Interventions to build resilience among young people

A literature review

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Background

Resilience refers to the ability to adapt to stress and adversity. In recent years, due to its potential influence on health, wellbeing and quality of life, resilience has become a major focus of interest for academic researchers, policymakers and practitioners working in the area of mental health and wellbeing.

Aim of the review

The aim of this project was to conduct a review of the literature relating to interventions designed to contribute to the development of resilience among children, adolescents and young adults.

In this review, we aimed to include any intervention which specifically defined itself as a resilience intervention. In addition, in the absence of a generally accepted definition of resilience and a way to measure this, we considered resilience as synonymous with having good mental health. We therefore also included interventions specifically designed to prevent mental health problems or promote mental health.

Methods

We used the following criteria to identify studies for inclusion in this review, which took a two-part approach:

- Interventions that have the term 'resilience' in the name of the intervention or one of the measures used. This section of the review covered primary studies as well as systematic reviews and meta-analyses.
- Interventions with the stated primary aim of preventing mental health problems or promoting mental health and that included a measure of mental health (defined as depression, anxiety disorders, social or emotional wellbeing, eating disorders, substance use [alcohol or other drugs but not smoking], conduct disorders/behaviour problems [including violence or aggression but not criminal behaviour] and suicide). This section of the review included systematic reviews and meta-analyses but not primary studies.

Databases that were systematically searched include Medline and Psycinfo. In order to assess the quality of included studies, we used the following tools: National Health and Medical Research council for primary studies and the Assessing the quality of systematic reviews (AMSTAR) for systematic reviews and meta-analyses.

Results

Findings from the studies included in this review demonstrate the significant effects of interventions that aim to either enhance resilience or prevent mental health problems.

For interventions with a reported aim of enhancing resilience, there is evidence for the following:

- cognitive behaviour therapy (CBT)-based interventions with or without other components, such as arts therapy:
    - The most commonly researched CBT-based intervention was the Penn Resiliency Program (PRP) (and culturally tailored versions), which reduced depressive symptoms; particularly in young people whose parents have psychopathology or alcohol dependence. However, there was no evidence that PRP was more effective than active control conditions.
    - FRIENDS is an Australian CBT-based intervention delivered in schools which has produced positive outcomes.
- parenting skills interventions, provided that maternal demoralisation is not high and children possess self-regulatory skills
- brief psychoeducation intervention delivered in a series of lectures to build an adaptive explanatory style in undergraduate students
- interventions that focus on attachment or parenting based on social learning frameworks offer promise for improving a range of outcomes for foster children
- the impact of mindfulness, arts therapy and participation in performing arts, as stand-alone interventions to foster resilience, requires further research.

For interventions that aim to prevent depression, anxiety and suicide, there is evidence of effectiveness for the following:

- psychological interventions for the prevention of depression in young people, particularly CBT-based interventions. Interventions conducted in multiple settings and interventions conducted in schools both show benefits. Online interventions also show promise. Evidence supports both targeted and universal programs.
- the use of exercise for the prevention of depression in young people
- psychological interventions for the prevention of anxiety in young people, particularly CBT-based interventions
- suicide prevention interventions for the improvement of knowledge and attitudes about suicide in young people
- studies of suicide prevention interventions for the improvement of help-seeking and reduction of suicidal behaviours although the evidence is weak and hampered by methodological concerns.

For interventions that aim to prevent eating disorders, there is evidence of effectiveness for:

- prevention programs that are CBT-based or incorporate media literacy and advocacy for addressing risk factors for eating disorders including beliefs about the desirability of being thin and dieting behaviours.

For interventions that aim to prevent behaviour problems, there is evidence of effectiveness for:

- parent-training interventions in families with young children and adolescents
- school-based interventions for the prevention of aggression and violent behaviours.

For interventions that aim to prevent substance use, there is evidence of effectiveness for the following:

- school-based interventions, including interventions for alcohol use, illicit drug use in general and cannabis use
- family-based interventions for the prevention of alcohol use
- family-based interventions for the prevention of drug use
- interventions for the reduction of alcohol use in higher education students, particularly interventions that include personalised feedback, moderation strategies, expectancy challenge, identification of risky situations, and goal-setting
- online interventions for the reduction of alcohol and drug use.

There is also evidence of effectiveness for family support interventions for the prevention of behaviour problems and substance use, and promotion of social and emotional wellbeing, academic success and family wellbeing. Such interventions have shown benefits in families in adverse circumstances: e.g. children of parents with a mental illness, children of divorced parents.

Preschool-based interventions have been shown to be effective for the promotion of cognitive, social, emotional and family wellbeing.

School-based interventions for the promotion of social and emotional wellbeing have also been shown to be effective, particularly if they are led by class teachers.

Conclusions

A review of interventions designed to build resilience (whether these were resilience-specific or mental health problem-specific) found a diverse range of studies focusing on the impact of interventions on young people's behaviour, emotional functioning, or presenting issues. A substantial number of resilience-specific studies assessed psychiatric symptoms (most commonly depression, followed by anxiety), the absence or reduction of which often seemed to serve as a proxy for measuring resilience. Because of this, some of these interventions are also included in systematic reviews of studies which to aim prevent mental health problems.

The most common types of interventions were CBT-based and skills-based psychoeducation interventions, targeted to young people and their parents. Many of these interventions showed beneficial effects in promoting resilience and reducing the risk of developing mental health problems.

While some studies attempted to assess the impact of other types of intervention, particularly those focused on developing skills and strengths (most notably school-based social and emotional learning interventions), many of the studies of their effectiveness were of low quality and there is a need for further research to determine the true effectiveness of strengths-based interventions, particularly those appropriate for the Australian context. There is also a need for further work to specifically define and operationalise indicators of resilience at all levels of analysis and to strengthen research-policy linkages in the area.

Background

Resilience refers to the ability to adapt to stress and adversity. In recent years, due to its potential influence on health, wellbeing and quality of life, resilience has become a major focus of interest for academic researchers, policymakers and practitioners working in the area of mental health and wellbeing. The World Health Organization defines mental health is as a state of wellbeing in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community (World Health Organization, 1999). It has recently been argued that mental health and mental illness, although highly correlated, exist on two separate continua (Keyes, 2002). Promoting mental health and preventing mental illness are therefore two linked but potentially distinct endeavours. Building resilience is potentially a pathway to achieving both outcomes.

Interest in the field of resilience was initially stimulated by findings that, despite the well-known links between negative life experiences and mental health problems, it is usual for most people *not* to develop these problems in spite of stressful experiences (Luthar et al., 2000; Richardson, 2002; Rutter, 1985).

Early work focused on the identification of personal factors, such as temperament and personality, which were associated with positive outcomes in the face of adversity (Rutter, 1985). Subsequently, research evolved to include a focus on both personal and external factors, which may act to increase risk or protect against it (Luthar et al., 2000). These factors may be divided into (1) individual characteristics, e.g. self-esteem, good problem solving; (2) family, peer and school factors, e.g. parental warmth, positive pro-social peer relationships; and (3) characteristics of the wider social environment, e.g. social cohesion. Current theories view resilience as a multidimensional construct, which includes personal characteristics and specific skills that allow individuals to cope well with adversity (Campbell-Sills et al., 2006).

More recently, research effort has been targeted towards understanding the underlying mechanisms by which these personal, family, social and environmental factors contribute to positive outcomes (Luthar et al., 2000). Moreover, the view of resilience as a fixed or global quality has shifted to one that recognises that new strengths and vulnerabilities often emerge with changing life circumstances, with resilience more accurately seen as a relative concept. Thus, resilience is seen as a dynamic process involving an interaction between personal and external risk and protective processes that act to modify the effects of adverse life events (Olsson et al., 2003, Rutter, 1985). Masten, Best and Garmezy (1990) have distinguished among three groups of resilient phenomena: those where (1) at-risk individuals show better-than-expected outcomes, (2) positive adaptation is maintained despite the occurrence of stressful experiences, and (3) there is a good recovery from trauma.

The positive psychology movement, which advocates a shift away from problem-oriented approaches to those focusing on strengths that allow individuals to survive and grow even in the face of adversity, has also contributed to developments in the field of resilience. In this context, resilience is seen as more than simple recovery from adversity but rather as a process in which disruption results in growth, knowledge, self-understanding and the increased strength of resilient qualities (Richardson, 2002). Thus, resilience is not seen as merely the absence of symptoms but must also be indicated by positive changes.

Research in the area of resilience is complicated by the diversity of ways in which the construct is defined and measured. Different research groups have considered resilience within different risk settings, examined the impact of different protective processes, and defined resilient outcomes according to different criteria. In considering the research evidence, Olsson et al. (2003) have emphasised the need to avoid confusion between resilience as an outcome of adaptation (maintenance of functionality in the face of adversity) and as a process of adaptation (assessment of a range of risk and protective mechanisms that act to mediate the effects of adversity), while emphasising that both approaches have something to offer the field. Given its complexity, it is likely that building resilience requires a focus on both the provision of opportunities to develop personal resources, as well as access to protective factors in the social environment. Thus, some resilience interventions focus on intervening at the individual level while others focus on other ecological levels, typically the family or community levels. Thus, an effective resilience intervention may be defined as one that has beneficial effects on mental health, functional capacity and social competence or as one that is aimed at developing an individual's internal resources and skills and/or changing social environments to further promote wellbeing.

Aims and scope of the review

Aim of the review

The aim of this project is to conduct a review of the literature relating to interventions designed to contribute to the development of resilience among children, adolescents and young adults.

Scope of the review

Given the diversity of approaches towards resilience, it is necessary for any review of studies to clearly define the approaches to be taken. Following the advice of those discussing conceptual issues in the area of resilience (Luthar et al., 2006; Olsson et al., 2003), we note the need to use a clear definition of resilience. Most definitions of resilience incorporate the idea of competence in the face of adversity and it is therefore necessary to clearly define 'adversity' and 'competence'. We also note the need to make a distinction between resilience as an outcome of adaptation and as a process of adaptation (Olsson et al., 2003). For the purposes of this review, we took the following approaches:

- We defined resilience as 'competence' (evidence of positive adaptation across one or more domains of functioning) in the face of adversity (a person's life circumstances). However, on the basis that everyone faces adversity at some point in life and needs to have skills and resources to cope, we included interventions targeted to all youth populations rather than just those that are specifically identified as facing adversity.
- We defined resilience as recovery from adversity or as recovery to an above-average level of competence (noting that, in this context, choices will be conceptually guided by the nature of the risk studied: e.g. if the stressor entails severe to catastrophic events, the maintenance of near-average functioning is likely to reflect resilience, whereas when risks generally fall in the more moderate range, evidence of superior functioning in conceptually important domains may be required to justify labels of resilience).

- We considered resilience as an *outcome* and defined competence as having good mental health and therefore included any intervention specifically designed to prevent mental health problems or promote mental health, and which include a measure of mental health.
- We considered resilience as a *process* and included interventions that aim to impact on resilience-promoting competencies and resources within the individual. Informed by the literature on risk and protective factors, we included interventions that aim to impact on the following resilience-promoting competencies and resources at the individual, family and school levels: social and emotional skills, parenting style, family functioning and positive social interactions at school.

Methods

Inclusion and exclusion criteria

In line with the approach described above, we used the following criteria to identify studies for inclusion in this review:

- Interventions that have the term 'resilience' in the name of the intervention or one of the measures used. This section of the review covered systematic reviews, meta-analyses, randomised controlled trials and controlled studies, and others deemed appropriate due to the strength of their research or evaluation design. In this section we took an open and flexible approach in order to review how others have characterised and measured resilience as a construct and on the types of interventions used to promote resilience.
- Interventions with the primary aim of preventing mental health problems or promoting mental health and which included a measure of mental health (defined as depression, anxiety disorders, social or emotional wellbeing, eating disorders, substance use [alcohol or other drugs but not smoking], conduct disorders/behaviour problems [including violence or aggression but not criminal behaviour] and suicide). This section of the review covered systematic reviews and meta-analyses.
- Published in the English language.
- Published on or after 1/1/2000.

Exclusion criteria were:

- Programs specifically designed to improve mechanisms other than resilience, mental health, or individual, family, or school-level protective factors
- Studies in languages other than English
- Studies conducted in low and middle-income countries
- Studies in adults older than 25
- Studies relating to community resilience
- Studies in populations with limited relevance to the broad population, e.g. children who undergo repeated painful medical procedures.
- Cultural contexts very different to the Australian community context (e.g. African-American community churches in the USA, war-torn countries)
- Studies which were not peer-reviewed.

Database searches

Databases that were systematically searched include Medline, a bibliographic database of life sciences and biomedical information, and Psycinfo, a database of abstracts of literature in the field of psychology. All searches were undertaken in July and August 2014.

In order to identify studies of interventions that have the term ‘resilience’ in the name of the intervention or one of the measures used, keyword and subject headings were searched using the following terms: (resilience OR resiliency) AND (trial OR train* OR teach* OR promot* OR preven* OR interven* OR program). The following limits were applied: English language, published in or after January 2000, subjects under the age of 18 years (rather than age 25 as the use of the older age limit led to the initial inclusion of studies which were targeted towards adults of all ages). We conducted a forward search strategy whereby articles that had cited any of the relevant primary studies of resilience interventions included in our review were located were also included as relevant. We searched for and found one review of resilience measures (Windle et al., 2011) and then searched for intervention studies that had used any of the measures designed for assessing resilience in youth.

The terms ('employment' OR 'work' OR 'job') were used in combination with other search terms such as (‘young’ OR ‘youth’), ‘transition’, ‘first’ and ‘resilience’ to search for research regarding interventions aimed at promoting resilience in young people transitioning into their first-time, full-time employment. These terms were used to search both titles and subject terms of published literature. While there is a body of literature regarding programs that assist young people, especially those with disabilities, in their transition into full-time work, no research was identified in this search that specifically related to promoting resilience in young people during this transition period.

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 with the following: (mental health-related terms AND prevention) OR (mental health-related terms AND “mental health promotion”). Mental health terms were general terms ("Mental health" OR "Mental health problem" OR "Mental wellbeing" OR "Emotional wellbeing"), terms specific to internalising problems (Depressi* OR Affective OR Mood OR internal* OR anxiety) or terms specific to externalising problems (external* problem OR external* disorder OR behav* disorders OR behav* disorder OR conduct problem OR conduct disorder OR aggression OR aggressive behav* OR antisocial behav* OR alcohol use OR drug use). The following limits were applied: review articles for methodology, English language, published in or after January 2000. The search in Medline was limited to studies in populations aged 18 years and younger. However, as applying this limitation in PsycINFO resulted in a significant number of relevant articles being excluded, this limit was not applied to the PsycINFO search.

The reference lists of all the included studies were also scrutinised in order to identify any relevant study that had not been considered. In addition forward searches were also conducted for articles that cited included studies.

Selection process

One researcher independently analysed each individual title and abstract in order to exclude papers which did not meet the above inclusion criteria. Of the remaining studies, the full text was obtained

and analysed independently by two researchers in order to establish their relevance to the inclusion/exclusion criteria. In order to achieve consensus, any disagreement about a study's inclusion was referred to a third researcher for consideration.

Appraisal of quality

In order to assess the quality of included studies, we used the following tools:

National Health and Medical Research Council (NHMRC)

Primary studies were assessed according to NHMRC levels of evidence (NHMRC, 2000) (see Appendix A).

Assessing the quality of systematic reviews (AMSTAR)

The AMSTAR checklist was used for quality assessment of systematic reviews and meta-analyses (see Appendix A). This checklist evaluates scientific quality and consists of 11 questions, with 1 mark given for a 'yes' response and 0 marks for a 'no', 'can't answer', and 'not applicable' response (Shea et al., 2007b). Each question outlines set criteria that must be used to decide whether to assign a point. However, as the AMSTAR includes questions specific to meta-analysis (questions 9 and 10), we decided to use adjusted cut-off scores to reflect the fact that they cannot be assessed on these two questions. Thus, a score of 0–3 was deemed low quality, 4–7 moderate and 8–9 high quality. The AMSTAR has been shown to have excellent reliability (R^2=.96) and construct validity (Shea et al., 2007a).

Results

Interventions using the term 'resilience' in the name of the intervention or measures

A flowchart of the study selection is shown in Appendix B, Figure 1. The initial search yielded 800 records of potential interest; of these, 677 were excluded based on the title or abstract. The remaining 123 articles were obtained and read in their full text. Of the remaining articles, 91 were excluded from the study for the reasons outlined in Appendix B, Figure 1. See Appendix C, Tables 1 and 2 for characteristics of included studies.

A further eight records were identified via our forward search strategy. All of the latter were ultimately included in our findings related to resilience interventions – one was a systematic review (Stewart and Wang, 2012) and seven were primary studies (Chen et al., 2014; Gerson & Fernandez, 2013; Hyun et al., 2010; Kindt et al., 2014; Roghanchi et al., 2013; Watson et al., 2014; Wijnhoven et al., 2014).

Thus a total of 32 studies were included in this section of the review – three systematic reviews, one meta-analytic review and 28 primary studies. To minimise duplication, we ensured that the 28 primary studies we reviewed were not already included in the four review articles.

Characteristics of review studies

Of the three systematic reviews, two were of low quality (Leve et al., 2012; Stewart & Wang, 2012) and one was of moderate quality (Brownlee et al., 2013). The sole meta-analytic review was of moderate quality (Brunwasser et al., 2009). The reviews were all relatively recently conducted (2009 to 2012). Each one covered a different topic, including one that was more general, focusing on strengths and resilience outcomes for young people (Brownlee et al., 2013) and three that were more specific [interventions that promote resilience of children in foster care (Leve et al., 2012), building resilience through school-based health promotion (Stewart & Wang, 2012) and the effect of the Penn Resiliency Program on depressive symptoms (Brunwasser et al., 2009)]. The number of primary studies appraised in each review ranged from six (Stewart & Wang, 2012) to 21 (Leve et al., 2012). The four reviews reported findings for a substantial total number of young participants, ranging from 1922 to 13,947. Each review included studies that covered a broad age range of young people, ranging from two months to 19 years, with the exception of one which did not provide a specific age range in an accessible manner and indicated that participants were of 'school age' (Stewart & Wang, 2012).

Intervention types in review studies

With the exception of the review focusing on resilience in foster children (Leve et al., 2012), the most common setting for resilience-promoting interventions across the reviews was schools (primary and secondary, as well as after-school programs). Other settings included mental health care agencies, residential settings and detention centres.

Selected interventions from studies that were classed as being high quality in the moderate quality review conducted by Brownlee et al. (2013) included:

- The FRIENDS intervention, which is a CBT program that aims to teach social and emotional learning and build strengths by developing protective factors in both children and adolescents in a school setting (Barrett et al., 2003). FRIENDS achieved positive outcomes for children (self-esteem, improved expectation for the future, reduced anxiety) and adolescents (reduced anxiety, depression, anger, post-traumatic stress, dissociation).
- Strength-Based Assessment on Youth with Emotional or Behavioural Disorders in receipt of psychotherapy from a public mental health agency (Cox, 2006). There were no differences in functioning in youth who were assessed using a strengths-based assessment compared to those assessed using a conventional deficit-based assessment; however, treatment gains were reported in youth when their therapist was highly strengths oriented.
- Leadership, Education, Achievement, and Development (LEAD) intervention, which is a community-based program, aimed to help reduce the risk of minority youth being involved with the juvenile justice system (Shelton, 2009). The program involves creative arts and instructional activities to develop self-awareness, improve communication skills, self-control and self-esteem, and to reduce risk behaviours. Outcomes in terms of resilience, self-esteem, social competence and sense of control were regarded as being in the right direction.

Most programs reviewed by Brownlee et al. (2013) lacked detail about what was done within the intervention, which was a limitation acknowledged by the authors.

Overall, interventions regarded as effective for foster children, included in the review by Leve et al. (2012), were considered to focus on attachment or to have evolved from parenting interventions based on social learning frameworks. These interventions were classified according to stage of development: early childhood, middle childhood and adolescence.

Specific early childhood interventions producing positive outcomes include:

- Attachment and Bio-behavioral Catch-up (ABC) – designed to help caregivers facilitate healthy regulation of their child's behavioural and stress responses, by teaching caregivers to be highly responsive to the child's emotions and increasing caregivers' provision of nurturing care and promotion of attachment security.
- Multidimensional Treatment Foster Care for Preschoolers (MTFC-P) – uses a behaviour management approach and intensively trains, supervises and supports foster caregivers to provide positive adult support and consistent limit setting.
- Bucharest Early Intervention Project (BEIP) – foster caregivers received ongoing support from social workers in managing challenging behaviour, encouraging child-centred parenting and organising a support group. The intervention was focused on developing attachment relationships, facilitating language development and providing foster parents with techniques for managing difficult child behaviour.

Specific middle childhood interventions producing positive outcomes include:

- Incredible Years (IY) – modified version incorporated a co-parenting component between foster and biological caregivers to expand their knowledge of each other and their child, practice open communication and negotiate inter-parental conflict (regarding family visitation, family routines and discipline)
- Keeping Foster Parents Trained and Supported (KEEP) – training, supervision and support to foster parents in applying behaviour management strategies
- Middle School Success (MSS) – derivative of KEEP specifically targeting youth exiting primary school. Foster caregiver sessions were group based and behaviour management oriented; youth sessions were group based (summer) and individually based (school year) and were oriented toward skill building
- Fostering Individualized Assistance Program (FIAP) – focused on wrapping services around the child based on their individual and family needs with the goal of improving placement stability and reducing behaviour and emotional problems. Intervention had four components: strength-based assessment, life-domain planning, clinical case management and follow-along supports and services.

One adolescent intervention was reported to produce positive outcomes:

- Multidimensional Treatment Foster Care for Adolescents (MTFC-A) – multicomponent program that involves individual placement (for six to nine months) with a specialised foster family (i.e. intensively trained, supervised and supported to provide positive adult support and mentoring, close supervision and consistent limit setting).

Stewart and Wang's (2012) review, ranked as low quality, focused on the Health-Promoting School (HPS) approach, the precise details of which are unclear. However, the authors indicate that the approach is holistic, integrating health into the curriculum; underpinned by Bronfenbrenner's (1989) ecological theory; and supported by the World Health Organization. HPS also recognises the significance of school-based health policies, links with health services and partnerships between the school, the family and community. The authors conclude that the evidence related to HPS is limited but promising.

Brunwasser et al. (2009) conducted a moderate quality meta-analysis of the Penn Resiliency Program (PRP), which is one of the most widely researched depression prevention programs and is

included in our present review because of the use of the term resiliency in the program name. PRP is a cognitive behavioural group intervention designed for youths in late childhood and early adolescence (ages 10–14 years). It is typically a school-based intervention but has been evaluated in other settings including primary care clinics and juvenile detention centres. Further details about the PRP intervention and various modifications of its structure and content are provided in Table 1, which summarises the primary studies included in our review. The review concluded that PRP reduced depression symptoms compared with no treatment but not compared with active controls, with further detail provided below (see Section 0).

Measures used in review studies

The types of measures used to assess youth 'resilience' were diverse. All four reviews included studies that assessed psychiatric symptoms (most commonly depression, followed by anxiety), the absence or reduction of which seemed to serve as a proxy for measuring resilience. Similarly, other measures of absence/reduction of problem emotions and/or behaviours were commonly used as indicators of resilience, such as, addiction severity or substance abuse, externalising/internalising problems, psychosomatic complaints, stress and hopelessness. More specific and less generalisable problem behaviours were used as indicators of resilience in the studies comprising the review of resilience of children in foster care such as number of placement changes, number of runaways, incarceration, arrest rates, deviant peer affiliations and pregnancy rates (Leve et al., 2012).

Assessing youth resilience via positive functioning and sense of self was somewhat less common in the studies comprising three of the review studies (Brownlee et al., 2013; Leve et al., 2012; Stewart & Wang, 2012) and included constructs such as self-esteem, self-concept, functioning, strengths, social competency, youth competence, sense of control, positive youth development, health, attachment, pro-social behaviour, learning and motivation, and family functioning and cohesion.

Only one of the review studies (Brownlee et al., 2013) included a study (Shelton, 2009) that directly assessed resilience as a construct in its own right using the Polk Resilience Patterns Scale (PRPS) (Polk, 2000), which is a 20-item scale designed to measure four patterns of thought to synergistically explain the construct of resilience: the dispositional, relational, situational and philosophical patterns. The PRPS is positively correlated with measures of 'sense of coherence' and 'psychological hardiness' and negatively correlated with measures of 'helplessness' and 'hopelessness'. The PRPS is not one of the more common measures of resilience (Windle et al., 2011) and does not appear to be widely used.

Some of the studies included in two of the reviews used measures of parent (caregiver) or school staff resilience and/or other outcomes (Leve et al., 2012; Stewart & Wang, 2012). A synthesis of these findings is beyond the scope of the present literature review which pertains to youth resilience. However, it should be noted that the home and school environment can have a significant impact on the resilience of young people, and indeed some of the interventions for promoting youth resilience directly target parent and teacher self-efficacy and skills as a means to foster youth resilience (Stewart & Wang, 2012).

Outcomes of review studies

All three high-quality quantitative studies in the moderate quality review conducted by Brownlee et al. (2013) reported some benefit to the strength-based/resiliency intervention and assessments compared to a control group, but comparisons to other interventions were not made precluding

attribution of positive results to the specific strengths/resiliency interventions. Common themes of the studies were personal (i.e. internal state including beliefs and values) competency, coping strategies, social competency, pro-social involvement and cultural identity. Interventions were intended to either increase the number of strengths or provide young people with support to use their existing strengths to deal with issues.

Leve et al. (2012) report that eight interventions offer promise for improving a range of outcomes for foster children, with results from most studies producing effects of small to moderate sizes that typically decrease over time. Findings from this review need to be interpreted with caution since its quality was ranked as low, and the authors acknowledge that the selection criteria used favoured studies reporting positive intervention effects and long-term follow-up data is lacking.

As noted above, Stewart and Wang (2012) concluded that that the evidence related to HPS approach is limited but promising. They considered programs that targeted school staff and students to be effective but call for further examination of impact on parents and for further research. Again, these findings need to be interpreted with caution since this was ranked as a low-quality review.

Also noted above, the moderate quality meta-analysis of the PRP (Brunwasser et al., 2009) found that participants reported fewer depressive symptoms at post-intervention and follow-up assessments compared with those receiving no intervention (producing effect sizes ranging from 0.11 to 0.21). However, there was no evidence that PRP was more effective than active control conditions. The authors concluded that PRP's effects on depressive disorders may be smaller than those reported in a larger meta-analysis of depression prevention programs for older adolescents and adults. They suggest that future PRP research should examine whether PRP's effects on depressive symptoms lead to clinically meaningful benefits for its participants, whether the program is cost-effective, whether cognitive behavioural skills mediate program effects, and whether PRP is effective when delivered under real-world conditions.

Characteristics of primary studies

Of the 28 records of primary studies that met criteria for inclusion in this review, one record of which reported findings from two studies (Gerson & Fernandez, 2013), the majority of studies were conducted in the US (n = 12) including one that contained data from both the US and Japan, followed by Australia (n = 5), Canada (n = 2) and the Netherlands (n = 2). One study was conducted in each of the following countries: China, the UK, Iran, Germany, Scotland, South Africa and Korea. The number of participants in the studies ranged from 11 to 2844, with most studies (n=13) having less than 100 participants. In general, participants in the studies ranged in age from 3 to 24 years, with the exception of the second part of one study (Gerson & Fernandez, 2013), in which participants ranged in age from 17 to 50 years. In terms of the quality of the studies, we rated 11 of the 29 primary studies as level II, seven as level III-2, four as level III-1, four as level IV and three as level III-3, using the NHMRC evidence hierarchy (see Appendix A). With the exception of six studies, which were published before or in 2008 (de la Rosa et al., 2005; Fraser & Pakenham, 2008; Green et al., 2007; Grunstein & Nutbeam, 2007; Hipke et al., 2002; Tuttle et al., 2006), the majority of studies were published more recently, from 2010 to 2014. All of the studies reported that their aim was to examine the effect of some sort of intervention on the resilience, psychological symptoms (e.g. depression, anxiety, trauma, etc.) or psychological strengths (e.g. self-esteem, proactive coping, social connectedness, etc.) of young people.

Intervention types in primary studies

In the main, the settings for the intervention studies included in this section of the review were educational institutions, including secondary or primary schools (n = 17: Anticich et al., 2013; Challen et al., 2014; Chen et al., 2014; Craig et al., 2014; Cutuli et al., 2013; de Villiers & van den Berg, 2012; Donohoe et al., 2012; Foret et al., 2012; Gillham et al., 2012; Green et al., 2007; Grunstein & Nutbeam, 2007; Hyun et al., 2010; Kindt et al., 2014; Mitchelson et al., 2010; Stoiber & Gettinger, 2011; Tuttle et al., 2006; Wijnhoven et al., 2014), only one of which trialled an online interactive program (Brainology) (Donohoe et al., 2012)), kindergartens (n = 2: Froehlich-Gildhoff & Roennau-Boese, 2012; Stoiber & Gettinger, 2011), universities (n = 1: Gerson & Fernandez, 2013) and a university counselling service (n = 1: Roghanchi et al., 2013). Health and welfare services were the next type of setting or referral source to the study interventions and included a hospital (Fraser & Pakenham, 2008), children referred via a child protection agency or child mental health centre (Coholic et al., 2012) and a mental health service (Watson et al., 2014). Other settings were aligned with the particular youth sub-populations of interest to the specific studies, such as first-time foster children (Craven & Lee, 2010), home visits to first-born children and their parents (de la Rosa et al., 2005), US Marine Corps and US Navy (Lester et al., 2012), and a homeless shelter (Grabbe et al., 2012). The setting/recruitment location for one study that examined resilience in children of divorce was unclear (Hipke et al., 2002).

The most common type of intervention examined via 14 of the 28 primary studies in terms of its impact on youth resilience was CBT which was typically delivered in a group format and over four to 18 sessions (Anticich et al., 2013; Challen et al., 2014; Chen et al., 2014; Cutuli et al., 2013; de Villiers and van den Berg, 2012; Foret et al., 2012; Gillham et al., 2012; Green et al., 2007; Hyun et al., 2010; Kindt et al., 2014; Roghanchi et al., 2013; Tuttle et al., 2006; Watson et al., 2014; Wijnhoven et al., 2014). The Penn Resiliency Program (PRP), including Dutch adaptations, was evaluated in four of these studies (Cutuli et al., 2013; Gillham et al., 2012; Kindt et al., 2014; Wijnhoven et al., 2014). One study delivered CBT via the Fun FRIENDS program (Anticich et al., 2013) and another via the Resilience Builder Program (RBP) (Watson et al., 2014), one study delivered CBT in the form of Rational-Emotional Behavioural Therapy (REBT) combined with art therapy (Roghanchi et al., 2013) and one study examined the effects of an individual solution-focused CBT life-coaching program with a trained teacher-coach (Green et al., 2007). The final study involving CBT compared Teen Club (TC, group psychoeducation, outreach and instrumental assistance) on its own to TC plus Positive Adolescent Life Skills (PALS), a cognitive behavioural skill-building component, delivered to high-risk teenagers over 25 sessions (Hipke et al., 2002).

Two studies tested mindfulness interventions, including:

- Holistic Arts-Based Group Program (HAP) for the development of resilience in children in need. The HAP teaches mindfulness using arts-based methods, and aims to teach children how to understand their feelings and develop their strengths (Coholic et al., 2012).
- A spirituality development class – a minimally modified version of Yale University's eight-session Spiritual Self-Schema (3-S) program – to homeless youth in a shelter (Grabbe et al., 2012).

Other interventions examined in terms of their impact on resilience in single studies included:

- School-based group counselling to promote effective problem solving and proactive coping skills, delivered to multiethnic sexual minority youth in eight to 10 sessions (Craig et al., 2014)

- Program for Accelerated Thriving and Health (PATH), involving psychoeducation about control explanatory styles (optimistic, pessimistic and personal), delivered to undergraduate university students in three sessions (Gerson & Fernandez, 2013)
- Families Over Coming Under Stress (FOCUS) program, involving eight sessions of family-centred strength- and skills-based education and skills to enhance coping with deployment-related experiences (Lester et al., 2012)
- Kindergarten teacher training on resilience, child training aimed at prevention and promotion of resilience, parenting, and networking with other services (Froehlich-Gildhoff & Roennau-Boese, 2012)
- Brainology, an online computer program designed to foster a mastery approach to learning (Donohoe et al., 2012)
- Training teachers in Functional Assessment (FA) and positive behaviour support (PBS) for addressing challenging behaviours in young children (Stoiber & Gettinger, 2011)
- BRiTA Futures Primary and Adolescent programs for CALD children, involving an eight to 10 session whole-class approach to cultural and personal identity, self-esteem, communication and relationships (Mitchelson et al., 2010)
- Transitional Group Therapy (TGT) (Craven & Lee, 2010), an experiential approach that employs play therapy (e.g. sand tray, drawings, puppet play and role play) and psychoeducational techniques in a strengths-based group format in order to:
    - teach and cultivate characteristics of personal and relational resiliency (Walsh, 1996) to ease the abrupt and often traumatic transition into foster placement
    - reverse feelings of loss, abandonment and betrayal through safe expression of emotions and other forms of social outreach; for example, anger is displayed, but regulated, in a milieu wherein the children are validated and valued
    - cultivate an inner sense of psychological permanence though increasing self-esteem and group identification
    - educate the children about foster care
    - decrease feelings of stigmatisation
- Koping Adolescent Group Program (KAP) for children of parents with a mental illness (COPMI), a peer support intervention offering psychoeducation, coping and peer support (Fraser & Pakenham, 2008)
- A dance/drama competition, the Rock Eisteddfod Challenge (Grunstein & Nutbeam, 2007)
- First-born Program (FBP) involving home visits to provide psychoeducation about the prenatal period, pregnancy, labour, care of newborn bonding, safety, discipline etc (de la Rosa et al., 2005)
- Parenting skills for mothers of children of divorce (Hipke et al., 2002).

Measures used in primary studies

Consistent with the findings from our review of reviews above (see Section 4.1.3), the types of measures used to assess youth 'resilience' were diverse and the use of multiple measures was common. Again, a substantial number of primary studies assessed psychiatric symptoms (most commonly depression, followed by anxiety), the absence or reduction of which seemed to serve as a proxy for measuring resilience. Specifically, nine studies measured symptoms of depression, six measured symptoms of anxiety, five measured behavioural or emotional difficulties, four measured internalising/externalising symptoms including aggressive behaviour and delinquency, two measured psychological symptoms, two measured substance abuse, and one each measured negative emotionality, anger control, impulsiveness and hopelessness.

Assessing youth resilience via positive functioning and sense of self was also common in the primary studies we examined and included constructs such as self-esteem/self-concept/self-appraisal (n = 6), family appraisal (n = 1), proactive coping/coping (n = 5), social connectedness/support to/from peers and family (n = 7), emotional/behavioural strengths (n = 5), social/ emotional/ behavioural/ cognitive/ intellectual competence (n = 10), family functioning/involvement (n = 4), mental wellness/

personal wellbeing/ general health (n = 3), educational/vocational functioning (n =2), optimism/personal control explanatory style (n = 2), cognitive hardiness (n = 1), spirituality (n = 1), health-promoting behaviours (n = 1), hope (n = 1) and leisure/recreation (n = 1).

Thirteen of the 29 (38%) primary studies directly assessed resilience as a construct in its own right using the Connor-Davidson Resilience Scale, including a Persian-translated version (n=3) (Chen et al., 2014; Gerson & Fernandez, 2013; Roghanchi et al., 2013), the Resilience Devereux Early Childhood Assessment Clinical Form (n=1) (Anticich et al., 2013), Behaviour Assessment System for Children (BASC-2), which includes a resiliency subscale (n = 1) (Watson et al., 2014), the Resiliency Scale developed by Wagnild and Young (1993) (n=1) (Grabbe et al., 2012), the Prince-Embury (2006) Resilience Scale (n = 3) (Coholic et al., 2012, de Villiers & van den Berg, 2012; Donohoe et al., 2012), Korean Adolescent Resilience Scale (n=1) (Hyun et al., 2010), a purpose-designed measure of resilience (n=2) (Grunstein & Nutbeam, 2007, Mitchelson et al., 2010) or the traits of personal resiliency subscale of Behaviour and Emotional Rating Scale 2nd edition (n = 1) (Craven & Lee, 2010). It is not surprising that we identified more resilience-specific measures in the primary studies compared to the systematic and meta-analytic reviews we analysed since our search strategy for primary articles deliberately incorporated resilience-specific measures. Appendix C , Table 3 describes each of the resilience-specific measures used in the 13 primary studies. Examining the content of various measures of 'resilience', it becomes clear that there are some commonalities to these measures. The concept most frequently measured relates to what Grabbe et al. (2012) term 'self-reliance'. This concept is variously named as or relates to strengths of character such as: self-control, initiative, adaptability, autonomy, acceptance of self, self-understanding and resourcefulness. A number of measures also relate to what could be called attachment or connectedness: the ability to seek out and respond to appropriate comfort and help; to relate to and develop positive relationships with peers, family members and others; and the ability to accept and give affection. Less commonly, measures of resilience focus on the ability to deal with, and develop from, experiences of failure, adversity and conflict. Furthermore, some measures also measure the 'flipside' to the strengths that make up resilience, assessing emotional and behavioural problems such as withdrawal, depression and anxiety; attentional problems and learning difficulties; aggression and bullying, hyperactivity, conduct problems, and problems with emotional control.

Finally, four of the primary studies assessed parent psychopathology and only one study assessed service use.

Outcomes of primary studies

Findings will be summarised for the higher-quality quantitative studies (levels II, III-1 and III-2) due to the methodological limitations of the remaining studies and our reduced ability to draw adequate conclusions from them.

Level II studies

The highest-quality primary studies (according to the NHMRC hierarchy of evidence, see Appendix A), which we identified were rated level II (n = 11). The vast majority (n = 10) of these methodologically rigorous studies examined the effect of CBT-based interventions on youth resilience, and the findings are promising but to some extent mixed, particularly in terms of the specificity of CBT as an intervention for fostering youth resilience. Four of these studies examined the Penn Resiliency Program (PRP) or Dutch modifications of PRP (termed Op Volle Karcht – OVK).

Compared with a control group, OVK effectively reduces depression symptoms in the short term and possibly prevents the development of a clinical depression (Wijnhoven et al., 2014). There was no main effect of OVK on depressive symptoms at follow-up but adolescents with parents with psychopathology who received the program had less depression symptoms compared to adolescents with parents with psychopathology in a control condition (Kindt et al., 2014). PRP did not reduce symptoms relative to the alternate intervention (Penn Enhancement Program, involving leader-facilitated discussions and interactive activities and games) (Cutuli et al., 2013). PRP can be beneficial when delivered by school teachers and counsellors and is most helpful to students with elevated hopelessness, and the involvement of parents in the program did not enhance the benefits achieved for young people (Gillham et al., 2012).

Six studies examined promising CBT interventions other than PRP. Among Chinese children whose parents died in an earthquake, CBT was effective in reducing PTSD, depression and improving resilience and general (non-CBT) support was more effective than no intervention in improving resilience (Chen et al., 2014). Program for Accelerated Thriving and Health (PATH) significantly increased optimistic and personal explanatory styles, resilience and thriving, and the second study reported in the same publication found that a modified version of PATH increased resilience in university students (Gerson & Fernandez, 2013). A Korean study reported that a CBT program might be effective for improving the resilience (but not self-concept or depression) of adolescents with alcohol-dependent parents (Hyun et al., 2010). Cognitive behavioural solution-focused life coaching of female senior high school students was associated with significant increases in cognitive hardiness and hope, and significant decreases in levels of depression (Green et al., 2007). No significant differences on the Problem Solving Screening Instrument (POSIT) were observed between adolescents who received Teen Club intervention and those who received Teen Club plus Positive Adolescent Life Skills (PALS – a CBT-based intervention) (Tuttle et al., 2006).

The single level II study that did not involve CBT examined the effects of a parenting skills program (vs. self-guided reading control) provided to divorced mothers (Hipke et al., 2002). This study found that children were less likely to maintain program gains in externalising when maternal demoralisation was high or when children's self-regulatory skills were low (Hipke et al., 2002).

Level III-1 studies

We rated four studies as providing level III-1 evidence and which reported promising findings, three of which delivered CBT-based interventions. The first of these was an Australian study, which reported that the Fun FRIENDS program produced comparable results (in terms of impact on resilience, social and emotional functioning and behaviour difficulties) to active comparison and wait-list control groups, but that the program achieved greater reductions in anxiety and behavioural inhibition (Anticich et al., 2013). This study also reported that Fun FRIENDS achieved significant improvements in parenting distress and parent–child interactions, with gains maintained at follow-up. Second, an Iranian study reported that Combined Rational Emotive Behaviour Therapy (REBT) plus art therapy increased self-esteem and resilience in students (Roghanchi et al., 2013). Third, a South African study found that CBT-based intervention improved intrapersonal characteristics (i.e. emotional regulation and self-appraisal) but interpersonal skills and external resources (i.e. family and general social support) did not increase significantly (de Villiers & van den Berg, 2012). The sole non-CBT intervention study in this category of evidence found that Functional

Assessment (FA) and positive behaviour support (PBS) increased children's resilience in that they demonstrated more positive behaviours and fewer challenging behaviours compared with control children at post-intervention (Stoiber & Gettinger, 2011).

Level III-2 studies

We rated seven studies as providing level III-2 evidence. Two of these studies tested CBT-based interventions. One study reported that the UK resilience program (UKRP), an adapted version of PRP, did not have a significant effect on anxiety at any measurement point, but at post-intervention UKRP university student participants reported lower levels of depressive symptoms than control group students; however, the effect was small and did not persist to one-year or two-year follow-ups (Challen et al., 2014). The second CBT-based study found that an intervention delivering didactic instruction, relaxation exercises, positive psychology and cognitive restructuring resulted in significantly greater improvements in levels of perceived stress, state anxiety and health-promoting behaviours compared with a wait-list control group and was most useful for girls (Foret et al., 2012).

The remaining five studies in this category of evidence delivered diverse interventions and reported the following findings:

- A German study reported that a four-tiered intervention (targeting early childhood teachers, children, parents and networks) in kindergartens produced positive effects on self-esteem, behavioural stability and cognitive development of children compared with a control group and over time (Froehlich-Gildhoff & Roennau-Boese, 2012).
- An online interactive program, Brainology, produced significant increases in mindset (intelligence) scores post-intervention and the impact was not maintained over time (Donohoe et al., 2012). There was no change in resilience or sense of mastery for either the intervention or control group.
- A Holistic Arts-Based Group program (HAP), which taught mindfulness using arts-based methods, was beneficial for children in that they self-reported lower emotional reactivity post-intervention but no changes were found in perceptions of self-concept (Coholic et al., 2012).
- An Australian study reported that the BRiTA Futures Program significantly improved global quality of life, and provided weak evidence of improvements in resilience, in primary school students. The study also reported significantly improved wellbeing, and provided weak evidence of improvement in resourcefulness, in secondary school students (Mitchelson et al., 2010).
- Transitional Group Therapy (TGT) produced desirable changes in pro-social behaviour and orientation towards peers, family and schools (Craven & Lee, 2010).

Narrative reviews

Ten narrative reviews of literature related to resilience were identified among the 91 articles that were excluded in the full text review. Of these 10 articles eight are tabulated in Appendix C, Table 4. We were unable to acquire full text copies of the two remaining papers, which led to their exclusion from the table. The rationale for tabulating these narrative reviews was that they offered a different perspective than the included articles and reviews presented above.

Interventions with the primary aim of preventing mental health problems

In considering the results of the review, we distinguish between universal, selected, or indicated prevention interventions (Mrazek & Haggerty, 1994). Universal interventions target the whole population, selective interventions target population subgroups at increased risk, and indicated prevention targets individuals at high risk. Indicated prevention overlaps with early intervention

while universal prevention overlaps with health promotion, particularly where the focus is on behaviour change. Several reviews also presented effect size estimates where data was available. These effect sizes are generally categorised as small (0.2), moderate (0.5), or large (0.8) (Cohen, 1992).

A flowchart of the review selection is shown in Appendix B Figure 2. The initial search yielded 3247 records of potential interest: of these, 3071 were excluded based on the title or abstract. The remaining 176 reviews were obtained and read in their full text. Of the remaining reviews, 92 were excluded from the study for the reasons outlined in Appendix C, Figure 2. See Appendix C, Table 5 for characteristics of included studies.

Reviews of interventions for the prevention of depression

We identified nine systematic reviews of interventions for the prevention of depression (Calear & Christensen, 2010a; Calear & Christensen, 2010b; Camero et al., 2012; Christensen et al., 2010; Horowitz & Garber, 2006; Larun et al., 2006; Merry et al., 2011; Spence & Shortt, 2007; Stice et al., 2009). Of these, four were high quality, four were moderate quality and one was low quality.

Four studies reviewed depression prevention interventions in multiple settings (Christensen et al., 2010; Horowitz & Garber, 2006; Merry et al., 2011; Stice et al., 2009). All studies concluded that interventions were effective, with most effect sizes in the moderate range. Cognitive Behaviour Therapy (CBT) programs were more common than other interventions. The most recent review, which included 53 studies and was of high quality, concluded that the risk of having a depressive disorder post-intervention was reduced immediately compared with no intervention (15 studies; risk difference (RD)
-0.09; 95% CI -0.14 to -0.05), at three to nine months (14 studies; RD -0.11; 95% CI -0.16 to -0.06) and at 12 months (10 studies; RD -0.06; 95% CI -0.11 to -0.01). However, there was no evidence for continued efficacy at 24 months (eight studies RD -0.01; 95% CI -0.04 to 0.03) and limited evidence of efficacy at 36 months (two studies; 464 participants; RD -0.10; 95% CI -0.19 to -0.02) (Merry et al., 2011).

Two studies examined the effects of school-based interventions, with both concluding that interventions were beneficial in the prevention of depression (Calear & Christensen, 2010b; Spence & Shortt, 2007). Calear and Christensen (2010b) noted that indicated prevention programs were found to be the most effective, with effect sizes for all programs ranging from 0.21 to 1.40. Teacher program leaders and the employment of attention control conditions (conditions used to balance non-specific attention in randomised trials of behavioural interventions) were associated with fewer significant effects. In their review of internet-based prevention of depression in children and adolescents, Calear and Christensen (2010a) reported that six of eight studies reported post-intervention reductions in symptoms of anxiety or depression or improvements in diagnostic ratings. Three of these studies also reported improvements at follow-up.

Two of the studies reported a prevention effect of physical exercise (Camero et al., 2012; Larun et al., 2006). The earlier, higher-quality review found that the five studies reporting depression scores showed a statistically significant difference in favour of the exercise group (SMD (random effects model) -0.66, 95% CI -1.25 to -0.08) (Larun et al., 2006). However, all exercise-based trials were generally of low methodological quality and they were highly heterogeneous with regard to the population, intervention and measurement instruments used. Moreover, five trials comparing

vigorous exercise to low-intensity exercise show no statistically significant difference in depression scores and four trials comparing exercise with psychosocial interventions showed no statistically significant difference in depression and anxiety scores between exercise conditions.

Reviews of interventions for the prevention of anxiety

We identified six systematic reviews of interventions for the prevention of anxiety (Christensen et al., 2010; Fisak et al., 2011; Larun et al., 2006; Neil & Christensen, 2009; Regehr et al., 2013; Teubert and Pinquart, 2011). Of these, four were high quality and two were of moderate quality. Four studies examined prevention effects in multiple settings, one in a school setting and one in college settings. In their 2011 review, Teubert and Pinquart (2011) included 65 studies, the majority of which were CBT-based programs. They concluded that there were small but significant effects on anxiety at post-test with effect sizes in the moderate range. They also found that intervention effects at post-test varied by type of prevention, with indicated/selective prevention programs showing larger effect sizes than universal programs. At follow-up, smaller effects were found in samples with higher percentages of girls, and there was a stronger effect size for programs focusing primarily on anxiety prevention.

Both reviews of interventions in schools and college students found beneficial effects. Regehr et al. (2013) assessed the impact of a variety of interventions and concluded that arts-based interventions, psychoeducation and CBT/mindfulness produced changes in self-reported anxiety. Neil and Christensen (2009) reviewed school-based interventions, noting that CBT, or components of it, formed the basis of the majority of programs (78%). Overall their results supported the value of prevention interventions for anxiety, with over three-quarters of the trials reporting a significant reduction in symptoms of anxiety. Small (0.11) to large (1.37) effect sizes were reported both at post-test and follow-up. However, this review included early intervention studies.

One study examined the effects of exercise on the prevention of anxiety, finding that six studies reporting anxiety scores showed a non-significant trend in favour of the exercise group (standard mean difference (SMD) (random effects model) -0.48, 95% confidence interval (CI) -0.97 to 0.01) (Larun et al., 2006). However, the methodological concerns cited in Section 0 in relation to this study also apply to these outcomes.

Reviews of suicide prevention interventions

We identified five reviews of suicide prevention interventions, all of moderate quality, three of which focused on school-based prevention (Katz et al., 2013; Miller et al., 2009; Robinson et al., 2013). In their review of school-based interventions, Robinson et al. (2013) noted that the most promising interventions for schools were gatekeeper training and screening programs. However, they also noted that the evidence was limited and hampered by methodological concerns. In their review, Katz et al. (2013) noted that most studies evaluated the programs' abilities to improve student and staff knowledge and attitudes toward suicide. The Signs of Suicide and the Good Behaviour Game programs were the only programs found to reduce suicide attempts. Several other programs were found to reduce suicidal ideation, improve general life skills and change gatekeeper behaviours.

Reviews of interventions for the prevention of eating disorders

We identified three studies that reviewed interventions for the prevention of eating disorders, with one of high quality and two of moderate quality. Interventions, which were typically psychoeducation and CBT-based, target risk factors for the development of eating disorders, including dieting behaviours and body dissatisfaction. Pratt and Woolfenden (2009) concluded that combined data from two eating disorder prevention programs based on a media literacy and advocacy approach indicated a reduction in the internalisation or acceptance of societal ideals relating to appearance at a three to six-month follow-up [SMD -0.28, -0.51 to -0.05, 95% CI]. However, there was insufficient evidence to support the effects of the other programs. Fingeret et al. (2006) concluded that interventions were beneficial, with effect sizes for general eating pathology, dieting and beliefs about the desirability of being thin that ranged from d = 0.17 to 0.21 at post-test and from d = 0.13 to 0.18 at follow-up. Stice and Shaw (2004) found that larger effects occurred for selected (vs. universal), interactive (vs. didactic), and multi-session (vs. single session) programs; for programs offered solely to females and to participants over age 15; and for programs without psychoeducational content.

Reviews of interventions for the prevention of behaviour problems

We identified 14 reviews of interventions specifically designed for the prevention of behaviour problems (Grove et al., 2008; Hahn et al., 2007; Kao et al., 2013; Leff et al., 2010; Limbos et al., 2007; Lösel & Beelmann, 2003; Menting et al., 2013; Mytton et al., 2006; Park-Higgerson et al., 2008; Petrenko, 2013; Piquero et al., 2009; Wilson et al., 2001; Wilson & Lipsey, 2007; Wyatt Kaminski et al., 2008), eight of high quality, five of moderate quality and one of poor quality. Three of the reviews focused specifically on family support interventions and six on school-based interventions for the prevention of violence or other problem behaviours. All reviews of family-focused interventions concluded that impacts were beneficial, with effect sizes reported in the moderate range.

Four of the five reviews of school-based violence prevention studies found beneficial effects. Wilson and Lipsey (2003) included 249 studies in their review and concluded that positive overall intervention effects were found on aggressive and disruptive behaviour and other relevant outcomes (mean effect size 0.21 for universal programs and 0.29 for selected/indicated programs). The most common and effective approaches were universal programs and targeted programs for selected/indicated children. Mytton et al. (2006) concluded that aggressive behaviour was significantly reduced in intervention groups compared with no intervention groups immediately post intervention (Standardised Mean Difference (SMD) = -0.41; 95% confidence interval (CI) -0.56 to -0.26). This effect was maintained in the seven studies reporting 12-month follow-up (SMD = -0.40, (95% CI -0.73 to -0.06)). Subgroup analyses suggested that interventions designed to improve relationship or social skills may be more effective than interventions designed to teach skills of non-response to provocative situations, but that benefits were similar when delivered to children in primary versus secondary school, and to groups of mixed sex versus boys alone.

Petrenko (2013) reviewed interventions primarily involving parent training to prevent and treat behavioural problems in young children with developmental disabilities and concluded that nearly all studies demonstrated moderate to large intervention effects on child behaviour post-intervention. Intervention effects were generally maintained at follow-up assessments (median follow-up six months post-interventions).

Reviews of interventions for the prevention of substance use problems

We identified 24 reviews of interventions specifically designed for the prevention of substance use problems (Carey et al., 2012; Champion et al., 2013; Cuijpers, 2002; Faggiano et al., 2008; Foxcroft & Tsertsvadze, 2011a; Foxcroft & Tsertsvadze, 2011b; Foxcroft & Tsertsvadze, 2011c; Gates et al., 2006; Gottfredson & Wilson, 2003; Jackson et al., 2012; Lemstra et al., 2010; Loneck et al., 2010; Moreira et al., 2009; Petrie et al., 2007; Porath-Waller et al., 2010; Rodriguez et al., 2014; Scott-Sheldon et al., 2014; Skara & Sussman, 2003; Soole et al., 2008; Teesson et al., 2012; Thomas et al., 2013; Tobler et al., 2000; Wood et al., 2014). Twelve were high quality, 11 were of moderate quality and one was of low quality. Eleven studies specifically reviewed school-based prevention interventions (Champion et al., 2013; Cuijpers, 2002; Faggiano et al., 2008; Foxcroft & Tsertsvadze, 2011c; Gottfredson & Wilson, 2003; Lemstra et al., 2010; Loneck et al., 2010; Porath-Waller et al., 2010; Soole et al., 2008; Teesson et al., 2012; Tobler et al., 2000), three reviewed family-based interventions (Foxcroft & Tsertsvadze, 2011a; Gates et al., 2006; Petrie et al., 2007), four studies reviewed interventions for college drinkers (Carey et al., 2007; Carey et al., 2012; Moreira et al., 2009; Scott-Sheldon et al., 2014) and four reviews assessed the impact of online interventions (Carey et al., 2012; Champion et al., 2013; Rodriguez et al., 2014; Wood et al., 2014).

All the studies of school-based interventions reported positive effects, including on alcohol use (Champion et al., 2013; Foxcroft & Tsertsvadze, 2011c; Gottfredson & Wilson, 2003; Lemstra et al., 2010), illicit drug use in general (Cuijpers, 2002; Faggiano et al., 2008; Gottfredson & Wilson, 2003; Loneck et al., 2010; Soole et al., 2008; Teesson et al., 2012; Tobler et al., 2000), cannabis use (Faggiano et al., 2008; Lemstra et al., 2010; Porath-Waller et al., 2010), hard drug use (Faggiano et al., 2008) and knowledge about drugs and skills in refusal (Champion et al., 2013; Faggiano et al., 2008; Loneck et al., 2010; Rodriguez et al., 2014; Teesson et al., 2012; Tobler et al., 2000). Mean effect sizes were in the small to moderate range. Intervention characteristics associated with greater effects included programs that were multifaceted, longer in duration (≥15 sessions), were more interactive (Porath-Waller et al., 2010; Soole et al., 2008; Tobler et al., 2000) and those led by peers (Cuijpers, 2002; Gottfredson & Wilson, 2003). One review found that programs targeting high school students were more effective than those targeting younger students (Porath-Waller et al., 2010), while two others concluded that targeting middle school students was more effective than targeting high school students (Gottfredson & Wilson, 2003; Soole et al., 2008). In their review of Australian school-based prevention programs, Teesson et al. (2012) found that five of seven intervention programs achieved reductions in alcohol, cannabis and tobacco use at follow-up, with effect sizes in the small range.

Three studies assessed the impact of programs in family settings. Foxcroft et al. (2011a) reviewed universal family-based programs for alcohol misuse in young people and found that in nine of the 12 trials there was some evidence of effectiveness compared with a control or other intervention group, with persistence of effects over the medium- and longer-term. Petrie et al. (2007) reviewed the impact of parenting programs for preventing tobacco, alcohol, or drugs misuse in children under 18. They found statistically significant self-reported reductions of alcohol use in six of 14 studies and of drugs in five of nine studies. They noted that the most effective appeared to be those that shared an emphasis on active parental involvement and on developing skills in social competence, self-regulation and parenting. Gates et al. (2006) reviewed interventions for prevention of drug use by young people delivered in non-school settings. Three family interventions (Focus on Families, Iowa Strengthening Families Program and Preparing for the Drug-Free Years), each evaluated in only one

study, showed beneficial effects in preventing cannabis use. The studies of multi-component community interventions did not find any strong effects on drug use outcomes, and the two studies of education and skills training did not find any differences between the intervention and control groups. Skara and Sussman (2003) assessed the impact of a broad range of long-term adolescent tobacco and other drug use prevention programs and found significant beneficial program effects for smoking, alcohol and marijuana outcomes up to 15 years after completion of programming.

In their review of group and individual-level interventions for first-year college students, Scott-Sheldon et al. (2014) found that students in the intervention groups reported lower quantity and frequency of drinking and fewer problems, with effect sizes in the small range.

Four studies found beneficial effects of online interventions, including in reducing frequency of recreational drug use (Champion et al., 2013; Rodriguez et al., 2014; Wood et al., 2014) and alcohol use (Carey et al., 2012; Champion et al., 2013), as well as attitudes to and knowledge about alcohol and drugs (Champion et al., 2013; Rodriguez et al., 2014). In a study comparing the impact of face-to-face and computer-delivered alcohol interventions for college drinkers, Carey et al. (2012) showed that both were effective, with a small number of comparisons suggesting a greater impact of face-to face interventions than those delivered by computer.

Review of interventions aiming to improve multiple mental health and wellbeing outcomes in family settings

We identified 18 reviews of interventions that aimed to improve multiple mental health and wellbeing outcomes in family settings (Barlow et al., 2010; Bayer et al., 2009; Bröning et al., 2012; Burrus et al., 2012; Cavaleri et al., 2011; D'Onise et al., 2010; Fackrell et al., 2011; Hale et al., 2014; Lundahl et al., 2006; Manning et al., 2010; Nelson et al., 2003; Nowak & Heinrichs, 2008; Rosner et al., 2010; Siegenthaler et al., 2012; Stathakos & Roehrle, 2003; Sweet & Appelbaum, 2004; Thomas & Zimmer-Gembeck, 2007; Waddell et al., 2007). Twelve were of moderate quality and six were of high quality. Hale et al. (2014) reviewed 55 studies conducted in a broad range of settings, which aimed to prevent multiple risk behaviours in adolescence, including substance use, aggressive and disruptive behaviours. They concluded that interventions were generally beneficial, with small to medium effect sizes.

Ten reviews assessed the impact of interventions directed specifically to parents or caregivers, notably parent skills training and home visiting and other family support programs (Barlow et al., 2010; Bayer et al., 2009; Burrus et al., 2012; Cavaleri et al., 2011; Lundahl et al., 2006; Manning et al., 2010; Nowak & Heinrichs, 2008; Sweet & Appelbaum, 2004; Thomas & Zimmer-Gembeck, 2007; Waddell et al., 2007). The majority of studies reviewed interventions targeted towards younger children and found beneficial effects on behaviour problems (Barlow et al., 2010; Bayer et al., 2009; Cavaleri et al., 2011; Lundahl et al., 2006; Nowak & Heinrichs, 2008; Sweet & Appelbaum, 2004; Thomas & Zimmer-Gembeck, 2007; Waddell et al., 2007) and social and emotional problems (Bayer et al., 2009; Cavaleri et al., 2011; Sweet & Appelbaum, 2004; Waddell et al., 2007). Manning et al. (2010) reviewed studies of the effects of early developmental prevention programs in at-risk populations on outcomes in adolescence and found benefits in the areas of educational success during adolescence (effect size 0.53), social deviance (0.48), social participation (0.37), cognitive development (0.34), involvement in criminal justice (0.24), family wellbeing (0.18), and social–emotional development (0.16). They also found that programs that lasted longer than three years

were associated with larger effects than programs that were longer than one year but shorter than three years. More intense programs (those with more than 500 sessions per participant) also had larger effects than less intense programs. Burrus et al. (2012) reviewed person-to-person interventions targeted to parents and other caregivers to improve adolescent health and found positive effects on drug use, alcohol use and problem behaviours.

Five reviews explicitly assessed studies of families in adverse circumstances. Siegenthaler et al. (2012) reviewed the impact on the mental health of children of interventions in parents with a mental illness and found reductions in the risk of new diagnoses and lower symptoms scores in intervention groups. Broning et al. (2012) reviewed interventions for children of substance-affected families, concluding that there was preliminary evidence for the effectiveness of the programs, especially when their duration was longer than 10 weeks and when they involved children's, parenting, and family skills training components. Two studies reviewed the impact on child mental health of interventions in divorcing parents, showing beneficial effects on child wellbeing (Fackrell et al., 2011; Stathakos & Roehrle, 2003). Stathakos and Roerhle (2003) reported that the best results were attained by interventions applied during the first two years after the separation, at the age of nine to 12 years, with no more than 10 sessions each lasting about 60–75 minutes. In a review of interventions for bereaved children, Rosner et al. (2010) found beneficial effects on depression and anxiety symptoms, social adjustment and wellbeing. At d=0.35, the overall mean weighted effect size was in the moderate range.

Two reviews focused on preschool-based programs (D'Onise et al., 2010; Nelson et al., 2003). D'Onise et al. (2010) reviewed early childhood development interventions, finding that over 50% of interventions did not have beneficial effects, but those that did impacted positively on internalising and externalising behaviours and social competence. In their review of longitudinal research on preschool prevention programs for disadvantaged children and families, Nelson et al. (2003) concluded that programs have effects on children's cognitive, social, emotional and family wellbeing that last up to nine years of age, with an overall effect size of 0.3.

School-based social and emotional learning interventions

We identified five reviews of school-based interventions. In their review of school-based interventions to enhance social and emotional learning (SEL), Durlak et al. (2011) concluded that programs led to significant improvement in social-emotional skills (Effect Size (ES)=0.57); attitudes about self, others and school (ES=0.23); positive social behaviours (ES=0.24); conduct problems (ES=0.22); emotional distress (ES=0.24) and academic performance (ES=0.27). Effects remained statistically significant for a minimum of six months after the interventions. In general, programs led by class teachers were more effective than those led by non-school personnel.

In a review of after-school programs to promote personal and social skills, Durlak et al. (2010) found that participants demonstrated significant increases in their self-perceptions and bonding to school, positive social behaviours, school grades and levels of academic achievement, and significant reductions in problem behaviours. For both of these studies, effect sizes were in the small to moderate range and programs that used a connected and coordinated set of activities to achieve their objectives, used active forms of learning, had at least one component devoted to developing personal or social skills and specifically targeted social and emotional learning skills rather than targeting skills or positive development in general terms were more effective. In a review of school-

based interventions for emotional disturbance, Reddy et al. (2009) found beneficial effects with effect sizes of 0.54 at post-test and 0.49 at follow up. Dubois et al. (2011) reviewed mentoring programs and found beneficial effects, with mean effect sizes ranging from 0.15 for psychological/emotional outcomes to 0.21 for conduct problems.

Summary of results

Findings from the studies included in this review demonstrate significant effects of interventions that aim to either enhance resilience or prevent mental health problems.

For interventions with a reported aim of enhancing resilience (or proxies for resilience such as mental health and social and emotional competence), there is evidence for the following:

- CBT-based interventions with or without other components, such as arts therapy
- the Penn Resiliency Program (the most commonly researched CBT-based intervention), including culturally tailored versions, which reduced depressive symptoms, particularly in young people whose parents have psychopathology or alcohol dependence. However, there was no evidence that PRP was more effective than active control conditions
- FRIENDS, an Australian CBT-based intervention delivered in schools which has produced positive outcomes
- parenting skills interventions, provided that maternal demoralisation is not high and children possess self-regulatory skills
- brief psychoeducation education intervention delivered in a series of lectures to build an adaptive explanatory style in undergraduate students
- interventions that focus on attachment or parenting based on social learning frameworks offer promise for improving a range of outcomes for foster children
- the impact of mindfulness, arts therapy and participation in performing arts, as stand-alone interventions to foster resilience, requires further research.

For interventions that aim to prevent depression, anxiety and suicide, there is evidence of effectiveness for the following:

- psychological interventions for the prevention of depression in young people, particularly CBT-based interventions. Interventions conducted in multiple settings and interventions conducted in schools both show benefits. Online interventions also show promise. Evidence supports both targeted and universal programs.
- the use of exercise for the prevention of depression in young people
- psychological interventions for the prevention of anxiety in young people, particularly CBT-based interventions
- suicide prevention interventions for the improvement of knowledge and attitudes about suicide in young people
- studies of suicide prevention interventions for the improvement of help-seeking and reduction of suicidal behaviours, although the evidence is weak and hampered by methodological concerns.

For interventions that aim to prevent eating disorders, there is evidence of effectiveness for the following:

- prevention programs that are CBT-based or incorporate a media literacy and advocacy for addressing risk factors for eating disorders, including beliefs about the desirability of being thin and dieting behaviours.

For interventions that aim to prevent behaviour problems, there is evidence of effectiveness for the following:

- parent-training interventions in families with young children and adolescents
- school-based interventions for the prevention of aggression and violent behaviours.

For interventions that aim to prevent substance use, there is evidence of effectiveness for the following:

- school-based interventions, including interventions for alcohol use, illicit drug use in general and cannabis use
- family-based interventions for the prevention of alcohol use
- family-based interventions for the prevention of drug use
- interventions for the reduction of alcohol use in higher education students, particularly Interventions that include personalised feedback, moderation strategies, expectancy challenge, identification of risky situations and goal-setting
- online interventions for the reduction of alcohol and drug use.

There is also evidence of effectiveness for family support interventions for the prevention of behaviour problems and substance use, and promotion of social and emotional wellbeing, academic success and family wellbeing. Such interventions have shown benefits in families in adverse circumstances e.g. children of parents with a mental illness, children of divorce. Preschool-based interventions have been shown to be effective for the promotion of cognitive, social, emotional and family wellbeing. School-based interventions for the promotion of social and emotional wellbeing have also been shown to be effective, particularly if they were led by class teachers.

Discussion

We reviewed the literature relating to interventions designed to contribute to the development of resilience among children, adolescents and young adults. In this review, we aimed to include any intervention which specifically defined itself as a resilience intervention. In addition, in the absence of a generally accepted definition of resilience and a way to measure this, we considered resilience as having good mental health. We therefore also included interventions specifically designed to promote mental health or prevent mental health problems (specified as depression, anxiety, suicide, eating disorders, substance use, or behaviour problems). Informed by the literature on risk and protective factors, we also included interventions that aimed to impact on the following resilience-promoting competencies and resources at the individual, family and school levels: social and emotional skills, parenting style, family functioning and positive social interactions at school.

Resilience-specific interventions

In the absence of a universally accepted definition of resilience and ways to measure this, an interesting issue that arises in a review of resilience-promoting interventions relates to the way people measure outcomes; that is, how they define resilience. Our review of reviews and primary

studies of resilience-specific interventions found that the types of measures used to assess youth resilience were diverse and the use of multiple measures was common. Most studies in this review focused on the impact of interventions on young people's behaviour, emotional functioning, or presenting issues. A substantial number of studies assessed psychiatric symptoms (most commonly depression, followed by anxiety), the absence or reduction of which seemed to serve as a proxy for measuring resilience. Because of this, many of the interventions which define themselves as resilience-promoting are also included in systematic reviews which specifically aim to assess the impact on prevention of mental health problems but do not necessarily refer to themselves as resilience interventions. This is particularly notable in the case of the PRP, which is the best-studied resilience program and is similar to other CBT-based depression prevention programs which do not refer to resilience. Most of the studies of resilience interventions tended to focus on changes in presenting issues rather than on the impact of the intervention on increasing specific strengths. Moreover, half of these were based on CBT, an intervention which was originally developed as a treatment for mental disorders and is therefore more likely to be focused on symptoms and problems rather than strengths. Furthermore, Gillham et al. (2004) argue that PRP is only one of many possible pathways to increase optimism and hope and mention interventions using parenting behaviours, school teaching and mass media as being alternative options.

In 2003, Olsson et al. (2003) noted the need for a more differentiated and testable theory of resilience to guide progress in the field. Arguably, with the growing popularity of the term resilience, cross-study variation in definitions and measures has widened. The use of emotional wellbeing (typically the absence of depression or anxiety) as a marker of resilience has been noted as problematic by a number of researchers (Garmezy, 1991; Luthar, 2001) and it is possible to consider resilience as the ability to function well despite symptoms of depression and anxiety. Thus, an intervention which defined its success or failure by the absence of symptoms may have beneficial effects that are not necessarily measured in the studies reviewed here.

As noted in a narrative review of resilience, there is a need to develop strategies to strengthen research-policy linkages, including greater commitment to operationalise indicators of resilience at all levels of analysis (Ager, 2013). It can be argued that a resilience intervention needs to be about more than prevention of problematic outcomes and should explicitly focus on building capacities that enable a person to successfully negotiate, and even grow from adversity. A number of studies that specifically aimed to build resilience took this approach, although the types of interventions varied widely and included group counselling (Craig et al., 2014), play therapy (Craven & Lee, 2010) psychoeducation (mostly skills-based) (de la Rosa et al., 2005; Froehlich-Gildhoff & Roennau-Boese, 2012; Gerson & Fernandez, 2013; Hipke et al., 2002; Lester et al., 2012; Mitchelson et al., 2010; Stoiber & Gettinger, 2011), peer support (Fraser & Pakenham, 2008), a dance/drama competition (Grunstein & Nutbeam, 2007), a strength-based assessment on youth with emotional or behavioural disorders in receipt of psychotherapy from a public mental health agency (Cox, 2006) and a creative arts intervention (Shelton, 2009). While all of these interventions showed some beneficial effects, most of the studies of their effectiveness were of low quality and there is a need for further research to determine the true effectiveness of strengths-based interventions. Consideration of existing resilience scales may be used to guide to the focus of interventions. The concept most frequently measured across the measures examined here relates to what Grabbe et al. (2012) term 'self-reliance', a concept that may include self-control, initiative, being adaptive, autonomy, acceptance of self, self-understanding and resourcefulness. A number of measures also relate to what could be

called attachment or connectedness: the ability to seek out and respond to appropriate comfort and help; to relate to and develop positive relationships with peers, family members and others; and the ability to accept and give affection.

There is also a need for research to specifically examine the question of whether inclusion of a resilience or strengths-based approach adds anything to existing prevention and promotion approaches, as very few studies have addressed this question.

Interventions specifically designed to prevent mental health problems

When resilience is defined as the absence of mental health problems then a consideration of the evidence for the prevention of these problems can help to guide the development and implementation of interventions. Findings from the studies included in this review demonstrate significant effects of interventions in the prevention of mental health problems, including depression, anxiety, suicide, eating disorders, substance use and behaviour problems.

Interventions targeted to specific ages

Interventions for families with young children

This review highlights the effectiveness of programs for promoting resilience at different ages, from birth to early adulthood. A number of reviews and interventions identified in this review were targeted to those in the early childhood age group. These interventions include those for the prevention of behaviour problems and promotion of emotional wellbeing that include a family-based component. These programs often involve parent skills training and typically have small to moderate effects on reducing child behaviour problems. Wyatt Kaminski et al. (2008) found that program components consistently associated with larger effects included increasing positive parent–child interactions and emotional communication skills, teaching parents to use time out and the importance of parenting consistency, and requiring parents to practice new skills with their children during parent training sessions. Given the links between behaviour problems and mental health problems in later life (Kim-Cohen et al., 2003), interventions that start early and that strengthen parenting skills and improve family functioning can be considered key resilience-building interventions. Cost-effectiveness studies also point to the benefits of parenting programs (McDaid & Park, 2011; Stevens, 2014). Two of the best-researched programs, the Triple-P parenting program (Nowak & Heinrichs, 2008) and the Incredible Years Parent Training interventions (Menting et al., 2013), are available in Australia. However, tailoring programs to the social context of families is likely to be essential to achieving successful outcomes (Law et al., 2009).

Other interventions that included the early childhood years included interventions targeted to families in adverse circumstances, although these also included older children (Bröning et al., 2012; Fackrell et al., 2011; Rosner et al., 2010; Siegenthaler et al., 2012; Stathakos & Roehrle, 2003).

Older children, adolescents and young adults

The majority of interventions and reviews outlined in this review targeted school-age children and adolescents. Many reviews assessed the impact of interventions across settings aimed at this age group and there is evidence for prevention of depression, anxiety, suicide, substance use, eating

disorders and aggression and violence. Interventions targeted to young adults typically reached this population through higher education institutions.

Interventions targeted to specific settings

School-based interventions

This review highlights the effectiveness of programs in various settings, including family, school, higher education institutions and, increasingly, online. School-based interventions were the most commonly identified type. There is evidence of the effectiveness of school-based interventions for the prevention of depression, anxiety, suicide, substance use, and aggression and violence. Most of the effects associated with interventions were small to moderate in statistical terms. However, as most of the reviews covered interventions that were universal in scope, even small effects may have large real-world impacts. Moreover, universal interventions are often easier to implement as they do not involve screening or identifying one particular group. However, in many cases, while universal interventions appear to have benefit, particularly in schools, interventions targeted to groups at higher risk show stronger effects and it is likely that optimal approaches will combine targeted and universal approaches.

With growing interest in the concept of resilience, school-based SEL interventions may be considered as resilience interventions, as they aim to promote social and emotional skills in order to improve academic performance and wellbeing. Social and emotional learning may be defined as the process through which children and adults acquire and effectively apply the knowledge, attitudes and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions (CASEL, 2014).

The most recent meta-analysis of SEL interventions showed that programs were effective in improving social-emotional skills; attitudes about self, others and school; positive social behaviours; conduct problems; emotional distress and academic performance (Durlak et al., 2011). In general, programs led by class teachers were more effective than those led by non-school personnel. They also investigated the extent to which interventions met the following criteria: Sequenced (program used a connected and coordinated set of activities); Active (uses active forms of learning); Focused (at least one component devoted to developing personal and social skills); and Explicit (target specific SEL skills rather than positive development in general terms). They concluded that programs following these procedures were more likely to lead to positive outcomes. Reported implementation problems also moderated outcomes. Further research in this area is needed to fully explore these moderators of program effectiveness, particularly as they related to the Australian context. While there are a large number of Australian SEL programs, relatively few of these have been well evaluated. Fewer still have shown positive effects (KidsMatter: Australian Primary Schools Mental Health Initiative, 2014). Those that have shown positive effects include: You Can Do It! Early Childhood Education Program (YCDI), which was evaluated as part of a controlled study conducted in Melbourne's western suburbs (Ashdown & Bernard, 2012). The program was shown to have positive effects on levels of social emotional competence and wellbeing, and also led to a reduction in problem behaviours (externalising, internalising, and hyperactivity problems), and an increase in reading achievement (decoding text) for lower-achieving students. In this study, resilience was defined in terms of attitudes and coping skills (e.g. ability to control behaviour when angry). In

another Australian study, Pahl and Barrett (2010) evaluated the impact of the Fun FRIENDS program on 263 children aged four to six years attending preschool in Brisbane. Schools were randomly allocated to an intervention group or a waiting list control group. Parent report data revealed no significant differences between the intervention and control groups on anxiety, behavioural inhibition, and social emotional strength at post-intervention. However, at 12-month follow-up, improvements were found in these measures in children in the intervention group. Teacher reports revealed significant improvements at post-intervention on these measures for children who had received the program. It is interesting to note that the Fun FRIENDS program was originally developed a program for the prevention of anxiety and depression (see below).

The results of the current review reflect those of a recent review of 52 reviews of mental health promotion and problem prevention in schools. Weare and Nind (2011) and Nation et al. (2003) have investigated the features associated with effective interventions. These include:

- improved teaching skills
- focusing on positive mental health
- balancing universal and targeted approaches
- starting early with the youngest children and continuing with older ones
- operating for a lengthy period of time and embedding work within a multi-modal/whole-school approach which include such features as changes to the curriculum including teaching skills and linking with academic learning
- improving school ethos
- teacher education
- liaison with parent
- parenting education
- community involvement
- coordinated work with outside agencies.

However, as with SEL programs, consideration needs to be given to programs that can be implemented in the Australian context. In their review of school-based prevention programs, Christensen et al. (2011) concluded one of the most effective anxiety prevention programs for both children and adolescents was found to be the FRIENDS program, which was developed in Australia, is targeted towards both children and adolescents and involves 10 sessions of 50 to 70 minutes per session and two booster sessions (Barrett & Turner, 2001; Barrett et al., 2006). Another effective program for the prevention of anxiety is the Stress Inoculation Training (SIT) program, which was developed in the United States and is targeted towards adolescents and involves five to 10 sessions of 50 to 70 minutes (Hains, 1992). The two depression programs with the most research evidence supporting their effectiveness are the Penn Resiliency Program (Brunwasser et al., 2009; Chaplin et al., 2006) and the Interpersonal Psychotherapy -Adolescent Skills Training (Young et al., 2006) programs, both of which were developed in the United States and target both children and adolescents. The most effective Australian programs are the FRIENDS program and the Resourceful Adolescent Program (Shochet & Ham, 2004). Christensen et al. (2011) also recommend the following programs as effective in reducing aggression and conduct problems in the Australian context: the Good Behavior Game (Barrish et al., 1969), PeaceBuilders (Embry et al., 1996) and Responding in Peaceful and Positive Ways (Meyer et al., 2000).

In their review of Australian school-based intervention programs, Teesson et al. (2012) found that the following programs achieved reductions in alcohol use: School Health and Alcohol Harm Reduction Project (SHARRP) (McBride et al., 2004), Climate Schools (Newton et al., 2010) and the Gatehouse Project (Bond et al., 2004). Climate Schools and the Gatehouse Project also led to reductions in cannabis use.

Although schools have the potential to implement successful resilience programs, more research is needed with a focus on the relationship between the multiple dimensions of resilience (i.e. individual and environmental) in order to ascertain how school interventions can effectively connect with the students' environment (Condly et al., 2006).

Higher education settings

Interventions targeted to young adults typically reached this population through higher education institutions. The greatest number of interventions in this category aim to prevent alcohol use while other interventions have targeted anxiety and eating disorders. In their review of group and individual-level interventions to prevent alcohol misuse in first-year college students, Scott-Sheldon et al. (2014) found that interventions that include personalised feedback, moderation strategies, expectancy challenge, identification of risky situations, and goal-setting optimised efficacy.

Online interventions

The growth in popularity of online interventions in recent years has led to the development of a number of prevention interventions. A number of reviews of online interventions were included in the current review. There is some evidence of effectiveness in the prevention of anxiety and depression (Calear & Christensen, 2010a), reduction of alcohol use in higher education students (Carey et al., 2012), and prevention of illicit and recreational drug use (Rodriguez et al., 2014; Wood et al., 2014). However, most of these reviews included small numbers of studies and further research is needed, particularly in relation to newer game-based interventions (Rodriguez et al., 2014).

Conclusions

A review of interventions designed to build resilience (whether these were resilience-specific or mental health problem-specific) found a diverse range of studies focusing on the impact of interventions on young people's behaviour, emotional functioning or presenting issues. A substantial number of resilience-specific studies assessed psychiatric symptoms (most commonly depression, followed by anxiety), the absence or reduction of which often seemed to serve as a proxy for measuring resilience. Because of this, some of these interventions are also included in systematic reviews of studies which to aim prevent mental health problems.

The most common types of interventions were CBT-based and skills-based psychoeducation interventions, targeted to young people and their parents. Many of these interventions showed beneficial effects in promoting resilience and reducing the risk of developing mental health problems.

While some studies attempted to assess the impact of other types of intervention, particularly those focused on developing skills and strengths, most of the studies of their effectiveness were of low quality and there is a need for further research to determine the true effectiveness of strengths-

based interventions. There is also a need for further work to specifically define operational indicators of resilience at all levels of analysis and to strengthen research-policy linkages in the area.

There is also a need for research to specifically examine the question of whether inclusion of a resilience or strengths-based approach adds anything to existing prevention and promotion approaches, as very few studies have addressed this question.

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Appendix A

NHMRC levels of evidence

Level	Description
I	Evidence obtained from a systematic review of all relevant randomised controlled trials
II	Evidence obtained from at least one properly designed randomised controlled trial
III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method)
III-2	Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomised, cohort studies, case-control studies, or interrupted time series with a parallel control group
III-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies, or interrupted time series without a parallel control group
IV	Evidence obtained from case-series, either post-test, or pre-test/post-test

AMSTAR: Measurement tool to assess the methodological quality of systematic reviews

1. Was an 'a priori' design provided? The research question and inclusion criteria should be established before the conduct of the review.	□ Yes □ No □ Can't answer □ Not applicable
2. Was there duplicate study selection and data extraction? There should be at least two independent data extractors and a consensus procedure for disagreements should be in place.	□ Yes □ No □ Can't answer □ Not applicable
3. Was a comprehensive literature search performed? At least two electronic sources should be searched. The report must include years and databases used (e.g. Central, EMBASE and MEDLINE). Key words and/or MESH terms must be stated and where feasible the search strategy should be provided. All searches should be supplemented by consulting current contents, reviews, textbooks, specialized registers, or experts in the particular field of study, and by reviewing the references in the studies found.	□ Yes □ No □ Can't answer □ Not applicable

4. Was the status of publication (i.e. grey literature) used as an inclusion criterion?

The authors should state that they searched for reports regardless of their publication type. The authors should state whether or not they excluded any reports (from the systematic review), based on their publication status, language etc.

□ Yes
□ No
□ Can't answer
□ Not applicable

5. Was a list of studies (included and excluded) provided?

A list of included and excluded studies should be provided.

□ Yes
□ No
□ Can't answer
□ Not applicable

6. Were the characteristics of the included studies provided?

In an aggregated form such as a table, data from the original studies should be provided on the participants, interventions and outcomes. The ranges of characteristics in all the studies analyzed e.g. age, race, sex, relevant socioeconomic data, disease status, duration, severity, or other diseases should be reported.

□ Yes
□ No
□ Can't answer
□ Not applicable

7. Was the scientific quality of the included studies assessed and documented?

'A priori' methods of assessment should be provided (e.g. for effectiveness studies if the author(s) chose to include only randomized, double-blind, placebo controlled studies, or allocation concealment as inclusion criteria); for other types of studies alternative items will be relevant.

□ Yes
□ No
□ Can't answer
□ Not applicable

8. Was the scientific quality of the included studies used appropriately in formulating conclusions?

The results of the methodological rigor and scientific quality should be considered in the analysis and the conclusions of the review, and explicitly stated in formulating recommendations.

□ Yes
□ No
□ Can't answer
□ Not applicable

9. Were the methods used to combine the findings of studies appropriate?

For the pooled results, a test should be done to ensure the studies were combinable, to assess their homogeneity (i.e. Chi-squared test for homogeneity, I^2). If heterogeneity exists a random effects model should be used and/or the clinical appropriateness of combining should be taken into consideration (i.e. is it sensible to combine?).

□ Yes
□ No
□ Can't answer
□ Not applicable

10. Was the likelihood of publication bias assessed?

An assessment of publication bias should include a combination of graphical aids (e.g. funnel plot, other available tests) and/or statistical tests (e.g. Egger regression test).

□ Yes
□ No
□ Can't answer
□ Not applicable

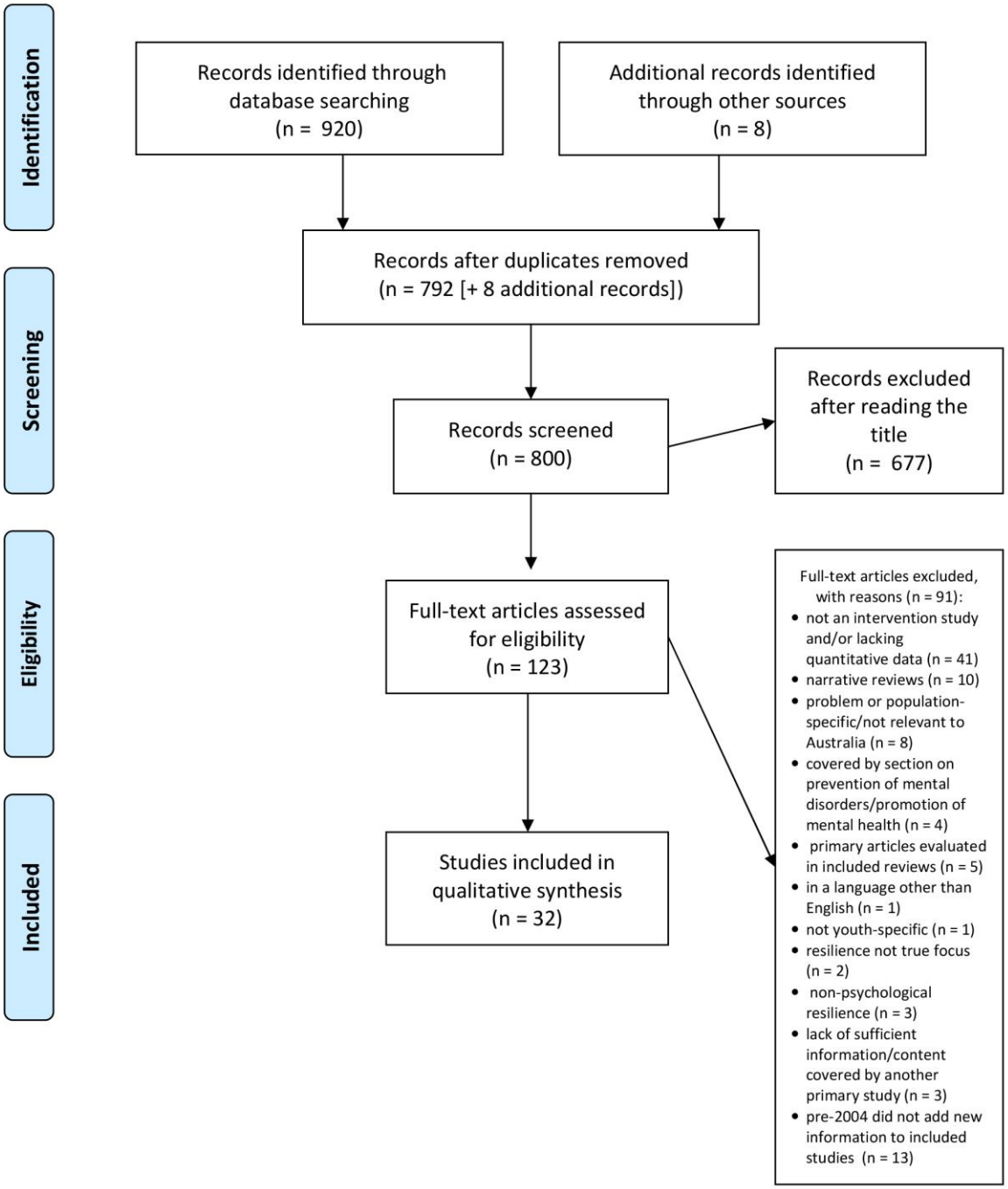
11. Was the conflict of interest stated?

Potential sources of support should be clearly acknowledged in both the systematic review and the included studies.

□ Yes
□ No
□ Can't answer
□ Not applicable

Appendix B

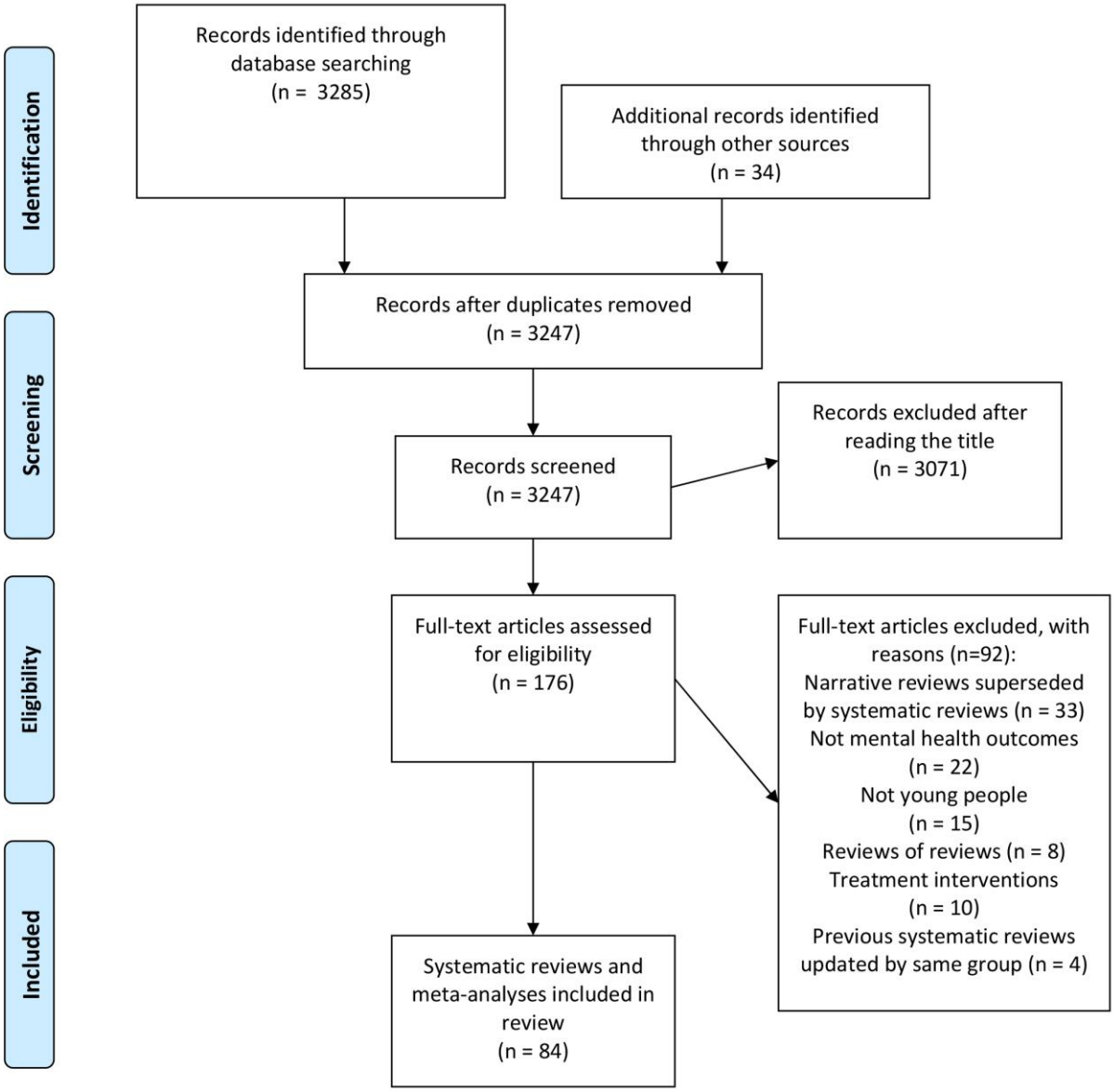
Figure 1: PRISMA flow diagram for interventions using the term 'resilience' in the name of the intervention or measures



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

Figure 2: PRISMA flow diagram for interventions with the primary aim of preventing mental health problems or promoting mental health



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

Appendix C

Table 1: Systematic reviews and meta-analytic reviews that use the term 'resilience' in the name or in the measures

Author/ year	• Topic of review • Type of review • Quality score	• No. reviewed studies • Year range of studies • Participant age range • Total number of participants	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
Brownlee et al. (2013)	• Strengths and resilience outcomes relevant to children and adolescents • Systematic • 5 (Moderate)	• 11 • 2000–2010 • 3–19 years • 17,385	• Primary & secondary school • Head Start Schools • Youth with mental disorder • After school program x 2 • School classroom x 2 • Residential • Detention centre and secure (substance use) treatment unit • Advocates to Successful Transition to Independence (ASTI) one-on-one advocate • Family and individual sessions	• Pre-post waitlist comparison group – nonrandomised • Pre-post randomised block design with comparison group • Nonrandomised pre-post with comparison group • Pre-post RCT with comparison group • Pre-post nonrandomised with comparison group (Cohort analytic) • Nonrandomised pre-post with comparison group • Nonrandomised one group pre-post (cohort) • Randomised pre-post with comparison group • Nonrandomised pre-post prospective cohort one group • Nonrandomised one group	• Self-esteem • Self-concept • Anxiety symptoms • Trauma symptoms • Hopelessness • Behaviour • Emotions • Functioning • Skills • Strengths & difficulties • Strength-based orientation • Resilience • Social competency • Youth competency • Sense of control • Positive youth development • Health • Posttraumatic stress symptoms • Addiction severity • Family adaptability & cohesion	• 3 high, 6 moderate and 2 low quality studies • preliminary evidence for efficacy of strength and resilience based interventions • comparisons to other interventions lacking • personal competency, coping strategies, social competency, pro-social involvement and cultural identity were common themes across studies • Recommendations provided for strengthening methodology in future studies.

Author/ year	• Topic of review • Type of review • Quality score	• No. reviewed studies • Year range of studies • Participant age range • Total number of participants	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
				pre only • Nonrandomised cohort one group pre-post		
Leve et al. (2012)	• Children in foster care – vulnerabilities and evidence-based interventions that promote resilience • Systematic • 2 (Low)	• 21 studies (unclear); 8 interventions • 1994–2012 • 2 months – 18 years • 1,922	• Unclear for some, foster care services for others • Intervention for caregivers	All studies included had an intervention and control arm. The latter was often foster-care services as usual. Follow-up ranged from 1 month to 5 years.	• Stress responses • Attachment to caregivers • Behaviour (secure vs avoidant) • Placement stability • Cognitive outcomes • Psychiatric symptoms (e.g. depression) • Positive discipline • Co-parenting skills • Child behaviour problems (externalising vs internalising) • Parenting • Prosocial behaviour • Substance abuse • Number of placement changes • Attention • Withdrawal • Number of runaways • Incarceration • Arrest rates • Deviant peer affiliations • Pregnancy rates • School engagement	• 8 interventions offer promise for improving a range of outcomes for foster children • Results from most studies have small to moderate effect sizes that typically decrease over time • Overall, effective programs are attachment focused or have evolved from parenting interventions based on social learning frameworks • Implementation challenges and opportunities are discussed • Review favoured reporting positive intervention effects • Lack of long-term follow-up data

Author/ year	• Topic of review • Type of review • Quality score	• No. reviewed studies • Year range of studies • Participant age range • Total number of participants	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
Stewart & Wang (2012)	• Building resilience through school-based health promotion • Systematic • 3 (Low)	• 6 • 2007–2009 • School age (not specified) • 3,760 staff (teaching & non-teaching) • 13,947 students • 5,809 parents	• Schools (with intervention duration ranging from 4 months to 2 years)	• Cohort comparison • CT (matched) x 2 • RCT x 2 • Pre-post	• Teachers' perception of school and self-efficacy • Students' perceptions of level of promotion of social competence and the clarity of behaviour codes, psychosomatic complaints, school stress, mental pressure, negative emotions, learning and motivation • Staff's feelings of trust and safety, tolerance of diversity and work connection • Level of participation by parents, local community and service providers in promoting resilience activities • Partnerships between school, families, local communities and health service providers • Curriculum development relating to resilience • Parent resilience • Teacher resilience • Students' perception of 'peer support', 'making difference', 'about me' and 'generally happy' • Teachers' perception of 'health policies', 'social environment', 'school	• Evidence related to health-promoting school (HSP) approach on resilience was limited but promising • Programs to enhance resilience among school staff and students were considered to be effective but the impact on parents needs more consideration • Continued investment and long-term evaluation (process and outcome) are necessary to provide more conclusive evidence about the effectiveness of using HPS approach to promote resilience.

Author/ year	• Topic of review • Type of review • Quality score	• No. reviewed studies • Year range of studies • Participant age range • Total number of participants	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
					community relations', 'personal skills building' and 'partnership & health services' • Students' depression symptoms	
Brunwasser et al. (2009)	• Penn Resiliency Program's (PRP) effect on depressive symptoms • Meta-analytic • 5 (Moderate)	• 17 • 1994–2008 • 8–18 years • 2,498 youths (4,408 targeted and 1,884 universal)	• Schools • Mental health organisations	• Most studies included some form of random assignment either at participant, classroom or school level • Mix of no intervention and active control comparisons • Three studies provided data at baseline and post-intervention only, while others evaluated intervention effects up to 3 years post-intervention	• Depression symptoms (16 of 17 studies used CDI – Kovaks, 2001)	• PRP participants reported fewer depressive symptoms at post-intervention and both follow-up assessments compared with youths receiving no intervention, with ESs ranging from 0.11 to 0.21. • Subgroup analyses showed that PRP's effects were significant at 1 or more follow-up assessments among studies with both targeted and universal approaches, when group leaders were research team members and community providers, among participants with both low and elevated baseline symptoms, and among boys and girls. • Limited data showed no evidence that PRP is superior to active control conditions. • Preliminary analyses suggested

Author/ year	• Topic of review • Type of review • Quality score	• No. reviewed studies • Year range of studies • Participant age range • Total number of participants	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
						that PRP's effects on depressive disorders may be smaller than those reported in a larger meta-analysis of depression prevention programs for older adolescents and adults. • PRP significantly reduces depressive symptoms through at least 1-year post-intervention. • Future PRP research should examine whether PRP's effects on depressive symptoms lead to clinically meaningful benefits for its participants, whether the program is cost-effective, whether CB skills mediate program effects, and whether PRP is effective when delivered under real-world conditions

* We have reported the year range of studies included each review and not the years searched by each review.

Table 2: Primary studies that use the term 'resilience' in the name (of the program or title of article) or in the measures

Citation/country	Stated aims of research	Study design/intervention description	Sample demographics	Outcomes measures	Outcomes of interest	Level of evidence (see Table 4)
Chen et al. (2014) China	To compare treatment effectiveness of short-term cognitive behavioural therapy (CBT) with a general supportive intervention and with a control group of non-treatment among Chinese children whose parents died in the 2008 earthquake (2 year post-earthquake).	• RCT, 3 arms (CBT, general support, no treatment) tested at baseline, post-treatment and 3-month follow-up • CBT program was a 6-week intervention with a 1-hour session each week. Program adapted from the manual 'Children and Disaster: Teaching Recovery Techniques', to increase applicability to Chinese culture and working with earthquake victims. Specifically, managing avoidance was omitted. Chinese cultures generally believe that acceptance and avoidance are the most adaptive approaches • The other modification was to integrate cognitive reframing throughout the CBT program. Each session began with a review and included a homework assignment to practice the techniques learned.	• N = 32 children • n = 10 CBT - 8 girls - M = 14.7 years • n = 10 general support - 7 girls - M = 14.6 years • n = 12 control group - 8 girls - M = 14.2 years	• Resilience (Connor-Davidson Resilience Scale for Children) • Symptoms of PTSD • Symptoms of depression	• CBT was effective in reducing PTSD and depressive symptoms and improved psychological resilience. • General support was more effective than no intervention in improving psychological resilience. • Short-term CBT group intervention seems to be a robust intervention for natural disaster victims. • Short-term CBT group intervention was more effective than the general supportive intervention and the no-treatment group in enhancing psychological resilience and reducing PTSD and depression among adolescents who had lost parents in the earthquake. • The general supportive intervention was effective only in improving psychological resilience.	II
Craig et al. (2014) Canada	To explore the immediate influence of a Lesbian Gay Bisexual Transgender Queer (LGBTQ) affirmative school-based group counselling program for sexual minority youth	• Pilot uncontrolled trial used a group pre-test post-test design. • Affirmative supportive safe and empowering talk (ASSET) offered in 15 urban high schools and consisted of 8–10 weekly sessions (45 mins average) with 6–12 participants. Groups were discussion-based and	• 263 multiethnic SMY – either self-referred or referred by school counsellor/ social worker • 72% female	• Rosenberg self-esteem scale • Proactive coping inventory • Social connectedness scale • Program	• Increased proactive coping, self-esteem but not social connectedness at last session • High participation and low dropout rate (11%) • Program perceived as helpful and satisfactory	IV

	(SMY) on: (1) self-esteem, (2) proactive coping and (3) social connectedness among ethnically/racially diverse SMY	focused on exploring shared experiences among SMY in a safe, supportive environment that promoted effective problem solving and proactive coping skills.	• 13–20 years • 50% 17–18 years • 99% lesbian • 46% white, Hispanic	acceptability and satisfaction		
Challen et al. (2014) UK	To assess the effectiveness of an 18-hour cognitive behavioural therapy group intervention in reducing depressive symptoms (and associated outcomes) in a universal sample of students in 16 mainstream schools in England.	• Comparative study but intervention assignment was not random, it was conditional on class membership, arbitrary and largely unrelated to student characteristics. • UK Resilience Programme (UKRP) based on Penn Resiliency Program (PRP) for Children and Adolescents. PRP teaches cognitive-behavioural and social problem solving skills. PRP also teaches techniques for positive social behaviour, assertiveness, negotiation, decision making and relaxation. The UKRP is the 18-hour UK implementation of PRP, with minor changes in examples and adaptation made for vocabulary. Frequency and duration of sessions varied from school to school (e.g. weekly or fortnightly for 50–100 minute sessions).	• 2844 • 49% female • 67% white • 11–12 years	• Children's Depression Inventory • Revised Children's Manifest Anxiety Scale • Child-reported Strengths and Difficulties Questionnaire	• At post-intervention UKRP reported lower levels of depressive symptoms than control group student but the effect was small and did not persist to 1-year or 2-year follow-ups. • There was no significant impact on symptoms of anxiety or behaviour at any point.	III-2
Kindt et al. (2014) Netherlands	To test the effectiveness of the depression prevention program, 'Op Volle Kracht' (OVK), an adaption of the Penn Resiliency Program (PRP), among a potential high-risk group of adolescents from low-	• RCT • OVK is an adapted version of the US Penn Resiliency Program (PRP), with important cultural and content-related modifications to make the program suitable for Dutch teenagers. Delivered in 16 weekly lessons during school hours by their mentors/teachers who received 4	• N = 1,343 – 666 experimental and 676 control (school as usual) • 11–16 years • M = 13.4 years • 52% girls • 52% ethnic	• Depression symptoms • Parent psychopathology	• No main effect of the program on depressive symptoms at 1-year follow-up. • Adolescents who had parents with psychopathology and received the OVK program had less depressive symptoms compared to adolescents with parents with psychopathology in the control condition. • Sample did not meet the characteristics of	II

	income areas in the Netherlands.	days of training from the research team.	minority • 5.9% parental psychopatholo-gy		a high-risk selective group for depressive symptoms. Therefore, no firm conclusions can be drawn about the selective potential of the OVK depression prevention program. • Future research should focus on high-risk participants, such as children of parents with psychopathology.	
Cutuli et al. (2013) US **Secondary analysis	To examine the effects of PRP on behaviour problems and internalising symptoms as reported by adolescents, their parents and teachers in a large longitudinal evaluation (Gillham et al., 2007)	• 3-arm RCT: PRP, Penn Enhancement Program (PEP), and control group. Adolescent, parents and teachers were assessed pre-intervention, 2 weeks post-intervention and at 6-month intervals for 3 years. • PRP provided cognitive behavioural group intervention once per week for 12 weeks. PRP sessions involved discussions, skill training and role plays in the classroom setting, and homework to reinforce the program content.	• 697 • 75% Caucasian • 54% male • 6th, 7th and 8th graders	• Internalising symptoms (somatic complaints, social withdrawal, symptoms of anxiety and depression) • Externalising symptoms (aggressive & delinquent behaviours) • Youth Self Report Form • Child Behaviour Checklist (parents) • Teacher report form	• Relative to no intervention control, PRP reduced parent-reports of adolescents' internalising symptoms beginning at the first assessment after the intervention and persisting for most of the follow-up assessments. • PRP also reduced parent-reported conduct problems relative to no-intervention. • There was no evidence that the PRP program produced an effect on teacher- or self-report of adolescents' symptoms. • Overall, PRP did not reduce symptoms relative to the alternate intervention (PEP), although there is a suggestion of a delayed effect for conduct problems.	II
Wijnhoven et al. (2014) Netherlands	To examine the effectiveness of the Cognitive Behavioural Therapy (CBT) component of the depression prevention program OVK (as above) among Dutch adolescent	• RCT pre-post intervention • See above for description of OVK. Delivered in 8 x 50 mins weekly CBT lessons plus homework.	• 102 adolescents - 50 experimental, 52 control • 100% female • all in first or second year of secondary	• Depression symptoms	• Decrease in depressive symptoms was significantly larger for girls in the experimental group compared to the girls in the control group. • At 6-months follow-up, the girls in the experimental group had significantly lower levels of depressive symptoms compared to the girls in the control	II

	girls with elevated depressive symptoms.		school • 11–15 years • M = 13.3 years • 98% Dutch		group. • Findings indicate that the CBT component of OVK effectively reduces depressive symptoms in the short term and possibly prevents the development of a clinical depression	
Anticich et al. (2013) Brisbane, Australia	To examine the effectiveness of the Fun FRIENDS program, a school-based, universal preventive intervention for early childhood anxiety and promotion of resilience delivered by classroom teachers	• 14 schools were randomly assigned to one of three groups: the intervention (IG), active comparison (CG) and wait-list control group (WLG). Assessments at pre-, post- and 12-month follow-up. • Fun FRIENDS is a developmentally appropriate downward extension of the FRIENDS for Life program. The primary components of the program include relaxation, cognitive restructuring, attention training and graded exposure to anxiety-provoking situations and problem solving, which are facilitated by peer and family support. The program actively involves parents, teachers and children to promote skill acquisition and reinforcement of skills across contexts. Delivered by trained teachers – one session per week over 10 weeks plus two booster sessions. 2 parent sessions.	• N = 488 - 159 IG, n = 196 CG, 133 WLG • 4–7 years	• Parent-rated • Anxiety and behavioural inhibition (BI) • Resilience (Devereux Early Childhood Assessment Clinical Form) • Social and emotional functioning • Behaviour difficulties • Parental stress and anxiety • Teacher rated • Social and emotional strength	• Comparable results were obtained for the intervention and comparison groups; however, the intervention group (IG) achieved greater reductions in BI, child behavioural difficulties and improvements in social and emotional competence. • Significant improvements in parenting distress and parent–child interactions were found for the IG, with gains maintained at 12-month follow-up. • Teacher reports revealed more significant improvement in social and emotional competence for the IG.	III-1 (schools volunte-ered, then randomly assigned)
Gerson et al. (2013) USA	To test a brief three-session program to build resilience (protection from depressive symptoms) and thriving (positive growth) in undergraduates by	• Study 1: pre-test–post-test waiting list control experiment • Study 2: placebo control experiment • Study 1: Program for Accelerated Thriving and Health (PATH) consisted of 3 x 60–90 min meetings over 3 weeks to build an adaptive	Study 1 • 28 undergraduates (15 PATH & 13 waitlist control) Characteristics provided for initial	• optimistic and personal control explanatory styles (Attributional Style Questionnaire • resilience (Beck	Study 1: • PATH significantly increased optimistic and personal control explanatory styles, resilience, and thriving Study 2:	Study 1: II Study 2: II

	teaching adaptive explanatory styles	explanatory style in undergraduates. Each meeting presented a scripted lecture about the relevance and components of pessimistic, optimistic, and personal control explanatory styles, • accompanied by colourful PowerPoint slides and interspersed with small-group discussions of thought questions distributed in two handouts. The presentation style was informal and offered opportunities for sharing by participants. • Study 2: modified version of PATH to incorporate Study 1 findings (e.g. incorporated 'letting go' of temporary negative events). Delivered in 3 x 30—50 min sessions over 5–6 days. Placebo control group differed from treatment group only in content, focusing mainly on stress and its impacts.	group (N = 33): • 18–26 years • M = 19.9 years • 61% female • 70% Caucasian • 42% first-year students Study 2: • 64 undergraduates (31 modified PATH & 33 placebo) • 17–50 years • M = 21.6 years • 81% female • 61% Caucasian • 53% seniors	Depression Inventory-II) • thriving (Connor–Davidson Resilience Scale 10)	• a modified version of PATH significantly increased resilience. • All effects were at least moderate in size. • As predicted, a personal control explanatory style significantly predicted thriving in both studies.	
Roghanchi et al. (2013) Iran	To explore the effect of combined rational emotive behaviour therapy (REBT) and the art therapy (engraving method) on improving self-esteem and resilience	• Quasi-experimental, pre-test-post-test with waitlist control group and random assignment • REBT and art therapy, 10 sessions for 10 weeks, 120 minutes per session	• 24 university students • 16 female • 19–24 years • M = 21.5 years	• Self-esteem • Resilience (using Persian-translated version of Connor-Davidson Resilience Scale)	• The results showed that the integration of REBT and art therapy increase the self-esteem and resilience of students.	III-I
Watson et al. (2014) USA	To examine the effectiveness of a resilience-based cognitive behavioural therapy (CBT) group psychotherapy, the	• One-arm pre-post design, quasi-experimental, non-controlled, non-randomised design • RBP was originally designed for youth with prominent social competence deficits rather those with a specific	• 22 children • 7–12 years • M = 9.9 years • 63% male • 82% generalised	• Using Behaviour Assessment System for Children (BASC-2): • Child social, emotional &	• Following the completion of RBP, parents and teachers reported significant decreases in problem behaviour. • In addition, parents reported significant decreases in depressive symptoms and improved family functioning domains of	IV

	Resilience Builder Program (RBP), for improving the social, emotional and family functioning of anxious children in a private clinical setting.	psychological disorder. Within this focus, RBP addresses cognitive and behavioural deficits. Aims to improve social competence by teaching children how to initiate and maintain peer interactions, to engage in reciprocity, to self-regulate their emotions and behaviours, and to become aware of how their behaviour impacts others. • Children also learn resilience skills such as proactive social problem solving, developing and acknowledging their own special talents, and flexibility. • 12-week (1 hour per week) manualised group treatment targeting social competence using resilience skills (i.e. affect and behaviour regulation, flexibility/adaptability, social problem-solving, proactive orientation). Typical RBP session structure: interactive didactic component (30 min), free play/behavioural rehearsal (20 min) and relaxation/self-regulation (10 min)	anxiety disorder	behavioural functioning • Internalising problems • Externalising problems • Resiliency • Emotional self-control • Negative emotionality • Anger control • Social Skills Improvement System- Rating • Scales (SSIS-RS; Gresham and Elliott, cited in Watson et al., 2014) • Family functioning (problem solving, communication, roles, affective responses, affective involvement, behaviour control, general functioning) • Parental psychopathology	problem behaviours and communication. • Teachers reported reduced internalising symptoms, somatic problems, and socially odd behaviours, as well as improvements in communication skills and resilience. • Moreover, children reported significant improvement in their positive and negative emotions, as well as their emotional control. • Findings suggest preliminary support for the effectiveness of RBP for improving anxious children's social, emotional and family functioning.	
Lester et al. (2012) US & Japan **Secondary analysis	To evaluate the Families OverComing Under Stress (FOCUS) program, which provides	• One-arm pre-post design • FOCUS family resiliency training: Is a family-centred, preventive intervention, manualised, and	• Baseline data for 488 unique families (742 parents, 873	• Parent psychological distress • Family functioning	• Family members reported high levels of satisfaction with the program and positive impact on parent–child indicators. • Psychological distress levels were	IV

	resiliency training designed to enhance family psychological health in US military families affected by combat- and deployment-related stress.	strength- and skills-based, practical, and easily accessible and applicable to military families • Provides education and skills training to enhance family coping with deployment related experiences • Uses structured narrative approach and Marine Corps stress continuum model delivered to individual families in 8 sessions. Parent/family sessions 90 mins and child sessions 30–60 mins	children) and pre-post outcomes for 331 families, representing 466 participants (300 non-active duty, 166 active duty). • Self-referred (51%) or referred by providers (43%) • Non-active duty primary caretakers: 97% female • Active duty primary caretakers: 16% female • 96% parents married • Mean age parents 34 years • 61% children aged 3–7 years; 19% 8–10 years; 20% 11 plus years • 55% boys	(e.g. problem solving, communication, roles, affective responsiveness, affective involvement, behaviour control & general functioning) • Child conduct problems, emotional symptoms, pro-social behaviour (parent-reported SDQ) • Child coping (Kidcope)	elevated for service members, civilian parents, and children at program entry compared with community norms. • Change scores showed significant improvements across all measures for service member and civilian parents and their children • Study provides preliminary support for a strength-based, trauma-informed military family prevention program to promote resiliency and mitigate the impact of wartime deployment stress.	
Grabbe et al. (2012) US	To examine the feasibility of delivering a spirituality development class – a minimally	• Quasi-experimental, one group, pre- and post-intervention design with standardised • Minimally modified Youth Education	• 71 youths enrolled in the study; 39 of the youth attended	• Self-report measures: • Impulsiveness • substance abuse	• The spirituality development class was well received by the youth. • Participants demonstrated improvement on measures of spirituality, mental	IV

	modified version of Yale University's 8-session Spiritual Self-Schema (3-S) program – to homeless youth in a shelter in an urban centre in the Southeastern United States.	in Spiritual Self-Schema (YESSS) – manual-guided therapeutic intervention, derived from the mindfulness work of Jon Kabat-Zinn et al. Mindfulness meditation is a mind training practice that cultivates attention through an awareness of a neutral point of focus, particularly on the breath, as an alternative to the normal wandering of the mind. Fosters calm alertness and attentiveness to sensations, thoughts and feelings in an open, fluid, accepting and non-judgmental manner. The program is consistent with positive psychology which fosters positive emotion, engagement and meaning rather than targeting depressive symptoms to improve the quality of life. Delivered in a group format over 4 weeks, with 2 sessions delivered per week.	at least four sessions of the class and completed the post-test.	• resilience (Resilience Scale – Wagnild & Young 1993) • spirituality • mental wellness • psychological symptoms	wellness, psychological symptoms and resilience on the post-test. • There were no statistically meaningful changes in impulsiveness scores. • Concluded that mindfulness meditation programs are feasible for this population. • Future studies of high-risk youth should use a randomised controlled trial design to examine the long-term impact of such training on psychological status and behavioural outcomes such as educational path, work attainment and drug and alcohol abuse.	
Gillham et al. (2012) US	To evaluate the effectiveness of the Penn Resiliency Program for adolescents (PRP-A), a school-based group intervention that targets cognitive behavioural risk factors for depression.	• RCT with 3 groups: (1) PRP-A; (2) PRP for adolescents and parents (PRP-AP); (3) usual care control. • Adolescents completed assessments immediately after the intervention, and at 6-month follow-up. • PRP is a cognitive behavioural intervention for young adolescents, which is intended for delivery in schools. Refer to Challen et al. (2014) & Cutili et al. (2013) above for more detail.	• 408 middle school students • 10–15 years • 92% 11–13 years • 52% boys • 77% European-American • 74% had married parents	• Depression symptoms • Anxiety symptoms • Cognitive style • Hopelessness • Coping	• PRP-A reduced depression symptoms relative to the school as usual control. • Baseline levels of hopelessness moderated intervention effects. • Among participants with average and high levels of hopelessness, PRP (A and AP) significantly improved depression symptoms, anxiety symptoms, hopelessness, and active coping relative to control. • Among participants with low baseline hopelessness, we found no intervention effects. • PRP-AP was not more effective than PRP-	II

					A alone. • No intervention effects on clinical levels of depression or anxiety. • Cognitive-behavioural interventions can be beneficial when delivered by school teachers and counsellors. • These interventions may be most helpful to students with elevated hopelessness.	
Froehlich-Gildhoff et al. (2012) Germany	To empower early childhood institutions, to promote the resilience and mental health of children who are growing up in adverse conditions or disadvantaged communities	• Control group design (Treatment group vs Control group: 5 kindergartens) with quantitative (standardised tests) and qualitative (interviews and group discussions) • 4 levels, 2 year project • Early childhood teachers – 6 training sessions (4 hours each) on resilience, resilience courses for children, cooperation with parents, networking and project reflection and sustainability. Monthly supervised team meetings • Child – structured training aimed at prevention and promotion of resilience. Based on 6 protective factors: perception of self and other, self-efficacy, self-regulation/self-control, social competencies, problem-solving skills, stress coping abilities) • Parental – weekly family consultation hour available & course comprised of 6 units once a week for 1.5 h. Course aimed to strengthen parenting and relationship building skills. • Network – cooperation & networking between early childhood institutions	• Treatment group: 5 kindergartens, 349 children • Control group: 5 kindergartens, 367 children • Demographic information not easily located	• Cognitive and social-emotional development of children • Self-concept for preschool children • SDQ	• Compared with the control group and over time, positive effects on self-esteem, behavioural stability and cognitive development of children who participated in the project (treatment group). • The parents appreciated the combination of group offers (parental courses) and the possibility of a one-to-one advisory service (counselling) – those parents who did not attend the parental courses could be addressed in counselling sessions. • A change in perspective regarding the children's resources and strengths resulted in both early-childhood teachers and parents developing a more positive perception of the children and of their own skills.	III-2 (method for allocati-on of groups unclear)

		and other institutions using network maps, and with short-cuts for families				
Foret et al. (2012) US	To examine the feasibility (enrolment, participation and acceptability) and potential effectiveness (changes in perceived stress, anxiety, self-esteem, health-promoting behaviours, and locus of control) of a relaxation response (RR)-based curriculum integrated into the school day for high school students.	• Non-randomised cohort study with wait-list control • The intervention included didactic instruction, relaxation exercises, positive psychology and cognitive restructuring. 4 week-intervention integrated into students' gym class schedule.	• 44 control, 42 intervention • 10th and 11th grade • 67% female • other demographics not collected but 2000 US census used to indicate 95% Caucasian, 88% 2-parent families	• Stress • State-trait anxiety • Health-promoting behaviours • Self-esteem • Locus of control	• The intervention group showed significantly greater improvements in levels of perceived stress, state anxiety, and health-promoting behaviours when compared to the wait-list control group. • The intervention appeared most useful for girls in the intervention group. • Several modifications may increase the feasibility of using this potentially effective intervention in high schools.	III-2
Donohoe et al. (2012) Scotland	To investigate the impact of the online interactive program Brainology (which aimed to encourage a growth mindset) on the mindset, resiliency and sense of mastery of secondary school pupils.	• Quasi-experimental pre-, post- and follow-up mixed-methods • Brainology is a computer program developed by Dweck. It leads users through activities and challenges developed around the assumption that intelligence is malleable (growth mindset) and can be improved through effort and application. Dweck links the growth mindset to a mastery approach to learning.	• N = 33: 18 intervention, 15 control • 13–14 years • 76% boys	• Mindset/intelligence • Prince-Embury Resilienc e Scale sense of mastery, sense of relatedness, emotional reactivity	• Significant increase in pre- to post-mindset scores for the intervention group. • However, there was a significant decline at follow-up and the initial impact of the intervention was not sustained. • There were no significant changes in mindset for the comparison group. • There were no significant changes in resiliency or sense of mastery for either group. • Study limited by small sample size, which has implications for generalisability. • Future research should investigate the longer-term effectiveness of educational interventions in schools.	III-2
de Villiers et al. (2012) South Africa	To determine the short- and medium-term effect of a resiliency program on the level of	• The Solomon Four Group Design was used (Braver & Braver 1988, cited in de Villiers & van den Berg 2012). This experimental design is used to	• 161 – 72 girls, 89 boys • 11–12 years • 84.6% white	• Interpersonal strengths • Intrapersonal strengths	• Intrapersonal characteristics such as emotional regulation and self-appraisal increased significantly after the children had been exposed to the resiliency	III-1

	resilience reported by a group of Grade 6 learners	evaluate the interaction between two main effects (the intervention and the pre-test); and so it requires the division of participants into four groups: two experimental and two control groups. The pre-test is administered to only one experimental and one control group in order to avoid pre-test sensitisation. Pre-, post-intervention and 3-month follow-up. • Intervention consisted of 15 sessions presented over a period of three weeks and focused on activities promoting emotional regulation, stress management, interpersonal skills, cognitive skills, behavioural skills.	• Numerous family and economic risks, and adverse life events • Homogeneous socioeconomic status	• Family involvement • School functioning • Affective strengths • Resiliency (Prince-Embury, 2006) • Self-appraisal • Family appraisal • Social support	programme • Interpersonal skills and external resources such as family and general social support did not increase significantly.	
Coholic et al. (2012) Canada	To investigate the effectiveness of a Holistic Arts-Based Group Program (HAP) for the development of resilience in children in need (referred via child protection agency or child mental health centre)	• HAP was compared with children who took part in an Arts and Crafts group (the comparison group), and children who were waiting to attend the HAP (the control group). • HAP teaches mindfulness using arts-based methods, and aims to teach children how to understand their feelings and develop their strengths. 12 weeks. Aims to build aspects of resilience such as self-awareness, social and problem-solving skill, emotional understanding and regulation, self-compassion and empathy and the ability to pay attention and focus, within a context that is strengths-based and responsive to participant needs.	• N = 36 • 20 boys aged 8–13 years • 16 girls aged 8–14 years	• Self-concept • Resiliency (Prince-Embury, 2006)	• HAP program was beneficial for children in that they self-reported lower emotional reactivity (a resilience measure) post-intervention. • No changes were noted for perceptions of self-concept. • Consideration should be given to how we can attend to young people's needs in relevant ways as resilience is a condition of a community's ability to provide resources as much as it is part of an individual's capacity for growth. • Programs such as the HAP can engage children in a creative and meaningful process that is enjoyable and strengths-based.	III-2

Stoiber et al. (2011) US	To conduct an experimental analysis of teachers' use of functional assessment (FA) and positive behaviour support (PBS) for addressing challenging behaviours in young children	• Randomised experimental-control group design that incorporated between-group and within-group comparisons • Experimental teachers participated in professional development designed to provide step-by-step training and guided implementation of FA linked to PBS intervention planning for children identified with challenging behaviour in prekindergarten through first-grade classrooms	• 90 students (57 of experimental teachers and 33 of control teachers) • 4–7 years	• Teacher measures • Competency self-ratings • Accommodating children with challenging behaviour • Student measures • Social Competence • Behaviour • Classroom competence	• At post-intervention, experimental teachers reported increased resilience as evidenced in their significantly higher competence and self-efficacy along with greater utilisation of FA and PBS practices compared with control teachers. • Increased levels of resilience were also documented on multiple measures for experimental children with challenging behaviours who received FA and PBS. • Specifically, experimental children demonstrated more positive behaviours and fewer challenging behaviours compared with control children at post-intervention.	III-1
Hyun et al. (2010) Korea	To examine the effects of cognitive behavioural therapy (CBT) aimed at enhancing the resilience of high-risk adolescents with alcohol-dependent parents in Suwon, South Korea.	• RCT with control group pre-test and post-test design. • The experimental group participated in 10 (50 min) sessions of CBT. Cognitive – increasing self-consciousness and identifying dysfunctional coping; behavioural – developing healthy coping strategies	• 15 experimental • 13 control • 12–13 years • 100% boys	• Children of Alcoholics Screening Test • Self-concept • Depression • Resilience (using Korean Adolescent Resilience Scale)	• Scores on resilience increased significantly after the intervention, whereas the scores of self-concept and depression did not change. • In the control group, none of the scores of outcome variables changed significantly after the intervention period. • The results indicate that the developed CBT program might be effective for improving the resilience of adolescents with alcohol-dependent parents.	II
Mitchelson et al. (2010) Australia	To profile young Culturally and Linguistically Diverse (CALD) people coming through the BRiTA Futures Program in Queensland, including their levels of wellbeing and resilience before	• The study is a retrospective review of data collected from participants in the BRiTA Futures Primary and Adolescent programs conducted between October 2007 and October 2009. A repeated measures design was used to investigate pre-and post-program changes in well-being and resilience. There was no control	• 117 children from 3 BRiTA Futures Primary School programs • 51% female • 84% grades 5–7 • 63% born overseas	• Personal wellbeing/general health • Resilience (using purpose-designed measures for CALD children & adolescents)	• Post-intervention data available for 27 primary school students and 61 adolescents • Pre-program results showed considerable proportions of primary school children (between 8.8% and 20.2%) and adolescents (34.1%) with poor levels of wellbeing upon commencing the program. • Upon completing the program, primary	III-3

	and after participation in the program.	group. Data were collected at two time points: (1) at the beginning of the first session of the program; and (2) at the end of the final session of the program. • The BRiTA Futures Primary School and Adolescent programs were designed in 2003 to promote resilience and positive acculturation in children and young people from CALD backgrounds. Primary school program delivered in 8 x 2-hour sessions over 8 weeks and adolescent program through 10 x 2-hour sessions over 10 weeks. Both programs utilise a whole class approach die to relevance to all children. • Examples of content: cultural and personal identity; self-talk and building self-esteem; cross cultural communication; understanding and managing emotions; communication processes and styles; stages of conflict, triggers and resolution strategies; stress; using humour and spirituality to build resilience; and building positive relationships and support networks.	• 192 adolescents from 3 BRiTA Futures Adolescent programs • 54% female • 90% grades 8–10 • 81% born overseas		school participants showed significant improvements in global quality of life (P = 0.014) and weak evidence of improvements in resilience (P = 0.057). • Adolescent participants showed significant improvement in wellbeing (P = 0.006) and weak evidence of improvement in resourcefulness (P = 0.079). • The BRiTA Futures program fills an important service gap for young CALD people and shows some promising initial results.	
Craven et al. (2010) USA	To evaluate the effectiveness of transitional group therapy (TGT) in reducing risk of psycho-social-educational problems in first-time foster children	• Pre-post design, pilot study • TGT is a short-term intensive group intervention informed by best practice to support traumatised children. 3 stages: • Stage 1 – establishing rapport (Sessions 1–3) • Stage 2 – introducing resiliency	• 11 children • 6–12 years	• Mental health symptoms • Traits of personal resiliency (using Behaviour and Emotional Rating Scale- Second Edition)	• Children demonstrated desirable changes in pro-social behaviour and orientation towards peers, family and schools. • TGT is worth further exploration for increasing resilience in first-time foster children	III-3

		(Sessions 4–7) • Stage 3 – integration of knowledge (Sessions 8–12)				
Fraser et al. (2008) Australia	To evaluate the effectiveness of a group psychosocial intervention for children (aged 12–18) of a parent with mental illness (copmi)	• Treatment and wait-list control design study with pre- and post-treatment, and 8-week follow up • Intervention is Koping Adolescent Group Program (KAP). KAP is a peer support intervention for copmi aged 12–18 years. KAP is provided by Child & Youth Mental Health Service, within the Royal Children's Hospital and Health Service District of Queensland Health. KAP adheres to a resilience framework and therefore aims to improve adjustment by modifying risk factors such as social isolation and inadequate mental health literacy and by strengthening protective factors such as coping skills and peer relationships. Intervention strategies: psychoeducation, coping skills training, peer support, group discussion, quizzes and other activities. • 3 x 6 hour group sessions fortnightly. • Session 1: Connecting & learning • Session 2: Stress in the family • Session 3: A brighter future	• n = 27 treatment • n = 17 control • 12–17 years • M = 13 years • 61% female • Most common parental mental disorder – depression (43%), followed by schizophrenia 32% and bipolar disorder 25%	• Intervention targets: • Mental health literacy • Connectedness • Coping strategies • Adjustment: • Depression • Life satisfaction • Pro-social behaviour • Emotional/ • Behavioural difficulties • Caregiving experiences	• Group comparisons failed to show statistically significant intervention effects, but reliable clinical change analyses suggested that compared to the control group, more intervention participants had clinically significant improvements in mental health literacy, depression, and life satisfaction. • These treatment gains were maintained 8 weeks after treatment. • Participant satisfaction data supported these treatment gains. • Given study limitations and the modest support for intervention effectiveness, it is important that this and other similar interventions should continue to be revised and undergo rigorous evaluation.	III-2
Grunstein et al. (2007) Australia	To examine characteristics of resilience among Australian adolescents, the extent to which resilience might be strengthened through	• Pre-post design with control group • REC is a performing arts competition for secondary schools, which originated in Australia in 1980. It has since grown to include over 400 schools and 40,000 students annually throughout Australia and has been	• 216 participants • 190 non-participants • 375 control • 13–17 years	• Resilience using purpose-designed measure (social competence, problem solving skills, autonomy, sense of purpose,	• The majority of participants in the REC were girls, and the analysis of results was restricted to a matched group of girls from Year 9 (age 13–14) and above. • Girls in this group from REC schools scored significantly higher in measures of overall resiliency during the rehearsal	III-2

	participation in a dance/drama competition, the Rock Eisteddfod Challenge (REC), and the impact participation may have on health-related behaviour	adopted in other countries (e.g. UK). Each school forms a team of up to 130 students to create an 8-minute production on a theme of their choice set to contemporary, commercially available music. Following extensive rehearsal schools perform at a professional venue for their peers, families and a panel of experienced judges.		sense of belonging)	period than students from control schools. • Within REC schools, participants scored higher for a combined measure of resiliency than non-participants. • High scores for resiliency were consistently associated with lower prevalence of reported substance misuse across the whole sample. • In general, increases in substance use observed over the time period from baseline to follow-up was less in the REC group than the control group. • Results need to be treated cautiously, and 'causal' conclusions about the intervention could only be preliminary.	
Green et al. (2007) Australia	To examine the efficacy of an evidence-based (cognitive-behavioural, solution-focused) life coaching program in enhancing cognitive hardiness and hope in senior female high school students	• RCT pre-post design – life coach vs wait-list control group • 10 sessions of life coaching over 2 school terms (28 weeks, including 2-week break) with a teacher-coach. 10 teachers were trained as coaches in 2 half-day workshops. Students selected 2 issues that they wished to be coached on (one personal and one school-related). Program based on solution-focused cognitive-behavioural framework. Each session involved goal setting and coaching to identify personal resources to self-generate solutions and action steps.	• 56 female senior high school students – 28 intervention, 28 control • 16–17 years	• Hope • Cognitive hardiness • Depression • Anxiety • Stress	• Life coaching was associated with significant increases in levels of cognitive hardiness and hope, and significant decreases in levels of depression. • Life coaching may be an effective intervention for high school students.	II
Tuttle et al. (2006) US	To test the addition of a cognitive-behavioural skill-building component called Positive Adolescent Life Skills	• RCT – Teen Club or Teen Club plus PALS • Interventions implemented in 2003–04 school year for 30 weeks. Group meetings held after school each week	• 16 adolescents attending urban secondary school • 10 boys, 6 girls	• All using Problem Oriented Screening Instrument for Teenagers (POSIT)	• Between-group differences in the POSIT subscale scores were not significantly different in this small sample. • Group interviews conducted at the conclusion of the intervention revealed	II

	(PALS) training to an existing intervention for urban adolescents to enhance resiliency. In previous pilot work with the existing intervention, called 'Teen Club', it was found that participants in group meetings and intensive case management reported an enhanced ability to connect with positive resources.	for 1.5 hr. Group leaders (at least one of whom was a registered nurse) available in between meetings for support and case management. • Teen Club – community health nurse and community outreach worker developed group intervention to provide additional social support, health education, community outreach and instrumental assistance to high risk teens. • PALS – 25 cognitive behavioural skill-building sessions divided into 5 modules. Focused on basic communication, enhancing social support and problem solving skills.	• 12–16 years	• Substance abuse • Physical health • Mental health • Family relationships • Peer relationships • Educational status • Vocational status • Social skills • Leisure/ recreation • Aggressive behaviour/ delinquency	that participants found the PALS intervention to be relevant and useful. • Authors suggest that the PALS component strengthened the existing intervention and lend preliminary support for the continuation of this combination of interventions. • Future research with larger numbers is needed.	
De la Rosa et al. (2005) US	To examine outcomes of a home visitation program that provided services to first-born children and their parents living in southwestern New Mexico.	• Pre-test-post-test • First-Born Program (FBP) – following the program design and training modules, home visitors of the FBP provide weekly to biweekly face-to-face direct family contact averaging 45 min per contact. Each service plan is individualised with structured family input. Services may begin any time during the pregnancy and continue until the baby is age 36 months. The average number of total contact hours between client and home visitor was 43.8, with a range from 5 to 103 hours. The key topics include the following: • Prenatal health practices and nutrition • Effects of substances on foetal development	• 109 families participating in the FBP home-visitation services. Clients were eligible to receive home-visitation services if they were county residents and expecting their first child.	• North Carolina Family Assessment Scale (NCFAS) which assesses 7 domains: (a) family environment, (b) social support, (c) service utilization, (d) caregiver characteristics, (e) personal problems affecting parenting or pregnancy, (f) family interactions,	• Clients participating in the First-Born Program displayed significantly higher post-test scores on measures of family resiliency. • Specifically, clients demonstrated improved scores in operationalised measures of resilience: social support, caregiver characteristics, family interaction measures, and a reduction in personal problems affecting parenting. • The results are promising as participants were observed to make positive improvements in specific areas related to family resiliency.	III-3

		• Common discomforts and complications of pregnancy • Preparation for labour, delivery, and postpartum • Basic care of newborn and basic child health issues • Responding to their child's cues and importance of attachment And bonding • Interactions that support child development and stimulate the Brain • Identification of needs, formulating goals, and plans • Modelling healthy habits • Consequences of domestic violence and of substance abuse • Father involvement • Safety issues • Discipline techniques		(g) child well-being		
Hipke et al. (2002) US	To examine predictors of intervention-induced resilience in children of divorce whose mothers participated in a preventive parenting program.	• RCT – parenting skills vs self-study, guided reading control. • New Beginnings Program (NBP) - based on a transitional events model in which children's adjustment to divorce is the joint consequence of the ongoing, stressful changes and events they experience related to marital dissolution, as well as the protective resources available to them. Four risk and protective factors were targeted for change: (a) quality of the primary residential mother–child relationship, (b) effective discipline in the post-divorce household, (c) exposure to inter-	• 157 families from NBP – 81 parenting skills group and 76 control • Mean age of children 10 yrs • Mean age of mothers 36 yrs	• Maternal education • Economic stress • Maternal demoralisation • Child temperament • Child behaviour • Child adjustment (CBCL)	• Children were less likely to maintain program gains in externalising when maternal demoralisation was high or when children's self-regulatory skills were low	II

		parental conflict, and (d) access to the non-residential father. • New Beginnings parenting program consisted of 11 weekly group sessions supplemented by 2 individual sessions per family. Didactic presentations, group activities, videotaped modelling and weekly homework based on social learning and cognitive behavioural principles. • Families assigned to self-study condition were mailed 6 books (3 for mothers, 3 for children) related to divorce adjustment				

Table 3: Description of resilience-specific measures used in the 28 primary studies

Measure	Constructs/Subscales and no. items	Item examples/content	Response format	Administration and scoring
Connor-Davidson Resilience Scale (Chen et al., 2014; Gerson & Fernandez, 2013; Roghanchi et al., 2013)	Resilience total score (25 items). "Resilience embodies the personal qualities that enable one to thrive in the face of adversity" (Connor & Davidson, 2003, p. 76).	Example items: • "Not easily discouraged by failure" • "Tend to bounce back after illness or hardship"	5-point range • not true at all (0) • rarely true (1) • sometimes true (2) • often true (3) • true nearly all of the time (4)	Self-report **Scoring:** 0 to 100 with higher scores reflecting greater resilience
Resilience Devereux Early Childhood Assessment Clinical Form (DECA-C) (Anticich et al., 2013)	"A strengths-based assessment approach linked to classroom and home-based strategies that promote children's personal assets and remediate behavioural concerns before they possibly become entrenched and develop into behaviour disorders" (LeBuffe & Naglieri, 1999. p. 121) Two composite scales (Total = 62 items) with two subscales and four additional items: 1. **Total Protective Factors (27 items)** • initiative (11 items) • self-control (8 items) • attachment (8 items) 2. **Behavioral Concerns (31 items)** • withdrawn/depression (9 items) • emotional control problems (8 items) • attention problems (7 items) • aggression (7 items) 3. **Additional items (4 items)** • set or threaten to set a fire? • say negative or critical things	• Initiative Scale: assesses independence, active learning, optimism, and problem-solving tasks and activities. • Self-Control: ability to manage frustration, cooperate, respect others, and self-soothe. • Attachment: ability to seek out adults and children, gain positive attention, and respond appropriately to adults comforting them. • Withdrawal/Depression: behaviours related to social withdrawal and depression. • Emotional Control Problems: ability to manage expression of negative emotions to pursue positive goal-directed behaviours. • Attention Problems: ability to attend to tasks and ignore distractions. • Aggression: verbal or physical aggression toward persons or things	• All items begin ""During the past 4 weeks, how often did the child…" • Using direct observation, items are rated on a 5-point Likert-type scale: • never (0) • rarely (1) • occasionally (2) • frequently (3) • very frequently (4).	• Completed by adult (e.g. parent, teachers, child-care workers) who have had contact with child ≥ hours/day, ≤ 2 days/week, for 4 weeks. • Scoring based on direct observation. • Parents and teachers complete same rating scale. Different norms available for each. • Ratings for each subscale are summed, deriving raw scores for each: Initiative + Self-Control + Attachment = Total Protective Factors etc. • Additional items: ratings of rarely (1) through very frequently (4) are interpreted as a concern. • Interpretation is outlined in the manual.

Measure	Constructs/Subscales and no. items	Item examples/content	Response format	Administration and scoring
	about herself or himself? • threaten or attempt to hurt herself or himself? • hurt or abuse animals?			
Behaviour Assessment System for Children (BASC-2) (Watson et al., 2014)	"used to evaluate the behavior and self-perception of children and young adults aged 2 through 25 years" (Reynolds & Kamphaus, 2004, p. 1). Assesses adaptive and maladaptive behaviour. Consists of five measures of behaviour: **1.Teacher Rating Scale (TRS)** • Externalizing problems (hyperactivity, aggression, conduct problems) • Internalizing problems (anxiety, depression, and somatisation) • Adaptive skills • School problems (learning and attentional problems) **2.Parent Rating Scale (PRS)** • Externalizing problems (hyperactivity, aggression, conduct problems) • Internalizing problems (anxiety, depression, and somatisation) • Adaptive skills • Activities of Daily Living **3.Self-Report of Personality (SRP)** Child and adolescent versions (8–11 years, 12–21 years): • School Problems • Internalizing Problems	• PRS and TRS: measures adaptive skills (e.g. "makes friends easily") and problem behaviours (e.g. "refuses to join group activities") in the community/ home and school.	• TRS and PRS; 4-point Likert scale of never, sometimes, often and almost always. • SRP: True/False response and 4-point response scale • SOS: direct observation using momentary time sampling to record both positive and negative behaviours.	• TRS has three forms with items targeted at three age groups: preschool (ages 2–5), child (ages 6–11), and adolescent (ages 12–21). • The SRP has forms for three age levels: child (ages 8–11), adolescent (ages 12–21) and young adults attending a post-secondary school (ages 18–25) • Normative scores provided.

Measure	Constructs/Subscales and no. items	Item examples/content	Response format	Administration and scoring
	• Inattention/Hyperactivity • Personal Adjustment • Overall composite score: Emotional Symptoms Index (ESI), which has both clinical and adaptive scales. College version: • Internalizing Problems • Inattention/Hyperactivity • Personal Adjustment • Overall composite score: Emotional Symptoms Index (ESI), which has both clinical and adaptive scales. Adolescent and College versions content scales: • Anger Control • Ego Strength • Mania • Test Anxiety. **4. Structured Developmental History (SDH):** information relating to • social • psychological • developmental • educational • medical **5. Student observation system (SOS)** **TRS and PRS Optional content scales:** • Anger • Control			

Measure	Constructs/Subscales and no. items	Item examples/content	Response format	Administration and scoring
	• Bullying • Developmental Social Disorders • Emotional Self-Control • Executive Functioning • Negative emotionality • Resiliency			
Resiliency Scale developed by Wagnild and Young (Grabbe et al., 2012)	Resilience Scale (25 items) measures "equanimity, perseverance, self-reliance, meaningfulness, and understanding that many experiences must be faced alone". (Grabbe et al., 2012, p. 929.) Measures two factors: • personal competence • acceptance of self and life.	Example items: • "I usually manage one way or another." • "When I'm in a difficult situation, I can usually find my way out of it."	• 7-point Likert-like scale from 'strongly disagree' to 'strongly agree'	**Scoring:** • Scores summed. • Range, 25–175. • High resilience >145 • Moderate = 125–145 • Low <120.
Prince-Embury (2006) Resilience Scale(Coholic et al., 2012; de Villiers & van den Berg, 2012; Donohoe et al., 2012)	Three scales (total 64 items): • sense of mastery (24 items) (self-efficacy, optimism, and adaptability) • sense of relatedness (24 items) • emotional reactivity (20 items). Ten subscales: • Optimism • Self-efficacy • Adaptability • Trust • Support • Comfort • Tolerance • Sensitivity • Impairment	Example items: • Sense of mastery: e.g. "If I try hard, it makes a difference." • Sense of relatedness: e.g. "I can make up with friends after a fight." • Emotional reactivity: e.g. "When I get upset, I stay upset for several days."	• 4-point Likert scale from Never (0) to Almost Always (4).	**Scoring:** Two index scores: • Resource (Sense of mastery + sense of relatedness) • Vulnerability (Emotional reactivity – Resource Index score) • Normed by gender and age band (9–11)(12–14)(15–18)

Measure	Constructs/Subscales and no. items	Item examples/content	Response format	Administration and scoring
Korean Adolescent Resilience Scale (Hyun et al., 2010) **NB:** Developed as part of unpublished Master's thesis so further details were not available.	Total resilience scale (31 items) has three domains: • intrapersonal characteristics (positive self-understanding) • characteristics of coping (self-reliance and resourcefulness) • interpersonal characteristics (perceptions of positive interpersonal relationships).		• 4-point scale	• Higher scores indicate a high level of resilience.
Purpose-designed measure of resilience (Grunstein & Nutbeam, 2007; Mitchelson et al., 2010) for use with CALD children	Resilience is measured in terms of: • emotional literacy • ability to deal with conflict • resourcefulness (sense of autonomy, aspirations and help-seeking behaviours) • connectedness (family functioning, relationships and how they believe they are viewed by other people).	Items measuring resourcefulness, emotional literacy and ability to deal with conflict: • "I can be strong inside when I need to be." • "I am proud of who I am." • "I know when other people are feeling sad." • "When someone is angry with me, I try to make things better." • "When I feel bad, I do things that make me feel better" Items used to measure resourcefulness and connectedness include adaptations of items from the California Healthy Kids Resilience Assessment (Constantine & Benard 2001, cited in Mitchelson et al. 2010). Resourcefulness items: • "I can achieve my goals."	• 4-point Likert scale from 'YES!' (4) to 'NO!' (1)	• Total from 5 to 20. • Higher scores indicate greater resilience.

Measure	Constructs/Subscales and no. items	Item examples/content	Response format	Administration and scoring
		• "I can make decisions about my future." • "I feel hopeful about my future." • "When faced with something new or different I usually tell myself I can do this." • "I would feel comfortable asking for help if I need to." Connectedness items: • "I try to understand other people's point of view or opinion." • "There is someone in my life that I admire and respect." • "I am respected by other young people my age." • "There is someone in my life that tells me when I am doing a good job." • "In my family we are able to make decisions to solve our problems."		
Traits of personal resiliency subscale of Behaviour and Emotional Rating Scale 2nd edition (Craven and Lee, 2010) (BERS-2)	Aimed at 5 to 18 years. Total (52 items) consists of five subscales: • Interpersonal Strengths (14 items) (ability to control behaviour in a social situation) • Affective Strength (7 items) (ability to give or receive affect) • Family Involvement (10 items) (participation and relationship family) • School Functioning (9 items)	Example items: • Interpersonal Strengths: e.g. "considers consequences of own behaviour"; "accepts no for an answer". • Family Involvement: e.g. "maintains positive family relationships"; "participates in family activities". • Intrapersonal Strengths: e.g. "enthusiastic about life"; "is self confident".	Respondents rate each items on scale: • not at all like the child (0) • not much like the child (1) • like the child (2) • very much like the child (3) Respondents also complete eight open-ended questions that address resiliency and protective factor issues by providing specific information about the child's	• Completed by a school 'diagnostician', teacher, caregiver, or any adult knowledgeable about the child. • Raw subscale scores can be converted to percentile ranks and standard scores with (mean= 10, SD=3). Overall strength quotient = sum of

Measure	Constructs/Subscales and no. items	Item examples/content	Response format	Administration and scoring
	(competence on school and classroom tasks) • Intrapersonal Strengths (11 items) (outlook on his or her competence and accomplishments)	• School Functioning: e.g. "reads at or above grade level"; "pays attention in class". • Affective Strengths: e.g. "asks for help"; "accepts a hug". Open-ended questions include: • "What are the child's favourite hobbies or activities?" • "At a time of need, to whom would this child turn for support?"	strengths and resources.	standard scores of five subscales converting the sum to a quotient.

Table 4: Narrative reviews that use the term resilience in the name or in the measures

Author (year)	Topic of review (number of studies if reported)	Summary of findings

Ager (2013)	Resilience and child wellbeing – public policy implications	• Only 22 of 108 papers presented primary quantitative data.
		• Breadth of sectoral engagement across the fields of education, social work and health; demonstrates diversity with regard to the systemic levels – individual (biological and psychological), communal (including systems of faith and cultural identity), institutional and societal – with which it engages; but is based more upon conceptual rather than empirical analysis.
		• Major themes of policy recommendation target strengthened family dynamics, increased capacity for counselling and mental health services, supportive school environments, development of community programs, promotion of socioeconomic improvement and adoption of a more comprehensive conception of resilience.
		• Evaluations of resiliency-informed policy initiatives are limited in number, with greatest rigour in design associated with more discrete programmatic interventions.
		• Recommended strategies to strengthen research–policy linkages include:
		  • greater commitment to operationalise indicators of resilience at all levels of analysis
		  • more coherent engagement with the policy-making process through explicit knowledge translation initiatives
		  • developing complex adaptive systems models amenable to exploring policy scenarios.

Burt & Paysnick (2012)	Resilience in the transition to adulthood	• Reviews key longitudinal studies that followed participants from childhood or adolescence through the transition to adulthood, using multiple informants and measures and tapping into constructs relevant to resilience, such as stress, coping, and competence. • Also reviews the transition to adulthood in specific risk populations (e.g. youth ageing out of foster care, youth with chronic medical conditions etc.). • Facilitators of transition to adulthood in youth who have experienced significant adversity in childhood/adolescence are often similar to those important for resilience in youth generally: cognitive skills, the ability to plan ahead and effectively modulate attention, personality traits of low neuroticism/high emotional stability, receiving positive and effective parenting, and having adequate economic resources. Effective parenting of adolescents/young adults involves balancing their increased need for autonomy and independence with the continued provision of targeted supports. • Other facilitators may be more relevant in certain populations, e.g. the timing of exit from foster-care placement and the opportunity for foster youth to enter into a relationship with a formal mentor. • Other factors associated with resilience in the transition to adulthood include the following: the cognitive/personality characteristic of organisation (which is closely related to aspects of executive function); self-efficacy and a drive for mastery (i.e. resilient emerging adults have experienced difficult times without defining themselves by their adversity); and close relationships, whether continuing relationships with parents or (more often) supportive romantic partners, close friends and mentors. Taking advantage of the benefits of a close relationship requires a degree of emotional maturity and security, and each of these broad areas can be studied in more detail along with their interactions. • The authors suggest there is a clear need for further research on prevention and intervention studies with at-risk youth in this age group.

Condly (2006)	Resilience in children: a review of literature with implications for education	• On an individual level, resilient children show above-average intelligence and have an easy-going temperament that does not allow them to succumb to self-pity. High intelligence on its own is not sufficient to protect against stress, it needs to be combined with a soothing temperament. • The role of a supportive family in the development of resilience in children is most important early in life and declines as the child ages. • Literature shows no clear effect of social support or friendships on a child's resilience. • The key in developing resilience in children is the opportunity to identify at-risk children and involve them in support programs. • Successful intervention programs at school take into consideration the personal developmental level of the child and include all aspects of the school in the intervention. The curriculum should include development of target skills, the training should be intensive and ongoing and the school staff need to be devoted to the student and to the proper implementation of the intervention program. • While schools are ideal places to implement programs as children spend much time at school, schools are also resource poor and it is questionable if teachers are skilled to implement these interventions. • The author notes that even with the most carefully designed and thoroughly researched program, resilience as an outcome is not a guarantee. • A proper understanding of risk and resilience is essential to the design and implementation of policies and programs that attempt to redress some of the effects that community violence, family abuse, poverty and minority status can have on children. A child's personality characteristics interact with its environments (family, friends, school, community). Future research should focus on the relationship between the individual and its environments to explain the nature of their direct and indirect effects on one another. This knowledge can greatly improve the development of programs.
Gillham & Reivich (2004)	Cultivating optimism in childhood and adolescence	• Review of research on the development of optimism and hope and interventions designed to build these qualities in youth. • The Penn Resiliency Program (cognitive-behavioural intervention) is discussed as an example of a school-based intervention that may promote hope and prevent symptoms of depression and anxiety. • The Penn Resiliency Program (PRP) can significantly improve explanatory style and other thinking styles associated with depression. • PRP halved rates of moderate to severe depressive symptoms over a two-year follow-up. • PRP is effective for children with high and low levels of initial symptoms. • PRP reduces and prevents future depressive symptoms in children who have high levels of initial symptoms. • PRP appears to prevent depressive symptoms from developing in many children. • Authors suggest that PRP may have even more dramatic effects on anxiety. • Findings suggest that cognitive-behavioural interventions such as PRP could be used on a wide scale to promote optimism and prevent depression and anxiety in young people. • Authors note that structural interventions such as the PRP reflect only one of many possible pathways for increasing hope and that interventions including parenting behaviours, teaching styles and messages through mass media may also be effective.
Sapienza & Masten (2011)	Understanding and promoting resilience in children and youth	• Advances in theory and methods for studying human resilience have ushered in a new era of integrative, bio-psychosocial research. • Research is integrating the study of resilience across system levels, with implications for promoting positive adaptation of young people faced with extreme adversity. • However, studies on neurobiological and epigenetic processes are just beginning, and more research is needed on efficacy, as well as

		strategic timing and targeting of interventions.
		• Findings:
		  • Resilience research has shifted toward dynamic system models with multiple levels of interaction, including research on the neurobiology of stress and adaption, epigenetic processes, and disasters.
		  • Growing evidence indicates individual differences in biological sensitivity to negative and positive experiences, including interventions.
		  • Early experiences show enduring programming effects on key adaptive systems, underscoring the importance of early intervention.
		  • Studies of developmental cascades demonstrate spreading effects of competence and symptoms over time, with important implications for the timing and targeting of interventions.
		  • Disaster research suggests guidelines for planning to protect children in the event of large-scale trauma.

Ungar et al. (2005)	Risk, resilience and outdoor programs for at-risk children	• Two outdoor programs were reviewed:
		  • Winter Treasures: primary prevention seeking to bolster a sense of self among youth as having a meaningful role in community and a rite of passage necessary to transition from child to adult
		  • Choices Wilderness Program: addresses the risks posed to youth when they are involved with substances such as drugs, alcohol or gambling.
		• Outdoor programs show favourable outcomes in terms of relationship building and a sense of spirituality and purpose, though there was little increased awareness of environmental issues.
		• Follow-up support after programming helped to reinforce changes made during the outdoor experience.
		• The long-term effect of the program depends on how promoting or constraining the environments to which young people return after the program. Personal growth depends on support from respective communities.
		• Though the evidence for the effectiveness of these programs is still emerging, the authors point out that group-work in natural settings offers a promise as a way to promote wellbeing in at-risk children.
		• More rigorous evaluation is required in this field.

Yeager & Dweck (2012)	Mindsets that promote resilience: When students believe that personal characteristics can be developed	• Implicit theories of intelligence: changes in theories of intelligence can affect academic behaviour over time; if students can be redirected to see intellectual ability as something that can be developed over time with effort, good strategies and help from others, then they are more resilient when they encounter rigorous learning challenges. • Implicit theories of personality: The incremental theory of personality intervention (leading students to hold a mindset in which people had the potential to change) increased resilience among students at a school with substantial levels of peer conflict. It reduced aggressive retaliation and increased pro-social behaviour following an experience of peer exclusion 1 month post-intervention, and it improved overall conduct problems in school as assessed 3 months post-intervention. When adolescents have or are taught a mindset in which people have the potential to change their socially relevant traits they can be more resilient in the face of victimisation or exclusion. • Collaborative partnership between researchers, practitioners and students may be necessary to engineer interventions that will work at scale (customised to address the mindsets of student of a given age or in a given context). • Context specificity for effectiveness of the intervention raises the question of the extent to which implicit theories taught in one context are transferrable across to other contexts. • The authors conclude that psychosocial interventions that change students' mindset are effective.

Zolkoski & Bullock (2012)	Resilience in children and youth: A review	• Individual-level interventions focus on developing personal coping skills and resources before encountering real-life adversity.
		  • The Life Skills Training Program is a school-based substance abuse and violence prevention program focusing on enhancing social and personal competence skills.
		  • Resourceful Adolescent Program is an intervention designed to improve adolescents' skills and social resources through; (a) supporting participants' strengths; (b) skill building for controlling stress; (c) developing social support networks; and (d) conducting interpersonal relationships with others.
		• It is equally important to identify what resources should be the target of the intervention and determine how to convey these resources to youth.
		• Family-centred interventions may help develop and enhance assets and resources.
		• Interventions at family-level may take on a preventative or crisis-care focus.
		  • The RAP program includes sessions for participants' parents with a focus similar to that of the adolescent sessions.
		  • The Multidimensional Family Prevention project assists youth and their parents develop new skills to enhance communication with each other and in general.
		  • Flint Fathers and Sons is a program designed to strengthen father–son relationships among African-American participants (Caldwell et al. 2004, cited in Zolkoski and Bullock 2012).
		  • Other family-focused interventions include: (a) preparing for the drug-free years ; (b) Iowa strengthening families, now revised and called the Strengthening Families Program: For Parents and Youth 10–14.
		• Social environment intervention
		  • Responsive Advocacy for Life and Learning in Youth (RALLY) is a research-based intervention addressing academic success and emotional wellbeing of adolescents in schools. The focus of RALLY is pulling in services to the classroom and school in order to extend prevention and intervention into the child's everyday experiences.
		  • The broader social environment such as the neighbourhood, region, or country plays a role in psychosocial development.
		  • Non-punitive social structures and supportive communities play an important role in promoting resilience.
		  • Experiences involving supportive peers, positive teacher influences, and opportunities for success, academic or otherwise, have been positively linked to resilience in adolescents.
		• The authors' recommendations:
		  • It is essential that resilience-based intervention approaches give close attention to the unique characteristics of the population of interest. Research on resilience has the potential to guide the development of effective interventions for diverse at-risk populations.
		  • Resilience-based interventions need to focus on developing assets and resources as the centre for change for those exposed to risk.
		  • Due to the multidimensional nature of resilience interventions cutting across behaviours may be the most effective.
		  • Intervention strategies must be tailored to the student's developmental level.

Table 5: Systematic reviews of studies with the primary aim of preventing mental health problems

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
Depression							
Camero et al. (2012)	• Physical activity interventions in children and adolescents • Systematic review • 4	• 8 • 2004–2009 • 6–18 years • N=704	• Aerobic exercise • Anaerobic exercise	• Community • School	• RCT • Quasi-experimental study	• Depression symptoms • Anxiety symptoms	• All studies reported an inverse relationship between physical activity and depression
Merry et al. (2011) (update of previous reviews (Merry et al., 2004, Merry and Spence, 2007)	• Prevention of depression and children and adolescents • Systematic review and meta-analysis • 11	• 53 • 1997–2010 • 5–19 years • N=14,406	• Psychological interventions • Educational interventions • Psychoeducational interventions • Universal prevention (31 studies) • Targeted prevention (39 studies) • Most programs included some components of Cognitive Behavioural Therapy (CBT).	• School • Community • Higher education institution	• RCT	• Depression symptoms • Prevalence of depressive disorder	• The risk of having a depressive disorder: - post-intervention was reduced immediately compared with no intervention (15 studies; risk difference (RD) -0.09; 95% CI -0.14 to -0.05; p<0.0003) - at three to nine months (14 studies; RD -0.11; 95% CI -0.16 to -0.06) - 12 months (10 studies; RD -0.06; 95% CI -0.11 to -0.01). • No evidence for continued efficacy at 24 months (8 studies RD -0.01; 95% CI -0.04 to 0.03). • Limited evidence of efficacy at 36 months (2 studies; 464 participants; RD -0.10; 95% CI -0.19 to -0.02).
Christensen	• Community-	• 26	• CBT	• University/	• RCT	• Depression symptoms	• 5 of 6 universal trial

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
et al. (2010)	based prevention of depression • Systematic review • 7	• 1987–2007 • Adolescents and young adults • N=3144	intervention used in 12 studies • Universal prevention (5 studies) • Selective prevention (16 studies) • Indicated prevention (3 studies) • Combined indicated and selective prevention (2 studies)	college • Community organisations • Alternative schools • Runaway shelter • Young offender institutions	• Non-randomised experimental trial	• Anxiety symptoms • Self-esteem • Employment status and quality • Employment self-efficacy • General health • Eating behaviours • Postpartum support • Emotion regulation • Academic achievement • Self-efficacy • Conduct problems • Parenting behaviours • Family events • Social support • Diabetes-related outcomes • Epilepsy-related outcomes	comparisons reported significant results (ES= 0.50-0.75). • 9 of 19 selective comparisons reported positive effects (ES= 0.27-0.9). • All 3 indicated trials reported significant outcomes (ES= 0.23=0.60). • Current findings provide support for programs in community settings. • CBT-based programs are likely to be associated with good outcomes, • Exercise may be of value in the prevention of depression, and computer-based programs may be useful if programs are to be rolled out to larger numbers.
Calear & Christensen (2010a)	• Internet-based prevention and treatment programs for anxiety and depression in children and adolescents • Systematic review • 5	• 8 studies (4 programs) • 2005–2009 • 5–12 years • N=2094	• CBT-based interventions	• School • Community • Universal prevention • Indicated prevention • Selective prevention • Treatment	• RCT • Non-randomised controlled trial • Pre-post evaluations	• Depression symptoms • Anxiety symptoms • Improvements in diagnostic categories	• 6 of 8 studies reported post-intervention reductions in symptoms of anxiety and/or depression or improvements in diagnostic ratings. • Three of these studies also reported improvements at follow-up.
Calear &	• School-based	• 42 trials (28 programs)	• Mostly CBT-	• School	• RCT	• Depression symptoms	• Indicated programs were found

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
Christensen (2010b)	prevention and early intervention programs for depression • Systematic review • 7	• 1990–2007 • 5–19 years • N=17,949	based programs • Mostly universal interventions				to be the most effective, with ES= 0.21 to 1.40. • Teacher program leaders and the employment of attention control conditions were associated with fewer significant effects.
Stice et al. (2009)	• Depression prevention programs for children and adolescents • Systematic review and meta-analysis • 8	• 46 trials (32 programs) • 1987–2008 • 12–24 years • N=16,723	• Universal prevention (11 studies) • Selective or indicated prevention (19 studies) • Mostly CBT-based programs	• Not specified	• RCT • Non-randomised experimental trial	• Depressive symptoms • Risk of depressive disorder onset	• Of the 32 prevention programs evaluated in these trials, 13 programs (41%) produced significant reductions in depressive symptoms and 4 (13%) produced significant reductions in risk for future depressive disorder relative to control groups in at least one trial. • The average intervention ES was an r = .14 at post-test and r = .10 at follow-up. • Larger effects emerged for programs targeting high-risk individuals, samples with more females, samples with older adolescents, programs with a shorter duration and homework assignments, and programs delivered by professional interventionists.
Spence & Shortt (2007)	• Universal school-based prevention	• 14 • 1993–2006	• Psychoeducation	• School	• RCT • Non-	• Depression symptoms	• Benefits of intervention seen in at least one measure of

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
	of depression • Systematic review • 3	• Grade 5 to grade 10 • N=5195	• CBT-based programs • Problem-solving interventions		randomised experimental trial		symptoms for 5 studies only. • Universal prevention interventions not efficacious.
Larun et al. (2006)	• Exercise in the prevention of depression and anxiety among children and young people • Systematic review and meta-analysis • 11	• 13 • 1984–2004 • 11–19 years • N=1108	• Aerobic exercise	• School • University • Community	• RCT • Quasi-randomised trial	• Depression symptoms • Prevalence of depression	• Five studies reporting depression scores showed a statistically significant difference in favour of the exercise group (SMD (random effects model) -0.66, 95% CI -1.25 to -0.08). • However, all trials were generally of low methodological quality and they were highly heterogeneous with regard to the population, intervention and measurement instruments used. • Five trials comparing vigorous exercise to low-intensity exercise showed no statistically significant difference in depression scores. • Four trials comparing exercise with psychosocial interventions showed no statistically significant difference in depression scores.
Horowitz & Garber	• Prevention of depressive	• 30 • 1987–2005	• Universal prevention (12	• School • University	• RCT	• Depressive symptoms	• Selective prevention programs were found to be more effective

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
(2006)	symptoms in children and adolescents • Systematic review and meta-analysis • 8	• Grade 1–12 • N=7532	studies) • Selective prevention (9 studies) • Indicated prevention (9 studies) • Psychoeducation • CBT-based programs • Problem-solving interventions	• Community			than universal programs (weighted mean ES= 0.3 vs 0.12) immediately following intervention. • Both selective and indicated prevention programs were more effective than universal programs at follow-up (weighted mean ES= 0.34 vs 0.02). • ES for selective and indicated prevention programs tended to be small to moderate, both immediately post-intervention and at an average follow-up of 6 months. • Most effective interventions are more accurately described as treatment rather than prevention.
Anxiety							
Regehr et al. (2013)	• Interventions to reduce stress in university students • Systematic review and meta-analysis • 8	• 29 • 1981–2011 • 17–21 years • N=2082 (unclear)	• Mindfulness-based stress reduction • Relaxation • CBT-based programs • Stress management • Biofeedback • Eye movement desensitisation	• College	• RCT • Non-randomised experimental trial • Pre-test post-test	• Anxiety symptoms • Depression symptoms • Stress	• Arts-based interventions, psychoeducation and CBT/mindfulness produce changes in self-reported anxiety (Standard Difference in Means point estimate -0.77, 95%CI-0.88 to -0.58)

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
			(EMDR) • Psycho-education • Arts-based interventions				
Teubert & Pinquart (2011)	• Prevention of symptoms of anxiety in children and adolescents • Systematic review and meta-analysis • 8	• 65 • 1978–2010 • 3–17 years • N=7334	• CBT-based programs • Social skills training • Relaxation • Psychoeducation	• School • Family • Community	• RCT	• Anxiety symptoms • Depression symptom • Self-esteem • Social competence	• Small but significant effects on anxiety at post-test (symptoms: g = .22, diagnosis: g = .23; SD units) and follow-up (symptoms: g = .19, diagnosis: g = .32). • Intervention effects at post-test varied by type of prevention: Indicated/selective prevention programs showed larger effect sizes than universal programs. At follow-up, smaller effects were found in samples with higher percentages of girls and stronger effect size for programs focusing primarily on anxiety prevention.
Fisak et al. (2011)	• Prevention of child and adolescent anxiety • Systematic review and meta-analysis • 8	• 35 • 1978–2010 • 4–16 years • N=7735	• Universal prevention (13 studies) • Selective prevention (14 studies) • Psychoeducation • CBT-based programs • Problem-	• School • Internet • Community	• RCT • Non-randomised experimental trial • Pre-test post-test	• Anxiety symptoms	• Programs effective (mean effect size at post-intervention = 0.18) • The weighted mean effect size for universal programs was .17 (Z=6.42, p<.001), and the weighted mean effect size for targeted programs was .26 • (Z=4.24, p<.001).

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
			solving interventions				
Christensen et al. (2010)	• Community-based prevention of anxiety • Systematic review • 7	• 18 • 1981–2007 • 17–60 years (majority undergraduate age) • N=3178	• CBT-based programs used in most studies • Universal prevention (11 studies) • Selective prevention (6 studies) • Combined indicated and selective prevention (1 study)	• University/ college (17 studies) • Community centre (1 study)	• RCT • Non-randomised experimental trial	• Anxiety symptoms scores • Relationship quality • Self-esteem • Coping • Locus of control • Perceived stress • Health-promoting behaviours • Physical health measures • General wellbeing • Conduct problems • Depression symptoms	• Approximately 60% of the universal and selective trials were associated with a positive outcome, with ES = 0.57 to 1.09 for universal trials and 0.02 to 0.48 for selective and indicated trials. • CBT-based program trials all associated with a positive outcome.
Neil & Christensen (2009)	• School-based prevention and early intervention programs for anxiety • Systematic review • 6	• 27 studies (20 programs) • 1990–2007 • 5–19 years • N = 6496	• Psychoeducation • CBT-based programs • Exercise • Relaxation	• School	• RCT	• Anxiety symptoms • Anxiety disorder diagnosis	• CBT, or components of it, formed the basis of the majority of programs (78%). • Overall the results of this review support the value of prevention interventions for anxiety, with over three-quarters of the trials reporting a significant reduction in symptoms of anxiety. • Small (0.11) to large (1.37) ES were reported both at post-test and follow-up.
Larun et al. (2006)	• Exercise in the prevention of	• 13 • 1984–2004	• Aerobic exercise	• School • University	• RCT • Quasi-	• Anxiety symptoms • Prevalence of anxiety	• Six studies reporting anxiety scores showed a non-significant

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
	depression and anxiety among children and young people • Systematic review and meta-analysis • 11	• 11–19 years • N=1108		• Community	randomised trial		trend in favour of the exercise group (standard mean difference (SMD) (random effects model) -0.48, 95% confidence interval (CI) -0.97 to 0.01). • However, all trials were generally of low methodological quality and they were highly heterogeneous with regard to the population, intervention and measurement instruments used. • Five trials comparing vigorous exercise to low-intensity exercise show no statistically significant difference in anxiety scores. • Four trials comparing exercise with psychosocial interventions showed no statistically significant difference in anxiety scores.
Suicide							
York et al. (2013)	• Community-based suicide prevention programs • Systematic review • 7	• 16 • 1987–2001 • Primarily adolescents • N=4254	• Psychoeducation • Skills development • Gatekeeper training	• School • Community	• RCT • Non-randomised experimental trial • Pre-test /post-test case series	• Suicide attitudes and knowledge • Depression • Hopelessness • Suicidal ideation • Suicide-related behaviours • Anxiety	• Results indicated that student curriculum, combined curriculum and gatekeeper training, and competence programs have a positive effect on adolescent's knowledge and attitudes about suicide, but only a negligible effect on suicidal

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
						• Stress	behaviours. • Five of 7 studies with moderate to large effect sizes on outcomes were also those with both good quality of execution and the greatest suitability of the design.
Robinson et al. (2013)	• School-based interventions aimed at preventing, treating, and responding to suicide-related behaviour in young people • Systematic review • 7	• 43 • 1987–2011 • School age • N=30,399	• Gatekeeper training • Screening • Psychoeducation • Universal prevention (15 studies) • Selective prevention (23 studies) • Indicated interventions (3 studies) • Postvention programs (2 studies)	• School	• RCT • Non-randomised experimental trial • Pre-test/post-test case series • Cohort study • Case-control study • Cross-sectional study	• Suicide-related behaviours • Knowledge of suicide • Attitudes towards suicide • Help-seeking behaviour	• Most promising interventions for schools are gatekeeper training and screening programs. • Evidence limited and hampered by methodological concerns.
Klimes-Dougan et al. (2013)	• Impact of universal suicide-prevention programs on the help-seeking attitudes and behaviours of youths	• 18 • 1989–2010 • Not specified • N=18,836	• Gatekeeper training • Screening • Psychoeducation • Public service announcements	• School (17 studies) • Community (1 study)	• RCT • Quasi-experimental design	• Help-seeking attitudes • Help-seeking behaviours • Help-giving behaviours	• Suicide-prevention programming has a limited impact on help-seeking behaviour. • Although there was some evidence that suicide-prevention programs had a positive impact on students' help-seeking attitudes and behaviours, there

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
	• Systematic review • 4						was also evidence of no effects or iatrogenic effects.
Katz et al. (2013)	• School-based suicide prevention programs • Systematic review • 6	• 16 programs • 1987–2010 • School age • Not specified	• Awareness/education curricula • Screening • Gatekeeper, peer leadership and skills training.	• School	• RCT • Quasi-experimental design • Ecological study • Case control study	• Attitudes/knowledge • General skills training • Gatekeeper behaviour • Help-seeking behaviour • Suicide ideation • Suicide attempts	• Most studies evaluated the programs' abilities to improve students' and school staffs' knowledge and attitudes toward suicide. • Signs of Suicide and the Good Behaviour Game were the only programs found to reduce suicide attempts. • Several other programs were found to reduce suicidal ideation, improve general life skills and change gatekeeper behaviours.
Miller et al. (2009)	• School-based suicide prevention interventions • Systematic review • 6	• 13 • 1987–2007 • 5–19 years • N=6578 (+ one study with stated n of 330,000)	• Gatekeeper training • Screening • Psychoeducation	• School	• RCT • Quasi-experimental design	• Attitudes and knowledge • Help-seeking behaviour • Hopelessness • Depression • Anger • Family factors • Coping skills • Self-efficacy • Problem-solving skills • Suicide ideation • Suicide attempts and completed	• Only 2 studies demonstrated strong evidence for statistically significant effects on primary outcome measures. • Very few studies provided promising evidence of educational/clinical significance (7.6%), identifiable components linked to statistically significant primary outcomes (23.1%), and program implementation integrity (23.1%). No studies provided evidence supporting the replication of program

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							effects.
Eating disorders							
Pratt & Woolfenden (2009)	• Prevention of eating disorders in children and adolescents • Systematic review and meta-analysis • 11	• 12 • 1991–2003 • 10–20 years • N=3092	• Eating disorder awareness • Promotion of healthy eating attitudes and behaviours • Training in media literacy and advocacy skills • Promotion of self-esteem	• School • Community	• RCT	• Weight • Knowledge and attitudes • Eating behaviours/eating disorder symptoms • Self-esteem • Depression • Symptoms • Anxiety symptoms • Body dissatisfaction/body image	• Combined data from two eating disorder prevention programs based on a media literacy and advocacy approach indicate a reduction in the internalisation or acceptance of societal ideals relating to appearance at a 3- to 6-month follow-up [SMD -0.28, -0.51 to -0.05, 95% CI]. • Insufficient evidence to support the effect of five programs designed to address eating attitudes and behaviours and other adolescent issues in the general community or those classified as being at high risk for eating disorder. • Insufficient evidence to support the effect of two programs designed to improve self-esteem.
Fingeret et al. (2006)	• Prevention of eating disorders • Systematic review and meta-analysis • 6	• 54 • 1993–2003 • Not specified • Not specified	• Psychoeducation • CBT-based programs	• School • Community • Higher education institutions	• RCT • Quasi-experimental design	• Negative affect • Eating pathology • Dieting • Attitudes • Body dissatisfaction	• Effect sizes for general eating pathology, dieting, and thin-ideal internalisation ranged from *d* = .17 to .21 at post-test and from *d* = .13 to .18 at follow-up.
Stice and Shaw (2004)	• Prevention of eating disorders	• 53 studies (38 programs) • 1987–2002	• Psychoeducation	• School • Community	• RCT • Quai-	• Knowledge • Eating pathology	• Average ES=0 .11 to 0.38 at termination and from .05 to .29

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	• Systematic review and meta-analysis • 5	• 10–19 years • N=7599	• Skills-based • Media literacy	• Higher education institutions	experimental design	• Dieting • Attitudes • Body dissatisfaction • Body mass	at follow-up. • Larger effects occurred for selected (vs. universal), interactive (vs. didactic), and multisession (vs. single session) programs; for programs offered solely to females and to participants over age 15; for programs without psychoeducational content.
Behaviour problems							
Family-based interventions							
Kao et al. (2013)	• Family interventions to address adolescent risky behaviours • Systematic review • 3	• 20 • 1999–2009 • 10–19 years • Not specified	• Individualised family therapy • Family support services • Parenting skills training	• Family	• RCT • Non-randomised experimental trial • Pre-test/post-test case series	• Alcohol use (8 studies) • Drug use (8 studies) • Sexual behaviour (6 studies) • General behaviour (5 studies)	• Traditional and computer-based family interventions showed significant effects on reducing risky behaviour among adolescents. • Interventions guided by theory, tailored to participants' culture/gender, and which included sufficient boosting dosages in their designs demonstrated significant short- or long-term effects in terms of reducing adolescents' risky behaviours.
Menting et al. (2013)	• Effectiveness of the Incredible	• 28 • 2001–2010	• Parent skills training	• Family	• RCT • Non-	• Disruptive behaviour • Pro-social behaviour	• Positive effects for distinct outcomes and distinct

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
	Years parent training to modify disruptive and pro-social child behaviour • Systematic review • 8	• Not specified • N=3909			randomised controlled trial	• Parent report • Teacher report • Observation	informants were found, including a mean ES = 0.27 concerning disruptive child behaviour across informants. • For parental report: ES were: indicated (*d* = 0.20) and selective (*d* = 0.13) prevention studies.
Piquero et al. (2009)	• Effects of early family/parent training programs on antisocial behaviour and delinquency • Systematic review and meta-analysis • Quality score=9	• 55 • 1976–2008 • 0–5 years • N=9663	• Parenting skills training	• Family	• RCT	• Antisocial behaviour • Delinquency	• Findings indicated that the weighted mean ES = 0.35, which was in the range of early family/parent training having a small to moderate effect on reducing child behaviour problems.
School-based interventions							
Leff et al. (2010)	• Programs for the prevention of relational aggression • Systematic review • 5	• 9 programs • 2003–2009 • Preschool to 8th grade • Not specified	• Classroom-based educational interventions	• School	• Not specified	• Aggressive behaviour • Pro-social behaviour • Social exclusion • Social competence • Peer likeability	• 7 programs led to beneficial effects on physical aggression.
Park Higgerson et al. (2008)	• School-Based Violence Prevention Programs • Systematic	• 26 • 1979–2003 • School age • N=7701 (unclear)	• Social competence training, • Assertiveness training	• School	• RCT	• Aggressive behaviour • Anger • Problem solving • Locus of control • Use of violence	• Overall, the intervention groups did not have significant effects in reducing aggression and violence as compared to the control groups (ES = -0.09, 95%

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
	review and meta-analysis • 8		• Peer mediation • Academic and educational services Interventions • Multimodal			• Self-control rating • Violence behaviour • Substance use • Social competence • School bonding • Academic achievement • School referrals for disciplinary action • Academic achievement • Social cognition • Acceptance by others • Self-worth ratings • Communication effectiveness	CI = -0.23 to 0.05)
Wilson & Lipsey (2007) (update of previous review (Wilson et al., 2003)	• School-based interventions for aggressive and disruptive behaviour • Systematic review and meta-analysis • 8	• 249 • Not specified • Pre-kindergarten to over 14 years • Not specified	• Social competence training • CBT-based programs • Behavioural and classroom management techniques • Therapy or counselling services • Separate schooling/schools-within-schools • Peer mediation	• School	• RCT • Quasi-experimental controlled trial	• Aggressive or violent behaviour • Disruptive behaviour	• Positive overall intervention effects were found on aggressive and disruptive behaviour and other relevant outcomes (ES= 0.21 for universal programs and 0.29 for selected/indicated programs). • The most common and most effective approaches were universal programs and targeted programs for selected/indicated children. • The mean effect sizes for these types of programs represent a decrease in aggressive/disruptive behaviour that is likely to be of practical

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
			• Academic and educational services Interventions • Multimodal				significance to schools. • Schools might be well-advised to give priority to those that will be easiest to implement well in their settings.
Hahn et al. (2007)	• Universal school-based programs to • prevent violent and aggressive behaviour • Systematic review • 6	• 53 • 1997–2004 • Kindergarten to high school • Ranging from 21 to 39,168 students	• Social competence training • Psycho education • School environment change	• School	• Not specified	• Disruptive/antisocial behaviour • General violence • Bullying	• Universal, school-based programs decrease rates of violence among school-aged children and youth. • Median effect was a 15% relative reduction in violent behaviour.
Mytton et al. (2006)	• School-based secondary prevention programs for preventing violence • Systematic review and meta-analysis • 11	• 56 • 1977–2002 • Kindergarten to year 12 • N=6822	• Non-response skills training • Social competence training	• School	• RCT	• Aggressive or violent behaviours • Responses to violent behaviour	• Aggressive behaviour was significantly reduced in intervention groups compared to no intervention groups immediately post-intervention in 34 trials with data, (Standardised Mean Difference (SMD) = -0.41; 95% confidence interval (CI) -0.56 to -0.26). • This effect was maintained in the seven studies reporting 12 month follow-up (SMD = -0.40, (95% CI -0.73 to -0.06)). Subgroup analyses suggested that interventions designed to improve relationship or social skills may be more effective than

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							interventions designed to teach skills of non-response to provocative situations, but that benefits were similar when delivered to children in primary versus secondary school, and to groups of mixed sex versus boys alone.
Wilson et al (2001)	• School-based prevention of problem behaviours • Systematic review and meta-analysis • 9	• 165 • Not specified • Elementary to high school age • Not specified	• Psychoeducation • CBT-based programs • Classroom reorganisation • Mentoring	• School	• RCT • Non-randomised controlled trial	• Substance use • Conduct problems • School behaviour • Crime	• Environmentally focused interventions are generally effective, as are cognitive behaviourally and behaviourally based individually focused interventions, both with and without an instructional self-control or social competency component. • Instructional strategies that do not use cognitive behavioural or behavioural instructional strategies; mentoring, tutoring, and work study programs; and recreational programs are not effective. • Small effect sizes.
Interventions in multiple settings							
Petrenko (2013)	• Intervention programs to	• 17 • 1995–2011	• Parent training • Teacher	• Family • School	• RCT • Quasi-	• Externalising child behavioural problems	• Nearly all studies demonstrated medium to large intervention

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
	prevent and treat behavioural problems in young children (age 3 to 8) with developmental disabilities • Systematic review • 4	• 3–8 years • N=864	training	• Multi-component	experimental controlled trial	• Internalising behaviour (2 studies) • Parenting behaviour (7 studies) • Parent stress (13 studies)	effects on child behaviour post-intervention. • Intervention effects generally maintained at follow-up assessments (median follow-up 6 months post-interventions) • Multi-component interventions may be more efficacious for child behaviour problems and yield greater benefits for parent and family adjustment.
Wyatt Kaminski et al. (2008)	• Components associated with parent training program effectiveness • Systematic review and meta-analysis • 7	• 77 • 1990–2002 • 0–7 years • Not specified	• Parenting skills training	• School • Family	• RCT • Quasi-experimental controlled trial	• Externalising behaviours • Internalising behaviours • Educational and cognitive outcomes • Social skills and social competence • Parent–child interaction • Parent knowledge, attitudes • Parent self-efficacy • Parent behaviours and skills	• Overall weighted ES =0.34 • Program components consistently associated with larger effects included increasing positive parent–child interactions and emotional communication skills; teaching parents to use time out; import ance of parenting consistency, and requiring parents to practice new skills with their children during parent training sessions.
Grove et al. (2008)	• Follow-up studies of programs designed to prevent the primary symptoms of oppositional defiant (ODD)	• 45 • 1981–2006 • 0–19 years • N=9366	• Parent training • Skills-based interventions • CBT-based programs	• School • Family	• RCT • Non-randomised controlled trials	• Property violations • Aggression • Oppositional behaviour • Disruptive or delinquent behaviour	• Small, positive effect on the symptoms of ODD and CD 2 years after the end of the intervention (Mean weighted ES=0.17).

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	and conduct disorders (CD) • Systematic review and meta-analysis • 9						
Limbos et al. (2007)	• Interventions to prevent youth violence • Systematic review • 6	• 41 • 1990–2006 • 12–17 years • N=not specified	• Skills-based interventions • Social competence training • Psychoeducation • School environment change • Family relocation	• School • Community	• RCT • Non-randomised controlled trial • Prospective study • Cross-sectional study • Single-group time series study	• Violent behaviour	• Overall, 49% of interventions were effective although interventions in populations already engaging in violent behaviour.
Losel & Beelmann (2003)	• Child skills training in prevention of anti-social behaviour • Systematic review and meta-analysis • 8	• 84 • 1970–2000 • 0–18 years • N=16,733	• Social competence training • CBT-based programs • Problem-solving	• School • Community	• RCT	• Antisocial behaviour • Social cognitive skills	• Total mean weighted ES=0.38 and for follow-up =0.28 • Well-implemented, cognitive-behavioural programs targeting high-risk young people who already exhibit some behavioural problems seem to be particularly effective.
Substance use							
School-based interventions							
Champion et	• School-based	• 12	• Social influence	• School	• RCT	• Alcohol consumption	• Of the seven programs with

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al. (2013)	alcohol and other drug prevention programs facilitated by computers or the Internet • Systematic review • 5	• 2001–2011 • 10–16 years • N=21,633	approach • Psychoeducation • Skills-based interventions	• Web-based		• Drug consumption • Tobacco use • Knowledge • Attitudes	available data, six achieved reductions in alcohol, cannabis, or tobacco use at post-intervention and/or follow up (majority tobacco use). • Two interventions were associated with decreased intentions to use tobacco, and two significantly increased alcohol and drug-related knowledge.
Teesson et al. (2012)	• Australian school-based prevention programs for alcohol and other drugs • Systematic review • 5	• 7 • 1995–2009 • 13–14 years • N=8264	• Social influence approach • Psycho education • CBT/skills-based programs	• School	• RCT • Quasi-experimental controlled trial	• Alcohol consumption • Drug consumption • Tobacco use • Knowledge • Attitudes	• Five of the seven intervention programs achieved reductions in alcohol, cannabis and tobacco use at follow-up. • The effect sizes for between-group differences on alcohol consumption were available for the positive trials and ranged from 0.16 to 0.38.
Foxcroft et al. (2011c) (update of previous review (Foxcroft et al., 2002))	• Universal school-based prevention programs for alcohol misuse in young people • Systematic review • =9	• 53 • 1984–2009 • 5–18 years • Range from 54 to 19,529	• Psychoeducation • Social norms interventions • CBT/skills-based programs	• School	• RCT	• Alcohol use • Alcohol initiation • Drunkenness initiation	• Six of the 11 trials evaluating alcohol-specific interventions showed some evidence of effectiveness compared to a standard curriculum. • In 14 of the 39 trials evaluating generic interventions, the program interventions demonstrated significantly greater reductions in alcohol use either through a main or

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							subgroup effect. • Gender, baseline alcohol use, and ethnicity modified the effects of interventions. • Results from the remaining 3 trials with interventions targeting cannabis, alcohol, and/or tobacco were inconsistent.
Loneck et al. (2010)	• Prevention counselling and student assistance programs • Systematic review • 4	• 10 • 1991–2007 • School age • N=11,161	• Counselling • School support and referral to services	• School	• Quasi-experimental study • Pre-test/post-test	• Knowledge • Beliefs • Substance use • Disciplinary referrals • Academic performance • Depression • Family factors	• Some evidence of reduction in substance use. • Weak study designs limit conclusions.
Lemstra et al. (2010)	• School-based marijuana and alcohol prevention programs • Systematic review • =7	• 6 • 1994–2006 • 10–15 years • N=11,926	• Psychoeducation • CBT/skills-based programs	• School	• RCT • Cohort studies	• Alcohol use • Marijuana use	• Long-term marijuana and alcohol prevention programs that utilised a 'comprehensive' program content resulted in: (a) a mean absolute reduction of 12 days of alcohol usage per month and (b) a mean absolute reduction of 7 days of marijuana usage per month. • school-based marijuana and alcohol prevention programs that utilised 'knowledge only' program content resulted in a mean absolute decrease of 2

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							days of alcohol usage per month.
Porath-Waller et al. (2010)	• School-Based Prevention for Cannabis Use • Systematic review and meta-analysis • 9	• 15 • 1999–2005 • 12–19 years • N=15,571	• Information provision • Social learning	• School	• RCT	• Cannabis use	• Programs had a positive impact on reducing students' cannabis use (*d* = 0.58, CI: 0.55, 0.62) • Programs incorporating elements of several prevention models were significantly more effective than were those based on only a social influence model. • Programs that were longer in duration (≥15 sessions) and facilitated by individuals other than teachers in an interactive manner also yielded stronger effects. • The results also suggested that programs targeting high school students were more effective than were those aimed at middle-school students.
Faggiano et al. (2008) (update of previous review (Faggiano et al., 2005)	• School-based prevention for illicit drugs • Systematic review and meta-analysis • 9	• 41 • 1984–2003 • School age • N=37,307	• Psychoeducations • Skills training • CBT-based programs	• School	• RCT	• Drug knowledge • Drug attitudes • Acquirement of personal skills (self-esteem, self-efficacy, decision-making skills, peer pressure resistance, assertiveness), • Peers/adults drug use • Intention to use drugs • Use of drugs	• Compared with usual curricula, skills-based interventions significantly reduce marijuana use (RR=0.82; 95% CI: 0.73, 0.92) and hard drug use (RR=0.45; 95% CI: 0.24, 0.85), and improve decision-making skills, self-esteem, peer pressure resistance (RR=2.05; 95% CI: 1.24, 3.42) and drug knowledge.

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
							• Compared with usual curricula, affective interventions improve decision-making skills and drug knowledge, and knowledge-focused programs improve drug knowledge. • Skills-based interventions are better than affective ones in improved self-efficacy. • No differences are evident for skills vs. knowledge focused programs on drug knowledge. • Affective interventions improve decision-making skills and drug knowledge to a higher degree than knowledge-focused programs.
Soole et al. (2008)	• School-based drug prevention programs • Systematic review and meta-analysis • 6	• 58 • 1998–2005 • Elementary to high school • Not specified	• Psychoeducation • Skills training	• School	• RCT • Quasi-experimental study	• Illicit drug use	• Impact of programs on all drug use also provided significant results both in the short-term (d = .141, 95% CI = .042-.24, p= <.01) and the long-term (d = .208, 95% CI = .087-.329, p= <.001) • Successful intervention programs typically involve high levels of interactivity, time-intensity, and universal approaches that are delivered in the middle school years. • Analysis suggests that the

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							inclusion of booster sessions and multifaceted drug prevention programs have little impact on preventing illicit drug use among school-aged children.
Gottfredson & Wilson (2003)	• School-based substance abuse prevention programs • Systematic review and meta-analysis • 6	• 94 • Not specified • Not specified • Not specified	• Psychoeducation • Skills training • CBT-based programs	• School	• RCT • Quasi-experimental study	• Alcohol use • Illicit drug use	• Mean ES for the high-risk and general student population studies were roughly comparable (0.05 and 0.07, p <.05, respectively). • Targeting middle school-aged children, peer-led programs more likely to be effective.
Cuijpers et al. (2002)	• School-based adolescent drug prevention programs • Systematic review and meta-analysis • 6	• 12 • 1981–1995 • 11–18 years • N=12,400	• Psychoeducation • Skills training	• School	• RCT • Quasi-experimental controlled trial	• Drug use	• Effects of peer-led prevention programs are somewhat greater than the effects of adult-led prevention programs. • The mean standardised difference between the effects of peer-led and the effects of adult interventions are small but significant (*d* = 0.24) at post-test.
Tobler et al. (2000)	• School-based adolescent drug prevention programs • Systematic review and meta-analysis • 8	• 207 • 1978–1996 • Elementary school to high school • Not specified	• Psycho education • Skills training	• School	• RCT • Quasi-experimental controlled trial	• Drug knowledge • Drug specific attitudes and values • Drug refusal skills • General skills • Academic performance • Psychological wellbeing	• Non-interactive lecture-oriented prevention programs that stress drug knowledge or affective development show small effects. • Interactive programs that foster development of interpersonal skills show significantly greater effects that decrease with large-scale implementations.

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
Interventions targeted to higher education students							
Scott-Sheldon et al. (2014)	• Alcohol interventions for first-year college students • Systematic review and meta-analysis • 8	• 41 • 1998–2013 • Mean age=19 years • N=24,294	• Individual level interventions • Group level interventions	• Higher education institution	• RCT	• Alcohol consumption • Alcohol-related problems	• Relative to controls, students receiving an intervention reported lower quantity and frequency of drinking and fewer problems (ES = 0.07– 0.14). These results were more pronounced when the interventions were compared with an assessment-only control group (ES= 0.11– 0.19). • Interventions that include personalised feedback, moderation strategies, expectancy challenge, identification of risky situations, and goal-setting optimise efficacy.
Carey et al. (2012)	• Face-to-face versus computer-delivered alcohol interventions for college drinkers • Systematic review and meta-analysis • 8	• 46 • 1994–2011 • Mean age 19 years • N=27,460	• Psychoeducation • Social norms interventions • CBT/skills-based programs • Motivational/feedback-based interventions	• Higher education institution	• RCT • Quasi-experimental controlled trial	• Alcohol use • Alcohol-related problems	• Analyses indicated that, compared to controls, face-to-face intervention (FTFI) participants drank less, drank less frequently, and reported fewer problems at short-term follow-up (d = 0.15–0.19); they continued to consume lower quantities at intermediate (d = 0.23) and long-term (d = 0.14) follow-ups. • Compared to controls, computer-delivered intervention

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
							(CDI) participants reported lower quantities, frequency, and peak intoxication at short-term follow-up (d = 0.13–0.29), but these effects were not maintained. • Direct comparisons between FTFI and CDIs were infrequent, but these trials favoured the FTFIs on both quantity and problem measures (d = 0.12–0.20).
Moreira et al. (2009)	• Social norms interventions to reduce alcohol misuse in university or college students • Systematic review and meta-analysis • 11	• 22 • 2000–2008 • College age • N=7275	• Web/computer feedback (WF) • Individual face-to-face (IFF) feedback • Group face-to-face (GFF) feedback • Mailed feedback (MF)	• Higher education institution	• RCT	• Alcohol use • Alcohol problems	• WF and IFF are probably effective in reducing alcohol misuse. No direct comparisons of WF against IFF were found, but WF impacted across a broader set of outcomes and is less costly so therefore might be preferred. • Significant effects were more apparent for short-term out-comes (up to 3 months). For mailed and group feedback, and social norms marketing cam-paigns, the results are not significant and therefore cannot be recommended.
Carey et al. (2007)	• Individual-level interventions to reduce college	• 62 • 1985–2007 • 18–26 years	• Psychoeducation • Social norms	• Higher education institution	• RCT	• Alcohol use • Alcohol-related problems	• At immediate follow-up, intervention participants reduced their quantity of

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
	student drinking • Systematic review and meta-analysis • 9	• N=13,750	interventions • CBT/skills-based programs • Motivational/feedback-based interventions				drinking (d+=0.19, 95% CI 0.07, 0.32), frequency of heavy drinking (d+=0.17, 95% CI 0.03, 0.31), and peak blood alcohol concentration (BAC) (d+=0.41, 95% CI 0.26, 0.57) compared to controls. • At follow-up, intervention participants reduced their quantity of drinking (d+=0.13, 95% CI 0.06, 0.19; Fig. 2), quantity for specific time intervals/drinking days (d+=0.13, 95% CI 0.05, 0.21), frequency of heavy drinking (d+=0.18, 95% CI 0.10, 0.26), peak BAC (d+=0.13, 95% CI 0.04, 0.21), and alcohol-related problems (d+=0.15, 95% CI 0.08, 0.21).
Family-based interventions							
Foxcroft et al. (2011a) (update of previous review (Foxcroft et al., 2002))	• Universal family-based programs for alcohol misuse in young people • Systematic review • 9	• 12 • 1999–2009 • 11–15 years • Range from 202–3496	• Psychoeducation • CBT/skills-based programs • Parent training	• Family	• RCT	• Alcohol use • Alcohol initiation • Drunkenness initiation	• 9 of the 12 trials showed some evidence of effectiveness compared to a control or other intervention group, with persistence of effects over the medium and longer-term. • 4 of these effective interventions were gender-specific, focusing on young females.
Petrie et al.	• Parenting	• 20	• Psychoeducatio	• Family	• RCT	• Alcohol use	• Statistically significant self-

Author/ year	• Topic of review • Type of review • Quality score	• No of reviewed studies • Year range of the studies • Age range of participants • Total number of subjects	Description of interventions	Settings	Methods used in reviewed studies	Outcome variables	Findings/conclusions
(2007)	programmes for preventing tobacco, alcohol or drugs misuse in children <18 • Systematic review • 7	• 1990–2003 • Primary to high school • N=36,650	n • Parenting skills training • Home visiting		• Non-randomised controlled trial	• Drug use • Smoking • Intentions to use substances • Behaviour problems	reported reductions of alcohol use were found in six of 14 studies, of drugs in five of nine studies. • The most effective appeared to be those that shared an emphasis on active parental involvement and on developing skills in social competence, self-regulation and parenting.
Gates et al. (2006)	• Interventions for prevention of drug use by young people delivered in non-school settings • Systematic review • =9	• 17 • 1996–2002 • Under 25 years • N=1230 (and 253 cluster trials)	• Psychoeducation • Skills training • Family interventions • Brief intervention or motivational training • Multi-component	• Community	• RCT	• Drug use	• Three family interventions (Focus on Families, Iowa Strengthening Families Program and Preparing for the Drug-Free Years), each evaluated in only one study, suggested that they may be beneficial in preventing cannabis use. The studies of multi-component community interventions did not find any strong effects on drug use outcomes, and the two studies of education and skills training did not find any differences between the intervention and control groups.
Online interventions							
Wood et al. (2014)	• Computer-based programs for the prevention and	• 5 • 2005–2011	• Skills training • Psychoeducatio	• School • Community	• RCT • Controlled	• Drug use	• Universal drug prevention programs were effective in reducing the frequency of

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	management of illicit recreational drug use • Systematic review • 6	• Mean age 13–44 • N=1864	n	• Internet	trial		recreational drug use in the mid-term (b12 months), but not immediately post-intervention.
Rodriguez et al. (2014)	• Computerised serious educational games about alcohol and other drugs for adolescents • Systematic review • 3	• 8 • 2000–2012 • 11–18 years • N=2196	• Computer games • Skills training • Psychoeducation	• Computer-based	• Online • CD	• Drug use • Alcohol use • Knowledge	• Six studies reported positive outcomes in terms of increased content knowledge and two reported increased negative attitudes towards the targeted drugs. • Only one study reported a decrease in the frequency of drug use.
Multiple settings							
Thomas et al. (2013) update of previous review (Thomas et al., 2011)	• Mentoring to prevent or reduce alcohol and drug use by adolescents • Systematic review • 8	• 6 • 1998–2011 • Adolescent • N=2433	• Mentoring	• School • Community	• RCT	• Alcohol use • Drug use	• Four RCTs provided evidence on mentoring and alcohol use • The 2 RCTs that could be pooled showed less use by mentored youth. • The 6 RCTs that provided evidence on drug use could not be pooled. • Two did provide some evidence that mentoring is associated with less drug use.
Jackson et al. (2012)	• Interventions to prevent substance use	• 18 • 1 • 10–21 years	• Social influence approach • Psychoeducatio	• School • Community	• RCT • Non-randomised	• Smoking • Alcohol use • Drug use	• Intervention effects were mixed, with most programs having a significant effect on some

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	and risky sexual behaviour in young people • Systematic review • 7	• N=43,220	n • CBT/skills-based programs		controlled trial	• Sexual behaviour	outcomes, but not others. • 2 of 11 studies demonstrated significant positive effects on at least one alcohol measure. • 3 of 10 interventions demonstrated significant positive effects on at least one drug use outcome. • The most promising interventions addressed multiple domains (individual and peer, family, school and community) of risk and protective factors for risk behaviour.
Foxcroft et al. (2011b) (update of previous review (Foxcroft et al., 2002))	• Universal multi-component prevention programs for alcohol misuse in young people • Systematic review • 9	• 20 • 1996–2009 • 7–15 years • Range from 361 to 12,022	• Psychoeducation • CBT/skills-based programs	• School and family settings	• RCT	• Alcohol use • Alcohol initiation • Drunkenness initiation	• 12 of the 20 trials showed some evidence of effectiveness compared to a control or other intervention group, with persistence of effects ranging from 3 months to 3 years. • Assessment of the additional benefit of multiple versus single component interventions was possible in 7 trials but only one of the 7 trials clearly showed a benefit of components delivered in more than one setting.
Skara & Sussman (2003)	• Long-term adolescent tobacco and other drug use	• 25 programs • 1982–2002 • Grades 4–9 • N=79,235 (unclear)	• Psychoeducation • Skills training	• School • Community	• RCT • Quasi-experimental study	• Smoking • Alcohol use • Marijuana use	• The majority of these studies reported significant program effects for long-term smoking, alcohol and marijuana

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	prevention programs • Systematic review • 6				• Pre-test/post-test		outcomes, while indicating a fairly consistent magnitude of program effects. • This review provides long-term empirical evidence of the effectiveness of social influences programs in preventing or reducing substance use for up to 15 years after completion of programming.
Multiple mental health outcomes							
Hale et al. (2014)	• Reducing multiple health risk behaviours in adolescence • Systematic review • 6	• 55 • 1990–2012 • 10–21 years • Not specified	• Psychoeducation • Skills training • Parenting skills	• School • Community • Family • Web-based	• RCT	• Alcohol use • Illicit drug use • Sexual risk behaviour • Aggressive • behaviour	• Interventions beneficial • Small to medium effect sizes
Families in adverse circumstances							
Siegenthaler et al. (2012)	• Effect of preventive interventions in mentally ill parents on the mental health of the offspring • Systematic review and meta-analysis • 9	• 13 • 1997–2010 • 0–18 years • N=1490	• Psychoeducation • CBT-based programs • Parenting skills training	• Community	• RCT	• Symptoms of mental disorders • Incidence of mental disorders	• Interventions to prevent mental disorders and psychological symptoms in the offspring of parents with mental disorders appear to be effective. • Interventions decreased the risk of new diagnoses by 40% (combined relative risk 0.60, 95% CI 0.45– 0.79). • Symptom scores were lower in the intervention groups: standardized mean differences

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							were -0.22 (95% CI -0.37 to -0.08) for internalizing symptoms (*p*=.003) and -0.16 (95% CI -0.36 to 0.04) for externalizing symptoms (*p* =.12).
Broning et al. (2012)	• Selective prevention programs for children from substance-affected families • Systematic review • 6	• 13 • 1995–2008 • 0–17 years • N=1188	• Psychoeducation • Parenting skills training • Peer support • Skill building	• School • Family • Community	• RCT • Quasi-experimental controlled trial • Descriptive study • Qualitative study	• Knowledge • Self-worth • Coping • Social behaviour • Emotion regulation • Depression • Health behaviours • School attachment and performance • Substance use • Family or social relationships	• Key significant findings of improvements in: • Knowledge • Coping • Social behaviour • School performance • Self-esteem • Family functioning • Externalising/internalising symptoms • Substance use risk • Effectiveness associated with duration longer than 10 weeks and involvement of children's, parenting, and family skills training components.
Fackrell et al. (2011)	• Court-affiliated divorcing parents • Education programs • Systematic review and meta-analysis • 7	• 28 • 1992–2006 • Not specified • Not specified	• Parent education	• Community	• RCT • Quasi-experimental controlled trial • Pre-test post-test	• Co-parenting conflict • Parent-child relationships • Parental discipline • Child wellbeing • Parent wellbeing • Relitigation	• Overall ES for the 19 control-group studies =0.39 (p<.001) • For child wellbeing ES=.34 (p<.001)
Rosner et al.	• Interventions for	• 15	• Group	• Family	• RCT	• Depressive symptoms	• Overall mean weighted ES=0.35

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(2010)	bereaved children • Systematic review and meta-analysis • 9	• 1982–2005 • <18 years • N=1073	psychoeducation • Individual and family psychoeducation • Support group • Psychotherapy	• Group • Individual	• Non-randomized experimental trial • Uncontrolled trial	• Anxiety symptoms • Social adjustment	• ES: • for depression = 0.01 to 0.54 • for anxiety = -0.17 to 0.76 • for social adjustment = -0.27 to 0.56 • for wellbeing = 0.44 to 1.31
Stathakos and Roehrle (2003)	• Intervention programs for children of divorce • Systematic review and meta-analysis • 7	• 23 • 1980–2000 • 3–14 years • N=1615	• Psychoeducation	• Family	• RCT • Non-randomised controlled studies	• Depression • Anxiety • Attitudes towards divorce • Academic behaviour and performance	• The average ES of all program = 0.43 based on a homogeneous set of data. • The best results were attained by interventions applied during the first two years after the separation/ divorce (ES = 0.99) at the age of 9–12 years (ES = 0.50) with no more than ten sessions (ES = 0.66), each lasting about 60-75 minutes (ES = 0.61). Group size was not so relevant, but there is a tendency for groups of medium size to be more efficient than small groups.
Parent skills training/family support programs							
Burrus et al. (2012)	• Person-to-person interventions targeted to	• 16 • 1992–2006 • 13–18 years	• Psychoeducation • Parenting skills	• School • Community	• RCT	• Mental health • Suicide • Alcohol and drug use	• Overall mean effect estimate largest for illegal drug use (RR=0.69, 95% CI=0.53, 0.91),

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	parents and other caregivers to improve adolescent health • Systematic review and meta-analysis • 7	• Not specified	training • Discussion			• Behaviour problems/violence • Sexual behaviour • Obesity • Road deaths	indicating a 31% reduction in these outcomes. • The effect estimate for drinking is even smaller (RR=0.95, 95% CI=0.88, 1.03), corresponding to a non-significant 5% reduction. • Summary RRs from meta-analyses of problem behaviour outcomes are generally around 0.80, representing about a 20% decrease in the composite estimates of problem behaviours. • The results from studies that could not be included in the meta-analyses are mostly in the favourable direction and thus support meta-analytic findings.
Cavaleri et al. (2011)	• Family support in prevention programs for children at risk for emotional/ behavioural problems • Systematic review • 5	• 37 programs (74 articles) • 1992–2009 • Not specified • Not specified	• Psychoeducation • Skills training • Emotional support • Instrumental support • Advocacy support	• Family	• RCT • Quasi-experimental study • Pre-test/post-test	• Externalising behaviours • Internalising difficulties e.g. depression and PTSD	• Key significant findings of improvements in: • Externalising behaviours • Internalising problems • Parent outcomes (e.g. behaviour, mood).
Barlow et al. (2010) (update of	• Group-based parent-training programmes for	• 8 • 1995–2007 • 0–3 years	• Psycho-education • Skills training	• Community	• RCT • Quasi-experiment	• Child problematic behaviour • Parent-child interaction	• Both parent-report (SMD -0.25; CI -0.45 to -0.06), and independent observations (SMD

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previous review (Barlow & Parsons, 2003))	improving emotional and behavioural adjustment in children from birth to three years old • Systematic review and meta-analysis • 11	• Not specified			al controlled trial	• Child cognitive development.	-0.54; CI -0.84 to -0.23) of children's behaviour produce significant results favouring the intervention group post-intervention. • A meta-analysis of follow-up data indicates a significant result favouring the intervention group for parent-reports (SMD -0.28; CI -0.51 to -0.04) but a non-significant result favouring the intervention group for independent observations (SMD -0.19; CI -0.42, 0.05).
Manning et al. (2010)	• Effects of early developmental prevention programs in at-risk populations on outcomes in adolescence • Systematic review and meta-analysis • 8	• 17 studies (11 programs) • 1970–2006 • Preschool • N=3285	• Structured preschool programs • Centre-based developmental day care • Home visitation • Family support services • Psycho-education	• Preschool • Community	• RCT • Quasi-experimental controlled trial	• Educational success • Cognitive development • Social–emotional development • Deviance • Social participation • Involvement in criminal justice • Family well-being	• The mean ES across all programs and outcomes =0.313, equivalent to a 62% higher mean score for an intervention group than for a control group. • The largest effect was for educational success during adolescence (ES= 0.53) followed by social deviance (0.48), social participation (0.37), cognitive development (0.34), involvement in criminal justice (0.24), family well-being (0.18), and social–emotional development (0.16). • Programs that lasted longer than three years were associated with larger sample means than

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							programs that were longer than one year but shorter than three years. • More intense programs (those with more than 500 sessions per participant) also had larger means than less intense programs. There was a marginally significant trend for programs with a follow-through component into the early primary school years (e.g. preschool to Grade 3) to have more positive effects than programs without a follow-through.
Bayer et al. (2009)	• Preventive interventions for children's mental health • Systematic review • 5	• 58 studies • 1977–2007 • Mean age <9 years • Not specified	• Home visiting programs • Psychoeducation • Parenting skills training • Family check up	• School • Community	• RCT	• Child internalising problems • Parenting behaviours • Child externalising problems • Family functioning • School attendance • Parenting stress • Anxiety symptoms • Mental health service use • Parent mental health	• Effective preventive interventions exist primarily for behaviour and, to a lesser extent, emotional problems, • Three US programs have the best balance of evidence: in infancy, the individual Nurse Home Visitation Programme; at preschool age, the individual Family Check Up; at school age, the Good Behaviour Game class program. • Three parenting programs in England and Australia are also worthy of highlight: the Incredible Years group format,

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							Triple P individual format, and Parent Education Programme group format.
Nowak et al. (2008)	• Triple-P positive parenting program • Systematic review and meta-analysis • 9	• 55 • 1997–2007 • Mean age 5.5 years • N=11,797 families	• Psycho-education • Skills training	• Family • School	• RCT • Quasi-experimental controlled trial • Uncontrolled studies	• Child problem behaviour • Parenting • Parental wellbeing	• There were significant positive effects on all three effect sizes for Parenting (overall ES = 0.38), Child Problems (overall ES = 0.35), and Parental Well-Being (overall ES = 0.17).
Thomas et al. (2007)	• Behavioural Outcomes of Parent-Child Interaction Therapy (PCIT) and Triple P—Positive Parenting Program • Systematic review and meta-analysis • 7	• 24 • 1980–2004 • 3–12 years • N=1519	• Psycho-education • Skills training	• Family • School	• RCT • Non-randomised trial • Single cohort study	• Child problem behaviours (parent or teacher report)	• Positive effects of both interventions, but effects varied depending on intervention length, components, and source of outcome data. • Both interventions reduced parent-reported child behaviour and parenting problems (effect sizes medium for Triple P and large for PCIT).
Waddell et al. (2007)	• Prevention of conduct disorders, anxiety disorders and depression in children • Systematic review • 5	• 15 • 1985–2004 • 4–18 years • N=15,650	• Parent training • Child social skills training • CBT-based programs	• School • Community	• RCT	• Conduct disorders • Anxiety disorders • Depression • All 3 disorders	• 7 of 9 trials showed reductions in at least two conduct-related symptoms or one diagnostic measure at follow- up. • 1 trial showed reductions in anxiety symptoms and diagnostic measures. • 3 of 4 depression studies showed reductions in at least

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							one measure of depression symptoms or diagnostic measure. • For prevention of conduct disorders, the four most noteworthy programs used parent training, child social skills training or combinations. • For depression and anxiety prevention, CBT was most common.
Lundahl et al. (2006)	• Parent training programs to modify child behaviours • Systematic review and meta-analysis • 6	• 63 • 1979–2003 • Mean age 81.4 (SD=42.2) months • N=4077	• Psychoeducation • Parent skills training	• Family	• RCT • Quasi-experimental controlled trial	• Child behaviour (compliance, problematic behaviours) • Child adjustment (self-esteem, affect) • Parent behaviour • Parental perceptions of parenting	• Parent training designed to modify disruptive child behaviour is a robust intervention producing effect sizes in the moderate range immediately following treatment (0.42 for child behaviour, 0.47 for parent behaviour and 0.53 for parental perceptions).
Sweet & Appelbaum (2004)	• Home visiting programs for families with young children • Systematic review and meta-analysis • 8	• 60 • 1968–2000 • 0–3 years • Not specified	• Home visiting programs	• Family	• RCT • Quasi-experimental controlled trial	• Social emotional outcomes • Cognitive outcomes • Prevention of abuse • Parenting behaviours • Parent attitudes	• In general, children in families who were enrolled in home visiting programs fared better than did control group children. • Weighted mean standardised effect sizes for socio-emotional outcomes *d*= 0.096.
Pre-school-based interventions							
D'Onise et al.	• Review of	• 41	• Structured	• Pre-school	• RCT	• Social competence	• The majority of the effect

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(2010)	preschool-based early childhood development interventions • Systematic review • 6	• 1978–2008 • 3–18 years • N=109,762 (unclear)	preschool programs • Centre-based day care	• Community	• Quasi-experimental cohort • Cohort	• Internalising problems • Externalising problems • Behaviour • Health service use	estimates demonstrated no effect of centre-based preschool interventions (53%). • Some beneficial effects on internalising and externalising behaviours and social competence.
Nelson et al. (2003)	• Longitudinal research on preschool prevention programs for disadvantaged children and families • Systematic review and meta-analysis • 7	• 34 programs • 1968–1999 • Preschool • N=10,373	• Home visitation • Parent training • Structured preschool programs • Centre-based day care	• Preschool • Family	• RCT • Quasi-experimental controlled trial	• Social and emotional outcomes • Parent and family outcomes • Cognitive outcomes	• Preschool prevention programs have effects on children's cognitive, social emotional and family wellness that last up to 9 years of age (effect size 0.3)
School-based interventions							
Durlak et al. (2011)	• School-based interventions to enhance social and emotional learning • Systematic review and meta-analysis • 7	• 213 • 1955–2007 • Elementary to high school age • N=270,034	• Curriculum interventions • Skills training • Environmental interventions • Teacher-led • Non-school personnel led	• School	• RCT • Non-randomised controlled studies	• Social and emotional skills • Attitudes towards self and others • Positive social behaviour • Conduct problems • Emotional distress • Academic performance	• Programs yielded significant positive effects on: • targeted social-emotional skills (mean ES=0.57) • attitudes about self, others, and school mean ES=0.23) • Positive social behaviours mean ES=0.24) • conduct problems (mean ES=0.22) • emotional distress (mean

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							ES=0.24) academic performance (mean ES=0.27). • Effects remained statistically significant for a minimum of 6 months after the intervention.
Dubois et al. (2011) (update of previous review (DuBois et al., 2002)	• Mentoring programs • Systematic review and meta-analysis • 8	• 73 • 1999–2010 • Pre-kindergarten to high school • Not specified	• Mentoring for specialised groups (e.g. youth in foster care) • Group mentoring • Peer mentoring • Skills training	• School • Community	• RCT • Quasi-experimental controlled trial	• Attitudinal/motivational • Social/relational • Psychological/emotional • Conduct problems, academic/school • Physical health • Career/employment	• Mean ES= 0.15 for psychological/emotional outcomes to 0.21 for conduct problems
Durlak et al. (2010)	• After-school programs to promote personal and social skills in children and adolescents • Systematic review and meta-analysis • 8	• 75 • 1979–2008 • 5–18 years • Not specified	• Skills training	• School	• RCT • Quasi-experimental study	• Self-esteem, self-concept, self-efficacy • Bonding to school • Positive social behaviours • Problem behaviours • Drug use • School performance	• Participants demonstrated significant increases in their self-perceptions and bonding to school, positive social behaviours, school grades and levels of academic achievement, and significant reductions in problem behaviours. • ES ranged in magnitude from 0.12 (for school grades) to 0.34 for child self-perceptions • Programs defined as: sequenced, active, focused and explicit showed mean weighted ES = 0.31 (95% CI 0.24-0.38)
Reddy et al. (2009)	• School-based interventions for	• 9 • 1998–2004	• Skills training • Academic	• School	• between-subjects	• Externalising behaviour at school	• Weighted total ES at post-test:= 0.54, 0.49 at follow up

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	emotional disturbance • Systematic review • 7	• Not specified • Not specified	support		design • within-subjects design • single-subject design	• Internalising behaviour at school • Externalising behaviour at home • Internalising behaviour at home • Social skills at school • Social skills at home • Academic achievement • Adaptive functioning at school • Active engagement • Family functioning	
Wells et al. (2003)	• Universal approaches to mental health promotion in schools • Systematic review • 7	• 17 • 1986–1999 • Years • N=13,672	• Teacher training • Classroom activities • Timetable changes • Whole-school approach	• School	• RCT • Controlled trials	• Mental health • Conduct problems • Depression • Suicidal ideation • Behaviours • Self-esteem	• Improvements in self-concept, aggressive behaviour and negotiating and problem-solving. • Positive evidence of effectiveness was obtained for programs that adopted a whole-school approach, were implemented continuously for more than a year, and were aimed at the promotion of mental health as opposed to the prevention of mental illness. • Provides evidence that universal school mental health promotion programs can be effective and suggests that long-term interventions promoting the

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							positive mental health of all pupils and involving changes to the school climate are likely to be more successful than brief class-based mental illness prevention programs.

Note: CBT: Cognitive behaviour therapy, RCT: Randomised controlled trial, ES: effect size

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