Psychiatry* 2005; 13: 399-402.
- 41 Andrews G, Wilkinson DD. The prevention of mental disorders in young people. *Med J Aust* 2002; 177 (7 Suppl): S97-S100.
- 42 Merry S, McDowell H, Hetrick S, et al. Psychological and/or educational interventions for the prevention of depression in children and adolescents. *Cochrane Database Syst Rev* 2004; (1): CD003380.
- 43 Flay BR, Biglan A, Boruch RF, et al. Standards of evidence: criteria for efficacy, effectiveness and dissemination. *Prev Sci* 2005; 6: 151-175.

(Received 30 Jul 2006, accepted 11 Dec 2006) □