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Depression and anxiety programs for children and young people

Beyond
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An **Evidence Check** rapid review brokered by the Sax Institute for Beyond Blue.
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This report was prepared by:

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Depression and anxiety programs for children and young people

This report was prepared by Skvarc D, Varcoe J, Reavley N, Rowland B, Jorm A, Toumbourou JW

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Executive summary

Background

This document reported a systematic literature review of interventions (manualised programs and other services) that are implemented in childhood and adolescence with the aim of preventing anxiety and depression disorders and symptoms. The report was commissioned for Beyond Blue by the Sax Institute.

Review question

What programs or services for children and young people have been shown to be effective in the prevention of, and early intervention for, mild depression and anxiety?

Summary of methods

Evaluations of interventions implemented in the 0 to 18 age period were included based on rigourous randomised trial designs. Interventions were classified as: universal, where they are applied to an entire population; selective, where they target groups with elevated risk; and indicated, where they target individuals already showing signs or symptoms of anxiety or depression.[1] Early intervention encompasses both indicated preventive interventions and early case identification. [1]

In order to identify reviews of interventions with the primary aim of preventing mental health problems or promoting mental health, keyword and subject headings were searched on 1st October 2018 using online databases. The literature search identified 27 systematic reviews that were included in this overview.

A grey literature search was also completed within evidence-based program repositories to identify interventions that have been recommended for wider dissemination. Interventions were also identified from the included literature reviews.

Evidence grading

The AMSTAR 2 checklist was used to rate the quality of the 27 included systematic reviews: 8 were rated of high quality and 8 as moderate quality. A 'thumbs' rating system was also used to summarise the evidence for specific interventions, programs and services: 1 thumb up: There are at least 2 good studies showing evidence of effects. 2 thumbs up: 3 studies showing positive effects; 3 thumbs up: 4 or more evaluations showing positive effects.

Key findings

There is high-quality evidence of effectiveness for programs that prevent and intervene early in mild depression and anxiety in children and young people. The majority of the included reviews summarised evaluations examining school-based psychological interventions. Meta-analyses of these interventions revealed small significant post-intervention effects in preventing anxiety and depression. In some cases, effects persisted at follow-up.

Our search identified 11 manualised psychological interventions that met our inclusion criteria. In summary, seven psychological intervention programs were identified to have evaluation evidence according with a 2 or 3 thumb rating: Friends; the Penn Resiliency Program; the Coping with Stress Course; Promoting Alternative Thinking Strategies; Blues Program/ Blues Peer Group; CBT Bibliotherapy; and Interpersonal Psychotherapy Adolescents Skills Training. These programs are for the most part US based. A number of Australian manualised psychological interventions were included, however they had lower evidence ratings. Economic evaluations support school based psychological interventions, although the returns are lower than widely implemented health care interventions.

Six other programs were identified as having sufficient evidence to warrant a 2 or 3 thumb rating. These were: Coping Cat (👍👍👍); Families and Schools Together (👍👍); Physical activity interventions (👍👍); the Good Behaviour Game (👍👍); Mentoring (👍👍); and Online CBT (👍👍). All of these programs have been trialled in Australia. There are very positive economic evaluations for Coping Cat and the Good Behaviour Game.

Gaps in the evidence

We examined the settings and age groups in which interventions have been evaluated. We identified few interventions that have been evaluated in the pre-school age period. This may be an important age period to consider for future innovation in prevention programs.

To date, family-level interventions have had few evaluations. There is a need for increased innovation and evaluation to further trial family-level interventions, including in the pre-school setting.

Stirling et al [2] presented evidence that community-level factors related to insecurity and facing racial and other minority group discrimination make small but significant contributions to child and adolescent depression. Future program development and research should investigate community interventions to address these community-level risk factors.

A surprising finding was that the effects of bullying prevention programs on child internalising problems, anxiety and depression are unknown due to a lack of evaluation. Given that bullying prevention programs are theoretically linked to mental health benefits for both perpetrators and victims, future bullying prevention evaluations should investigate these effects.

The present review identified evaluations of physical activity interventions. However, there is evidence that other healthy lifestyle factors, such as good nutrition and sleep and avoiding substance misuse, may also contribute to adolescent mental health. [3, 4] Future program development and research should investigate the preventive benefits of child and adolescent healthy lifestyle interventions.

Our report identified a range of different types of interventions in varied age periods and settings. The range of interventions align with ecological theories arguing that multi-level factors contribute to child and adolescent anxiety and depression. Community-level interventions were identified that use coalition models to strategically integrate prevention services to address a range of risk and protective factors. At this stage there has been limited evaluation of the effects of these coalition models on child and adolescent internalising problems, anxiety or depression. Future program investment and evaluation should seek to establish whether community coalition models can offer a means of maximising prevention effects by improving the coordination of different interventions within settings.

The included reviews summarise a large number of randomised trials, the majority evaluating psychological interventions. Hetrick et al. [5] noted that few evaluations of the effects of psychological interventions have adopted active controls. Thus, evaluations completed to date cannot rule out the possibility that some of the changes seen in study participants may arise from being in the intervention arm of a trial or research study.

The review studies consistently identify heterogeneity of effects across psychological interventions. In some cases, heterogeneity is also evident when specific programs are evaluated (e.g. Penn Resiliency Program, FRIENDS, Interpersonal Psychotherapy). This suggests that future research is required to better understand the factors that explain variation in program outcomes (e.g. service delivery staff and setting, implementation fidelity monitoring). Variations in programs and implementation models should be competitively evaluated to distil critical components and superior models.

Although significant effects are evident for a number of programs at post-intervention, effects are typically smaller at follow-up. Future evaluations should investigate how to sustain longer-term intervention effects.

There is a need for further research to evaluate the most cost-effective approaches. In view of their potentially low cost, online universal programs may be a priority for further economic evaluation. There is an economic research gap in quantifying the long-term costs of depression and in providing ready access to pricing estimates of prevention programs for the Australian context.

Discussion of key findings

The most commonly evaluated strategy was universal psychological interventions implemented in primary and secondary school settings. There is consistent evidence for the efficacy of these interventions. It is noteworthy that many of the Australian school-based psychological intervention programs, have had less evaluation than the US based programs. As the Australian programs are similar in content to the US interventions, it seems reasonable that with further program development and evaluation in the Australian context, these programs should have the potential to consistently demonstrate effects.

In a number of cases, the Australian psychological intervention programs had weaker effects than their US counterparts. It is possible that the weaker effects may be partly related to differences in implementation models rather than program content. For example, a number of the Australian programs (Aussie Optimism, FRIENDS, Resourceful Adolescent Program) that were implemented by school staff had weak effects. To improve the evidence for Australian psychological interventions, future evaluations should competitively test the effects of different implementation models. For example, it may be feasible to test whether effects improve when psychologists, mental health staff and peer leaders implement programs.

The results of our review revealed that many of the intervention programs we identified tend to address one or two of the risk or protective processes that affect child and adolescent mental health. However, in order to achieve sustained prevention effects, it may be necessary to address multiple risk and protective processes. This evidence supports the implementation of a mixture of universal, selected and indicated prevention approaches within family, school and community settings. There is currently insufficient evidence to confidently identify whether universal, selected or indicated approaches are superior for the prevention of anxiety, depression or internalising problems. It is possible that the most effective approaches might involve a combination of intervention types being implemented within a school or community setting.

Recommendations

Based on the findings of this review, the following three recommendations were made:

1. That state and national authorities set aside funds to enable pilot studies to evaluate the effect of Australian school students receiving a minimum of one term of school-based psychological interventions in both late primary and early secondary school.
2. That Australian research agencies prioritise funds to support the evaluation of child and adolescent depression and anxiety prevention programs.
3. That in addition to school psychological interventions (Recommendation 1) funding be made available to evaluate the effect of a mixture of universal, selective and indicated prevention interventions being strategically implemented in different settings within health service regions.

Applicability

In summary, we evaluated the mixture of prevention interventions identified in this report to be applicable for implementation in Australia both in universal and targeted populations. Available evidence suggests that interventions to prevent anxiety, depression and internalising problems can be targeted to socioeconomically disadvantaged communities, and adapted for implementation in culturally and linguistically diverse communities. The available evidence also suggests that interventions can be successfully targeted to recruit youth in settings such as corrections institutions and health and mental health services.

Conclusion

A range of high quality systematic reviews were identified, and these studies demonstrated that prevention interventions have small but significant post-intervention effects in reducing anxiety, depression and internalising symptoms and disorders in children and adolescents. In total, 13 programs (7 school psychological interventions and 6 other programs [2 family, 2 school, and 2 community]) were identified with sufficient evidence to warrant a 2 or 3 thumb rating. The existing research is unable to detect consistent differences in effect sizes for universal, selective and indicated interventions. A number of gaps in knowledge were identified. We made three recommendations for disseminating prevention programs and for research to identify superior intervention models. Identifying models that can sustain effects over longer than 12-month follow-up periods is an important priority.

Background

Anxiety and depression are common mental disorders in Australian children and adolescents and contribute a considerable health burden.[6] This document reported a systematic literature review of interventions (manualised programs and other services) that are implemented in childhood and adolescence with the aim to prevent these mental disorders.

The report was commissioned for Beyond Blue by the Sax Institute as an Evidence Check review. Evidence Check reviews are designed to answer specific policy or program questions and are reported in a policy friendly format. The current review forms one of a series commissioned by Beyond Blue to support its policy reform agenda.

This literature review sought to identify:

- Programs and services that aim to prevent anxiety and depression and that have a strong evidence base for their effectiveness
- Other key programs or services that look promising but are not yet evaluated, where the evidence base is not yet known, or is not strong.

Prevention in developmental context

The substantial health, social and economic consequences of poor mental health emphasise the importance of using effective approaches to prevent disorders and promote mental health [7] Prevention refers to strategies or programs that avert or delay the onset, or severity of mental health problems.[1] Prevention responses were classified in the present report as: universal, where they are applied to an entire population; selective, where they target groups with elevated risk; and indicated, where they target individuals already showing signs or symptoms of anxiety or depression. Early intervention encompasses both indicated preventive interventions and early case identification.[1]

To identify prevention intervention opportunities, it is important to consider evidence of how depression and anxiety develop over the life course and what is known of the modifiable factors that contribute to these problems. In infants and young children, it is difficult to disentangle depression and anxiety and observers generally measure internalising symptoms (that combine observable anxious, fearful and sad behaviours). A large Australian longitudinal study [8] modelled parent reports of child internalising symptoms across eight study waves from age 3 to age 15 and identified 6 trajectories (sub-groups identifiable from common symptom patterns). These comprised: very low, low, moderate, high, decreasing, and increasing symptom pathways.

An analysis of parent and child-reported predictors [8] noted a number of factors that were theoretically implicated in the development of internalising trajectories. At the infant and toddler stage temperamental traits (inhibition/shyness, irritability) were early predictors for subsequent high or increasing internalising trajectories.[8] These findings accord with *neurobiological theories* of individual differences in child vulnerability to internalising that refer to influences that include biogenetic, parent and environmental factors.

Early child behaviour problems and parent-child relationship difficulties were also observed from the infant and toddler stage, as significant risk factors for subsequent high or increasing internalising trajectories. These findings accord with theories of *child-onset pathways* to emotional problems. Parent behaviour, family stress and mental health are known to influence child behaviour and relationship difficulties.[9-11]

Toxic stress risk process theories argue that stress and trauma experiences can impair neurobiological development early in the life course where children and young people have intense negative experiences (such as child maltreatment, peer bullying and family violence) that are maintained over time.[12] Toxic stress is a risk factor affecting cognitive and physical disability and child-onset mental health problems, including development of socio-emotional skills.[13-15]

Internalising problems, anxiety and depression are commonly observed to have different influences for girls compared to boys. Letcher et al. [8] noted the increasing pathway was much more common for girls and was influenced by *adolescent-onset risk processes*. Girls with temperamental reactivity and shyness who faced parenting and peer difficulties were more commonly on the increasing trajectories. For boys externalising problems were more prominent for the increasing trajectories.[8] These observations accord with *social development risk process theories* that argue that characteristics in peer and family social interactions influence child and adolescent pathways to depression. Anxiety triggers include actual and perceived threats of violence and trauma. Depression is known to be influenced by internalisation of actual and perceived social exclusion and negative social evaluation. *Cognitive risk process theories* emphasise thoughts as key drivers for emotional problems.

A follow-on study by Toumbourou et al.[16] noted that children high on parent-reported internalising symptoms had a greater probability of self-reporting high levels of depression symptoms in adolescence. Adolescent depression was observed to be influenced both by child-onset internalising problems, and by factors occurring in adolescence. These findings accord with life course theories that emphasise that adolescent emotional adjustment is influenced by childhood adjustment.

Toumbourou et al.[16] noted that adolescent depression was predicted both by child-onset internalising problems, but also by adolescent protective factors that included emotional competence and supportive parent and peer relationships (for girls). Letcher et al.[8] also reported that factors associated with recovery from elevated internalising symptoms included higher social competence, more positive parent and peer relations, and school adjustment. These findings accord with theories that *social emotional competence and social support act as protective processes* that assist in recovery from child and adolescent-onset emotional problems.

Using the same longitudinal dataset, Letcher et al.[17] completed a similar analysis of parent reported anxiety symptoms across 12 longitudinal study waves from age 4 months to age 17 years. Three anxiety symptom sub-groups were found, characterised by: low, moderate and high symptoms. The study found that there were important gender differences in high anxiety trajectories. For high anxiety boys (9% of boys), anxious and shy symptoms were observable by parents from age 5. The observation of child-onset pathways supports neurobiological theories that argue for individual differences in vulnerability to anxiety.

For girls, high anxiety trajectories were more common (15%) and showed elevations around puberty, with parenting and parent–child relationship factors more strongly associated with high anxiety in girls than boys. These findings support the operation of social development risk processes and social support protective processes in the emergence of anxiety through adolescence.

Shore et al. [18] conducted a systematic review and meta-analysis of longitudinal studies published between 2002 and 2015 that examined child and adolescent depression symptom trajectories. Twenty studies were included (n = 41,236) and depression symptom measures were harmonised to a common metric. A random pooled effects estimate identified 56% [95% CI 46 – 65%] of the sampled study populations on 'No or low' depressive symptom trajectories and 26% (CI 14 – 40%) on a 'Moderate' trajectory. 'High', 'Increasing', and 'Decreasing' depressive symptom subgroups were evident for 12% (CI 8 – 17%). Moderate symptoms were associated with poorer adjustment and outcomes relative to low symptom groups. 'High' or 'Increasing' trajectories were predominantly predicted by: female gender; low socioeconomic status; higher stress reactivity; conduct problems; substance misuse; and problems in peer and parental relationships. The

finding that substance misuse was associated with elevated trajectories is congruent with *lifestyle risk process theories* that emphasise health behaviour as an important component influencing emotional health.

The effect of peer relationships is congruent with *social development risk process theories*. Individuals with high depression symptoms are commonly found to cluster in peer settings such as school classrooms (e.g. Buttigieg et al., [19] Dishion and Tipsord [20] have argued that this is partly explained by peer contagion where "co-rumination" of pessimistic, critical and emotionally upsettling cognitions can contribute to emotional problems. Peer contagion influences are known to affect antisocial, suicidal and lifestyle risk behaviours and need to be monitored and managed in peer interventions and school and community settings.

The above findings, summarised from longitudinal studies, identify that there are different developmental settings (e.g. family, primary school, secondary school) that influence child internalising and child and adolescent anxiety and depression. In this report we use a settings approach to organise the existing evidence and to highlight gaps where there may be prevention opportunities.

Methods

Peer review literature

To identify reviews of interventions with the primary aim of preventing mental health problems or promoting mental health, keyword and subject headings were searched on 1st October 2018. We used EBSCOHost to search the following databases: Academic Search Complete, AMED - The Allied and Complementary Medicine Database, Applied Science & Technology Source, CINAHL Complete, E-Journals, Global Health, Health Policy Reference Center, Health Source - Consumer Edition, Health Source: Nursing/Academic Edition, MEDLINE Complete, PsycARTICLES, PsycEXTRA, Psychology and Behavioral Sciences Collection, PsycINFO, OpenDissertations.

To ensure the search was comprehensive, two search strategies were used. The following terms were included in the first search strategy: ((depress* OR anxi*) AND intervention* AND (community OR school-based OR universal) AND (adoles* OR youth OR child*)) AND (review OR meta*). The second search strategy used the terms: (("Mental health" OR "Mental health problem" OR "Mental wellbeing" OR "Emotional wellbeing")) AND ((Depressi* OR Affective OR Mood OR internal* OR anxie*)) AND (interventions or strategies or best practices). The following limits were applied for each strategy: Review articles; English language; published after January 2013; ages 18 years and younger. The reference lists of all the included studies were also scrutinised to identify any additional relevant studies. In addition, forward searches were also conducted for articles that cited included studies.

Interventions were organised to identify those that targeted universal, selected and indicated populations and early intervention opportunities.[1] Major intervention implementation settings were identified including family services, schools, and community settings including health and mental health services, corrections, and online services. Where possible we separated intervention outcomes for children aged 0 – 12 years (pre-school and primary school age) from those for young people aged 13 – 18 years (secondary school age). Outcome measures were organised to identify reductions in depression and or anxiety symptoms and disorders, and indicators of healthy functioning.

Evidence grading

We used the AMSTAR 2 checklist (https://amstar.ca/) to rate the quality of systematic reviews and meta-analyses. This checklist provides criteria to evaluate scientific quality based on 16 items that have high interrater reliability and validity).[21] The AMSTAR 2 provides criteria for assessing 'Yes' (full achievement with the qualities described) in each of the 16 items. For some items, definitions are also provided for 'Partial' achievement of qualities. Although the AMSTAR 2 is not formally scored, we assigned a numerical value of 1 for all items rated as a Yes and 0.5 for items rated as Partial.

Grey literature

We also conducted a concurrent search of grey literature. We formally searched Google Scholar. The following evidence-based program repositories were searched: Californian Evidence Based Clearinghouse for Child Welfare (CEBC: www.cebc4cw.org/program) under the headings Anxiety and Depression Treatment (Child & Adolescent); Washington State Institute for Public Policy (WSIPP: http://wsipp.wa.gov/BenefitCost?topicId=5); the What works for kids site, hosted by ARACY listed by Mental Health (http://whatworksforkids.org.au/programs); the online search facility available through the Substance Abuse and Mental Health Services Administration (SAMHSA: https://www.samhsa.gov/ebp-resource-center), using the search terms for "Mental health" and "Children and youth"; and previous what works resources completed for Beyond Blue.[22]

To rate the evidence for interventions we used the Thumbs rating that has been used previously in Beyond Blue 'what works' guides[22]:

👍	at least two good studies showing significant effects
👍👍	three studies showing significant effects
👍👍👍	four or more studies showing significant effects
👎	consistent evidence showing that the intervention does not work
?	not enough evidence to say whether or not the approach works

To be included in this review interventions had to have been evaluated via peer-reviewed literature.

A flowchart of the literature selection process is included as Appendix Figure A1. Search strategy one returned 37 peer reviewed literature review papers, while strategy two returned 465. The titles and abstracts identified from the two searches were combined. Manual scanning of titles and abstracts and elimination of duplicates yielded 25 papers that were identified for full text analysis. An additional 5 papers were identified through forward searching. After reading full texts, three papers were excluded[23-25] leaving 27 papers that were analysed using the AMSTAR 2 items.

Included studies

A summary table of the 27 papers that were analysed using AMSTAR 2 is presented as Appendix Table A1. Of the 27 reviews, 11 were rated as of low quality (AMSTAR 3.5 to 7.5). [26-36] The following,8 were rated as of moderate quality (AMSTAR 8 to 11) [37-44] and 8 were rated as of high quality (AMSTAR 11.5 to 15). [2, 5, 6, 45-49] We had senior authors complete a verification check on AMSTAR 2 ratings and all cited text for the 15% of review papers that we had most frequently cited. We found an 87% agreement in our AMSTAR 2 verification checks and no inaccuracies in the cited text and figures. The AMSTAR 2 inconsistencies did not change our categorisation of the papers we list above as high, moderate or low quality.

Program and service information was identified using two strategies. Firstly, the grey literature search identified interventions that had consistent evidence for effectiveness and in addition had been shown to be cost-effective.

Secondly, intervention details were identified from summaries and meta-analyses provided in the 27 literature reviews. As part of this process, intervention details were extracted from the evaluation study tables reported in the 27 included literature reviews. Across the 27 literature reviews, over 182 intervention evaluations were identified. Each of the evaluation studies was examined to identify: common names for the intervention programs; and effects on anxiety and depression. Where relevant this information was then added to the information gathered from the first two strategies.

To be included: interventions had to have documentation specifying how they were theoretically designed to prevent or address child and adolescent mental health problems; and one or more prior evaluations were required.

To judge the size of effects, we used Cohen's [50] criteria to determine small ($r < 0.30$, d or Hedges g < 0.30); medium ($r = 0.30$, d or Hedges g $= .50$); large ($r = 0.50$, d or Hedges g $= 0.80$); and very large ($r = 0.70$, d or Hedges g $= 1.30$) effect sizes. We evaluated effect sizes for relative risk ratios above 0.41 as small, from 0.40 to 0.25 as medium and below 0.25 as large. We evaluated Cox effect sizes under 0.28 as small, from 0.28 to 0.41 as medium and above 0.41 as large.

Conlict of Interest Management

In Appendix 2 we declare two intervention ratings where authors have involvement in the intervention management. Author Toumbourou has intellectual property responsibility for the management of the Resilient Families intervention. Authors Toumbourou and Reavley are Directors, and Rowland is the Chief Executive Officer of Communities That Care Ltd. We have managed these issues by non-conflicted authors verifying the statements we make regarding these interventions.

Findings

In what follows we present findings organised around developmental settings. In sourcing information, emphasis was given to the six reviews that received the highest AMSTAR rating. Additional details were then obtained from the lower-rated reviews and from the grey literature sources, where information was considered relevant.

In overview, there is evidence from rigorous evaluation studies that interventions have small, significant effects in preventing internalising, anxiety and depression in children and adolescents. The majority of the included reviews summarise evaluations examining school-based psychological interventions, however two reviews also summarise evidence for physical activity interventions. Both universal (school-based) and selective and indicated interventions in other settings have evidence for effects. Table 1 below presents an overview of findings for universal, selected and indicated programs organised within settings.

Table 1: Overview of evaluation evidence for programs organised within developmental settings

Settings	Age Period		
	Pre school	Primary	Secondary
Family	Home visiting[s,i] (👍) Triple P[u,s,i] (?) Exploring Together[s,i] (👍)	Triple P[u,s,i] (?) Exploring Together[s,i] (👍) Coping Cat[s,i] (👍👍👍) FAST (👍👍) Tuning in to Kids[u,s,i] (?) Strengthening Families[u,s,i] (👍)	Triple P[u,s,i] (?) Tuning in to Teens[u,s,i] (?) Resilient Families[u] (?)
School	Friends for Life[s,i] (👍👍)	Psychological interventions[u,s,i] (see text); Physical activity[u,s,i] (see text) Bullying Prevention[u] (?) Good Behaviour Game[u] (👍👍)	Psychological interventions[u,s,i] (see text) Physical activity[u,s,i] (see text)
Community	Communities for Children[s] (?)	Communities That Care[u] (?); Mentoring[s,i] (👍👍) Online CBT[u,s,i] (👍👍)	Communities That Care[u] (?) Mentoring[s,i] (👍👍) Online CBT[u,s,i] (👍👍)

NOTE:
👍 = positive effect in at least 2 evaluation trials
👍👍 = positive effects in 3 trials,
👍👍👍 positive effects in 4 or more trials,
? = Insufficient evidence to evaluate effects.
u = Universal intervention (targeting whole population)
s = Selective (targeting high risk groups)
i = Indicated intervention (targeting those with early symptoms).

Table 1 shows that there were no universal interventions identified in the pre-school period. Universal interventions become more common in the primary and secondary school age periods. A number of the

programs identified in Table 1 include universal, selective and indicated approaches. The information summarised in Table 1 is presented in more detail in the sections that follow.

Family setting

Eight prevention programs were identified that focussed service delivery on parents and families: Home visiting (👍); Triple P (?); Exploring Together (👍); Coping Cat (👍👍👍); FAST (👍👍); Tuning into Kids/ Teens (?); Strengthening Families (👍); and Resilient Families (?) All of these programs operate in Australia. One of these programs (Home visiting), focussed on vulnerable parents in the Pre-school period (prenatal and antenatal service delivery). The majority of programs (six) are delivered to Primary school students: Triple P (?); Exploring Together (👍); Coping Cat (👍👍👍); FAST (👍👍); Tuning into Kids (?); and Strengthening Families (👍). The Triple P (Positive Parenting Program) included variations suitable for parents with Pre-school, Primary and Secondary school children.

The evaluation evidence revealed small significant effects at post-intervention in reducing internalising (Home visiting, Exploring Together, FAST, Triple P, Strengthening Families) and depression symptoms (Resilient Families) and medium effects for anxiety symptoms (Coping Cat). **All of the effects were restricted to selective families and, hence at this point there is no evidence that family interventions can be used to achieve universal prevention effects.** A consistent finding was that effects were smaller at follow up assessments. For Triple P and Resilient Families evidence is limited to a single study. Information on the eight programs and their mental health impact is summarised in the sections that follow, and further details are provided in Appendix 2.

Family setting: pre-school period

Our search identified three family-level prevention programs implemented in the pre-school period: Family Home Visiting, Triple P and Exploring Together.

Family Home Visiting (👍) Identified in the WSIPP search. As a selective intervention these programs involve professional staff visiting the homes of vulnerable mothers with the aim of ensuring a healthy pregnancy and postnatal family environment. These programs seek to reduce toxic stress risk processes. The Washington Institute of Public Policy (WSIPP) evaluation [51] found good evidence for economic returns. Based on 2 included studies there were small significant effects in reducing child internalising problems (Cox effect size post-intervention = -0.048, follow-up = -0.035, 2 studies [k = 2]). We found no evidence for effects on child anxiety or depression.

Triple P (?) is the dominant parent education model in Australia and internationally. There are variations of this program for pre-school, primary and adolescent age groups. The program is based on behavioural theory and organised such that different levels of intervention intensity are tailored to the severity of child behaviour problems. At the universal level, parent education materials on different topics are disseminated using behavioural social marketing (i.e. key messages disseminated using posters, brochures and other media) to all parents. Level 4 interventions are the most intensive and involve parents receiving assistance in personalised or group format sessions.

The most rigorous independent systematic review and meta-analysis is that reported by the WSIPP, 2018[51] (details in Appendix 2). Reviews are available of the universal and Level 4 groups. For the universal program, none of the included evaluations examined effects on internalising problems, anxiety or depression. The WSIPP review of the Level 4 groups identified small significant effects in reducing child internalising problems based on 1 study (Cox effect size post intervention = -0.025 and at first follow-up = -0.018, k = 1). The WSIPP evaluations identify Triple P to be cost-effective, based on economic returns from reduced child neglect and externalising problems (e.g. conduct problems).

Exploring Together (👍). Identified as addressing internalising problems through the WW4K search. Ran as a selective group program addressing secure attachment and emotional competence protective factors by encouraging effective parenting in the childhood years. Two evaluations report effects on internalising problems. Hemphill & Littlefield, [52] found the program had medium-sized effects in reducing child internalising symptoms (d = 0.57).

Family setting: primary school age period

Triple P and Exploring Together were summarised under pre-school and include primary school programs.

Coping Cat (👍👍👍) Similar to Coping Koala according to WSIPP. Identified in the WSIPP search, this is a selective and indicated group intervention for families with children identified with high levels of anxiety. The program focusses on emotional competence protective factors. The WSIPP (2018) evaluation found good evidence for economic returns. Based on 13 studies, there are medium effects in reduced child anxiety symptoms (Cox effect size post-intervention = -0.414, first follow-up = -0.191).

Families and Schools Together: (FAST: 👍👍) was identified as addressing internalising problems through the Australian Research Alliance for Children and Young People (ARACY) What Works for Kids (WW4K) and WSIPP searches. This is a selective group parenting program that addresses secure attachment and emotional competence protective factors by encouraging effective parenting in the childhood years. It is run as an after school program targeting selected parents and managed by trained facilitators. The WSIPP (2018) meta-analysis revealed the program had small effects in reducing child internalising (Cox effect size post intervention = – 0.056 and at first follow-up = -0.041, k = 7). Despite preventive effects on internalising in seven studies, we downgraded our evaluation to two thumbs due to negative economic evaluation findings due to negative academic test scores in one study (see Appendix 2).

Tuning into Kids/ Tuning into Teens (?) was identified as addressing internalising problems through the WW4K search. This program addresses secure attachment and emotional competence protective factors by focussing on the emotional connection between parents and children. There is evidence that the program reduces child externalising problems, but no studies so far have reported effects on internalising problems.

Strengthening Families (👍) Identified as addressing internalising problems through the WW4K and WSIPP searches. Run as either universal or selective groups, the program addresses secure attachment and emotional competence protective factors by encouraging effective parenting in the childhood years. The WSIPP (2018) evaluation included two studies and found small significant effects in reducing internalising problems (Cox effect size post-intervention = - 0.129, first follow-up = -0.094, two studies). The program was also found to have positive economic returns.

Family setting: secondary school age period

Triple P and Tuning into Teens were summarised in earlier sections and include programs for adolescents. One program was identified that focussed on adolescents, Resilient Families.

Resilient Families (?) was identified as addressing internalising problems through the WW4K search. This program addresses secure attachment and emotional competence protective factors by encouraging authoritative parenting in the adolescent years. There is evidence from one evaluation that the program has small selective effects in reducing adolescent depression one-year post intervention in adolescents with moderate baseline symptoms, where families attended parent education events.[19]

School setting

Most of the included literature reviews evaluated psychological interventions implemented in the school setting. These are mostly based on cognitive behavioural therapy (CBT) and mindfulness practices but also include interpersonal interventions. **In summary, the school psychological interventions show small**

significant effects in reducing internalising, anxiety and depression symptoms at post-intervention, with smaller but significant effects maintained in a number of programs at follow-up.

In later sections we report on three additional universal interventions that have been evaluated in schools: physical activity, Bullying Prevention, and the Good Behaviour Game. Although we found limited evidence for Bullying Prevention, physical activity and the Good Behaviour Game were rated respectively as 2and 3 thumbs. In what follows we examine school interventions in different developmental settings: Pre-school, primary and secondary school.

Pre-school setting

We identified limited evaluations of prevention interventions implemented in the pre-school setting. One study reported an evaluation of a psychological intervention (Friends for life) that aggregated findings for pre-school and primary school students.[53]

FRIENDS for Life (👍👍) Identified in the review by Brunwasser and Garber [29] was implemented as a universal primary school program to prevent anxiety problems, with one study also reporting pre-school implementation. [53] The program is implemented by school staff. This program is based on CBT and seeks to reduce cognitive risk factors and increase emotional [4] competency protective factors. In studies completed in Australia, small significant effects were observed in preventing depressive symptoms at 6 –12-month follow-up (g = -0.24, CI - 0.34 to -0.14, k = 3), but not at post-intervention (g = -0.04, CI - 0.14 to 0.05, k = 4). There was significant heterogeneity between the studies. We were unable to source meta-analyses for effects on internalising problems or anxiety.

Primary and secondary school setting

School psychological interventions have been commonly implemented with both primary and secondary school age groups. In the sections that follows we overview the findings from the meta-analyses. The available evidence suggests school psychological interventions have small significant effects in preventing depression, anxiety and internalising, with similar effect sizes for primary and secondary school aged children.[49]

Stockings et al. [48] reported a series of meta-analyses of RCTs to examine preventive effects. Psychological (mostly school-based CBT) interventions were found to have significant medium sized effects at post-intervention in universal school populations (internalising Relative Risk [RR] = 0.39, CI 0.26 to 0.59, k = 9, N = 5115; anxiety RR = 0.25, CI 0.10 – 0.65, k=3, N=2023; and depression RR = 0.41, CI 0.24 – 0.69, k = 9, N = 5115). Effects were reduced at 6-9 month follow-up (internalising RR = 0.49, CI 0.37 to 0.64, k = 9, N = 1507,p < .05; anxiety RR = 1.10, CI = 0.45 – 2.51, k = 2, N = 1046, p = not significant; depression RR = 0.46, CI 0.35 – 0.62, k = 9, N = 1507,p < .05). At 12-month follow-up effects were not significant for internalising, anxiety or depression.

The Stockings et al. [48] review combined data from both primary and secondary school aged children (average age 12.6 years). Analyses were not provided to evaluate if effects were different by child age or when interventions were conducted in primary versus secondary school settings.

While not satisfying a number of the AMSTAR criteria, Corrieri et al. [30] evaluated primary and secondary school-based universal and targeted programs to prevent both anxiety and depression in children and adolescents. Pooled estimates showed small post-intervention effects for depression symptoms (d = -0.12, k = 19), with effects reduced at follow-ups at 6-months (d = 0.06, k = 5) and 10-30 months (d = -0.05, k= 8). For anxiety symptoms, effects were also small at post-intervention (d = -0.29, k = 6) and smaller at follow-up at 6-months (d = -0.10, k = 3) and 18-30 months (d = -0.05, k= 3). Corrieri et al. (2013)[30] did not analyse whether effects were different for interventions in primary versus secondary school settings.

In one of the higher rated reviews, Werner-Seidler at al.,[49] presented a meta-analysis that included 81 RCTs of primary and secondary school-based psychological prevention programs, 40 targeting depression, 24 anxiety, and 17 both outcomes. Pooled estimates revealed small effect sizes post intervention for both depression (g = 0.23, CI 0.19 to 0.28) and anxiety (g = 0.20, CI 0.14 to 0.25). Small significant effects were evident after 12-month follow-up for both depression (g = 0.11, CI 0.04 to 0.18) and anxiety (g = 0.13, CI 0.04 to 0.22). There was significant heterogeneity between studies.

Werner-Seidler et al., (p. 39) [49] found no significant effect size differences for school psychological interventions implemented in primary versus secondary school age groups. Child age did not explain significant heterogeneity in preventive effects for either depression or anxiety. The intervention effect sizes were similar at post-intervention and follow-up for depression and anxiety for children, early adolescents and older adolescents.

Werner-Seidler et al., (p. 39) [49] reported that externally delivered interventions were superior to those delivered by school staff for depression, but not for anxiety. A meta-regression analysis found that targeted (compared to universal) programs predicted larger effect sizes for the prevention of depression.

Kallapiran et al. [46] presented a series of meta-analyses evaluating the effects of psychological interventions based on mindfulness and acceptance and commitment therapy (ACT) interventions on anxiety symptoms. Fifteen RCTs were included 8 in non-clinical (universal) school samples. Mindfulness based stress reduction and mindfulness based cognitive therapy showed large and significant effects in reducing anxiety symptoms post-intervention when compared to non-active controls in nonclinical school populations (Hedges g = 0.96 CI 0.55 to 1.37, k = 3). There were insufficient studies to examine universal effects of ACT, however this intervention had a medium but non-significant effect on post-intervention depression when compared to active controls in clinical populations.

Moreno-Peral et al. [47] reviewed psychological and/ or educational interventions (mostly based on CBT) for their effects on anxiety in universal (non-clinical) populations. Meta-analysis revealed small post-intervention effects (d = −0.31 CI −0.40 to −0.21, p < .001, k = 29, n = 10,430). There was high heterogeneity. This meta-analysis combined findings across a range of settings and included both universal and selective samples.

In a review that rated high on AMSTAR criteria, Lawrence et al. [54] reported evaluations of selective and indicated psychological interventions to reduce anxiety. This review included 16 trials targeted to children and adolescents at risk of anxiety disorders. Targeting was based on family risk factors (e.g. parent anxiety disorder) or child risk factors (e.g. elevated anxiety symptoms, experiencing bullying). For the two trials reporting diagnostic outcomes, meta-analysis revealed significant effects post-program (RR = .09, CI .02 to .16) and at 12-month follow-up (RR = .31, CI .17 to .45).

Hetrick's et al., [5] Cochrane review evaluated the effects of psychological interventions (including cognitive behavioural therapy (CBT), interpersonal therapy (IPT) and third wave CBT)) in the prevention of depressive disorder in children and adolescents. Of the 83 trials that were included, 67 were in school settings, three in the community and four in mixed settings. Twenty-nine trials were carried out in universal (unselected) populations and 53 in targeted populations. Pooled analyses revealed small significant post-intervention effects (standardised mean difference SMD = -0.21, CI -0.27 to -0.15,p < .0001). Effects were maintained up to 4 to 12 months follow-up (SMD = -0.12, CI -0.18 to -0.05,p = .0002, k = 53, N = 11,913). The effect was no longer evident at the long-term follow-up. Hetrick et al's (2016) did not examine effect size differences for school psychological interventions implemented with primary versus secondary aged children.

Lee et al. [31] reported an economic evaluation of the cost-effectiveness of school-based psychological interventions to prevent depression. Their review found economic support for universal group-based interventions and indicated interventions delivered to students with subthreshold depression. Both

interventions were found to be cost-effective, however effects fell below the large returns achieved in a number of other widely implemented health interventions.

Given consistent evidence of heterogeneity (e.g. Hetrick et al.; Stocking et al.[5, 48]), there is an argument for specific reviews of the effects of discrete programs (e.g. Brunwasser & Garber [29]) In what follows we report effects for specific psychological interventions and further details are provided in Appendix 2.

In what follows, information from the Brunwasser and Garber meta-analyses[29] is merged with other information sourced from grey literature searching to provide details on 11 manualised psychological interventions. In summary, 7 psychological intervention programs were identified to have evaluation evidence according with a 2 or 3 thumb rating: Friends (described earlier under pre-school programs); the Penn Resiliency Program; the Coping with Stress Course; Promoting Alternative Thinking Strategies; Blues Program/ Blues Peer Group; CBT Bibliotherapy; Interpersonal Psychotherapy Adolescents Skills Training. An additional two programs were rated one thumb (Problem Solving for Life, Acceptance and Commitment Therapy), while two programs were rated as question mark (Aussie Optimism and the Resourceful Adolescent Program). Details of the above programs are provided in what follows, with further information provided in Appendix 2.

Penn Resiliency Program (👍👍👍) Identified in four of the included reviews.[5, 29, 37, 41] This is a manualised group CBT based intervention delivered universally to all students in late primary or secondary school or to universal, selected or indicated adolescent groups targeted in locations such as primary care clinics or ethnic community centres. This program seeks to reduce cognitive risk factors and increase emotional competency protective factors. Brunwasser & Garber's meta-analyses [29] show small significant effects in preventing depressive symptoms at post-intervention (g = - 0.08, CI - 0.15 to - 0.01, k = 13) and at 6-30 month follow-up (g = - 0.19, CI - 0.27 to - 0.11, number of studies [k] = 12). Evaluation findings show high heterogeneity, with two studies reporting negative effects. We were unable to source meta-analyses for effects on internalising problems or anxiety.

Coping with Stress Course (👍👍👍). Identified in two of the included reviews. [29, 40] This is a manualised group CBT based intervention delivered to selected secondary school age adolescents based on sub-clinical symptoms or targeted based on parents diagnosed with a depressive disorder in health care organisations. This program seeks to reduce cognitive risk factors and increase emotional competency protective factors. Brunwasser & Garber's meta-analyses[29] show medium sized significant effects in preventing depressive symptoms at post-intervention (g = - 0.33, CI - 0.47 to - 0.20, k = 4) and small effects at 12-33 month follow-up (g = - 0.18, CI - 0.32 to - 0.04, k = 4). We were unable to source meta-analyses for effects on internalising problems or anxiety.

Promoting Alternative Thinking Strategies (PATHS) (👍👍👍) Identified in the review by WSIPP. Implemented as a universal primary school program to prevent internalising and externalising problems. The program is implemented by school staff. It is based on CBT and seeks to reduce cognitive risk factors and increase emotional competency protective factors. The WSIPP (2018) meta-analysis [51] reported reductions in internalising (Cox effect size post-intervention = -0.015, follow-up = 0.000, k = 7). Effects on anxiety and depression were not included in the meta-analysis. The economic analysis shows high returns due to improved school outcomes.

Blues Program/ Blues Peer Group (👍👍👍) Identified in the review by Brunwasser & Garber [29] and in the WSIPP search. This is a manualised peer group intervention delivered to selected students with high (sub-clinical) depressive symptoms in secondary school. This program seeks to reduce cognitive risk factors, and increase emotional competency and social support protective factors. Brunwasser & Garber (2016) meta-analyses [29] show significant medium effects in preventing depressive symptoms at post-intervention (g = - 0.45, CI - 0.63 to -0.28, k = 3) and small significant effects at 6 - 24 month follow-up (g = - 0.21, CI - 0.38 to

-0.03, k = 3). There was low heterogeneity between the studies. There is also evidence that the intervention reduced depressive disorder after six months (OR = 0.12) and 24 months (OR = 0.53). Effects on internalising problems and anxiety are unknown. The WSIPP (2018, Program/537) meta-analysis found significant effects for major depressive disorder (Cox effect size post-intervention = -0.201, first follow-up = 0.000, k = 4). According to WSIPP this program is not cost effective.

CBT Bibliotherapy self-help using the Feeling Good Handbook (👍👍) Identified in the review by Brunwasser and Garber.[29] Selected secondary school students with high (sub-clinical) depressive symptoms were invited by researchers to complete the self-help Feeling Good Handbook. [55] This book is based on CBT and seeks to reduce cognitive risk factors, and increase emotional competency protective factors. Brunwasser & Garber meta-analyses [29] show significant effects in preventing depressive symptoms at post-intervention (g = - 0.18, CI - 0.36 to 0.002, k = 3) and at 6 - 24 month follow-up (g = - 0.25, CI - 0.43 to -0.07, k = 3). There was low heterogeneity between the studies. The trials demonstrated effectiveness as youth were offered minimal guidance from the research team. We were unable to source meta-analyses for effects on internalising or anxiety.

Interpersonal Psychotherapy-Adolescents Skills Training (👍👍). Identified in the review by Brunwasser and Garber. [29] Implemented as a universal secondary school program with an indicated group component for students identified with high (non-clinical) depression symptoms. The program teaches communication and social skills and seeks to reduce social development risk factors and increase social support protective factors. Brunwasser & Garber meta-analyses show significant medium effects in preventing depressive symptoms at post-intervention (g = - 0.49, CI - 0.71 to -0.28, k = 3) and small significant effects at 3 - 18-month follow-up (g = - 0.24, CI - 0.46 to -0.01, k = 3). There was significant heterogeneity between the studies. There is evidence in one evaluation that the intervention reduced depressive disorder after six months. One trial found significant effects (effectiveness evidence) where the curricula was implemented by trained group leaders. Effects on internalising problems and anxiety were not included in the meta-analysis.

Problem Solving for Life (👍) Identified in the review by Brunwasser and Garber .[29] Implemented as a universal secondary school program with an indicated group component for students identified with high (non-clinical) depression symptoms. The program is implemented by school staff. It is based on CBT and seeks to reduce cognitive risk factors and increase emotional competency protective factors. Brunwasser & Garber meta-analyses [29] show small significant effects in preventing depressive symptoms at post-intervention (g = - 0.19, CI - 0.28 to - 0.11, k = 2) and non-significant effects at 12 - 33 month follow-up (g = 0.03, CI - 0.06 to - 0.12, k = 2). There were no effects on depressive disorders. The programs were delivered by teachers and hence represent an effectiveness trial. We were unable to source meta-analyses for effects on internalising problems or anxiety.

Acceptance and Commitment Therapy (ACT) (👍) Identified in the WSIPP search, a number of studies have evaluated this form of psychological intervention. ACT encourages participants to pursue their activities without being dominated by their emotions. The WSIPP report (2018, Program/757) revealed ACT in adolescent groups resulted in medium effects for major depressive disorder (Cox effect size post-intervention = -0.281, first follow-up = 0.000, k = 2, One thumb) and large effects for anxiety disorders (Cox effect size post-intervention = -0.450, first follow-up = 0.208, k = 1, WSIPP,2018, Program/756).

Aussie Optimism Program (?) Identified in two of the included reviews.[29, 37] This is a manualised group CBT based intervention delivered universally by school teachers to late primary or early secondary school students. This program seeks to reduce cognitive risk factors, and increase emotional competency and social support protective factors. Brunwasser & Garber meta-analyses [29] show non-significant effects in preventing depressive symptoms at post-intervention (g = - 0.09, CI - 0.19 to 0.01, k = 3) or at 9 month follow-up (g = -

0.03, CI - 0.13 to 0.08, k = 3). There is some heterogeneity between the studies. We were unable to source meta-analyses for effects on internalising problems or anxiety.

Resourceful Adolescent Program (RAP) (?). Identified in the review by Brunwasser and Garber [29] and in the WW4Ks search. Implemented as a universal secondary school program. The program is based on CBT and seeks to reduce cognitive risk factors and increase emotional competency protective factors. Brunwasser & Garber meta-analyses [29] show non-significant effects in preventing depressive symptoms at post-intervention (g = - 0.05, CI - 0.25 to 0.15, k = 2) or at 6 - 12 month follow-up (g = 0.12, CI - 0.004 to 0.25, k = 3). There is significant heterogeneity between the studies. We were unable to source meta-analyses for effects on internalising problems or anxiety.

In addition to psychological interventions, our search also identified three other universal school programs that have been evaluated for preventive effects in primary and secondary school populations: Physical activity, Bullying prevention and the Good Behaviour Game.

Physical activity interventions (👍👍) Identified in the reviews by Stockings et al [48] and Brown et al.[45] This is a group of interventions that have been implemented and evaluated by researchers as whole school interventions or in selective and indicated populations. These programs seek to reduce biological risk factors and enhance healthy lifestyle protective factors.

Stockings et al. [48] found that universal physical activity interventions had medium to large sized significant effects at post-intervention for: internalising (RR = 0.39, CI 0.26 to 0.59, k = 9, N = 5115); anxiety (RR = 0.25, CI = 0.10 to 0.65, k=3, N=2023); and depression (RR = 0.41, CI 0.24 – 0.69, k = 9, N = 5115). Smaller significant effects were maintained at 6 - 9 month follow-up for internalising (RR = 0.47, CI = 0.37 to 0.60, k = 10, N = 1915); and depression (RR = 0.45, CI 0.35–0.58, k = 10, n = 1915); but were not significant for anxiety (RR = 1.10, CI = 0.45 – 2.51, k = 2, n = 1046). Effects were non-significant at 12-month follow-up for internalising, anxiety or depression.

Brown et al. [45] also reviewed the effect of physical activity interventions in reducing depressive symptoms. The nine included studies incorporated both universal school interventions, and selective interventions implemented in varied settings including youth in prisons, in a socioeconomically disadvantaged school, from a Hispanic community and for youth with problems of obesity. The overall pooled effect showed a small but significant decrease in depression for the intervention relative to control groups (Hedges' g = - 0.26, SE = 0.09, 95% CI = -0.43, -0.08, p = .004, n = 281). Analysis revealed significant heterogeneity across the included studies. The two universal studies completed in schools showed the weakest effects. Despite there being a sufficient number of studies to warrant a higher rating, we downgraded our rating to 2 thumbs due to a lack of evaluation information as to which specific physical activity program should be implemented.

Bullying Prevention (?) Identified through the search of the WW4K site. The Olweus Bullying Prevention Program has been the most widely evaluated. Programs of this type seek to reduce social development and toxic stress risk factors. Although preventing bullying should theoretically have mental health benefits for both perpetrators and victims, the effects on internalising problems, anxiety and depression are unknown due to a lack of evaluation.

Good Behaviour Game (👍👍) This program was identified in the WSIPP search and uses classroom management strategies to reduce peer antisocial behaviour. In this way it reduces social development and toxic stress risk processes and increases social support protective processes. WSIPP (2018) meta-analyses showed small effects in preventing anxiety disorder (Cox effect size post-intervention = – 0.089 and first follow-up – 0.041, k =3) and major depressive disorder (Cox effect size post-intervention = – 0.118 and first follow-up – 0.000, k =3). WSIPP (2018) economic evaluations are highly favourable.

Community setting

A number of interventions implemented in community-settings to prevent and manage anxiety and depression show significant small to large effects for primary and secondary school age children, but have not been evaluated in pre-school age groups. Most evaluations have examined psychological interventions and physical activity. Mentoring also shows significant effects.

A number of the psychological and physical activity interventions that are implemented in schools are also implemented with selected or indicated samples in community settings, such as health care organisations, community centres and correctional institutions. Of the 11 included psychological interventions that were implemented in primary or secondary schools, 3 were also evaluated as selective or indicated interventions in community settings: the Penn Resiliency Program (👍👍👍); Coping with Stress Course (👍👍👍); and Friends (👍👍).

Stockings et al. [48] reported a series of meta-analyses evaluating the prevention effects for psychological and physical activity interventions in selected populations. Effects were of a similar magnitude to those reported above for the universal psychological interventions implemented in primary and secondary schools.

Stirling et al. [2] reported a meta-analysis of the effect of community-level factors on child and adolescent depressive symptoms. This review found that low community safety and community minority ethnicity and discrimination were small but significant risk factors for depressive symptoms in school-aged children. Community disadvantage showed overall risk effects and community connectedness was protective, however these effects were indirect and explained by other risk factors. Of the included studies, three were evaluations of community interventions that aimed to reduce the effects of socioeconomic disadvantage (neighbourhood relocation, obtaining casino income for an Indian reservation and microfinance for children that had lost a parent to AIDS). Meta-analysis showed these interventions achieved small but non-significant reductions in child and adolescent depressive symptoms ($d = 0.127$, $N = 1903$, $p = .055$, $k = 3$). The Stirling review was unable to identify evaluations of community interventions targeting the more direct risk factors of low safety and discrimination.

Community setting: pre-school age period

The identification of interventions at the individual, school, family, and community levels is in line with ecological theories of the reciprocal developmental influences that contribute to child and adolescent anxiety and depression. The two interventions below are community coalition models that seek to strategically integrate prevention strategies to address multiple risk and protective factors to maximise the effectiveness of prevention interventions.

Communities for Children (?) Identified in the WW4K search. This is a community intervention that supports coalitions in disadvantaged Australian communities to implement effective child development programs. Evaluations show this model improves the coordination and implementation of evidence-based practices within targeted geographic service regions. However, effects in preventing child internalising problems, anxiety or depression are unknown. The cost effectiveness of this program is unknown.

Community setting: primary and secondary school age period

Communities That Care (?) Identified in the WW4K and WSIPP searches. This is a manualised community intervention that supports community coalitions to assess risk and protective factors for children and adolescents and to use this data to select and implement effective prevention programs. Effects in preventing internalising problems, anxiety or depression are unknown. According to WSIPP this program is cost effective due to positive effects in increasing the implementation of effective prevention programs and preventing tobacco use, and crime and increasing school completion.

Two additional interventions were identified that are implemented in the primary and secondary school age period: Mentoring and Online CBT. These interventions are described in the following sections and were evaluated as 1 and 2 thumbs respectively.

Mentoring for children with disruptive behaviour disorders (👍) This program was identified in the WSIPP search. An adult provides guidance and support to a child with behavioural problems. In this way it reduces social development risk processes and increases social support protective processes. WSIPP (2018) meta-analyses showed very large effects in preventing internalising symptoms (Cox effect size post-intervention = – 0.746 and first follow-up – 0.544, k = 2).

Online cognitive behavioural therapy (👍👍) Identified in the WSIPP search. This is an interactive online CBT program for children with high levels of anxiety. According to WSIPP this program had significant small to medium prevention post-intervention effects, that reduced at follow-up (Cox effect size anxiety disorders post-intervention = -0.439, first follow-up = -0.203, k = 5. Major depression post-intervention and first follow-up = 0.000, k = 1). The effects on internalising problems are unknown. This intervention was evaluated as cost effective (Benefits minus cost $US7,599). Although there are effects in more than four evaluations, we downgraded our rating to 2 thumbs as evaluations are not yet specific as to the programs to be implemented. Three online program options are listed in Appendix 2.

Gaps in the evidence

We examined the settings and age groups where interventions have been evaluated. Table 1 revealed limited interventions that have been evaluated in the pre-school age period. This may be an important age period to consider for future innovation in prevention programs.

To date family level interventions have had few evaluations relative to psychological interventions. There is a need for increased innovation and evaluation to further trial family level interventions. As child onset internalising symptom pathways are known to be influenced by family risk factors in the perinatal age period (0 - 2 years), it is important to further evaluate family interventions in the pre-school setting.

Our thumb ratings were based on evidence for impacts on internalising problems, anxiety and depression. In the family intervention Triple P, the one thumb rating was incongruent with the high economic returns for the prevention of problems such as child neglect and externalising behaviour. These findings reinforce the priority for further mental health evaluation of family interventions that are known to be effective in preventing other child and adolescent problems.

Stirling et al. [2] presented evidence that community level factors related to insecurity and facing racial and other minority group discrimination make small but significant contributions to child and adolescent depression. Future program development and research should investigate community interventions to address these community level risk factors.

A surprising finding was that the effects of bullying prevention programs on child internalising problems, anxiety and depression are unknown due to a lack of evaluation. Given that bullying prevention programs are theoretically linked to mental health benefits for both perpetrators and victims, future bullying prevention evaluations should investigate these effects.

The present review identified evaluations of physical activity interventions. However, there is evidence that other healthy lifestyle factors, such as good nutrition and sleep, and avoiding substance misuse, may also contribute to adolescent mental health.[3] [4] Future program development and research should investigate the preventive benefits of child and adolescent healthy lifestyle interventions.

Our report identified a range of types of interventions in varied age periods and settings. The range of interventions align with ecological theories arguing that multi-level factors contribute to child and adolescent anxiety and depression. Community level interventions were identified that use coalition models

to strategically integrate prevention services to address a range of risk and protective factors. At this stage there has been limited evaluation of the effects of these coalition models on child and adolescent internalising problems, anxiety or depression. Future program investment and evaluation should seek to establish whether community coalition models can offer a means of maximising prevention effects by improving the coordination of different interventions within settings.

The included reviews summarise a large number of randomised trials, the majority evaluating psychological interventions. Hetrick et al, [5] argued that future evaluations of the effects of psychological interventions should adopt active controls. Evaluations completed to date cannot rule out the possibility that some of the change seen in study participants may arise from being in the intervention arm of a trial or research study.

The review studies consistently identify heterogeneity of effects across psychological interventions. In some cases, heterogeneity is also evident when specific programs are evaluated (e.g. Penn Resiliency Program, FRIENDS, Interpersonal Psychotherapy). This suggests that future evaluation research is required to better understand the factors that explain variation in program outcomes (e.g. service delivery staff and setting, implementation fidelity monitoring). Variations in programs and implementation models should be competitively evaluated to distil critical components and superior models.

Although significant effects are evident for a number of programs at post-intervention, effects are typically smaller at follow-up. Future evaluations should investigate how to sustain longer-term intervention effects.

Lawrence et al [54] identified the need for further research to evaluate the most cost-effective approaches. Their review identified online universal programs to be a priority for further economic evaluation, in view of their potentially low implementation cost.

We noted in a number of cases the WSIPP economic evaluations[51] estimate relatively small economic benefits for the prevention of internalising problems and depression, while preventing school problems are estimated to have large long-term economic returns (see Appendix 2 for - Families and Schools Together, Blues Program/ Blues (Peer) Group, and Acceptance and Commitment Therapy for depression). The WSIPP estimates also factor in costs that are specific to the Washington State service context (e.g. agency health care returns for treating child anxiety). These observations suggest that there is an economic research gap in quantifying the long-term costs of depression and in providing ready access to pricing estimates of prevention programs for the Australian context.

Discussion

In overview, this report has identified that there is high quality evidence to answer the question: What programs or services for children and young people have been shown to be effective in the prevention of, and early intervention for, mild depression and anxiety?

The finding that prevention 'works' aligns with recent international reports that advocate for increased implementation of mental health promotion.[7] Our review found that the most commonly evaluated strategy was universal psychological interventions implemented in primary and secondary school settings. Our first recommendation is based on consistent evidence for the efficacy of school-based psychological interventions.

Recommendation 1: That state and national authorities set aside funds to enable pilot studies to evaluate the effect of Australian school students receiving a minimum of one term of school-based psychological interventions in both late primary and early secondary school.

On average the effective programs involve around 10 classroom sessions;[5] hence we recommend evaluating the effect of students receiving at least this number of sessions during their late primary and early secondary school years.

Making available specific funding support to purchase prevention programs could initiate a market to support the dissemination of effective programs. Funding support to purchase prevention programs could also come with a requirement to monitor and achieve agreed student mental health targets. The evaluations of the 11 psychological intervention programs identified in this report include systems for monitoring student mental health outcomes.

Of the 11 manualised psychological interventions that are implemented in primary and secondary schools, 7 were identified to have evaluation evidence according with a 2 or 3 thumb rating: Friends; the Penn Resiliency Program; the Coping with Stress Course; Promoting Alternative Thinking Strategies; Blues Program/ Blues Peer Group; CBT Bibliotherapy; and Interpersonal Psychotherapy Adolescents Skills Training. It was noteworthy that despite there being a number of Australian school-based psychological intervention programs, the 2 and 3 thumb ratings were mostly achieved by the USA-based programs.

As the Australian programs are similar in content to the US interventions, it seems reasonable that with further support for program development and evaluation Australian programs, such as Aussie Optimism and the Resourceful Adolescent Program, should have the potential to consistently demonstrate positive effects.

It is possible that the weaker effects reported in the Australian programs may be partly related to differences in implementation models, rather than program content. A number of the Australian programs (Aussie Optimism, Friends, Resourceful Adolescent Program) that were implemented by school staff had either non-significant effects, or effects that were not sustained at follow-up (Friends). Given that the Werner-Seidler at al. review [49] found that externally-delivered interventions were superior to those delivered by school staff for depression, it is important for Australian psychological interventions to conduct outcome and economic evaluations to test the effects of different implementation models and staffing. These considerations lead us to our second recommendation.

Recommendation 2: That Australian research agencies prioritise funds to support the evaluation of child and adolescent depression and anxiety prevention programs.

With research funding support it will be feasible to test whether the effects of school psychological interventions improve, while maintaining economic benefits, when psychologists, mental health staff or peer leaders (i.e. blues group) implement programs.

In areas other than psychological interventions, six programs were identified as having sufficient evidence to warrant a two or three thumb evaluation. These were: Coping Cat (👍👍👍); Families and Schools Together (👍👍); Physical activity interventions (👍👍); the Good Behaviour Game (👍👍); Mentoring (👍👍); and Online CBT (👍👍).

Table 1 identified six family programs that were evaluated with a question mark or 1 thumb: Home visiting; Triple P; Exploring Together; Tuning into Kids/ Teens; Strengthening Families; and Resilient Families. Prioritising prevention research funds would enable further refinement and evaluation of prevention programs in the family setting.

The evidence summarised in this review supports the implementation of a mixture of universal, selected and indicated prevention approaches within the family, school and community settings. There is currently insufficient evidence to confidently identify a superior approach to the prevention of anxiety, depression or internalising. Werner-Seidler et al. [49] presented subgroup analyses that suggested universal psychological intervention programs for depression prevention had smaller effect sizes at post-test relative to selected and indicated programs. For anxiety, effect sizes were comparable for universal and selected and indicated programs. In contrast, Stockings et al. [48] found larger reductions in depressive disorders for universal preventions compared to selective and indicated prevention. It is possible that the most effective approaches might involve a combination of intervention types being implemented within the family, school and community settings.

A common finding identifed in our review, relevant to both psychological interventions and other program evaluations, is that effects tended to diminish in size over time. One explanation for this phenomenon may be found in the complex range of risk and protective processes that we summarised in the introduction that operate in different settings to influence child- and adolescent-onset internalising, anxiety and depression trajectories. The results of our review revealed that many of the intervention programs that we identified in Table 1 tend to address one or two of the risk or protective processes we outlined in the introduction. However, in order to achieve sustained prevention effects, it may be necessary to address multiple risk and protective processes.

A common finding in public health is that risk and protective factors do not operate in isolation and hence, population behaviour change is more likely to be achieved where efforts to address risk processes are reinforced at different age periods and across diverse settings.[3] These considerations lead to our third recommendation.

Recommendation 3: That in addition to school psychological interventions (Recommendation 1) funding be made available to evaluate the effect of a mixture of universal, selective and indicated prevention interventions being strategically planned for implementation in different settings within health service regions.

In line with ecological theories, the present report identified evidence for a range of different types of interventions in varied age periods and settings. Future program investment and evaluation should seek to evaluate whether community coalition models can offer a means of maximising prevention effects by improving the coordinated implementation and evaluation of different interventions in family, school and community settings within specific geographic service regions.

Table 1 identifies two community coalition models that currently operate across Australia. To date evaluations show that these coalition models are effective at improving the coordination and implementation of evidence-based practices within targeted geographic service regions. Currently there has been insufficient evaluation to identify whether these models contribute to community-level prevention of child and adolescent internalising problems and anxiety and depression.

Given the ecological context of risk and protective factors, it is feasible that community coalition models can make a valuable contribution to the strategic planning and implementation of prevention services within a geographic region. It is likely that increasing such services will improve not just mental health outcomes, but also prevent problems in other areas related to physical health and health behaviour, crime and violence, and failure to engage in education and employment.[56]

Applicability

In summary, we evaluated the mixture of prevention interventions identified in this report to be applicable for implementation in Australia both in universal and targeted populations. Available evidence suggests that interventions to prevent anxiety, depression and internalising problems can be targeted to socioeconomically disadvantaged communities [2] and culturally and linguistically diverse communities.[48] The available evidence suggests that interventions can be successfully targeted to selective and indicated groups including youth in corrections institutions and recruited from health and mental health services. [48]

Conclusion

A range of high quality literature reviews were identified and these studies demonstrated that preventive interventions have small but significant post-intervention effects in reducing anxiety, depression and internalising problems in children and adolescents. In total, 13 programs (7 school psychological interventions and 6 other programs 2 family, 2 school, and 2 community]) were identified with sufficient evidence to warrant a 2 or 3 thumb rating. The existing research is unable to detect consistent differences in effect sizes for universal, selected and indicated interventions. A number of gaps in knowledge were identified. We made three recommendations for disseminating prevention programs and for research to identify superior intervention models. Identifying models that can cost-effectively integrate prevention services to sustain effects over longer than 12-month follow-up periods is an important priority.

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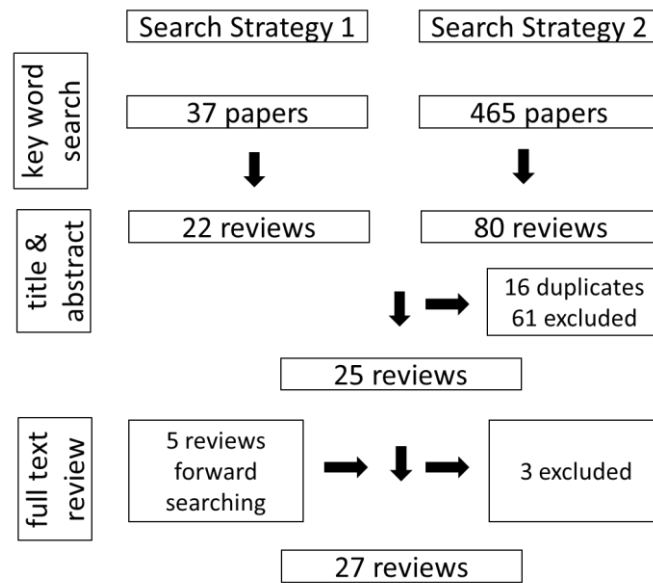
Appendix 1

Figure A1: Flowchart of the literature selection process

Table A1: AMSTAR ratings for the 27 included studies

Citation	AMSTAR Total	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Ahlen et al. (2015)[37]	10	1	0	1	1	1	1	0	1	0	0	1	0	0	1	1	1
Bennet et al. (2015)[27]	6	1	1	1	1	0	1	0	0.5	0	0	N/A	N/A	0	N/A	N/A	1
Brown et al. (2013)[45]	13.5	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1
Brownlee et al. (2013)[28]	6	1	1	1	1	0	0	0	0	1	0	N/A	N/A	1	N/A	N/A	0
Brunwasser et al. (2016)[29]	5.5	1	0	1	1	0	0	0.5	0	0	0	1	0	0	0	0	1
Clarke et al. (2015)[38]	10	1	1	1	1	1	1	0	1	1	0	N/A	N/A	1	N/A	N/A	1
Corrieri et al. (2013)[30]	6.5	1	0	1	1	0	0	1	1	0	0	0.5	0	0.5	0.5	0	1
Fleming et al. (2014)[36]	5.5	1	0	1	1	1	1	0	1	0	0	N/A	N/A	NA	NA	0	0
Franklin et al. (2017)[39]	10.5	1	0	1	1	1	1	0	0.5	1	0	1	1	1	0	1	0
Sanchez-Hernandez et al. (2014)[34]	3.5	1	0	1	1	0	0	0	1	0	0	N/A	N/A	0	N/A	N/A	0
Hetrick et al. (2015)[40]	11	1	1	1	1	1	1	0	0.5	1	0	1	1	0	1	0	1
Hetrick et al. (2016)[5]	15	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
Kallapiran et al. (2015)[46]	13.5	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1
Kohut et al. (2017)[26]	7	1	0	0	1	1	1	1	1	0.5	0	N/A	N/A	0.5	N/A	N/A	1
Lawrence et al. (2017)[54]	12.5	1	1	1	1	1	1	0	1	1	0	1	1	0	0.5	1	1
Lee et al. (2017)[31]	6	1	0	1	1	1	1	0	1	0	0	0	0	0	0	0	0

Citation	AMSTAR Total	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Moola et al. (2014)[32]	4	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1
Moreno-Peral et al. (2014)[47]	14	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
Mychailyszyn et al. (2017)[33]	7.5	1	1	1	1	0	0	0	1	0	0	1	0	0	1	1	1
Rasing et al. (2017)[41]	10	1	1	1	1	0	0	1	1	0	1	1	0	0	1	0	1
Sandler et al. (2014)[35]	6	0	1	1	1	1	0	0	1	0	0	0	0	0	0	0	1
Stirling et al. (2015)[2]	14.5	1	1	1	1	1	1	1	1	0.5	1	1	1	0.5	1	0.5	1
Stockings et al. (2016)[48]	11.5	1	1	1	1	0	1	0	0.5	1	0	1	1	1	1	0	1
Tyrer et al. (2014)[42]	8	1	1	1	1	0	1	0	1	0	0	1	0.5	1	0	0	0
van Genugten et al. (2017)[43]	10	1	1	1	1	1	1	0	0	0	1	0	1	0	1	1	0
van Zoonen et al. (2014)[44]	8	1	0	1	1	0	0	0	0.5	0.5	1	1	1	0	1	0	0
Werner-Seidler et al. (2017)[49]	12.5	1	1	1	1	1	1	0	1	1	1	1	1	1	0	0.5	0

Note: AMSTAR2 Criteria. A1= Review includes evaluations with control groups of interventions with children or adolescents to prevent anxiety or depression. 1 = Yes. A2 = Review states that the methods were established prior to the conduct of the search and extraction and any significant protocol deviations were justified (Not Partial if no risk of bias assessment; Yes = synthesis plan, heterogenity examined, protocol deviations justified). 0.5 = partial, 1 = Yes. A3 = Review states the study designs that were included (e.g. randomised trials). 1 = Yes. A4 = Review describes a comprehensive literature search strategy (Yes = searched reference lists + registries + grey literature + consulted experts + searched within 24 months). 0.5 = partial. 1 = Yes . A5 = Review study selection was cross-checked (duplicated)?. 1 = Yes. A6 = Review extrction was cross-checked (duplicated)?. 1 = Yes. A7 Partial = Review included a table of excluded studies, Yes = reasons given for exclusions?. 0.5 = Partial, 1 = Yes. A8 Included studies are adequately described (Partial = populations, interventions, comparators, outcomes, designs Yes = Also setting, followup timeframe)?. 0.5 = Partial, 1 = Yes. A9 Assessed risk of bias. Partial = unconcealed allocation and lack of blinding. Yes = allocation not random and selection of results from multiple measures. 0.5 = Partial, 1 = Yes. A10. Reported sources of funding for the included studies?. 1 = Yes. A11. Meta-analysis. Appropriate methods for combining resuts?. 1 = Yes. A12.

Meta-analysis. Assessed risk of bias in studies?. 1 = Yes. A13. Risk of bias interpreted in discussion of results?. 1 = Yes. A14. Satisfactory explanation and discussion of observed heterogeneity?. 1 = Yes. A15. Meta-analysis. Investigated and discussed publication and small study bias?. 1 = Yes. A16. Reported and management strategy for conflict of interest?. 1 = Yes.

Appendix 2: Information on the interventions presented in Table 1

Family Interventions

1. **Family Home Visiting**

Evaluation outcomes

www.wsipp.wa.gov/BenefitCost/Program/35. (2 included studies child internalising Cox effect size post-intervention = -0.048, follow-up = -0.035. No estimate for depression or anxiety, WSIPP, 2018) (👍).

www.aracy.org.au/projects/righthome

Target audience

Selected mothers assessed as vulnerable for parenting risk factors

Reach

Commonly targeted to socioeconomically disadvantaged parents.

Referral pathways

Parents are commonly referred by welfare, corrections or healthcare organisations.

Components:

Manualised curricula delivered to paraprofessional staff.

"The Nurse Family Partnership program provides intensive visitation by nurses during a woman's pregnancy and the first two years after birth. The program is designed to serve low-income, at-risk pregnant women expecting their first child. The goal is to promote the child's development and provide support and instructive parenting skills to parents. Among programs included in the meta-analysis, participants received 25–35 home visits on average, spread over approximately two years."

An Australian RCT is currently in progress implemented in Maternal Child Health (MH) services, but has not yet published outcomes for child emotional adjustment (www.aracy.org.au/projects/righthome). In the Australian trial services are provided "beginning during pregnancy and continuing until the child reaches two, parents who take part … receive 25 home visits" (www.aracy.org.au/projects/righthome).

Workforce requirements

These programs are implemented in Australia by trained maternal child nurses who are supported by social workers (www.aracy.org.au/projects/righthome).

Cost-effectiveness

 Benefits minus cost: "$US 1,827 per participant = Costs $US 11,819, Benefits $US 13,646" (2 included studies child internalising Cox effect size post-intervention = -0.048, follow-up = -0.035. No estimate for depression or anxiety, WSIPP, 2018 (👍)

Minority populations

Programs of this type have been implemented with diverse populations including parents: from low SES backgrounds, Aboriginal and Torres Strait Islander backgrounds; from culturally and linguistically diverse (CALD) backgrounds and nations. We found no reports of delivery for LGBTI people.

2. Triple P Positive Parenting Program – Universal and Level 4 Groups

Evaluation outcomes

http://whatworksforkids.org.au/program/triple-p-positive-parenting-program (well supported)

http://www.wsipp.wa.gov/BenefitCost/Program/79 (WSIPP, 2018, Universal Triple P: No effect estimates for internalising, anxiety or depression)

http://wsipp.wa.gov/BenefitCost/Program/81 (WSIPP, 2018, Level 4 groups: 1 included study internalising Cox effect size at post intervention = -0.025 and at first follow-up = -0.018). We did not identify meta-analysis estimates for depression or anxiety.

Target audience

Selected parents reporting children to be exhibiting behaviour problems

Reach

A broad range of parent demographics are relevant.

Referral pathways

Parents may self-refer or be referred by organisations.

Components

Manualised curricula delivered to parent groups.

"Triple P Positive Parenting Program (system) is a universal prevention program that aims to increase the skills and confidence of parents to prevent the development of serious behavioral and emotional problems in their children. Triple P has five levels of intensity. The first level is a media campaign that aims to increase awareness of parenting resources and inform parents about solutions to common behavioral problems. Levels two and three are primary health care interventions for children with mild behavioral difficulties, whereas levels four and five are more intensive individual- or class-based parenting programs for families of children with more challenging behavior problems" (WSIPP, 2018, Program/79).

"Triple P—Positive Parenting Program (Level 4, group) is an intensive class-based parenting program for families of children with more challenging behavior problems. The focus is learning skills and role-playing strategies to cope with and correct behavior problems" (WSIPP, 2018, Program/81).

"Triple P draws on social learning, cognitive behavioural and developmental theory as well as research into risk factors associated with the development of social and behavioural problems in children. It aims to equip parents with the skills and confidence they need to be self-sufficient and to be able to manage family issues without ongoing support" … "Level 4 is for parents of children with severe behavioural difficulties (or in the case of Group Triple P/Group Teen Triple P, for motivated parents interested in gaining a more in-depth understanding of Positive Parenting). It is available for parents of children from birth to 12 years and 12–16 years and is delivered as a". … group "course of 10-12 hours contact" (WW4K, 2018).

Workforce requirements

The Level 4 groups are delivered by a broad range of professionals that have been accredited after successfully completing the training courses. "Most training is either two or three days with accreditation to follow, usually 6--8 weeks later. Some training course may have prerequisites" (WW4K, 2018). Training

courses run in different Australian states and are advertised on the Triple P website (https://www.triplep.net/glo-en/getting-started-with-triple-p/training-for-individuals/).

Cost-effectiveness

Benefits minus cost: "$US 2,201 per participant = Costs $US 560 (Estimated as a profitable program for Washington State agencies as courses can run on a sliding scale and operate at an overall profit for agencies), Benefits $US 1,641" (WSIPP, 2018, Program/81: 1 included study internalising Cox effect size post-intervention = -0.025, follow-up = -0.018. No estimate for depression or anxiety). (👍).

Minority populations

Triple P has been implemented successfully with a range of parents including: from low SES backgrounds, Aboriginal and Torres Strait Islander; and people from culturally and linguistically diverse (CALD) backgrounds and nations. We found no reports of delivery for LGBTI people.

3. Exploring Together

Evaluation outcomes

http://whatworksforkids.org.au/program/exploring-together-primary-school-program (Supported)

https://www.kidsmatter.edu.au/primary/programs/exploring-together (2 studies, 1 thumb). Significant reductions in depression/anxiety symptoms at 6 months. (Hemphill & Littlefield, 2001: Internalising d = 0.57). Both studies are relatively small and have not been audited in an independent systematic review.

Target population

Children selectively targeted in pre-school and primary school.

"Exploring Together is a short-term, multi-group, early intervention program for children at risk of developing serious emotional and behavioural problems, their parents/carers and teachers. It targets primary school-aged children between 6 and 14 year of age. The program focuses on developing children's social skills and reducing their problematic behaviour, enhancing parenting practices, and strengthening family units." (WW4K, 2018).

"The target group for Exploring Together multi-group programs are primary school children showing early signs of emotional and behavioural problems including aggression, impulsivity, anxiety, social withdrawal, problematic peer, parent-child and family relationships. These children and their families require intensive early intervention.

There are two versions of the multi-group program for primary school aged children. The Exploring Together Pre-School/ Early Primary School Program is for children aged 3 ½ to 7 years. The Primary School Program is suitable for 7 to 14 year old children (KidsMatter, 2018).

Reach

Separate workshop-style groups run concurrently for children and parents, followed by a combined session.

Referral pathways

Children are typically identified and referred for participation by teachers, though self-referral is possible.

Workforce requirements

Facilitators are trained professionals and expected to have some sort of psychology, social work, or mental health professional background. Teachers are also applicable. Training varies in length and cost depending upon specific components of the program, though training appears to take a maximum of 2 days (via workshop). The cost of training is $440, and the manual itself is $85. Training costs are estimated on proximity to Melbourne, and incur additional travel costs outside the metropolitan region.

Cost-effectiveness

Very little information is available to perform a cost benefit analysis. However, one such report that did touch upon the cost of implementing the program in the Tiwi Islands concluded that despite increased costs of "fly-in, fly-out" facilitation, the program was effective though likely unsustainable due to the costs involved. This is unlikely to be the case for the more common implementations, however.

Minority populations

The programs have been used extensively with families from a diverse range of cultural, linguistic and socio-economic backgrounds. A version of the program has also been specifically developed and evaluated for use with Indigenous Australians." (KidsMatter, 2018).

4.   Coping Cat/ Coping Koala

Evaluation outcomes

http://www.cebc4cw.org/program/coping-cat/

CEBC Evidence Rating 1 — Well-Supported by Research Evidence
http://wsipp.wa.gov/BenefitCost/Program/66 (WSIPP, 2018, 13 included studies anxiety disorders Cox effect post-intervention = -0.414, first follow-up = -0.191). Effects on depression and internalising unknown (👍👍👍)

Target audience

Children experiencing problematic levels of anxiety aged: 7 – 13 (CEBC, 2018)

Reach

A broad range of child and family demographics are relevant.

Referral pathways

Parents may self-refer or be referred by organisations.

Components

Manualised curricula delivered to groups of (1) children; and (2) parents.

Group-based manualised "16 week program some sessions for parents/caregivers. The computer-assisted intervention, Camp Cope-a-Lot, is 12 sessions with less than half of the sessions requiring professional time" (CEBC, 2018).

"Treatments usually include multiple components, such as strategies to control physiological responses to anxiety, cognitive restructuring and self-talk, exposure to feared stimuli, and positive reinforcement. This brief therapy can be administered in individual, group, or family format; well-known examples include the Coping Cat and Coping Koala programs". The WSIPP benefit costs results are those from group formats".

Workforce requirements

The programs are delivered by a broad range of professionals that have been accredited after successfully completing the training and accreditation requirements. ELABORATE

Cost-effectiveness

Benefits minus cost: "$US 6,612 per participant = Costs $US 418 (Estimated as a profitable program for Washington State organisations that can offer programs on a sliding scale for families and can benefit from health system returns for child treatment), Benefits $US 6,194" (WSIPP, 2018, 13 included studies anxiety disorders Cox effect post-intervention = -0.414, first follow up = -0.191 - 👍👍👍. Effects on depression and internalising unknown).

Reason for including a treatment
Cost-effective group-based and online family program, evaluations show potential to extend to Indicated

Minority populations
We were unable to find information on the implementation of Coping Cat/ Coping Koala with: low SES backgrounds; physical disability; Aboriginal and Torres Strait Islander; people from culturally and linguistically diverse (CALD) backgrounds; LGBTI people.

5. Families and Schools Together (FAST)

Evaluation outcomes
http://www.cebc4cw.org/program/baby-fast-groups-for-young-mothers/ (Efficacy unable to be evaluated for infants and early childhood).

https://www.kidsmatter.edu.au/primary/programs/families-and-schools-together-fast (Good evidence of efficacy for enhanced family functioning, preventing children at-risk from experiencing school failure, preventing alcohol and other drug abuse, reducing the stress experienced by parents and children from daily life situations).

http://whatworksforkids.org.au/program/families-and-schools-together-fast-0 (Well supported)

http://wsipp.wa.gov/BenefitCost/Program/150 (WSIPP, 2018: Meta-analysis from 7 studies shows the program reduces internalising symptoms (Cox effect size post intervention = – 0.056 and at first follow-up = -0.041) (downgraded to 2 thumbs due to negative economic returns based on one study [see below]).

Target population
Children universally targeted in primary schools (with some trials in secondary schools). Program is usually targeted towards children who are considered at risk for educational failure or other problems.

Reach
Designed for children and families (children are invited to attend with parents/guardians).

Referral pathways
Children are identified by educators, who then refer children/parents into the program.

"Families and Schools Together (FAST) is a multi-family after school program intended to increase parents' involvement in school and their child's education, increase parent-child bonding and communication, and enhance parents' self-efficacy. Groups of 8 to 12 families meet weekly for eight consecutive weeks. Sessions last about 2½ hours and take place after school or early in the evening. Trained facilitators conduct the meetings, which involve experiential learning, parent-child play, and a shared meal. The initial eight weeks are followed by two years of monthly parent-led meetings".

Workforce requirements
The program is delivered by trained facilitators, who first undergo an internship of at least 5 days (2 days training, 3 days on site workshop delivery).

Cost-effectiveness
The WSIPP (2018, Program/150) evaluation found the program was not cost effective: $US – 3,500 loss per child treated, $US - 909 program costs, $US – 2,671 (negative benefits). The economic loss is mainly due to large negative costs associated with a small negative effect on academic test scores in one study. Hence, these negative economic findings should be considered with caution.

"FAST has been shown to have positive outcomes for children from low socio-economic or disadvantaged family backgrounds. Positive outcomes have also been reported with indigenous children, including indigenous children living in remote indigenous communities, children from culturally and linguistically diverse backgrounds and with children from rural areas." (KidsMatter, 2018).

6. **Tuning in to Kids / Tuning in to Teens**

Evaluation outcomes

http://whatworksforkids.org.au/program/tuning-in-to-kids (Supported – Question mark for internalising)

https://www.kidsmatter.edu.au/early-childhood/programs/tuning-kids (Rated 4 out of 5 stars (Good) for early childhood/primary school aged children, though the specific outcomes are not individually assessed.)

http://www.cebc4cw.org/program/tuning-in-to-kids-tik/ (2 – Medium for younger children and teens).

Evidence from at least one study to suggest that the positive effects of the program are sustained for at least 6 months.

Target population

Broad targets – the program is described as suitable for both universal and selective approaches.

Reach

Tuning in to Kids/Teens and variants are aimed at parents and primary and secondary age children.

Referral pathways

The program is self-initiated by schools/organisations, and the organisation itself advertises various meetings and workshops for interested parents.

Components

Manualised curricula delivered to parent groups.

The program is delivered in six 2-hour sessions, plus two booster sessions run in two month intervals after the program conclusion.

"Tuning in to Kids™ is an evidence-based parenting program that focuses on the emotional connection between parents and children. In particular the program teaches parents skills in emotion coaching, which is to recognise, understand and respond to children's emotions in an accepting, supportive way. This approach helps the child to understand and manage their emotions. ...Program variants include Tuning in to Toddlers, Tuning in to Kids, Tuning in to Teens, Dads Tuning in to Kids and Trauma-focused Tuning in to Kids. A version of the program for parents of anxious children and for parents of children with chronic illness have both been evaluated with publications to follow shortly." (WW4K, 2018).

Workforce requirements

The program is designed to be delivered by trained professional staff who have completed the facilitator training provided by Tuning in to Kids. Training appears to typically involve attending a 2-day workshop.

Cost-effectiveness

No information available at this time.

Minority populations:

No specific evidence for efficacy in diverse samples.

7. Strengthening Families Program

Evaluation outcomes

http://whatworksforkids.org.au/program/strengthening-families-program (supported)

http://wsipp.wa.gov/BenefitCost/Program/138 (WSIPP, 2018, 7 included studies, 2 included for internalising Cox effect size post-intervention = - 0.129, at first follow-up = -0.094 – one thumb).

Target audience

In Australia the target has been primary school aged children. Programs are offered either universally to all parents in a primary school or for selected families with children experiencing behaviour problems.

Reach

Universal reach, but is also delivered to selective populations in disadvantaged primary school. Internationally the program is also offered selectively to parents in corrections and substance abuse treatment programs.

Referral pathways:

Universal programs invite all families in a location such as a primary school. Selected parent programs have been run in: disadvantaged primary schools. Internationally the program is also offered selectively to parents in corrections and substance abuse treatment programs.

Components

Manualised curricula for (1) parents; (2) students; and (3) groups.

"The Strengthening Families Program (SFP) is a nationally and internationally recognized parenting and family strengthening program for high-risk and regular families with different age versions from birth to 17 years of age. Culturally adapted versions with different languages were tested and found effective in 36 countries including Australia — the first international implementation in Queensland" (WW4K, 2018)

The universal version, "Strengthening Families for Parents and Youth 10-14 (also known as the Iowa Strengthening Families Program) is a family-based program that attempts to reduce behavior problems and substance use by enhancing parenting skills, parent-child relationships, and family communication. The seven-week intervention is designed for 6th grade students and their families.".

Workforce requirements

In Australia the program is managed by Barwon Child Youth and Family Services in Geelong, Victoria. The program is delivered based on manuals and licenses that were purchased from the international managing agency. Within an Australian municipality, a family service agency obtains the license to operate the program after completing training and accreditation requirements. Trained facilitators then run the program in locations across a municipality.

Cost-effectiveness

Benefits minus cost: "$US 4,547 per participant = Costs $US -835, Benefits $US 5,381" (WSIPP, 2018, 7 included studies, 2 included for internalising Cox effect size post-intervention = - 0.129, first follow up = - 0.094 – one thumb). Effects on depression and anxiety not reported.

Minority populations

Strengthening Families has been implemented successfully with a range of parents including: from low SES backgrounds; and people from culturally and linguistically diverse (CALD) backgrounds and nations. We found no reports of delivery for LGBTI people or Aboriginal and Torres Strait Islanders. As the program has

been run successfully with first nation Americans, it is likely to translate to Aboriginal and Torres Strait Islander people.

Resilient Families

Evaluation outcomes
http://whatworksforkids.org.au/program/the-resilient-families-program (promising)

https://positivechoices.org.au/teachers/resilient-families-program (3/3 stars - multiple studies showing benefits).

Buttigeig et al, (2015)[19] report selective effects in reducing depression one-year post intervention - in cases where adolescents had moderate baseline symptoms and families attended parent education events (Question mark).

Target audience
Universal program for secondary school students and parents

Reach
A broad range of parent demographics are relevant.

Referral pathways
 All parents and students are offered the program within a school.

Components
Manualised (1) student curricula; (2) parent group programs.

"The following major components: Student Curriculum: The student curriculum covers communication skills, emotional awareness, conflict resolution, stress reduction, responsibilities in the family, and changes that occur in families. The curriculum component is a 10-week program, delivered to Year 7 students by their classroom teachers. Parenting Adolescents Quiz: This component is a 2-hour social evening for parents with Year 7/ Year 8 children. The evening uses a fun quiz format to impart research-based information to help parents promote healthy youth development. PACE (Parenting Adolescents: A Creative Experience): PACE is an 8-week parenting program that provides practical information on a range of issues facing young people and their families. Groups provide a safe and positive forum in which the strengths and experiences of parents can be shared and explored. Parent Education Book: Helping your child succeed in school and life is a simply written and engaging book that sets out the major issues parents face in raising children through the early secondary school period and the parenting strategies they can use to build family resilience." (WW4K, 2018).

Workforce requirements
The program is delivered by school staff following half day training courses.

Cost-effectiveness
Unknown.

Minority populations
The 1999 version of Resilient Families was implemented successfully with a range of parents from: low SES backgrounds, Aboriginal and Torres Strait Islander; and people from culturally and linguistically diverse (CALD) backgrounds and nations. We found no reports of delivery for LGBTI people.

Conflict of Interest Declaration: Author Toumbourou holds intellectual property responsibility for the Resilient Families program.

School Interventions

1. **FRIENDS for Life**

Evaluation outcomes
Although this program is focussed on preventing anxiety, Brunwasser & Garber's (2016)[29] meta-analyses showed small significant effects in preventing depressive symptoms at 6 - 12 month follow-up (g = - 0.24, CI - 0.34 to -0.14, k = 3, 👍👍) but not at post-intervention (g = -0.04, CI - 0.14 to 0.05, k = 4). There was significant heterogeneity between the studies. We were unable to source meta-analyses for effects on internalising or anxiety.

Target audience
Delivered universally to primary school students, with one study including pre-school children.

Reach
The program is relevant to students from diverse backgrounds. The evaluations have been in universal primary school populations in Australia.

Referral pathways
All students receive the universal program.

Components
Manualised curricula delivered to: (1) groups of children; and (2) parents.

This program "involves ten weeks of 1 to 1.5-hour sessions to be run in class time, and has corresponding homework tasks for each session so the skills can be practiced at home with families. Schools may choose to complete the program over a 10-week period, or choose to conduct shorter sessions over a longer period of time. At the conclusion, there is also the option to run two booster sessions via homework tasks, where the students can review their progress and re-visit the FRIENDS management plan .. [There are] two parent sessions that may be arranged by the school. In addition, handouts are provided to supply parents with further information. (www.kidsmatter.edu.au/primary/programs/friends-life/).

Workforce requirements
The programs are delivered by school staff after receiving training from the developers.

Cost-effectiveness
Unknown

Minority populations
Evaluations effects are unknown for participants: from low SES backgrounds; from culturally and linguistically diverse (CALD) backgrounds; with a physical disability; from Aboriginal and Torres Strait Islander backgrounds; or from LGBTI orientation.

2. Penn Resiliency Program (PRP)

Evaluation outcomes

Brunwasser & Garber (2016)[29] meta-analyses show small significant effects in preventing depressive symptoms at post-intervention (g = - 0.08, CI - 0.15 to - 0.01, k = 13) and at 6-30 month follow-up (g = - 0.19, CI - 0.27 to - 0.11, k = 12, 👍👍👍). Evaluation findings show high heterogeneity with two studies reporting negative effects. When delivered by external providers (in an effectiveness trial) rather than the research team, effects were non-significant at post-intervention (g = -0.06, CI -0.13 to 0.02, k = 7), but significant at first follow-up (g = - 0.15, CI - 0.23 to -0.07, k = 6). Effects on internalising and anxiety are unknown.

Target audience

Delivered universally to all students in late primary or secondary school or to universal, selected and indicated adolescent groups targeted in locations such as primary care clinics or ethnic community centres.

Reach

A broad range of child and family demographics are relevant. Evaluation trials include Australian children.

Referral pathways

 All students receive the universal program or families with high depression symptom children may be referred by clinics.

Components

Manualised curricula delivered to groups of children. Group-implemented 12 session manualised curricula based on CBT.

Workforce requirements

The programs are delivered by the Penn State Resiliency Research team staff and students or by accredited mental health providers.

Cost-effectiveness

Unknown

Minority populations

PRP evaluations include participants from: low SES backgrounds; and from culturally and linguistically diverse (CALD) backgrounds.[29] We were unable to identify evaluations with: people with a physical disability; Aboriginal and Torres Strait Islander people; or LGBTI people.

3. Coping with Stress Course

Evaluation outcomes

Brunwasser & Garber (2016)[29] meta-analyses show medium sized significant effects in preventing depressive symptoms at post-intervention (g = - 0.33, CI - 0.47 to - 0.20, k = 4) and small effects at 12-33 month follow-up (g = - 0.18, CI - 0.32 to - 0.04, k = 4) (👍👍👍). Evaluation findings show low heterogeneity. Similar effects have been found when delivered by external providers (in an effectiveness trial). Effects on internalising and anxiety are unknown.

Target audience

Delivered to selected secondary school age adolescents based on sub-clinical symptoms or targeted based on parents diagnosed with a depressive disorder in health care organisations (see details www.promisingpractices.net/program.asp?programid=151).

Reach

A broad range of child and family demographics are relevant. No evaluation trials in Australian children were identified.

Referral pathways

Students in the secondary school trial were recruited into a research study and then referred into the intervention based on assessment of sub-clinical depressive symptoms. In the health organisation trial adolescents were invited to participate based on referral from parents diagnosed with a depressive disorder.

Components:

Manualised curricula delivered to groups of children. Group-implemented 15 sessions each of 45-60 minute implemented from a manualised curricula based on CBT.

Workforce requirements

The programs are delivered by the research team staff and students or by accredited providers.

Cost-effectiveness

Unknown

Minority populations

The evaluations have not reported effects with participants from: low SES backgrounds; culturally and linguistically diverse (CALD) backgrounds; people with a physical disability; Aboriginal and Torres Strait Islander people; or LGBTI people.

4. Promoting Alternative Thinking Strategies (PATHS)

Evaluation outcomes

http://whatworksforkids.org.au/program/promoting-alternative-thinking-strategies-paths (well supported)

https://www.blueprintsprograms.org/factsheet/promoting-alternative-thinking-strategies-paths (rated as a Model program)

 http://www.wsipp.wa.gov/BenefitCost/Program/94 (WSIPP, 2018, 7 included in the meta-analysis for internalising Cox effect size post-intervention = -0.015, follow-up = 0.000,) (👎👎👎) Effects on anxiety and depression were not included in the meta-analysis.

Target audience:

Pre-school and primary school children, ages 3 to 11 (WW4K, 2018).

Reach

Universal reach, but is also delivered to selective "special need" students.

Referral pathways

 All students attending school for the universal implementation. Referral for selective implementation is for students identified by the school as special needs.

Components

Manualised classroom delivered curricula.

"The Promoting Alternative Thinking Strategies (PATHS) curriculum is a classroom socioemotional learning program designed to improve self-control, emotional understanding, interpersonal relationships, and social problem-solving skills for [primary school students]. The program is designed to be a multi-year, school-

wide intervention to prevent serious emotional and behavioral problems. The PATHS curriculum provides scripts to guide lessons that classroom teachers or counselors teach two to three times a week."

"Each grade level undertakes different components using an overall scope and sequence. New developmental topics are added each year to a basic curriculum model that is focused on emotional awareness, self-control, interpersonal problem solving, empathy development, and healthy peer relationships. Implemented two or three times per week. Each session is designed to last approximately 30 minutes" (WW4K, 2018).

Workforce requirements
Classroom teachers deliver the curricula following a "2-3-day training workshop and … bi-weekly or monthly consultation and observation from project staff as they deliver the PATHS curriculum to their students" (WW4K, 2018). The curricula is delivered based on manuals that are purchased from the developer.

Cost-effectiveness
Benefits minus cost = "$US 7,127 per participant = Costs $US -360, Benefits $US 7,487 " (WSIPP, 2018, 11 included studies, 7 included for internalising Cox effect size post-intervention = -0.015, follow-up = 0.000. Effects on anxiety and depression were not included in the meta-analysis.

Minority populations
PATHS has been implemented successfully in the USA with students from low SES backgrounds, special learning need students, and students with a physical disability. There is no information on the implementation with: Aboriginal and Torres Strait Islander; people from culturally and linguistically diverse (CALD) backgrounds; or LGBTI people.

5. Blues Program/ Blues (Peer) Group

Evaluation outcomes
Brunwasser & Garber (2016) meta-analyses show significant medium effects in preventing depressive symptoms at post-intervention (g = - 0.45, CI - 0.63 to -0.28, k = 3) and small significant effects at 6-24 month follow-up (g = - 0.21, CI - 0.38 to -0.03, k = 3). There was low heterogeneity between the studies. There is also evidence that the intervention reduced depressive disorder after 6-month (OR = 0.12) and 24-months (OR = 0.53). One trial found significant effects (effectiveness evidence) where the curricula was implemented by school staff.

http://wsipp.wa.gov/BenefitCost/Program/537 (WSIPP, 2018, 4 included studies for major depressive disorder Cox effect size post-intervention = -0.201, (👍👍👍), first follow-up = 0.000). Effects on anxiety and internalising are unknown.

Target audience
Selected adolescents with sub-clinical depressive symptoms.

Reach
Relevant to secondary school students from diverse backgrounds. No evaluations have been reported with Australian youth.

Referral pathways
Students with high (sub-clinical) depressive symptoms are referred into the groups by researchers.

Components:
Manualised curricula delivered to groups of adolescents. The program consists of six weekly one-hour group sessions and home practice assignments. Sessions focus on engaging in pleasant activities, cognitive

restructuring techniques, and response plans for future life stressors… In the studies we reviewed, there was an average of 6.85 students per group with an average of 73 students served by each teaching team" (WSIPP, 2018).

Workforce requirements
"The program was team-taught by either a graduate student and undergraduate assistant or two school personnel (typically a school counselor or school nurse). Program leaders received an average of ten hours of training" (WSIPP, 2018).

Cost-effectiveness
Benefits minus cost = "$US -144 per participant = Costs $US -116, Benefits $US -28 " (WSIPP, 2018). The low benefits are associated with an estimated small economic return from preventing major depression and hence should be interpreted cautiously.

Minority populations
We were not able to find evaluations that included participants from: low SES schools; culturally and linguistically diverse (CALD) backgrounds; with a physical disability; Aboriginal and Torres Strait Islander people; or LGBTI people.

6.   CBT Bibliotherapy (Evaluation of self-help using the Feeling Good handbook)

Evaluation outcomes
Brunwasser & Garber (2016) meta-analyses show significant effects in preventing depressive symptoms at post-intervention (g = - 0.18, CI - 0.36 to 0.002, k = 3) and at 6-24-month follow-up (g = - 0.25, CI - 0.43 to -0.07, k = 3) (👍👍). There was low heterogeneity between the studies. The trials demonstrated effectiveness as youth were offered minimal guidance from the research team. Effects on anxiety and internalising are unknown.

Target audience
Selected adolescents with sub-clinical depressive symptoms.

Reach
Relevant to secondary school students from diverse backgrounds. No evaluations have been reported with Australian youth.

Referral pathways
Students with high (sub-clinical) depressive symptoms were referred to the books by researchers.

Components:
Self-help book recommended to adolescents. The self-help "Feeling Good Handbook" (Burns, 1989) was provided to adolescents. This book is based on CBT and offers guidance on changing cognitions and managing emotions.

Workforce requirements
Students were given minimal guidance or support in how to use the book.

Cost-effectiveness
Not available.

Minority populations

We were not able to find evaluations that included participants from: low SES schools; culturally and linguistically diverse (CALD) backgrounds; with a physical disability; Aboriginal and Torres Strait Islander people; or LGBTI people.

7. Interpersonal Psychotherapy-Adolescents Skills Training

Evaluation outcomes

Brunwasser & Garber (2016) meta-analyses show significant medium effects in preventing depressive symptoms at post-intervention ($g = -0.49$, CI -0.71 to -0.28, $k = 3$) and small significant effects at 3-18-month follow-up ($g = -0.24$, CI -0.46 to -0.01, $k = 3$) (👍👍). There was significant heterogeneity between the studies. There is evidence in one evaluation that the intervention reduced depressive disorder after 6-months. One trial found significant effects (effectiveness evidence) where the curricula was implemented by trained group leaders. We did not find meta-analyses for effects on anxiety and internalising.

Target audience

Universal school program with indicated component for adolescents with sub-clinical depressive symptoms.

Reach

Relevant to secondary school students from diverse backgrounds. No evaluations have been reported with Australian youth.

Referral pathways

All students in a school receive the universal curricula. Students with high (sub-clinical) depressive symptoms are referred into the groups by researchers.

Components

Manualised curricula delivered to groups of adolescents.

"The program includes two individual pre-group sessions followed by eight group sessions with 3-7 adolescents per group. It may also include a mid-program session that parents are allowed to attend and four individual booster sessions in the months following the group sessions. … The program aims to decrease depressive symptoms by helping adolescents improve their relationships and interpersonal interactions. The group teaches adolescents communication strategies and interpersonal problem-solving skills that they can apply to their relationships".

(www.blueprintsprograms.org/factsheet/interpersonal-psychotherapy-adolescent-skills-training)

Workforce requirements

The universal program is implemented by the teacher following training from the researchers. The indicated program "is delivered by mental health clinicians at school" (www.blueprintsprograms.org/factsheet/interpersonal-psychotherapy-adolescent-skills-training).

Cost-effectiveness

Information was not identified.

Minority populations

Evaluations were not found with students: from low SES schools; from culturally and linguistically diverse backgrounds; with a physical disability; from Aboriginal and Torres Strait Islander backgrounds; or with an LGBTI orientation.

8. **Problem Solving for Life**

Evaluation outcomes

Brunwasser & Garber (2016) meta-analyses show small significant effects in preventing depressive symptoms at post-intervention (g = - 0.19, CI - 0.28 to - 0.11, k = 2, One thumb) and non-significant effects at 12-33 month follow-up (g = 0.03, CI - 0.06 to - 0.12, k = 2). There were no effects on depressive disorders. The programs were delivered by teachers and hence represent an effectiveness trial. We were unable to source meta-analyses for effects on internalising or anxiety.

Target audience

Delivered by teachers as a universal secondary school program and in an indicated format with groups selected by the researchers to have high sub-clinical depression symptoms.

Reach

A broad range of child and family demographics are relevant. Evaluation trials have been in Australian schools.

REFERRAL pathways

All students in the school receive the universal intervention. Students were recruited into a research study and then referred into the indicated intervention based on assessment of sub-clinical depressive symptoms.

Components

Manualised curricula delivered to groups of children

Eight manualised sessions lasting approximately 45 minutes delivered by classroom teachers who have received training from the researchers. The curriculum teaches CBT techniques including problem solving (www.childtrends.org/programs/problem-solving-for-life).

Workforce requirements

The programs are delivered by classroom teachers who have received training from the researchers.

Cost-effectiveness

Unknown

Minority populations

The evaluations have not reported effects with participants from: low SES backgrounds; culturally and linguistically diverse (CALD) backgrounds; people with a physical disability; Aboriginal and Torres Strait Islander people; or LGBTI people.

9. Acceptance and Commitment Therapy (ACT)

Evaluation outcomes

http://wsipp.wa.gov/BenefitCost/Program/757 (for children with depression - adolescent groups to treat depression) (Major depressive disorder medium significant effect - Cox effect size post-intervention = -0.281, first follow-up = 0.000, k = 2, One thumb).

http://wsipp.wa.gov/BenefitCost/Program/756 (for children with high anxiety) (Anxiety disorder large significant effect - Cox effect size post-intervention = -0.450, first follow-up = 0.208, k = 1).

Target audience

Indicated adolescents with elevated symptoms of depression or anxiety

Referral pathways

Adolescents are referred by health or mental health services.

Components:

Manualised curricula.

"Acceptance and Commitment Therapy (ACT) for depression aims to increase client acceptance of negative thoughts and feelings and to reduce the negative behavioral impact of depression. Acceptance and Commitment Therapy relies on six core processes of change: 1) acceptance; 2) learning to view thoughts as hypotheses rather than facts, 3) being present, 4) viewing the self as context for experience, 5) identifying core values, and 6) acting based on those values. These core principles are applied through various exercises and through homework. In the two studies included in this analysis, ACT was delivered either in 10 group or 20 individual sessions." (WSIPP, 2018).

Workforce requirements

Experienced mental health professionals

Cost-effectiveness

Benefits minus cost for depression = "$US -755 per participant (negative return) = Costs $US -598, Benefits $US -157 (negative benefits)" (WSIPP, 2018, Program/757, 2 studies). For anxiety benefits minus cost: "$US 6,901 per participant = Costs $US 367 (profitable program for Washington State agencies based on health system returns for treating child anxiety), Benefits $US 6,534" (WSIPP, 2018, Program/756, 1 included study).

Minority populations

Effects are unknown for youth: from low SES backgrounds; with a physical disability; from Aboriginal and Torres Strait Islander backgrounds; from culturally and linguistically diverse backgrounds; that identify as LGBTI.

10. Aussie Optimism Program

Evaluation outcomes

Brunwasser & Garber (2016) meta-analyses show non-significant effects in preventing depressive symptoms at post-intervention (g = - 0.09, CI - 0.19 to 0.01, k = 3) or at 9 month follow-up (g = - 0.03, CI - 0.13 to 0.08, k = 3, Question mark). There is some heterogeneity between the studies. Two of the trials were effectiveness trials where the curricula was implemented by school teachers.

Target audience

Delivered universally to late primary or early secondary school students.

Reach

The evaluations have been in disadvantaged Australian schools.

Referral pathways

All students receive the universal program.

Components

Manualised curricula delivered to groups of children.

Group-implemented 12 sessions each of 45-60 minutes implemented from a manualised curricula based on CBT and interpersonal skills.

Workforce requirements

The programs are delivered by teachers after receiving training from the developers.

Cost-effectiveness

Unknown

Minority populations

Evaluations include participants from: low SES schools. Effects are unknown for participants from; culturally and linguistically diverse (CALD) backgrounds; with a physical disability; Aboriginal and Torres Strait Islander people; or LGBTI people.

11. Resourceful Adolescent Program

Evaluation outcomes

http://whatworksforkids.org.au/program/resourceful-adolescent-programs-rap-a-rap-p-rap-t (Supported)

Brunwasser & Garber (2016) meta-analyses show non-significant effects in preventing depressive symptoms at post-intervention (g = - 0.05, CI - 0.25 to 0.15, k = 2) or at 6 - 12-month follow-up (g = 0.12, CI - 0.004 to 0.25, k = 3). There is significant heterogeneity between the studies.

Target audience

Delivered universally to early secondary school students.

Reach

The program is relevant to students from diverse backgrounds. The evaluations have been in universal secondary school populations in Australia, the UK and Mauritius. The program is relevant to students from diverse backgrounds.

Referral pathways

All students receive the universal program.

Components

Manualised curricula delivered to: (1) groups of children; (2) parents; and (3) as training for teachers.

In the traditional student curricula there are eleven group sessions, conducted weekly for between 40 and 50 minutes during school class time, with one facilitator per group. The recommended group size is 15 participants, although many schools run it in regular class groups. ... [has] also been run in a camp format" ... "There appears to be no additional benefits of adding the parent component to the adolescent component with regard to quantifiable impact on depressive symptoms" (WW4K, 2018).

Workforce requirements

The programs are delivered by school staff after receiving a training manual from the developers.

Cost-effectiveness
Unknown

Minority populations
Evaluations have included schools from culturally and linguistically diverse (CALD) backgrounds. Effects are unknown for participants from: low SES schools; with a physical disability; Aboriginal and Torres Strait Islander people; or LGBTI people.

12. Physical activity interventions

Evaluation outcomes
Stockings et al (2016)[48] reported physical activity interventions had medium to large sized significant effects at post-intervention for internalising (RR = 0.39, CI 0.26 to 0.59, k = 9, N = 5115); anxiety (Relative Risk [RR] = 0.25, CI = 0.10 to 0.65, k=3, N=2023); and depression (RR = 0.41, CI 0.24 – 0.69, k = 9, N = 5115). Smaller significant effects were maintained at 6-9 month follow-up for internalising (RR = 0.47, CI = 0.37 to 0.60, k = 10, N = 1915); and depression (RR = 0.45, CI 0.35–0.58, k = 10, N = 1915); but were not significant for anxiety (RR = 1.10, CI = 0.45 – 2.51, k = 2, N = 1046). Effects were non-significant at 12 month follow-up for internalising, anxiety or depression.

Brown et al, (2013)[45] included nine studies (n = 581), that were mostly randomised individuals in schools and meta-analysis found a small protective effect in reducing depressive symptoms (Hedges' g = -0.26, p = .004).

Despite there being a sufficient number of studies to warrant a higher rating, we downgraded our rating to 2 thumbs due to a lack of clarity as to which physical activity program should be implemented.

Target audience
Universal – all children in a school. Selected – students with elevated depression symptoms.

Reach
A broad range of child demographics are relevant.

Referral pathways
Universal – all children in a school. Selected – students with elevated depression symptoms

Components
Manualised curricula. Evaluations have been completed by researchers using published intervention protocols.

Workforce requirements
Universal programs have been implemented by researchers and teachers.

Cost-effectiveness
Unknown.

Minority populations
We found no reports of delivery to: people: from low SES backgrounds, Aboriginal and Torres Strait Islander; from culturally and linguistically diverse (CALD) backgrounds; or LGBTI people.

13. Bullying Prevention Programs

Evaluation outcomes

http://whatworksforkids.org.au/program/olweus-bullying-prevention-program (Olweus - Promising, Question Mark)

https://www.blueprintsprograms.org/factsheet/olweus-bullying-prevention-program. "Reductions in self-reported bullying are mixed across multiple evaluations, but generally positive. Reductions in self-reported victimization are mixed across multiple evaluations. Decreases in other forms of delinquency and anti-social behavior, such as theft, vandalism and truancy found in the original Norway study and South Carolina replication. Improvements in positive social relationships and school climate found in Norway study. In Pennsylvania, improvements in all 14 bullying outcomes, including a 13% decrease in the likelihood of being bullied and a 29% decrease in the likelihood of bullying others" (Blue prints, 2018).

Although bullying prevention programs show positive effects in reducing bullying and antisocial behaviours, we were unable to identify studies that have found positive effects on child or adolescent mental health.

Target audience
Universal primary and secondary school program, 6 -17 years olds (WW4K, 2018).

Referral pathways
All students attending school.

Components
Manualised school training curricula and policies.

"The goals of the OBPP are to reduce existing bullying among students, prevent new bullying problems, and achieve better peer relations. These goals are pursued by restructuring the school environment to reduce opportunities and rewards for bullying, encouraging pro-social behaviours, and building a sense of community. The OBPP is designed for students in elementary, middle, and high schools and involves all staff, students, parents, and the community in bullying prevention efforts. All students participate in most aspects of the program, while students who bully others and students who are bullied receive additional individualised interventions" (WW4K, 2018).

Workforce requirements
Implemented by school leaders and staff with advice from the developer.

Cost-effectiveness
Unknown

Minority populations
Effects on minorities is unknow.

14. Good Behaviour Game

Evaluation outcomes
http://www.wsipp.wa.gov/BenefitCost/Program/82. WSIPP (2018) meta-analysis showed small effects in preventing anxiety disorder (Cox effect size post-intervention = -0.089 and first follow-up -0.041, k =3) and major depression disorder (Cox effect size post-intervention = -0.118 and first follow-up -0.000, k =3) (👍👍).

Target audience
Delivered to universal primary school age students.

Reach

A broad range of child and family demographics are relevant. Although no evaluation trials have been published with Australian students, we are aware an Australian pilot is in process.

Referral pathways

All students in primary school participate in the program.

Components

Manualised teacher curricula

"A classroom behavior management game providing a strategy to help elementary teachers reduce aggressive, disruptive behavior and other behavioral problems in children, particularly highly aggressive children, while creating a positive and effective learning environment" ... "In GBG classrooms, the teacher assigns all children to teams, balanced with regard to gender; aggressive, disruptive behavior; and shy, socially isolated behavior. Basic classroom rules of student behavior are posted and reviewed. When GBG is played, each team is rewarded if team members commit a total of four or fewer infractions of the classroom rules during game periods". (www.blueprintsprograms.org/factsheet/good-behavior-game).

"The Good Behavior Game is a two-year classroom management strategy designed to improve aggressive/disruptive classroom behavior .... After teachers establish shared behavior expectations in their classroom, teams of students play the game throughout the day and may receive rewards by minimizing negative behaviors. The program is universal and can be applied to general populations of early elementary school children (1st and 2nd grades)" (WSIPP, 2018).

Workforce requirements

The program is delivered by teachers following training from the program developer.

Cost-effectiveness

Benefits minus costs $USD 10,850 per participant = Benefits $11,002 – Costs $153.

Minority populations

The evaluations have reported effects with participants from: low SES backgrounds; culturally and linguistically diverse backgrounds; people with a physical disability. We were unable to identify evaluations with; Aboriginal and Torres Strait Islander people; or LGBTI people.

Community Interventions

1. Communities for Children

Evaluation outcomes

The most recent national evaluation of Communities for Children (Edwards et al, 2011)[57] shows that the program has been associated with increased delivery of evidence-informed services and positive impacts in three areas: fewer children were living in a jobless household; parents reported less hostile or harsh parenting practices; and parents felt more effective in their roles as parents. Negative effects were observed in parent reports of children's physical functioning. The effects on child internalising, anxiety or depression are unknown (Question mark).

Target audience

Service delivery plans are implemented in selective geographic target areas identified with high socioeconomic disadvantage

Referral pathways

Children within a geographic area are exposed to collective efforts to improve service delivery practices.

Components

Policies and funding guidelines delivered to community coalitions. Communities for Children is a community coalition model that seeks to improve service delivery within a socioeconomic disadvantaged geographic area by using funding incentives and training to encourage services to adopt evidence-based service models. "The programme is designed to ensure resources are invested strategically over time and supported by evidence-based practices in disadvantaged communities. Whole community approaches support and enhance early childhood development and wellbeing from birth to 12 years". An "Expert Panel have provided guidelines and an industry listing of evidence-based programmes that the panel recommends based on evaluation evidence and assessed suitability…
(https://apps.aifs.gov.au/cfca/guidebook/programs)." (Toumbourou et al, 2017).[56]

Workforce requirements

The program is implemented by community coordinators that receive training and assistance from the Australian Institute for Families.

Cost-effectiveness

Pezzullo et al. (2010)[58] estimated the program returned $4.77 for every $1 spent.

Minority populations

The program is designed to be suitable for vulnerable families including participants from: low SES backgrounds; culturally and linguistically diverse backgrounds; with a physical disability; from Aboriginal and Torres Strait Islander backgrounds; or identifying as LGBTI people.

2. Communities That Care

Evaluation outcomes

http://whatworksforkids.org.au/program/communities-that-care (Supported – Question mark for internalising)

http://www.wsipp.wa.gov/BenefitCost/Program/115 (WSIPP, 2018: This model has evidence for increasing the implementation of effective prevention programs resulting in preventive effects for crime and substance use and increased school completioare unknown for internalising problems, anxiety or depression.)

https://www.blueprintsprograms.org/factsheet/communities-that-care (4/5 stars, promising program).

Target audience

Universal effects on children and adolescents across a geographic target area.

Reach

Relevant to all children and adolescents across a geographic target area. An Australian evaluation is in process.

Referral pathways

Children and adolescents within a geographic area are likely to benefit.

Components

Manualised curricula delivered to community coalitions.

"Communities That Care (CTC) is a process designed to enhance the healthy development of children and young people. CTC builds community capacity to plan and deliver effective developmental prevention services that are evidence-based and respond to local needs. CTC uses a public health approach to decrease the prevalence of youth-related problems such as substance abuse, violence, mental illness, school failure and antisocial behaviour. Through the training provided, communities develop the skills to identify and

minimise the risk factors for these health and behaviour outcomes, whilst simultaneously promoting protective factors, to improve well-being for young people in the community. Communities undertaking the CTC process are provided with extensive training and technical assistance to guide them through five phases of planning and delivery" (WW4K, 2018).

Workforce requirements
The program is implemented by community coordinators that receive training and assistance from the Communities That Care staff.

Cost-effectiveness
Benefits minus cost = "$US 2,555 per participant = Benefits $US 3,148 - Costs $US 593" (WSIPP, 2018). Program benefits are calculated from positive effects in preventing tobacco use, and crime and increasing school completion.

Minority populations
Evaluations include participants from: low SES schools; culturally and linguistically diverse backgrounds. We were not able to find evaluations with participants: with physical disability; Aboriginal and Torres Strait Islander people; or LGBTI people.

Conflict of Interest Declaration: Authors Toumbourou and Reavley are Directors and Rowland is the Chief Executive Officer of Communities That Care Ltd.

### 3.	Mentoring: Community-based for children with disruptive behaviour disorders

Evaluation outcomes
http://www.wsipp.wa.gov/BenefitCost/Program/819. WSIPP (2018) meta-analysis showed very large effects in preventing internalising symptoms (Cox effect size post-intervention = − 0.746 and first follow-up – 0.544, k = 2, One thumb).

Target audience
Delivered to selected children diagnosed with disruptive behaviour disorders.

Reach
This is a program with a selective reach. Variants of mentoring are used in Australia.

Referral pathways
Delivered to selected children diagnosed with disruptive behaviour disorders.

Components
Manualised curricula for mentors

"In community-based mentoring programs for children with disruptive behavior disorders, paraprofessional mentors are paired with youth with diagnosed disruptive behavior disorders. These youth are referred to mentoring by their mental health care providers. Among studies included in this analysis, youth were 8 to 12 years old. On average, mentors met with their mentees for three to four hours each week over a period of eight weeks. Mentors engage in developmentally appropriate activities (e.g. playing games, sports) and promote and reinforce positive behaviors and goals (e.g. social skills, communication, affect regulation). Mentors debrief parents at the end of each visit and discuss activities, behavior, and goal progression. Paraprofessional mentors receive training on program guidelines, discipline strategies, structured activities, and mentor-parent interactions and receive regular supervision." (WSIPP, 2018).

Workforce requirements

The program is delivered by paraprofessionals mentors who receive training on program guidelines, discipline strategies, structured activities, and mentor-parent interactions and receive regular supervision" (WSIPP, 2018).

Cost-effectiveness

Benefits minus costs $USD 4,085 per participant = Benefits $5,727 – Costs $1,641.

Minority populations

The evaluations have reported effects with participants from: low SES backgrounds; culturally and linguistically diverse backgrounds; people with a physical disability. We were unable to identify evaluations with; Aboriginal and Torres Strait Islander people; or LGBTI people.

4. Online cognitive behavioural therapy

Evaluation outcomes

http://wsipp.wa.gov/BenefitCost/Program/64 (WSIPP, 2018) Cox effect size five studies Anxiety disorders post-intervention = -0.439, first follow-up = -0.203, K = 5. Major depression post-intervention and first follow-up = 0.000, k = 1. Internalising effects unknown. Although there are effects in more than four evaluations, we downgraded our rating to 2 thumbs as the evaluations are not yet clear as to the specific programs that have positive effects (👍👍).

Target audience

Children with high anxiety symptoms

Reach

A broad range of child and family demographics are relevant.

Referral pathways

Parents may self-refer or be referred by organisations.

Components

Manualised curricula delivered online

"These treatments utilise the same principles and techniques as those of other Cognitive Behaviour Therapy (CBT) treatments for anxiety (e.g. strategies to control physiological responses to anxiety, cognitive restructuring and self-talk, exposure to feared stimuli, and positive reinforcement). However, they are unique insofar as clients have reduced (if any) face-to-face time with therapists. Clients are supported remotely via email or phone contact. A manual or online program helps to guide progress of the intervention." (WSIPP, 2018).

Three examples of online programs include:

- Camp Cope Alot. Available from Professor Kendall (www.workbookpublishing.com/information.php?info_id=5)
- Cool Teens: Available from Professor Ron Rapee https://www.ncbi.nlm.nih.gov/pubmed/18563472
- Brave Online: Available from Professor Sue Spence. https://www.kidsmatter.edu.au/health-and-community/enewsletter/brave-online-program-susan-spence https://brave4you.psy.uq.edu.au/

Workforce requirements

Online programs are hosted by a variety of health and mental health organisations.

Cost-effectiveness

Benefits minus cost = "$US 7,599 per participant = Costs $US 791 (profitable program for Washington State agencies based on health system returns for treating child anxiety), Benefits $US 6,808"

Minority populations

We were unable to find information on the implementation with: low SES backgrounds; physical disability; Aboriginal and Torres Strait Islander; people from culturally and linguistically diverse (CALD) backgrounds; LGBTI people.