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Inequalities and the mental health of young people

A systematic review of secondary school-based cognitive behavioural interventions

Josephine Kavanagh, Sandy Oliver, Jennifer Caird, Helen Tucker, Adele Greaves, Angela Harden, Ann Oakley, Theo Lorenc, and James Thomas

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REPORT

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CONFLICTS OF INTEREST

There were no conflicts of interest for this review.

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SUMMARY

Background

This report aims to increase what is known about prevention and inequalities. It is the second report in a study of health inequalities and health promotion intervention research about young people, funded by the English Department of Health, which aims to build on the findings of the first report (Oliver et al. 2008). The first report contains a descriptive map of the available research evidence on health promotion research, inequalities and young people's health; and a methodological study examining how well health promotion research with children and young people takes into account health inequalities, diverse populations and the involvement of children, young people and their carers in the development and implementation of health promoting interventions.

The mental health of young people is of significant concern for policymakers and practitioners in the UK (Department of Health 2004). Statistics show that, at any one time in the UK, one in ten children under 16 years of age has a clinically diagnosed mental health disorder, and among 11-16 year-olds, 13% of boys and 10% of girls are affected (Office for National Statistics 2004a).

Variations in a broad range of social, economic and environmental determinants of mental health, have contributed to inequalities in the distribution of mental health problems that some young people experience. These determinants include factors such as gender, socio-economic status (SES) and ethnicity. However, measuring the impact of an intervention on health inequalities, including inequalities in the distribution of mental health problems, raises methodological challenges both for primary research and research synthesis.

In order to describe systematically the socio-demographic and socio-economic factors implicated in health inequalities, we drew on the classifactory framework PROGRESS (Place of residence, Race/ethnicity, Occupation, Gender, Religion, Education, Socio-economic status (SES) and Social Capital). We expanded this to form PROGRESS-Plus with the addition of the variables of age disability, sexual orientation, and other specific vulnerable or excluded groups.

This current review focuses specifically on the role of interventions based on the techniques of cognitive behavioural therapy (CBT) in secondary schools for preventing and reducing suicidality, depression and anxiety in young people. A central aim of these interventions is to improve the social skills and problem-solving-abilities young people require to cope with life and its many challenges, and thereby decreasing the likelihood of depressive symptoms developing when the individual is faced with biological or environmental stressors. As these interventions can be delivered and implemented at different levels we chose to evaluate the relative effectiveness of the following three approaches:

- **Universal** – approaches applied to a broad population, regardless of clinical risk factors
- **Indicated** – approaches delivered to those with identified clinical risk factors or early symptoms identified through screening

- **Targeted** – approaches delivered to a population which is at a higher risk of poor mental health due to specific social determinants (e.g. participants living within an economically deprived neighbourhood), regardless of clinical risk factors

Given that the school is both a supportive environment for young people, and a location for community level interventions to be delivered and evaluated, this was considered to be a particularly appropriate choice of review scope, both substantively and methodologically.

Aims and research questions

The aim of the current study was to conduct a systematic review of interventions addressing an aspect of health in which young people are already known to experience health inequalities. A further aim of the study was to use the systematic review as a case-study to explore approaches to applying an 'equity lens' to a review topic, by building on work completed in the systematic map and methodological review (Oliver et al., 2008). A two-stage review process was used, beginning with a broad substantive review question, which was then given a narrower focus in consultation with the steering group and a policy adviser from the Child and Adolescent Mental Health Services (CAMHS) team at the Department of Health (England).

- Are secondary school-based mental health promotion interventions based on cognitive behavioural techniques effective in preventing or alleviating depression, anxiety and suicidality among young people?

- To what extent do they reduce or increase inequalities in depression, anxiety and suicidality experienced by some groups of young people?

Methods

Sensitive search strategies were developed for a comprehensive range of cross-disciplinary databases. The results of searches were screened for relevance against a pre-specified list of inclusion criteria. The methodological quality of relevant randomised controlled trials was assessed for quality, and data from those studies which were judged to be methodologically sound was extracted by two researchers working independently. Standardised and tested methods for meta-analysis, subgroup analysis and meta-regression were employed to synthesise data.

Findings

It was found that CBT delivered to young people in secondary schools can reduce the symptoms of depression and anxiety. No evidence was found to assess the impact of CBT on suicidal thinking or behaviour.

Few studies provided any useful data that might be used to examine the impact of CBT-based interventions on inequalities in mental health. No studies presented data relevant to evaluating the differential impact of interventions according to differences in the participants' gender, age, religion, education or social capital. Several studies reported findings about gender, but did not report their data. While a number of studies include subgroup analyses according to clinical risk factors, no subgroup analyses on the basis of socio-demographic group were reported in any of the included studies. Although conclusions about impact of CBT on inequalities are therefore tentative, there are suggestions that it might be less effective for people who are more socio-economically disadvantaged.

Recommendations

Recommendations for practice

Relevant providers wishing to implement preventive mental health programmes in secondary schools should consider the use of CBT-based interventions for reducing depression and anxiety levels.

Providers of preventive mental health services to young people should:

- consider using adequately trained and supported school staff to provide CBT-based interventions to young people
- consider providing programmes of 10 or more weeks' duration
- be aware of, and consider monitoring, potential adverse effects

Providers of preventive mental health services to young people should consider providing universal, rather than indicated, interventions. Providers implementing indicated interventions may wish to monitor any potential adverse effects due to stigma associated with mental health problems.

Recommendations for research

There is a need for well-conducted randomised controlled trials (RCTs) of CBT-based interventions with young people in UK secondary schools. Consideration should be given to developing and piloting a CBT-based intervention for the prevention of depression and anxiety, to be delivered in UK secondary schools. Intervention developers should:

- involve young people in the design of the intervention to increase its acceptability and appropriateness to young people
- consider using existing school staff to provide the intervention, with appropriate training and support
- include suicidal ideation and behaviours as outcome measures

- examine differential effects of the intervention on lower- and higher-SES populations, and include process evaluations or qualitative components to identify possible reasons which might generate such differences

- examine differential effects of the intervention on other PROGRESS-Plus populations, and include process evaluations or qualitative components to identify possible reasons which may generate such differences

We recommend the PROGRESS-Plus framework as a useful core framework for describing and analysing data in systematic reviews. The PROGRESS-Plus terms may require further modification and definition to reflect the context and focus of particular research projects.

Future trials of health promotion interventions should consider including subgroup analyses of population groups at risk of inequalities on specified health measures. Choice of subgroup populations should be *a priori*, and have an appropriate rationale. Underpowered subgroup analyses which meet these criteria should be conducted only for the purposes of monitoring for potential adverse effects, or hypothesis generation.

Recommendations for reporting

- There needs to be better and fuller reporting of socio-demographic data of participants in reports of primary research.

- Research commissioners, journal editors and other relevant research stakeholders should encourage authors to report their data and methods of analysis for their investigations of differential effect of interventions on the health status of different socio-demographic groups.

1. BACKGROUND

1.1 Inequalities in health

The term ‘health inequalities’ is commonly understood to refer to inequalities between the health of less and more disadvantaged social groups (Graham and Kelly 2007, p 6). Inequalities in health are recognised to be a major problem in many countries, with many reporting increases during the 1980s and 1990s (Acheson, 1998; Black and Whitehead, 1992; Crombie et al., 2005a, 2005b). Unjust or unfair variations are termed ‘inequities’ (Dahlgren and Whitehead, 1991). Judgements about what is unjust, unfair, avoidable or unnecessary are subjective and depend upon what is known about the genesis of health inequalities (Kawachi et al., 2002) and on the potential scope of prevention efforts. To avoid making these subjective judgements, we have chosen in our work to focus on health inequalities.

This report aims to increase what is known about prevention and inequalities with a systematic review funded by the English Department of Health. It is the second report in a study of health inequalities and health promotion intervention research about young people, which aims to build on the findings of the first report (Oliver et al., 2008). The first report contains a descriptive map of the available research evidence on health promotion research, inequalities and young people’s health; and a methodological study, examining how well health promotion research with children and young people takes into account health inequalities, diverse populations and the involvement of children, young people and their carers in the development and implementation of health promoting interventions. The same report described how much health promotion and public health research had addressed inequalities, and the methods employed. It made recommendations for study design and methods for data collection and analysis appropriate for intervention evaluations addressing inequalities.

There is increasing global interest in using evidence informed policy to address the problem of health inequalities. A recent report for the WHO Commission on the Social Determinants of Health recommended that ‘Actions to tackle the social determinants of health must be evidence based. That evidence may be drawn from a variety of disciplines and methodological traditions. There should be no hierarchy of evidence – the quality of the research is more important than the type of research’ (Kelly et al. 2007, p 101). In order to build the evidence base and increase the capacity to act on health inequalities, the Cochrane Health Equity Field, which is co-registered as the Campbell Equity Methods Group, is encouraging systematic review authors to include explicit descriptions of the effect of the interventions not only on the whole population but also on the disadvantaged and/or their ability to reduce socio-economic inequalities in health (http://equity.cochrane.org/en/index.html). The international collaborative Eurothine project (http://survey.erasmusmc.nl/eurothine/index.php?ind) aimed to increase knowledge substantially about health inequalities in the European Union to help policymakers develop strategies for tackling health inequalities at local, national and international levels. In the final project report, the authors recommended that a clearinghouse should be established in order to identify and assess evidence on the effectiveness of policies and interventions to reduce health inequalities throughout Europe. The overarching conclusion of this study

states that 'it may not be realistic to eliminate health inequalities in the foreseeable future, but reducing them to more acceptable levels is well within the realm of possibility. What is required is a genuine determination to follow the logic of emerging evidence, and to apply it to the health outcomes of greatest concern in any particular setting' (Eurothine, 2007, p 601).

It has been said that there are three goals for interventions seeking to reduce health inequalities (Graham and Kelly, 2004). The immediate goal is to improve the health of the most disadvantaged groups; the second is to reduce the gap between the most and least disadvantaged groups; and the third goal is to reduce gradients across the population, seeking to improve outcomes for all groups and not only the most disadvantaged: 'as the penalties of inequalities affect the whole social hierarchy and usually increase from the bottom to the top… if policies only address those at the bottom of the social hierarchy, inequalities in health will still exist' (Acheson, 1998, in Graham and Kelly, 2004, p 9).

These goals may be achieved either with interventions for particular disadvantaged populations (targeted interventions) or by interventions available to all (universal interventions). Where targeting of disadvantaged groups is appropriate, measures of intervention effectiveness on the selected outcome may be utilised directly as evidence of the intervention's effect on inequalities. Where a universal or population-based approach is adopted, the intervention may be evaluated in terms of differential impacts on subgroups of the population. This report describes, where possible, how a systematic review might include evaluations of both types of intervention in order to assess the impact of the interventions on health inequalities.

1.2 Inequalities and the mental health of young people in the UK

In consultation with our steering group (see section 2.2), a decision was taken to focus this review on the effectiveness of health promotion interventions directed at reducing or preventing health inequalities that young people are already experiencing. A further decision was taken to focus on interventions directed towards the mental and emotional health of young people, an area in which inequalities exist. This decision reflected the interests and expertise of the research team and policymakers.

Children and young people currently constitute 25% of the total population (Office for National Statistics, 2004b), and mental health problems experienced by this population impact not only on the individuals themselves but also on their families and carers. Statistics show that, at any one time in the UK, one in ten children under 16 years of age has a clinically diagnosed mental health disorder, and that among 11-16 year-olds, 13% of boys and 10% of girls are affected (Office for National Statistics, 2004a).

Against this background, the mental health of young people is of significant concern for policymakers and practitioners in the UK (Department of Health, 2004). Mental health is one of the five priorities for action set out in *Saving lives: our healthier nation* (Department of Health, 1999). This set a target to reduce the death rate from suicide and undetermined injury by at least one-fifth by 2010. One

of the objectives of the *National Suicide Prevention Strategy for England* (Department of Health, 2002) is to promote the mental health of children and young people under 18 years of age. Another is to improve the identification and management of childhood depression. It commits to piloting a mental health promotion project for young men, to monitor non-fatal deliberate self-harm, to identify suicide 'hotspots', and to promote cross-governmental action on social risk factors such as unemployment and housing.

Emotional disorders -– such as anxiety, depression and phobias -– are among the most common mental health problems experienced by young people. It is estimated that 1% of children and 3% of young people suffer from depression in any one year (National Institute for Health and Clinical Excellence, 2005). Depression during the teenage years has been linked with substance abuse, academic problems, impaired social relationships, physical health problems, risky sexual behaviour, self-harm and suicide (e.g. Deas and Brown, 2006; Galaif et al., 2007; Hauenstein, 2003). Once established in young people, depression can be difficult to treat and can result in problems in adulthood (Fombonne et al., 2001a, 2001b). Furthermore, early onset increases the risk of subsequent depressive episodes over the life span (Aalto-Setälä et al., 2002; Fombonne et al., 2001a, 2001b).

Variations in respect of a broad range of social, economic and environmental determinants of mental health, have contributed to inequalities in the distribution of mental health problems among young people. In our earlier work (Oliver et al. 2008), we found the PROGRESS framework a useful starting point for summarising and describing the broad field of health determinants. First used by Evans and Brown (2003), the mnemonic stands for: Place of residence, Race/ethnicity[1], Occupation, Gender, Religion, Education, Socio-economic status (SES) and Social capital. In applying this framework to review literature about young people, we found it could be improved by expanding first to include age, sexual orientation and disability, and further to include other descriptors for specific vulnerable populations. We employ this PROGRESS-Plus framework here to describe inequalities in mental health experienced by young people.

Age and gender have both been associated with differences in the distribution of mental health problems. Suicide related to emotional problems is a major issue, primarily for older children and young people, with low rates in children under the age of 11. Suicide consistently ranks as one of the leading causes of death for adolescents between 15 and 19 years of age, and accounts for 30% of deaths in the 15-24 year age group (Carr, 2002). Among young people aged 11-16 who had an emotional disorder, 28% report attempts to harm or kill themselves (Office for National Statistics, 2004). Research indicates that boys and young men aged 15-24 are most at risk, although there has been a decrease in these rates in recent years (Samaritans, 2005). Attempted suicide is also frequent among young people, with as many as 2-3% of girls attempting suicide at some point during their adolescence (Mind, 2005).

Research suggests that the prevalence of childhood mental health problems is gradually increasing (Collishaw et al., 2004). Studies have shown that 20% of children and young people experience mental health difficulties during their

[1] The term 'race' relates to human population types based on external phenotypes. It is now understood that such categorisation is not meaningful and can be considered pejorative. We use the term 'ethnicity' alone throughout the rest of this report.

adolescence, and that one in ten have a clinically recognisable mental health disorder (CAMHS Outcomes Research Consortium, 2004). Furthermore, the Nuffield Foundation (Hagell, 2004) found that adolescent emotional problems, such as anxiety and depression, had increased for both boys and girls since the 1980s. Suicide mortality and morbidity has also increased over most of the 20th century among white adolescents in the US and Europe (Guo and Harstall, 2002).

In 2004, the Office for National Statistics surveyed 12,294 children and young people aged 5 to 16 across the UK (Office for National Statistics, 2004). They found that 11% of boys and 8% of girls had a mental health problem, and that a quarter of those suffering from emotional disorders (such as anxiety and depression) also suffered from another type of clinically recognisable mental disorder. Older children (11-16) were discovered to be more at risk of developing mental health problems than younger children (62% compared with 46%). Girls were found to be at increased risk of developing emotional disorders, while boys tended to experience conduct or hyperkinetic disorders, such as attention deficit hyperactivity disorder (ADHD). Of those with emotional disorders, 54% were girls and 62% were aged 11-16.

Furthermore, a broad range of socio-economic factors encompassed by the term socio-economic position (SEP) were shown by the survey to have a key role in the aetiology of emotional disorders in children. Children with an emotional disorder were more likely to come from a single parent family (31% compared with 15%), and 54% lived in households with incomes under £300 per week. When all mental health disorders, including conduct disorders, were analysed, a stronger relationship between disorders and SEP is seen. Using the National Statistics socio-economic classification -– an occupationally based, socioeconomic classification with eight classes utilised by the Office for National Statistics from 2001 onwards (Office for National Statistics, 2005) -– it was shown that 13% of children with parents from semi-routine occupations and 15% of those with parents from routine occupations suffered from a disorder, compared with 4% of children with parents in higher professional groups. Prevalence of mental health problems was also higher among children in families where neither parent worked (20%) compared with those in which both parents worked (8%), or one parent worked (9%). Parental education was also linked to prevalence of mental health problems with a rate of 17% among children whose parents had no educational qualification, compared with 4% among those with parents educated to degree level. Family composition, which is an aspect of social capital, has also been related to the mental health of children and young people. Prevalence rates of mental health problems were higher in children from single parent families (16%) compared with married couple families (7%). Nearly one-fifth (18%) of boys living in single parent families suffered from a mental health problem, as did 13% of girls. Further, the proportion of children with emotional disorders living with a widowed, divorced or separated lone parent was twice that among those with no disorder (31% compared with 15%). Reconstituted or blended families (i.e. those where stepchildren, or step-parents are present) also increased the prevalence of mental health problems: 14% compared with 9% without step-parents or stepchildren.

Place of residence, including housing status, has been shown to impact on the mental health of young people. Children living in rented accommodation, either social sector (17%) or private sector (14%), were twice as likely to suffer from a mental health problem than those in family owned accommodation (7%) (Office for National Statistics, 2005). Overcrowding has been indicated in the aetiology of

childhood mental health problems. A study in the US (Evans et al., 2001) showed that overcrowding was significantly associated with children's mental health, and concluded that 'children living in lower-quality housing, independent of household income, have greater symptoms of psychological distress'. There is also evidence to show that homelessness can lead to poor mental health and lower educational attainment (Office of the Deputy Prime Minister, 2004a, 2004b).

It has been suggested that ethnicity, as well as gender, age, and socio-economic conditions, has an impact on mental health status and diagnoses of psychiatric disorders (Choi and Park, 2006; Nguyen et al., 2007). Data from the ONS survey suggested that Indian children had a relatively low rate of mental disorder (3%, compared with 7%-10% in other groups) (Office for National Statistics 2004a).

The ONS survey, along with other research evidence, highlights the interrelated nature of young people's mental health and socio-economic status. The social determinants of young people's mental health discussed here are both wide-ranging and complex in their inter-relationships. It may be that socio-economic position is the most powerful of all these variables; however, it is not necessarily an exclusive, explanatory variable for disparities in the mental health of young people.

Other factors which leave young people vulnerable to poor mental health include holding refugee or asylum seeking status (Heptinstall et al., 2004), and being a 'looked after' child in the care of health and social care services (Meltzer et al., 2002).Gay, lesbian, and bisexual young people are at increased risk of mental health problems when compared with their heterosexual counterparts, with these associations being particularly evident for measures of depression, suicidal behaviour and ideation and multiple disorder (Fergusson et al., 1999; McNair, 2003; Russell and Joyner, 2001). Religious commitment has been identified as both a potential risk and protective factor for depression and suicidal ideation, and, where research has made this link, it appears to relate differently with different religions, and the level of a person's commitment (McCullough and Larson, 1999). In young people, it has been suggested that more frequent religious behaviour and a greater desire to participate in religious activities are associated with lower rates of depressive symptoms (Schapman and Inderbitzen-Nolan, 2002).

1.3 Promoting mental well-being and addressing mental health problems in young people

In 2001, the Mental Health Foundation reviewed the nature of positive mental health and developed a definition based on both emotional well-being and social functioning. Specifically, their definition includes the following elements:

- self-confidence and assertiveness
- empathy
- capacity to develop emotionally, creatively, intellectually and spiritually
- capacity to initiate and sustain mutually satisfying personal relationships

- capacity to face problems, resolve and learn from them, to use and enjoy solitude, and to laugh at oneself and at the world

Interventions for promoting positive mental health explicitly aim to increase the prevalence of these characteristics among young people, while also giving them the skills to cope with life and its many challenges. Such interventions can be delivered and implemented at different levels:

- **Universal** – approaches applied to a broad population, regardless of clinical risk factors

- **Indicated** – approaches delivered to those with identified clinical risk factors or early symptoms identified through screening

- **Targeted** – approaches delivered to a population who are at a higher risk of poor mental health due to specific social determinants (e.g. participants of particular age groups, gender, ethnicity or living within an economically deprived neighbourhood)

Supportive environments (i.e. environments that support good health practices) are expected to provide 'the greatest impact in producing lasting change' when it comes to optimising people's health (O'Donnell, 1989). Our earlier report concluded that there is a need for rigorous evaluations of the effects of structural or social support interventions. These may be particularly promising for reducing inequalities.

Supportive environments might be encouraged through the use of 'upstream' or 'systems-level' interventions, and a systematic review of reviews of these is being conducted by the Department of Health funded Public Health Research Consortium (Bambra et al., 2009). Our earlier study (Oliver et al., 2008) found that interventions and evaluations at the level of communities and social networks, and those increasing access to services are also promising.

One intervention known to be effective for mental health is cognitive behavioural therapy (CBT). Given that the school can be both a supportive environment for young people, and a location for community level interventions to be delivered and evaluated, a review focusing on CBT in this setting could enhance what is known about CBT and about methods for investigating impact on inequalities.

1.4 Cognitive behavioural approaches to promoting mental health

Current UK guidelines on the treatment of moderate to severe depression in young people specify that medication should only be used in conjunction with specific psychological therapies, including individual CBT, and interpersonal therapy or family therapy for those with moderate to severe depression (NICE, 2005). Preventing the onset of depression and promoting good mental health in young people have been the aims of a number of evaluated interventions over the past decade. These have frequently been based on psychological interventions and often underpinned with approaches based on the principles of cognitive behavioural therapy (CBT) (Merry et al., 2004a).

CBT type interventions can be delivered on an individual or group basis. The location of such group interventions, however, is open to debate and, with the move towards more socially inclusive mental health services in the UK (Office of the Deputy Prime Minister, 2004a), attention has turned towards existing community facilities as locations for interventions. For children and young people, the key community resource is the school, making them the prime choice for delivery of mental health interventions (Burns et al., 1995). Delivery within schools facilitates the involvement of key figures in the child's life, such as teachers and peers, while also providing real life situations for the practice and development of social skills. Existing school-based interventions have tended to be delivered in a group setting, teaching young people how to solve problems, manage stress and cope with negative thinking.

CBT-based interventions are complex, but well defined, in the literature. It is thought that they are particularly suited to the prevention of mental health problems in adolescence, given that depression and anxiety can arise from, and be exacerbated by, ineffective or absent social skills and problem-solving abilities. A dearth of such skills can compound the social withdrawal associated with depression, and its concomitant problems in young people, such as school absenteeism and poor academic performance.

The cognitive behavioural approach is primarily based on Beck's cognitive model of depression. CBT interventions focus primarily on the relationships between cognitions, feeling and behaviours (Beck, 1974). In terms of cognitions, participants are taught that depression and anxiety can often involve distortions of reality with themes, such as low self-esteem, self-blame and a desire to escape. Beck identified three major cognitive patterns in the aetiology of depression:

- a negative view of self
- a negative view of one's past and present experiences
- a negative view of the future

Such distortions can result in the generation of negative automatic thoughts (NATs), which feed into the vicious cycle of negative thinking, low mood and social withdrawal associated with depression (Bailey, 2001). This cycle can result in a variety of symptoms of depression: behavioural, such as social withdrawal; motivational, including an inability to take an interest or pleasure in everyday life; emotional, including feelings of sadness, guilt, shame and anxiety; cognitive, such as poor concentration and memory difficulties; and somatic, including poor sleep and reduced appetite.

In CBT, depressive thinking styles are challenged through monitoring of thoughts and thought processes, resulting in the ability to identify negative automatic thoughts. Once identified, these thoughts can then be subjected to reality testing, where evidence for and against the thought is evaluated and alternative explanations sought. The link between such thoughts and depressive feelings is explicitly elicited, usually through the use of collaborative formulation between client and therapist which results in a diagram of the cycle between thoughts, feelings and behaviours specific to the individual (Bailey 2001).

Exposure is one technique frequently used in CBT, particularly when depression is co-morbid with an anxiety disorder. This involves graded exposure to situations

of which the individual in question is avoidant either due to withdrawal or anxiety. Activity scheduling is also useful as a means of reducing social withdrawal and encouraging individuals to engage in pleasant activities which can lift mood while also challenging inertia. Both exposure and activity scheduling also allow individuals to 'try out' social skills and problem-solving techniques they have learnt in-session in real world situations (Bailey 2001, Verduyn 2000).

Skills training can form part of CBT behavioural style interventions, while also being an intervention in their own right. Training operates predominantly in five key areas: social skills, social problem solving, coping, communication skills and academic skills. The aim of skills-based interventions is to change individual cognitive and behavioural characteristics and thereby decrease the likelihood of depressive symptoms developing when the individual is faced with biological or environmental stressors (Merry et al., 2004a).

1.5 Measuring health inequalities in evaluations of interventions

Measuring the impact of an intervention on health inequalities raises methodological challenges both for primary research and research synthesis. Health-promotion practitioners and researchers have often targeted interventions at population groups at risk of adverse outcomes. It has been assumed that any post-intervention improvement in outcomes means that the intervention is effective not only in improving health for the targeted population, but also in reducing inequalities. This assumption about improving inequalities may not be justified, if there are coincidental changes in the wider population or if interventions are open to wider, less disadvantaged groups, who may also benefit more.

Another approach to reducing health inequalities has been to develop universal interventions in order to improve the health of the population as a whole. A potential impact of this approach may be to increase existing inequalities, since less disadvantaged groups may be in a position to benefit more from the intervention, particularly where the health outcome of interest is strongly correlated with social determinants. Options for measuring such an effect include comparing the effects of an intervention on pre-specified subgroups; or, measuring inequality in health across the whole study population. While the methods may vary, these options are similar in both primary research and research synthesis.

In primary research, subgroup analysis has been used to identify subgroups that may benefit (or benefit more) from an intervention. Subgroup analyses of groups of people who have been identified as at risk of experiencing inequalities on a particular health measure may be a useful means to assess the effect of the intervention on inequalities.

There are a number of diverging opinions on the inclusion of subgroup analyses in outcome evaluations. These differences in opinion largely relate to when or if they should be conducted (National Institutes of Health, 2001; Oakley, 2006; Rothwell, 2005) and the potential for statistical error in both the conduct and interpretation of subgroup analyses (Brookes et al., 2001; Rothwell 2005).

It has been argued that subgroup analyses are indicated and justified where there are potentially important differences in outcomes for specific groups of trial participants (Rothwell, 2005). This work has been conducted largely in clinical trials of treatment. Lessons from clinical trials suggest that the trial participants should be pre-specified and identifiable: for example, through screening to identify a particular clinical risk factor, or through collection of qualitative data to identify a specific socio-demographic group. Translating these lessons to health promotion effectiveness and inequalities requires analysis of population subgroups according to socio-demographic variables.

Debate is ongoing as to whether outcome evaluations should routinely include subgroup analyses according to key factors (gender, ethnicity, SES). Some researchers argue that carrying out such subgroup analyses is an important tool for monitoring diversity and inequalities, and recommend routine subgroup analysis on variables such as gender and ethnicity without any prior justification (National Institutes of Health, 2001). Other researchers hold that all subgroup analysis should take the form of testing pre-specified hypotheses for which an appropriate rationale can be given (Brookes et al., 2001; Oakley, 2006; Rothwell, 2005), hence ruling out routine subgroup analysis. It has further been argued that the routine collection of data on some population groups (e.g. on the basis of ethnicity or gender) without an adequate rationale (e.g. epidemiological evidence demonstrating unequal health status, or a pre-specified hypothesis that there is likely to be a differential impact of the intervention between groups due to factors such as acceptability or accessibility) may in fact obscure the importance of social hegemonies in determining health inequalities (Oakley, 2006).The latter positions have clear advantages in terms of the possibility of avoiding statistical error and the generation of misleading results. However, even if it is accepted that subgroup data cannot generally be used to support specific causal inferences, it may still be of value in assisting future research (for example, by generating further hypotheses).

Good practice requires that subgroup analyses should be chosen in advance, have some justification and aim to be adequately powered; tests should be chosen with care to avoid false positive results (Brookes et al., 2001; Rothwell, 2005). This advice is also applicable to the use of subgroup analyses to evaluate differential intervention impact on participants at risk of health inequalities. This is particularly an issue with regards to statistical power. However, while adequately powered subgroup analyses are required to avoid type 1 errors and to show a causal link, underpowered subgroup analyses may still have a role to play. Analyses which do not support causal inferences may be of value in monitoring the potential effects of interventions on inequalities.

With this in mind, our sister report on health inequalities, health promotion and young people (Oliver et al., 2008),suggests that where subgroup analyses are used to investigate inequalities, they should be both pre-specified and have an appropriate rationale. Subgroup analyses which are under-powered to investigate differential effects in evaluations of interventions should only be used for hypothesis generation. This suggestion aims to discourage the use of post hoc analyses, while allowing for the collection of data which on its own should be treated with caution, and used for hypothesis generation, but is then available to be aggregated in a systematic review.

Measuring inequality in health across a whole study population involves measuring the strength of correlation (with regression analyses) between health

status and socio-economic characteristics (Keppel et al., 2005, pp 10-14). Theoretically, in a study of effectiveness, these methods could be used to measure whether an intervention weakened the correlation, signifying that it reduced inequalities, or strengthened it, signifying that the intervention increased inequalities. As with subgroup analyses, there should be some justification for the choice of socio-economic characteristics to be analysed, and these should also be pre-specified.

A systematic review and meta-analysis of cognitive behavioural therapy for preventing mental ill-health in young people is suitable for trying such analytical methods.

2. RESEARCH QUESTIONS AND METHODS

2.1 Research questions

The remit for the research team was to conduct a systematic review of interventions addressing an aspect of health where young people are already known to experience health inequalities, and a decision was taken to focus the review on the mental health of young people. A further aim of the study was to use the systematic review as a case-study to explore approaches to applying an 'equity lens' to a review topic, by building on work completed in our systematic map and methodological review (Oliver et al. 2008). A two-stage review process was used, beginning with a broad substantive review question, which was then given a narrower focus, in consultation with our steering group and a policy adviser from the Child and Adolescent Mental Health Services team from the Department of Health (England).

Our initial broad review question was as follows:

- *In secondary school aged young people, what is the evidence of the effectiveness of school-based mental health educational programmes to prevent or alleviate mental health problems?*

- *To what extent do they reduce or increase inequalities in young people's mental health?*

These broad review questions were the basis on which highly sensitive searches were conducted and inclusion criteria were developed and applied (see sections 2.2 onwards). The results of this process were used to inform the choice of narrower, more focused questions.

2.2 User involvement: refining the questions

Following consultation with our steering group and a relevant policy expert from the Department of Health, our broad question was narrowed further. It was decided that, given policy and practitioner interest in suicide, the review should focus on the impact of interventions on anxiety, depression and suicidality (i.e. actual suicide, attempted suicide, suicidal ideation). A decision was also taken to focus on those interventions which were based on cognitive behavioural techniques. Focusing on interventions based on the techniques of CBT allowed for a synthesis of a more homogenous set of RCTs.

Substantive questions were as follows:

- Are secondary school-based mental health promotion interventions based on cognitive behavioural techniques effective in preventing or alleviating depression, anxiety and suicidality among young people?

- To what extent do they reduce or increase inequalities in depression, anxiety and suicidality experienced by some groups of young people?

In addition to these questions, we wanted to explore the methodological challenges of applying an equity lens to a review of effectiveness.

2.3. Identifying relevant studies

2.3.1 Search sources

The following bibliographic databases were searched for health promotion and public health research about secondary school-based interventions for reducing psychiatric morbidity and suicide in young people:

- MEDLINE
- CINAHL
- EMBASE
- The Cochrane Library
- PSYCINFO
- ERIC
- SOCIAL SCIENCE CITATION INDEX
- ASSIA
- Trials Register of Public Health Interventions (TROPHI)
- Database of Public Health Effectiveness Reviews (DOPHER)
- C2 SPECTR
- PSITRI

These were supplemented with searches of the following websites:

- Google Scholar: http://scholar.google.com/
- Young Minds: http://www.youngminds.org.uk/
- Mind: http://www.mind.org.uk/
- National Institute of Mental Health: http://www.nimh.nih.gov/

References from relevant reviews and trials identified during searches were screened to identify further primary papers. Authors of all included studies were contacted to ensure all relevant papers had been obtained, and to request additional socio-demographic data (where needed), and any unpublished data relevant to assessing the impact of the intervention on health inequalities.

2.3.2 Search strategies

Sensitive search strategies were developed which combined both free-text and controlled-language terms to describe combinations of the following concepts:

- secondary-school
- young people
- mental health

- randomised and non-randomised controlled trials

Full details of search strategies employed are shown in Appendix 1.

2.4 Screening

Inclusion criteria for studies were first applied to titles and abstracts identified during searching. Where no abstract was available from the bibliographic database records, attempts were made to retrieve the full paper. Studies included on title and abstract alone were then re-screened using the full paper.

In order to be included in the systematic review, studies had to meet the following criteria:

- report any intervention to improve mental health or prevent poor mental health
- measure any mental health outcomes, including behaviours and symptoms (excluding eating disorders)
- concern interventions delivered within secondary schools
- concern groups or individuals targeted by interventions aged 11-19
- use a randomised controlled design
- be published from 1996 onwards
- be reported in the English language

After a meeting with our advisory group and commissioners, studies were subsequently re-screened. To be included, studies also had to meet the following criteria:

- report interventions based on cognitive behavioural techniques
- measure at least one of the following outcomes: depression, anxiety, suicidality.

2.4.1 Quality assessment and data extraction

A standardised framework was used to extract data on the development and content of the intervention evaluated, the study populations, and the design, implementation and quality of the outcome evaluations (Peersman et al.,1997).

The procedures and criteria used for assessing methodological quality built on those described in previous EPPI-Centre health promotion reviews (for examples, see Oakley et al., 1996; Peersman et al., 1996). Four ‘core’ methodological criteria were used to initially divide outcome evaluations into two broad categories: ‘sound’ and ‘not sound’. ‘Sound’ outcome evaluations were judged as meeting the following criteria:

- Findings are reported for each outcome measure indicated in the aims of the study.
- A control/comparison group equivalent to the intervention group on socio-demographic and outcome variables was used.
- Pre-intervention data is provided for all individuals in each group.

- Post-intervention data is provided for each group.

These criteria, however, only capture some of the known sources of bias in outcome evaluations. They do not distinguish between randomised and non-randomised trials, or between quality of method and quality of reporting. We, therefore, decided to include a further category of studies as 'sound, despite discrepancies with the four core criteria'. This category included, for example, studies in which full pre-intervention data was not presented but authors stated that there were no significant differences between the groups or differences had been accounted for in data analysis.

The above procedures were conducted independently by two reviewers who then met to compare their findings. Disagreements were resolved through discussion and reference back to the study concerned.

Only studies judged to be methodologically sound or 'sound despite discrepancies' were entered into the synthesis stage of the review. Data was identified and extracted by one reviewer, and then checked and confirmed by another reviewer. Where appropriate, and if statistical tests revealed no significant statistical heterogeneity between the studies, their data was combined in a statistical meta-analysis using our specialist EPPI-Reviewer software to calculate an overall effect size (Thomas, 2002). Where it was inappropriate to conduct meta-analysis, narrative analysis was conducted. Methods for calculating pooled effect sizes are described in detail in Appendix 2.

2.4.2 Attrition

Our report of the systematic map and methodological review recommended that outcome evaluations addressing health inequalities should take care to minimise attrition, and that attrition data should be linked to socio-demographic data (Oliver et al., 2008).

Included studies were analysed to ascertain to what extent attrition data was linked with socio-demographic data.

2.4.3 Participant involvement

It has been argued that greater involvement of the public in the development and evaluation of services may resolve problems of access and acceptability. A review of the theories and evidence supporting active public involvement in evidence-informed public health appears supports this position (Oliver, 2008).We inspected reports for descriptions of young people or their families involved in developing, delivering or evaluating interventions.

2.5 Describing inequalities

A coding scheme for study populations was developed by modifying Evans and Brown's (2003) PROGRESS framework, while compiling the systematic map of health inequalities research conducted prior to this review (Oliver et al., 2008).

In the first instance, PROGRESS was adapted to include descriptors for age, disability and sexual orientation which are also implicated in health inequalities (US Department of Health and Human Services, 2000). We also removed the term 'race' from the 'race/ethnicity' descriptor to indicate that the relevance of this category is socio-cultural. There are also groups of particularly vulnerable young people within society, whose source of vulnerability has been linked to health and social inequalities. The category of 'Other vulnerable groups' was created and included a heterogeneous range of populations, such as runaways, young people not in school, and young offenders. It is not a well-defined group, but reflects the need to identify at-risk populations who may not correspond to pre-defined socio-demographic categories, such as those included in the original PROGRESS schema.

We distinguished two ways of measuring SES, narrowly and broadly. The narrower concept included only SES measured according to economic criteria, such as income and eligibility for means-tested benefits. The wider concept we named 'All SES'. This incorporated proxy descriptors of SES such as Education, Occupation and some aspects of place of residence to provide a more complete picture of SES. This adapted and more inclusive framework was named PROGRESS-Plus (Kavanagh et al., 2008). Population categories for the dimensions of PROGRESS-Plus are listed in Table 2.1.

Table 2.1: Categories included in the PROGRESS-Plus framework

PROGRESS	
Place of residence	Rural/urban, country/state, area deprivation, housing characteristics
Ethnicity	Ethnic background
Occupation	Professional, skilled, unskilled, unemployed etc.
Gender	Male or female
Religion	Religious background
Education	Years in and/or level of education attained, school type
Social capital*	Neighbourhood / community / family support.
Socio-economic status (SES)	Income related measure (e.g. means-tested benefits / welfare, affluence measures, etc.)
Plus	
'All SES'	SES and other income related measures, occupation, education, elements of place of residence.
Age	Age range
Disability	Existence of physical or emotional/mental disability
Sexual orientation	Heterosexual, gay, lesbian, bisexual, transgender
Other vulnerable and socially excluded groups (review specific)	School non-attenders, looked after YP, YP in criminal justice system, victims of abuse, runaways, teenage parents

* 'Social capital' describes support available through informal social networks of neighbourhoods, communities and families; in relation to young people, we recognised social capital as largely related to family structure, and the form and quality of family relationships.

2.6 Outcome measures

A number of *a priori* decisions were taken about the choice of outcome measures and follow up-periods. Where more than one measure of the same outcome was reported (e.g. depression scores calculated using both the Becks Depression Inventory, and RADS), the choice would be based on which of the measures was used more frequently across all included studies. Where frequency was equal a judgement would be made on the appropriateness of the scale for young people.

Follow-up periods to use were specified in advance and were adapted from those used in a systematic review of psychological and/or educational interventions for the prevention of depression in children and adolescents, by Merry and colleagues (2004):

1. Time 1 = post intervention to 4 weeks
2. Time 2 = >4 weeks and up to and including 3 months
3. Time 3 = >3 months and up to and including 6 months
4. Time 4 = >6 months and up to and including 12 months
5. Time 5 = >12 months and up to and including 18 months
6. Time 6 = > 18 months

Where a study reported outcome data for two time periods relevant to one time period, the earliest time was used: for example, if a study reported 24 months and 36 month data, only the 24-month data was used).

2.7 Effect sizes, heterogeneity, sensitivity and subgroup analyses

For the results of different studies using different measurement tools (e.g. Reynolds Adolescent Depression Scale, Children's Depression Index) to be combined in a statistical meta-analysis, their results need to be standardised. For this review, the standardised mean difference (with standard errors) was selected, this is essentially the difference in means between the two groups in the evaluation divided by their pooled standard deviation. We adopted a random effects model, as this incorporates an estimate of between-study heterogeneity. The Der Simonian and Laird method was used to compute this (see Appendix 2 for further details).

The significance of SMDs are not easy to interpret at first glance: Cohen (1988) suggested that 0.2 represents a small effect, 0.5 a moderate effect, and 0.8 a large effect. Anything of a moderate effect or more has been used as a cut-off for clinical significance. As these generic statements are themselves not always amenable to interpretation by review users, SMDs have been translated into reductions or increases in depression scores. These were calculated by multiplying the standard deviation of baseline effect size (chosen from the largest study in a meta-analysis), by the pooled effect size. Results are presented as a reduction or increase in depression score of the instrument used in the study. Heterogeneity was explored using both the *Q test* and the I^2 *index*. The *Q test* reveals the presence versus absence of heterogeneity as indicated by a *p value* of <0.05, while the I^2 *index* quantifies the degree of heterogeneity (Higgins and Green, 2008; Huedo-Medina et al., 2006). If no significant heterogeneity was found, the results of the studies were pooled and a final effect size was calculated. If significant heterogeneity was found, possible reasons for the differences between studies were explored through sensitivity analyses of subgroups of studies. In order to prevent this procedure from becoming an exercise in 'data dredging', the categorical variables which identified the subgroups used in this exercise were specified in advance of the meta-analysis.

Sensitivity analyses to explore heterogeneity:

i. Quality of study (Sound / sound despite discrepancies)

Subgroup analyses were used both to explore heterogeneity and also to answer questions about the effectiveness according to specific characteristics of interventions, and population groups:

ii. Universal interventions
iii. Indicated interventions
iv. High risk or low risk on the basis of entry to the study
v. Intervention provider
vi. Intensity of intervention (short = up to 9 sessions, long = 10+ sessions)

vii. Timing inside or outside school day
viii. Targeted towards a particular PROGRESS-Plus group

2.8 Methods for meta-regression

Meta-regression is not generally considered appropriate where there are fewer than 10 studies in a meta-analysis (Higgins and Green, 2008). However, given the focus of the review on health inequalities, and our intention to explore the methodological challenges of applying an equity lens to a review of effectiveness, an *a priori* decision was taken to conduct meta-regression on the basis of the socio-economic position of participants with fewer studies if necessary. Therefore, where there was data to support this type of analysis, heterogeneity was further explored through meta-regression (Thompson and Higgins, 2002). Meta-regression is similar to standard regressions, in which the outcome variable is predicted through explanatory variables. Data was exported from EPPI-Reviewer (Thomas, 2002), and the statistical software Stata (StataCorp, 2001) was used to undertake this analysis.

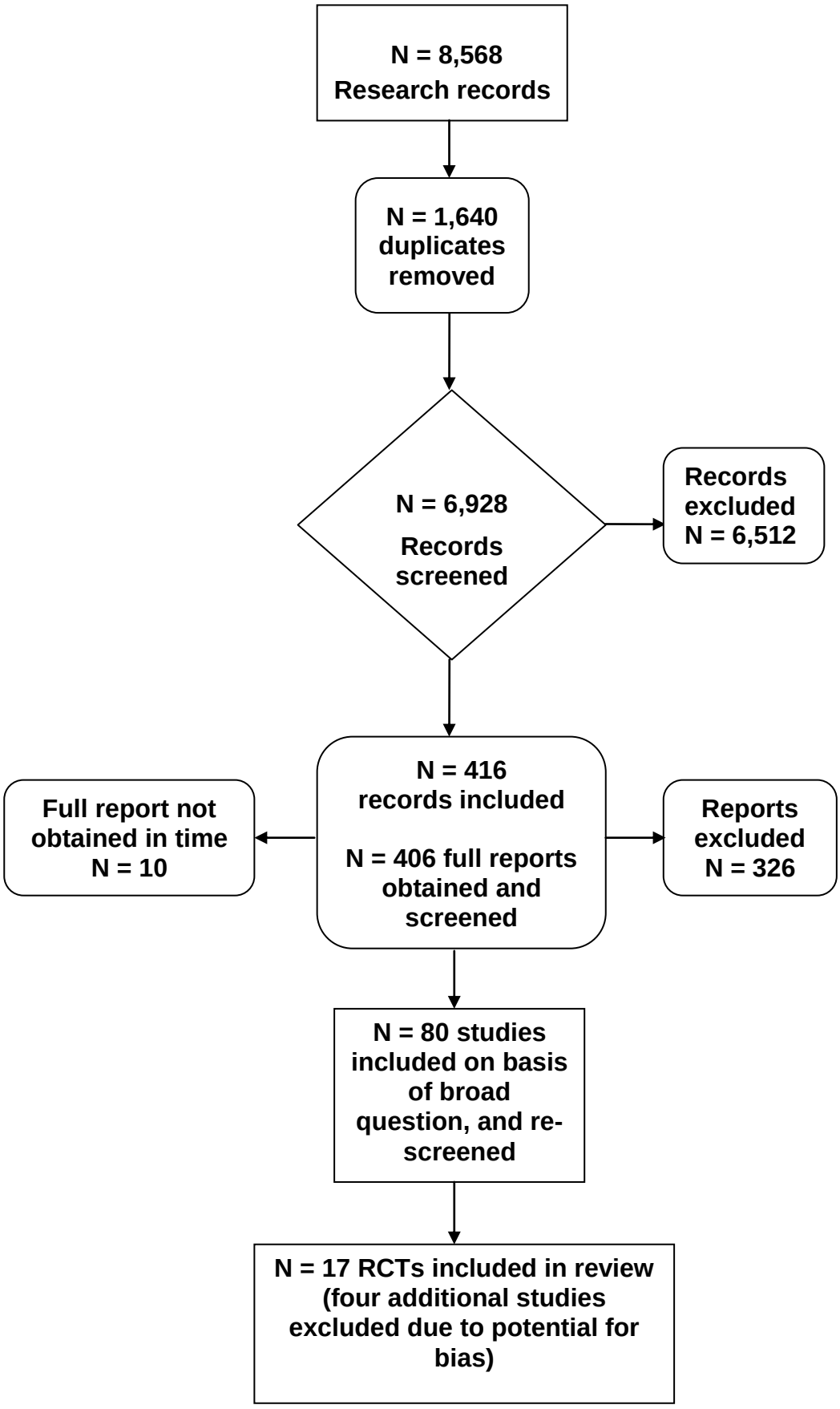
3. FINDINGS: EFFECTIVENESS REVIEW

3.1 Flow of literature through the review

Figure 3.1 describes the flow of literature through the review process. Our searches identified 8,568 records: comprehensive searches of bibliographic databases and research registers identified 8,518 citations, scanning review and included study bibliographies identified a further 44 citations. Authors of all relevant outcome evaluation studies were contacted to enquire about additional papers and data pertinent to an inequalities analysis. Twenty-two authors were contacted, of whom nine did not respond (41%), two were untraceable (9%), six provided additional papers (27%) and five provided additional information – primarily socio-demographic data (23%).

After removing 1,640 duplicates, the titles and abstracts of 6,928 records were screened against inclusion criteria. Most of these did not meet the inclusion criteria and were excluded from the review (N= 6,512, 94%). This reflected the sensitive search strategies employed which did not specify that interventions must be based on cognitive behavioural techniques. A total of 416 records of research were identified as being potentially relevant and full reports were obtained and processed for 406 (98%) of these within the timescale of the review. After screening on full reports, 80 studies were included in the review, and descriptively coded. Following consultation and secondary screening, 21 RCTs were quality appraised. Four studies were judged to be of low methodological quality and were therefore excluded from the review. A total of 17 RCTs were included in the synthesis of studies.

Figure 3.1: Flow of literature through the map



3.2 Existing reviews

During the process of conducting this review, a number of other published reviews were identified. We have focused on three groups of reviews: those which are largely of school-based interventions; those which focus on the use of CBT with young people; and, those reviews which focus on suicide prevention. This section is not intended to be a comprehensive review of reviews.

None of the reviews identified specifically considered the use of CBT-based interventions in secondary-schools. No reviews considered the potential impact of interventions on mental health inequalities, although one did have a focus on socially excluded young people (Harden et al., 2001).

Reviews of school-based interventions

Only six reviews were of school-based interventions, while none of these focused solely on secondary schools; all judged the interventions to be effective, although they varied in their strength of recommendations. A 2004 Cochrane review considered the effectiveness of psychological and/or educational interventions for the prevention of depression in children and adolescents (Merry et al., 2004a). Twenty-one studies were included, and the authors concluded that there was insufficient evidence to warrant the introduction of prevention programmes, but that there was sufficient data to suggest that further study would be worthwhile. Some of the studies were conducted in primary schools, and it did not include outcomes such as anxiety or suicidality in adolescence. In 2003, a systematic review of universal approaches to mental health promotion in schools was published (Wells et al., 2003). Seventeen studies met the inclusion criteria, and the authors concluded that there was sufficient evidence to support the efficacy of school-based mental health programmes with one caveat: long-term programmes promoting mental well-being of all students and involving changes in the school environment were more successful than brief class-based interventions.

A review of 130 evaluations of indicated preventive mental health programmes for children and young people, concluded that such programmes were effective in reducing early signs of mental ill health while also significantly increasing competencies (Durlak and Wells, 1998). The majority of interventions (93.4%), however, were delivered to elementary school children and were not secondary school based. The same authors conducted a review of universally provided school-based interventions for children and young people (Durlak and Wells, 1997). One hundred and seventy seven interventions for preventing behavioural and social problems in young people were identified. Interventions were from a broad range of approaches, including those that attempted to modify the school environment as well as individually focused mental health promotion. The authors concluded that most categories of programme were successful

Harden and colleagues (2001) conducted an innovative mixed methods systematic review, which examined the barriers to and facilitators of mental health for young people. The review focused on young people from socially excluded groups and on interventions to prevent suicide, self-harm, depression and the promotion of self-esteem and coping strategies. Young people had clear perspectives on their mental health and how it could be promoted. These included the inappropriateness of the terms such as ‘mental health’; their sophisticated understanding of coping strategies; their wide range of concerns; and the

irrelevance of many interventions to young people's pragmatic, everyday worries. Evaluated interventions tended to neglect physical and material factors identified as important by young people for their mental health (e.g. money, unemployment). The review found that interventions to promote self-esteem were more likely to be effective if this was the main focus of the intervention, and skill development was more effective than information alone. There was some evidence that interventions to prevent suicide might be harmful.

Hoagwood and Erwin (1997) conducted a review on the efficacy of school-based mental health services. Sixteen studies met inclusion criteria and three types of interventions were found to have empirical support for their effectiveness – cognitive-behavioural therapy (CBT), social skills training and teacher consultation. The authors note, however, that the evidence for these interventions was mixed.

Reviews of cognitive behavioural interventions

Four reviews evaluated CBT-based interventions with children and young people; however, these were not school based. All the reviews concluded that the interventions were effective to some degree. Cartwright-Hatton and colleagues (2004) systematically reviewed the efficacy of cognitive behaviour therapies for childhood and adolescent anxiety disorders. Ten trials were included, on the basis of which the authors concluded that CBT was an effective intervention for anxiety disorders in children aged over six, and young people when compared with no intervention controls. In 2004, Compton and colleagues reviewed the evidence on the efficacy of cognitive-behavioural psychotherapy for anxiety and depressive disorders in children and adolescents. Twenty-one randomised controlled trials were included, and the authors concluded that there was substantial evidence for the efficacy of problem-specific cognitive-behavioural interventions, with medium-to-large reductions in primary outcomes.

Curry compared specific psychotherapies for childhood and adolescent depression (Curry, 2001). Therapies considered were interpersonal psychotherapy, cognitive behavioural therapy and family therapy. The authors concluded that, among children with elevated depressive symptoms, CBT interventions demonstrated efficacy in reducing symptoms and in facilitating movement of symptoms back into normal range. However, longer term follow-up did not support the superiority of CBT over other interventions. The interventions reviewed were a mix of individual and group-based work. James and colleagues (2005) conducted a review of cognitive behavioural therapy for anxiety disorders in children and adolescents. Thirteen trials were included in the review, which concluded that cognitive behavioural therapy appeared to be an effective treatment for childhood and adolescent anxiety disorders in comparison with waiting list or attention control.

Reviews of suicide prevention

Other reviews in the area focused on suicide prevention. The most recent was a systematic review with narrative synthesis conducted in 2003 (Gould et al., 2003). The authors concluded that the research about interventions to prevent suicide in young people was lacking, although programmes which were multifaceted were more likely to succeed than single interventions. In 2002, the Alberta Heritage Foundation conducted a review of the efficacy of suicide prevention programmes for children and young people (Guo and Harstall, 2002). They identified 12

relevant studies – 10 primary quantitative studies and 2 systematic reviews – all of which were school based. The authors concluded that more well designed research, which takes into account the multidimensional nature of suicide prevention programmes, was required to establish the efficacy of such programmes.

Burns and Patton (2000) conducted a review of preventative interventions for youth suicide, using a risk factor-based approach. Five key risk factor domains were identified – individual, family, community, school and peer – and studies of interventions targeted at these domains were evaluated. The authors concluded that, while there is a paucity of evidence on the effectiveness of interventions targeting depression and suicidal behaviour, there were evidence-based interventions which targeted important risk factors. Finally, in 1996 a systematic overview of adolescent suicide prevention programmes was published with the aim of summarising the current evidence base. Based on a review of 11 relevant studies, the authors concluded that there was insufficient evidence to support curriculum-based suicide prevention programmes (Ploeg et al., 1996). Importantly, and in keeping with the review by Harden and colleagues (2001), they found that suicide prevention programmes may have both harmful and beneficial effects on young people.

3.3 Characteristics of included primary studies

Evidence tables for the 17 included RCTs are presented in Appendix 3. Descriptions of the aims and content of the various intervention packages are presented in Appendix 4.

3.3.1 Methodological aspects of studies

Excluded studies

Twenty-one RCTs were considered eligible for inclusion in the review and were critically appraised according to the methods described earlier (see section 2.4). Of these, four studies were judged not to be methodologically sound and excluded from the synthesis. One study was poorly reported with no pre-intervention data presented (Adomeh, 2006). Two did not report numbers of participants in the control and intervention groups (Brown and Block, 2001; Petersen et al., 1997), and one study had conflicting information about the number of participants in the control and intervention groups (Cardemil, 2000). Further details of these studies are in Appendix 4.

Included studies

Of the 17 studies judged to be sound and included in the synthesis, only two studies, both poorly reported, were judged to be sound despite discrepancies with quality criteria (Lamb et al., 1998; Lock and Barrett, 2003).

Lamb and colleagues (1998) evaluated a school-based intervention to promote coping in rural teens with an RCT. They reported only pre- and post-intervention data for those remaining in the study; however, attrition levels were not high and

the authors note that there were no differences between those who dropped out and those who remained in the study. Lock and Barrett (2003) conducted a cluster-RCT to evaluate a universal preventive intervention for anxiety in young people. While post-intervention data at the first follow up was included in the synthesis, high levels of unequal attrition between the control and intervention groups led the reviewers to consider outcome data for follow-up periods at 12-, 24- and 36- months to be unreliable.

Only six of the studies reported methods of randomisation: two studies used computer-generated random numbers (Gillham et al., 2007; Stein et al., 2003); two used block randomisation which was not further described (Listug-Lunde , 2005; Puskar et al., 2003); one used random number tables (Merry et al., 2004a); and, one used numbers drawn randomly from a container (Sheffield et al., 2006). Two of these studies also reported that allocation was concealed, and that participants were blind to which group they were in (Merry et al., 2004a; Sheffield et al., 2006). Five of the included RCTs were cluster trials (Lock and Barrett, 2003; Poessel et al., 2008; Ruini et al., 2006; Sheffield et al., 2006; Spence et al., 2003) with only one reporting an intra-class correlation ICCs (Gillham et al., 2007). Three studies reported that power calculations had been conducted prior to recruitment (Sheffield et al., 2006; Masia-Warner et al., 2007; Poessel et al., 2008).

Attrition

Of the 17 included studies, 14 provided some data describing which participants had dropped out of the study or were unavailable for follow-up outcome data collection. Six of these did not link attrition data to socio-demographic data, but linked data to clinical risk factors or simply stated that there was no difference between those participants who remained in the study, with those who dropped out. Four studies linked attrition data to unspecified demographic data, and the remaining studies linked attrition data to SES (Gillham et al., 2007; Spence et al., 2003), gender (Poessel et al., 2008) and ethnicity (Chaplin et al., 2006).

Participant involvement

While one study reported that the intervention had been developed in collaboration with school personnel (Stein et al., 2003), none of the included studies reported whether young people had been involved at any stage in the development of any of the interventions. It is unclear whether this lack of data on participant involvement in the development of interventions means that this involvement is simply not taking place or just that it is not reported. While the former explanation may be the more credible, both explanations indicate an absence of appreciation of the importance of the role of young people in developing the type of complex social interventions described in this review.

3.3.2. Characteristics of interventions

Comparator

None of the included studies compared CBT-based interventions with an active control (i.e. another modality, such as psychotherapy-based interventions)

Location

Only one of the interventions was evaluated in the UK (Castellanos and Conrod, 2006). This was of a personality type matched cognitive-behavioural intervention with the aim of reducing depression, panic and risk-taking behaviours. Ten of the evaluations were conducted in the USA (Chaplin et al., 2006; Gillham et al., 2006; Gillham et al., 2007; Lamb et al., 1998; Listug-Lunde, 2005; Masia Warner et al., 2005; Masia Warner et al., 2007; Puskar et al., 2003; Stein et al., 2003; Stopplebein, 2003). Three studies were conducted in Australia (Lock and Barrett, 2003; Sheffield et al., 2006; Spence et al., 2003). Italy (Ruini et al., 2006), China (Yu and Seligman, 2002), New Zealand (Merry et al., 2004a), and Germany (Poessel et al., 2008) each provided the location for an intervention.

Intervention type

All the interventions were based on techniques derived from cognitive behavioural therapy, and were delivered at the group level. Groups varied from small groups to entire classes, but none of the interventions were provided at the individual level. All the included studies evaluated CBT type interventions for their effectiveness in reducing or preventing the onset of the symptoms of a range of emotional disorders.

The contents of the interventions varied, depending upon their aims and the emotional disorders they were aiming to prevent. There was no clear difference between the content of interventions according to whether they were targeted, indicated or universally provided interventions. All the interventions had multiple components, an element of skills training around the issues of problem-solving, addressing negative thinking or social skills training. Interventions which aimed to reduce anxiety tended to have an element of social skills training (Lock and Barrett, 2003; Masia Warner et al. 2005, 2007). The interventions taught students a variety of techniques for problem solving and coping, including assertiveness, relaxation, negotiation, positive thinking and communication. Common stressors for young people - such as family relationships, conflict, low-self-esteem and self-image - were the subject of discussion and education. Descriptions of each of the interventions can be found in Appendix 4.

Support for intervention provider

All the evaluations reported some level of training or support for intervention providers. The level of training and support that was reported varied considerably: it ranged from the provision of a manual or protocol, with no further support reported, to 30 or 40 hours training with weekly supervision and feedback, based on recordings of sessions.

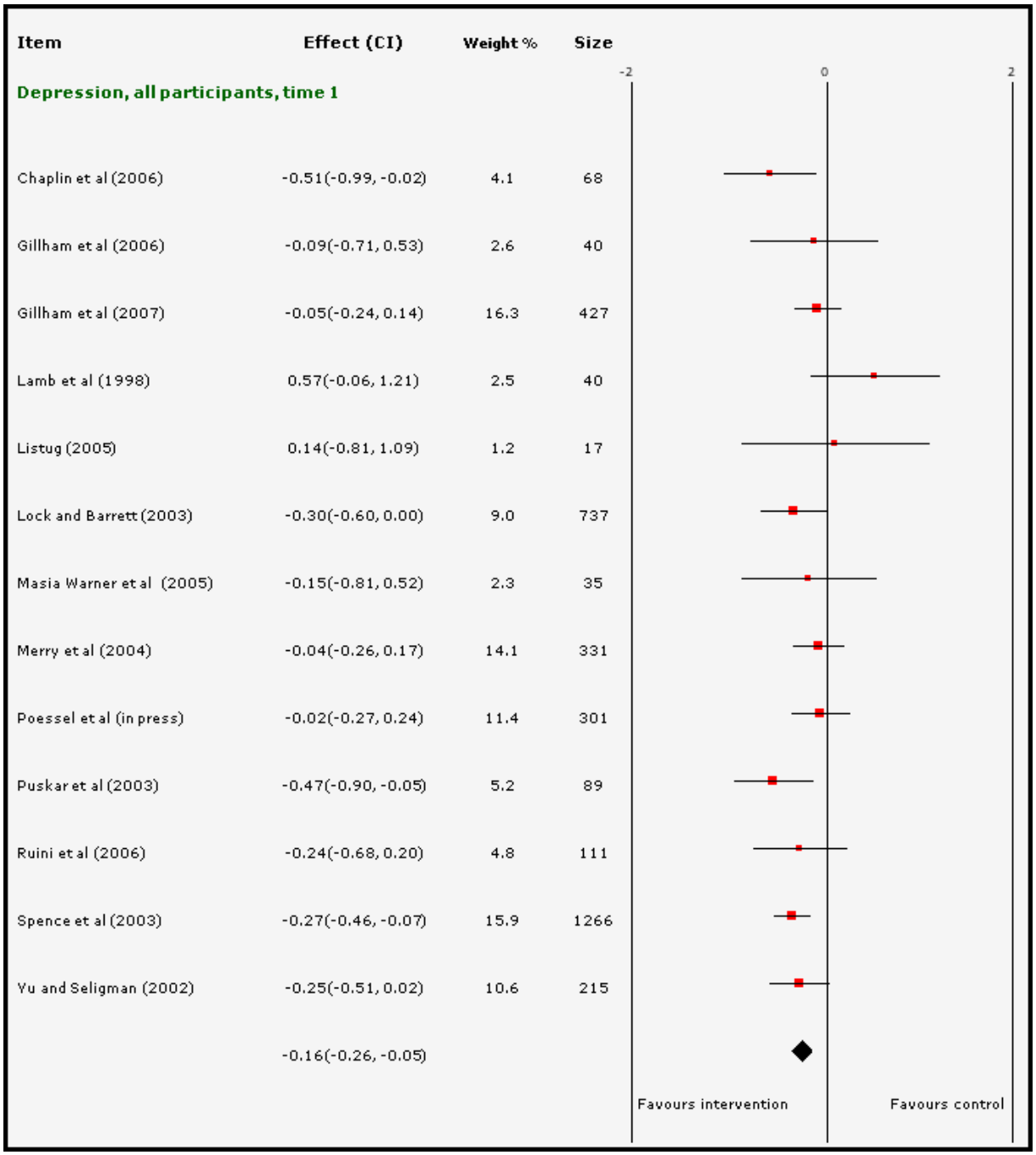
The seven interventions that were provided by school personnel, rather than an external provider reported a minimum of six hours training, based around an intervention manual (Sheffield et al., 2006). The most intensive support reported included one weeks manual–based training with bi-weekly supervision and feedback based on audio-recordings of sessions (Chaplin et al., 2006). A similar level of support and training was reported in studies of interventions with an external intervention provider. Further details are reported in Appendix 4.

3.4 Impact of CBT on depression outcomes

Secondary school-based CBT type programmes were effective for reducing depressive symptoms up to three months after the intervention had finished. The effect remained positive, though insignificant, at six- and 12-month follow-up. No evidence of harm was detected in any of the analyses.

Fourteen RCTs examined the impact of CBT-based interventions on depression scores at Time 1 (up to 4 weeks post intervention). CBT-based interventions were shown to have a positive impact SMD=-0.23 (CI=-0.43, -0.03); however, high and significant levels of heterogeneity were present (Q(13)=56.6, *p*=2.13E-07, I^2=77%). Heterogeneity was not explained by removing two studies of lower quality (Lamb et al., 1998; Puskar et al., 2003), but was explained by removing one study, which was a small extreme outlier (Masia Warner et al., 2007). The effect remained both positive and significant SMD=-0.16 (CI=-0.26,-0.05), with no heterogeneity (Q(12)=15.7 *p=0.207,* I^2=23.4%) (see Figure 3.2). This effect is equivalent to a reduction of 1.44 points on the Beck Depression Inventory (BDI). The benefit of the intervention increased and remained significant at Time 2 (3 months) SMD=-0.21 (CI=-0.35, -0.07), equivalent to a reduction of 1.9 points on the BDI when the results of four studies were pooled (Listug-Lunde, 2005; Sheffield et al., 2006; Stein et al., 2003; Yu and Seligman, 2002). Nine studies provided data for follow-up at Time 3 (6 months), when the results of these data was pooled, the intervention effect while remaining positive was no longer significant SMD=-0.12 (CI=-0.26, 0.02); however, there was significant heterogeneity with this finding (Q(8)=17.8, *p*=0.016 , I^2=57.4%) which was not explained by removing one study of lower quality (Puskar et al., 2003). This positive impact also remained non-significant at Time 4 when data from five studies, all with 12-month follow-up measures, was pooled, SMD=-0.08 (CI=-0.18, 0.03), with no heterogeneity present. There was no evidence of harm at any of the follow-up periods.

Figure 3.2: Depression, all participants, time 1



3.4.1 Characteristics of interventions

A priori decisions were taken to explore a range of specific characteristics of the interventions which might have increased or decreased the effectiveness of the interventions, and which might explain heterogeneity. Subgroup analyses were conducted to ascertain the effectiveness of indicated and universally provided interventions; internal (members of school staff, such as teachers, school

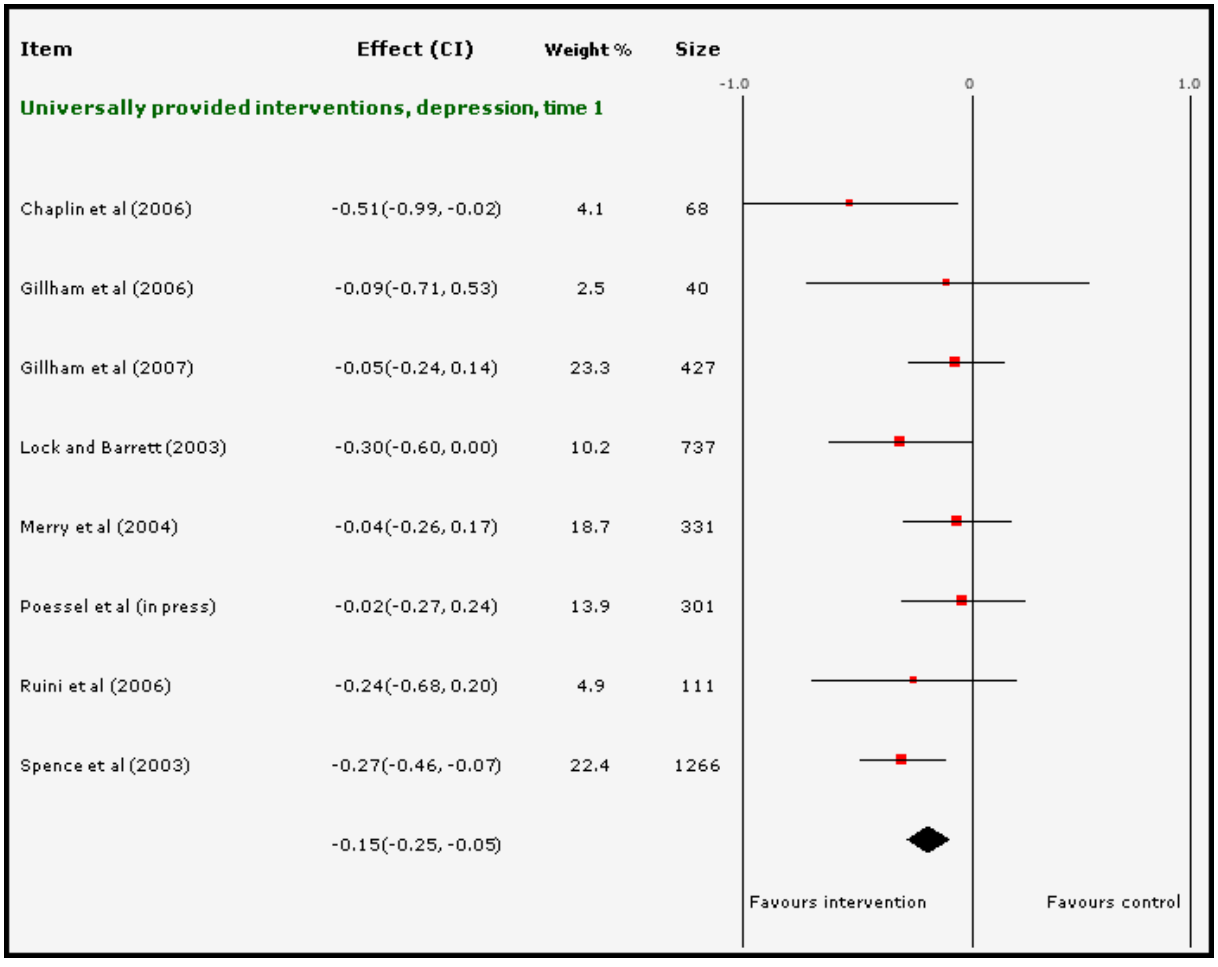
counsellors) and external (providers visiting the school, such as researchers, external psychologists) intervention providers; the intensity of the intervention (long or short); and, whether the intervention was provided within or outside of regular school hours.

Universally provided interventions

Universally provided interventions were shown to improve depressive symptoms, up to four weeks after delivery.

The nine studies which were provided universally (Chaplin et al., 2006; Gillham et al., 2006; Gillham et al., 2007; Lock and Barrett, 2003; Merry et al., 2004a; Poessel et al., 2008; Ruini et al., 2006; Sheffield et al., 2006; Spence et al., 2003) showed a significant reduction in depressive symptoms, SMD=-0.15 (-0.25, -0.05) at Time 1, with no heterogeneity present (see Figure. 3.3) - equivalent to a reduction of 1.35 points on the BDI. This positive effect was not maintained beyond four weeks. Only three of these studies provided subgroup data on participants at low or high risk of depression. At Time 1, on the basis of two studies (Lock and Barrett, 2003; Spence et al., 2003) the intervention was found to be beneficial for both the low risk and high risk groups (SMD=-0.29 (-0.42,-0.15);SMD=-0.36 (-0.58, -0.13)). Due to a lack of data, it was not possible to evaluate the effectiveness of universal interventions for these subgroups beyond Time 1.

Figure 3.3 Universally provided interventions, depression, time 1



Indicated interventions

Indicated interventions were shown to improve depressive symptoms for young people with existing depressive symptoms, with the effect lasting up to six months after the intervention had been delivered.

Eight studies evaluated the effect of interventions provided only to young people with existing depressive symptoms (Castellanos and Conrod, 2006; Lamb et al., 1998; Listug-Lunde, 2005; Masia-Warner et al., 2005; Masia-Warner et al., 2007; Puskar et al., 2003; Stein et al., 2003; Yu and Seligman, 2002). Pooling the results of six of these studies at Time 1 showed no evidence of effect, SMD=-0.59 (-1.32, 0.13). However, this finding had a high level of heterogeneity (Q(5)=47.6, *p*=4.33E-09, I^2 = 89.5%) which appeared to be explained by removing one study of lower quality (Lamb et al., 1998) and an extreme outlier (Masia-Warner et al., 2007). When these two studies were removed, indicated interventions had a beneficial impact at Time 1 SMD=-0.27 (-0.48, -0.06) with no heterogeneity present (Q(3)=1.78, *p*=0.62 I^2 = 0%) – equivalent to a reduction in Children's Depression Inventory (CDI) score of 2.6 points (Figure 3.4). The same effect was maintained at three months when data from three studies was pooled, SMD=-0.27 (-0.49, -0.06) (Puskar et al., 2003; Stein et al., 2003; Yu and Seligman, 2002). This finding was repeated at six month (Time 3) follow-up, when the results of four studies were pooled (Castellanos and Conrod, 2006; Puskar et al., 2003; Stein et al., 2003; Yu and Seligman, 2002), SMD=-0.25 (-0.42,-0.08), again without heterogeneity. This effect is equivalent to reduction of 2.4 points on the CDI.

With any exploration of heterogeneity, particularly with a small group of studies, caution should be applied in concluding that the effect is significant. However, while two studies were removed from the analysis due to heterogeneity at Time 1, given that the effect remained significant at two further time points with no heterogeneity, this suggests that this is a reliable finding. There was insufficient data to analyse the impact beyond six months.

Figure 3.4: Indicated provision, depression, time 1

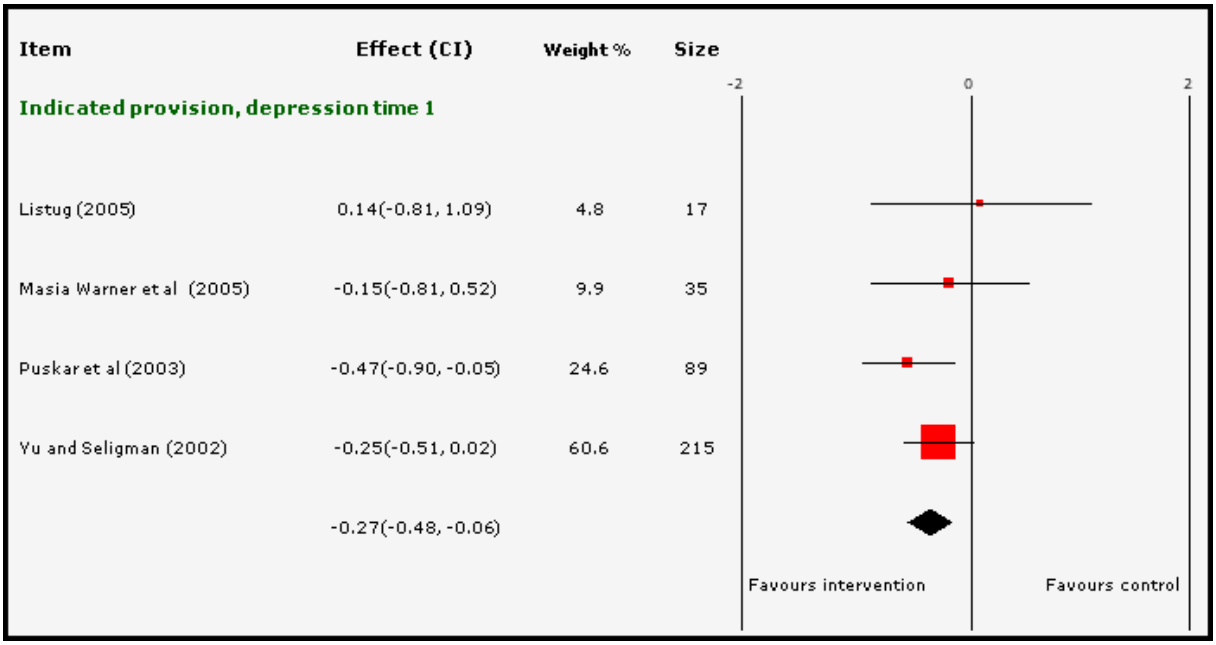


Figure 3.5: Indicated provision, depression, time 2

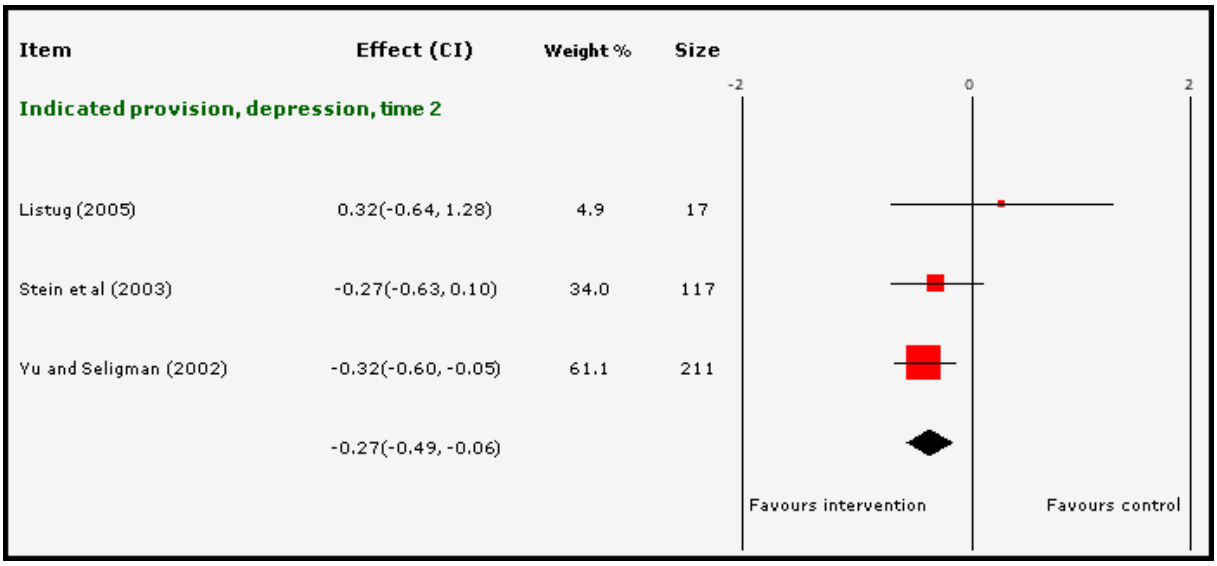
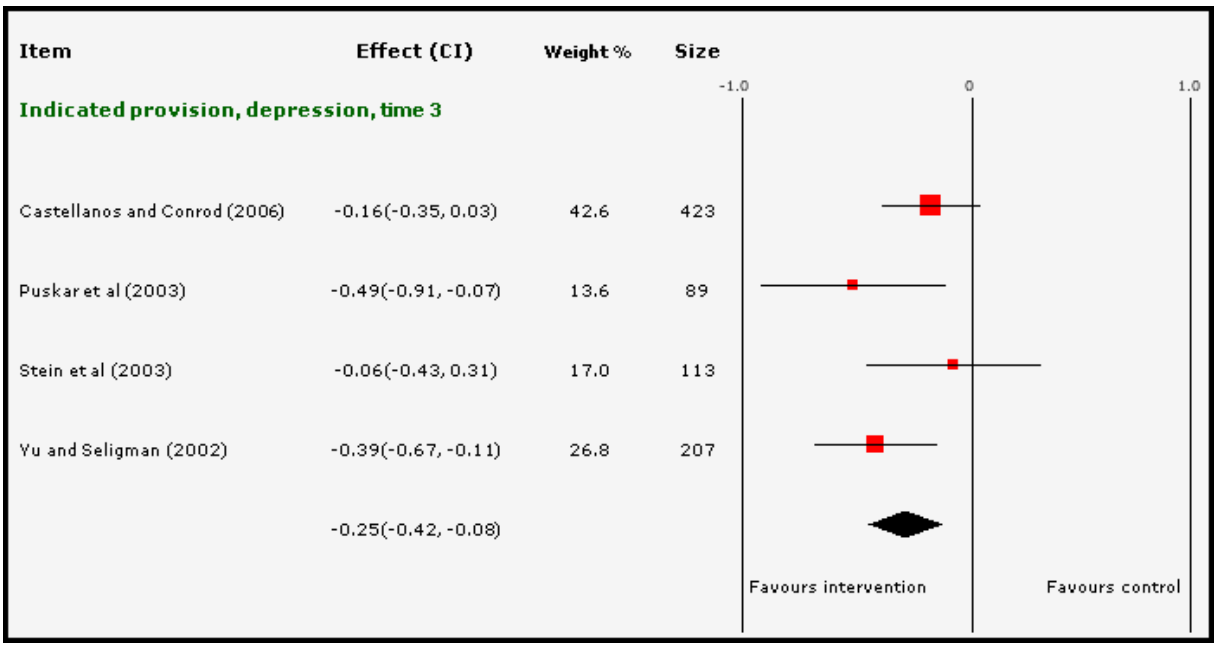


Figure 3.6: Indicated provision, depression, time 3



Intervention provider

Interventions provided by an existing member of school-staff (internal provider) were found to be effective, while those delivered by individuals external to the school structure were not.

Seven studies evaluated interventions that were provided by someone internal to the school, such as a school-teacher or on-site health worker. When data from six of these studies was pooled (Chaplin et al., 2006; Gillham et al., 2007; Lock and Barrett, 2003; Merry et al., 2004a; Spence et al., 2003; Yu and Seligman, 2002), the intervention proved to be successful in reducing depressive symptoms at

Time 1, SMD=-0.18 (CI=-0.30,-0.07) with no heterogeneity – equivalent to a reduction in depression score of 1.62 on the BDI (see Figure 3.7). Only two studies provided data for the three-month follow-up period and when data from these studies was pooled, the effect remained both beneficial and significant, SMD=-0.21 (CI=-0.36, -0.05), with no heterogeneity present – equivalent to a reduction in depression score by 1.9 on the BDI. This effect was no longer present at six-month follow-up on the basis of data from four studies.

Ten studies evaluated interventions with an external provider, such as a psychologist or researcher (Castellanos and Conrod, 2006; Gillham et al., 2006; Lamb et al., 1998; Listug-Lunde, 2005; Masia-Warner et al., 2007; Masia-Warner et al., 2005; Poessel et al., 2008; Puskar et al., 2003; Ruini et al., 2006; Stein et al., 2003). When data from eight studies which measured depression at Time 1 was pooled, the intervention proved to be ineffective. However, there was a significant and high level of heterogeneity with this finding (Q(7)=49.9, *p*=1.49E-08, I^2 = 86%). This appeared to be explained by removing one study of lower quality (Lamb et al., 1998) and an extreme outlier (Masia-Warner et al., 2007). When these two studies were removed (Figure 3.8), the intervention remained ineffective with no heterogeneity present SMD=-0.14 (CI=-0.32, 0.03) (Q(5)=3.88, *p*=0.566, I^2 =0%). With any exploration of heterogeneity, particularly with a small group of studies, caution should be applied in concluding that the effect is significant or non-significant. However, interventions delivered by external providers also proved to be ineffective at three- and six-month follow-up without any heterogeneity present.

Figure 3.7: Internal provider, depression, time 1

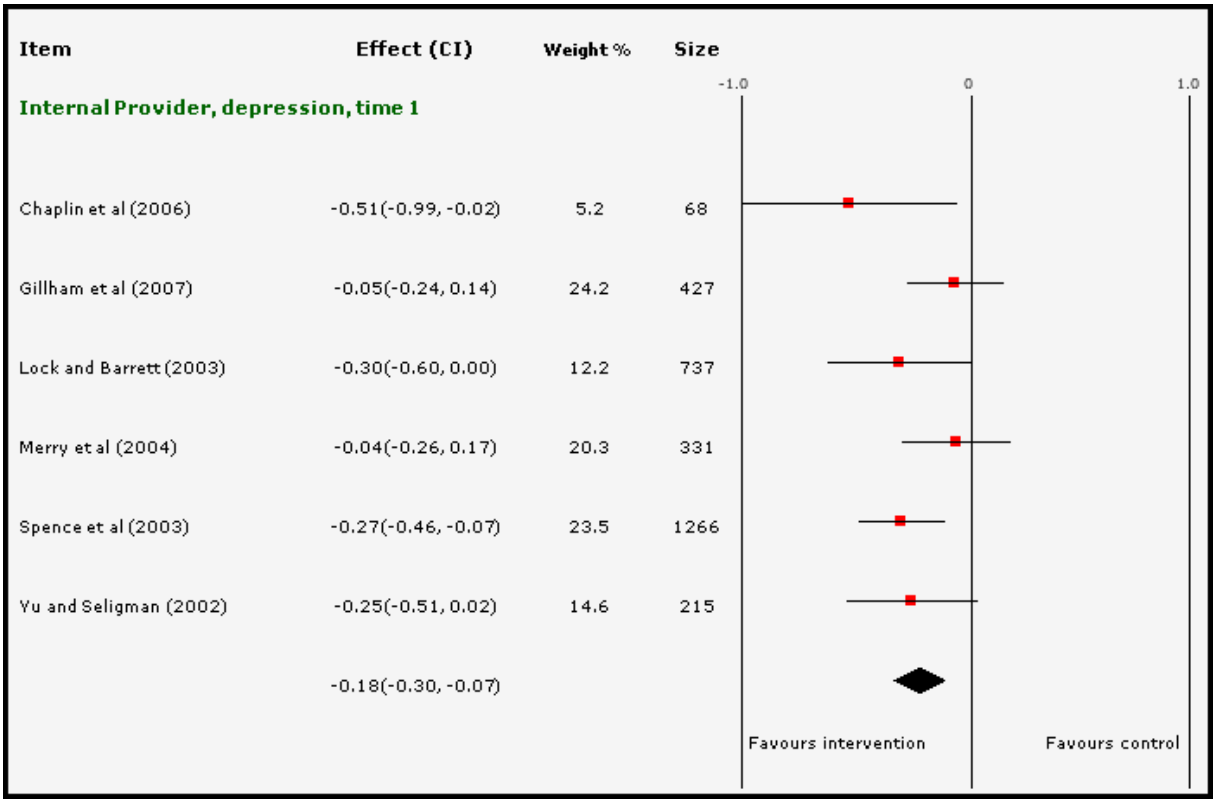
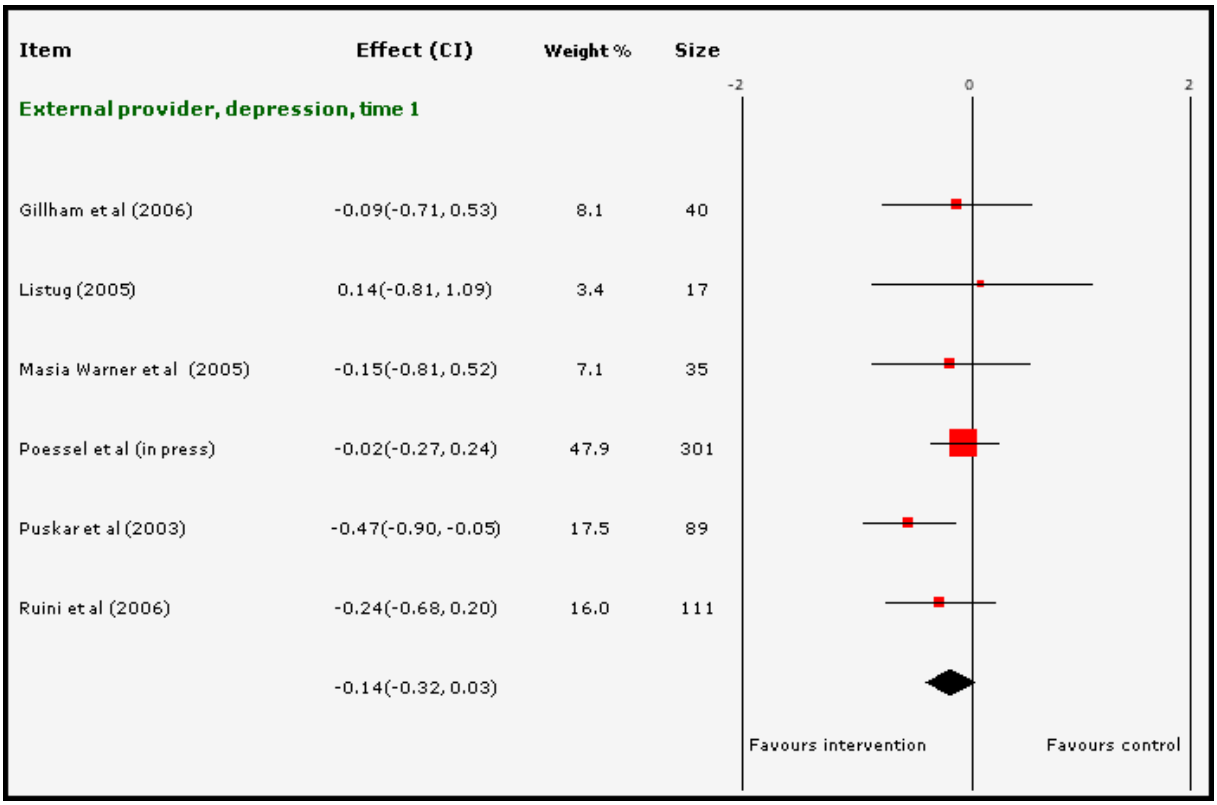


Figure 3.8 External provider, depression, time 1



Intensity of the Intervention

Interventions of longer duration (ten or more sessions) were effective up to three months post-intervention. Short interventions (up to nine sessions) proved to be ineffective for preventing depression in young people.

Data was pooled from eleven RCTs which evaluated the longer interventions and this proved to be successful in reducing depressive symptoms at Time 1, SMD=-0.32 (CI=-0.58,-0.05) with a high level of heterogeneity (Q(9)=50.2, *p*=9.88E-08, I^2 = 82.1%). Heterogeneity was not explained by the removal of one study of lower quality (Lock and Barrett, 2003); however, it was explained by the removal of a extreme outlier (Masia-Warner et al., 2007). Removal of this study indicated that long interventions were effective at Time 1 SMD=-0.15 (CI=-0.26, -0.04), with no heterogeneity present – equivalent to a reduction of 1.92 points on the CDI. This effect remained beneficial at three-month follow-up when data from three studies was combined, SMD=-0.27 (CI=-0.49, -0.06). However, this positive effect did not last beyond three months – equivalent to a decrease of 3.2 points on the CDI. At six-month follow-up, when data from six studies was pooled, this beneficial effect was no longer present, SMD=-0.11 (CI=-0.31, 0.09). There was significant heterogeneity with this finding (Q(5)=15.6, *p*=0.008, I^2=67.9%) and it should therefore be judged with caution. There was no obvious explanation for the source of this heterogeneity.

Six studies provided data on short interventions. When Time 1 data from four of these studies was combined, the shorter interventions proved to be ineffective SMD=-0.09 (CI=-0.41,0.22) with a high level of heterogeneity (Q(3)=6.26, *p*=0.09, I^2=52.1%). When data for the one lower quality study (Lamb et al. 1998) was removed, the short interventions were seen to be effective (see Figure 3.10)

SMD=-0.25 (CI=-0.42, -0.08), with no heterogeneity present (Q(2)=0.293, *p*=0.86, I^2=0%) – equivalent to a reduction of 3 points on the BDI. However, as with earlier explorations of heterogeneity, caution is required in interpreting this effect. No data was available for meta-analysis at three-month follow-up, and the intervention remained ineffective at six-month follow-up when the results of three studies were combined, SMD=-0.14 (CI=-0.31, 0.03) with no heterogeneity present.

Figure 3.9: Depression, time 1, long interventions

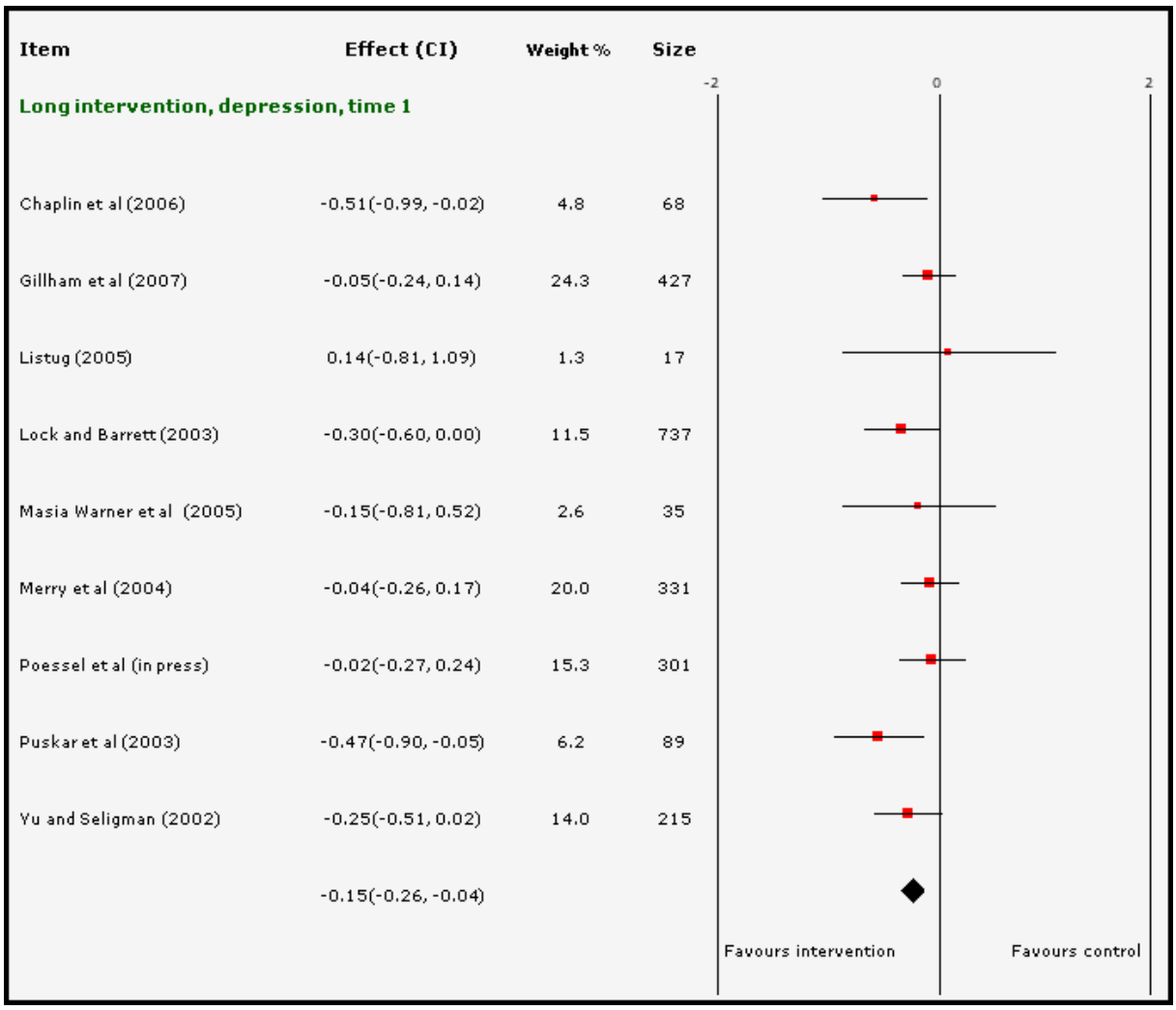
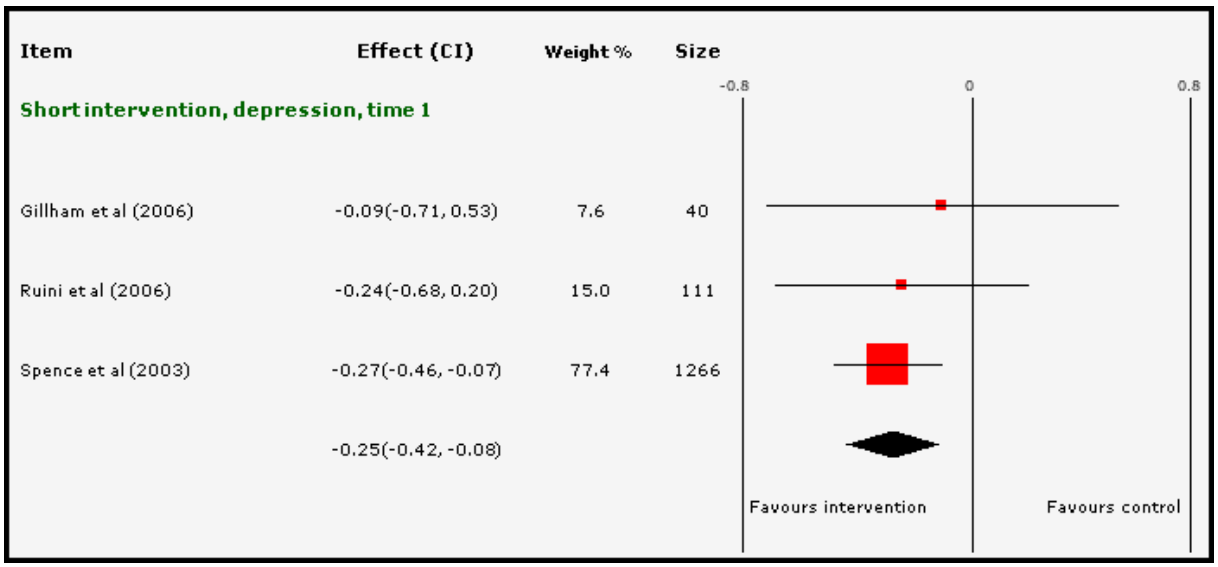


Figure 3.10: Depression, time 1, short interventions



Timing of intervention

Interventions delivered within the school day were shown to be effective for up to four weeks after the intervention had ended. Those delivered outside the school day were not effective.

Twelve studies evaluated interventions delivered within the school day. Eleven of these studies provided outcome data at Time 1; when these results were pooled, the intervention was shown to be ineffective, SMD=-0.15 (CI=-0.52, 0.02) with a significantly high level of heterogeneity (Q(10)=52.9, *p*=7.78E-08, I^2=81%). Heterogeneity was not explained by removing the two lower quality studies (Lamb et al., 1998; Lock and Barrett, 2003), but was explained by removing one small outlier from the meta-analysis (Masia-Warner et al., 2007). Removing this study resulted in a positive effect for interventions delivered within the school day, SMD=-0.15 (CI=-0.28, -0.02) with no heterogeneity – equivalent to a reduction of 1.35 points on the BDI (Figure 3.11). As with previous explorations of heterogeneity, this finding should be interpreted with caution. This effect was not evident at either three-month or six-month follow-up.

Only three studies measured interventions provided outside school hours (Chaplin et al., 2006; Gillham et al. 2007; Yu and Seligman, 2002). When the results of these studies were combined, these interventions were shown to be ineffective, SMD=-0.19 (CI=-0.42, 0.03) with no heterogeneity (Figure 3.12).

Figure 3.11: Depression, time 1, delivery in school hours

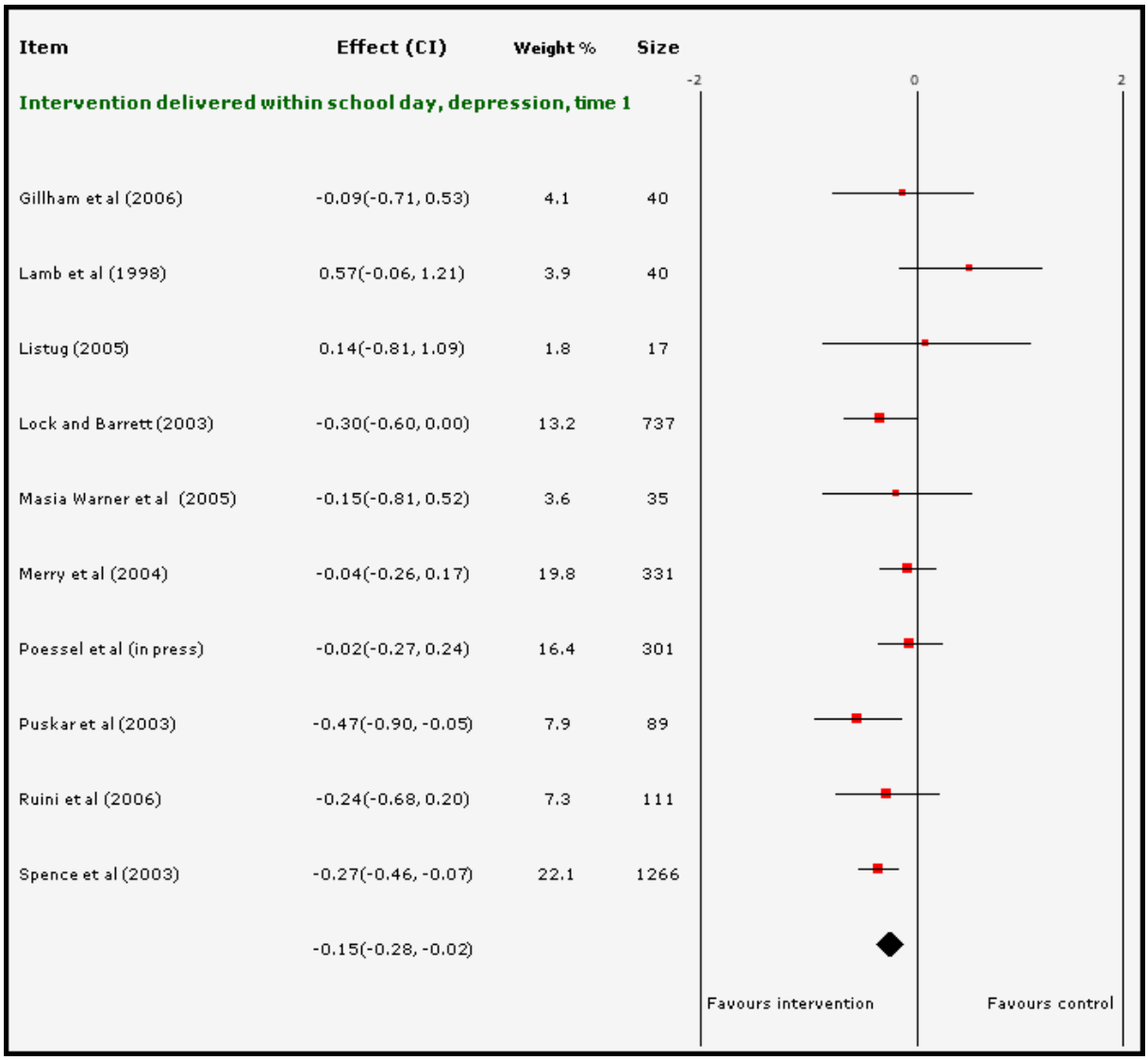
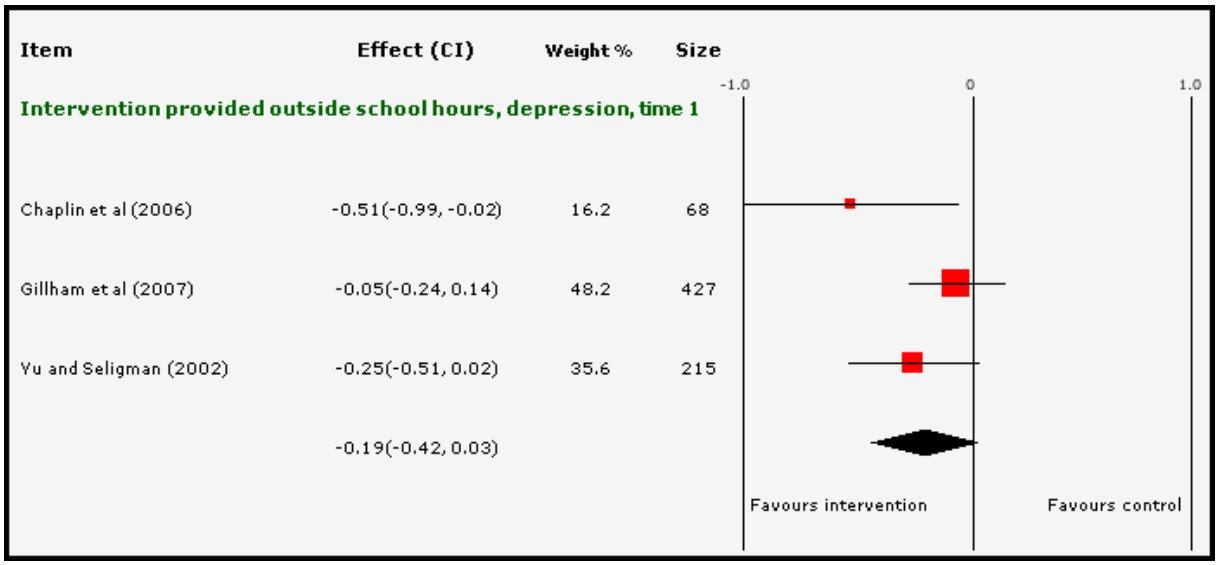


Figure 3.12: Depression, time 1, delivered outside school hours



3.5 Impact of CBT on anxiety outcomes

Secondary school-based CBT type interventions were found to be effective for reducing anxiety immediately post-intervention, and at six months follow-up. Interestingly, the results for three-month follow-up, while beneficial, were not shown to be significant.

When the results of seven RCTs reporting the impact of CBT-based interventions on anxiety measures at Time 1 were combined, the intervention was not seen to be effective, SMD=-0.47 (CI=-1.47, 0.00). However, there was a significant and high level of heterogeneity with this finding (Q(5)=44.5, I^2=88.8%). Removing the lower quality study (Lock and Barrett, 2003) did not explain this level of heterogeneity, which was only explained by the removal of one small outlying study (Masia-Warner et al., 2007). When this study was removed, the intervention was shown to be effective, SMD=-0.23 (CI=-0.45, -0.02), with no heterogeneity (Q(4)=3.08, *p*=0.55, I^2=0%) (Figure 3.13). This effect is equivalent to a reduction of 1.54 points on the Revised Children's Manifest Anxiety Scale (RCMAS). As with previous explorations of heterogeneity, this finding should be interpreted with caution. This effect was not seen at three-month follow-up when data from two studies was combined, SMD=-0.13 (CI=-0.32, 0.05) with no heterogeneity (Figure 3.14). However, when data from three studies which presented six month follow-up was combined, a beneficial effect was seen: SMD=-0.18 (CI=-0.35, -0.01), with no heterogeneity (Figure 3.15). This effect is equivalent to a reduction of 2.93 points on the Spence Children's Anxiety Scale (SCAS). The SCAS was chosen as the outcome scale with which to convert SMDs to as this was used by Sheffield and colleagues (2006), which is the largest study included in the meta-analysis. There was no evidence of the intervention causing harm at any time point.

Figure 3.13: Anxiety, all populations, time 1

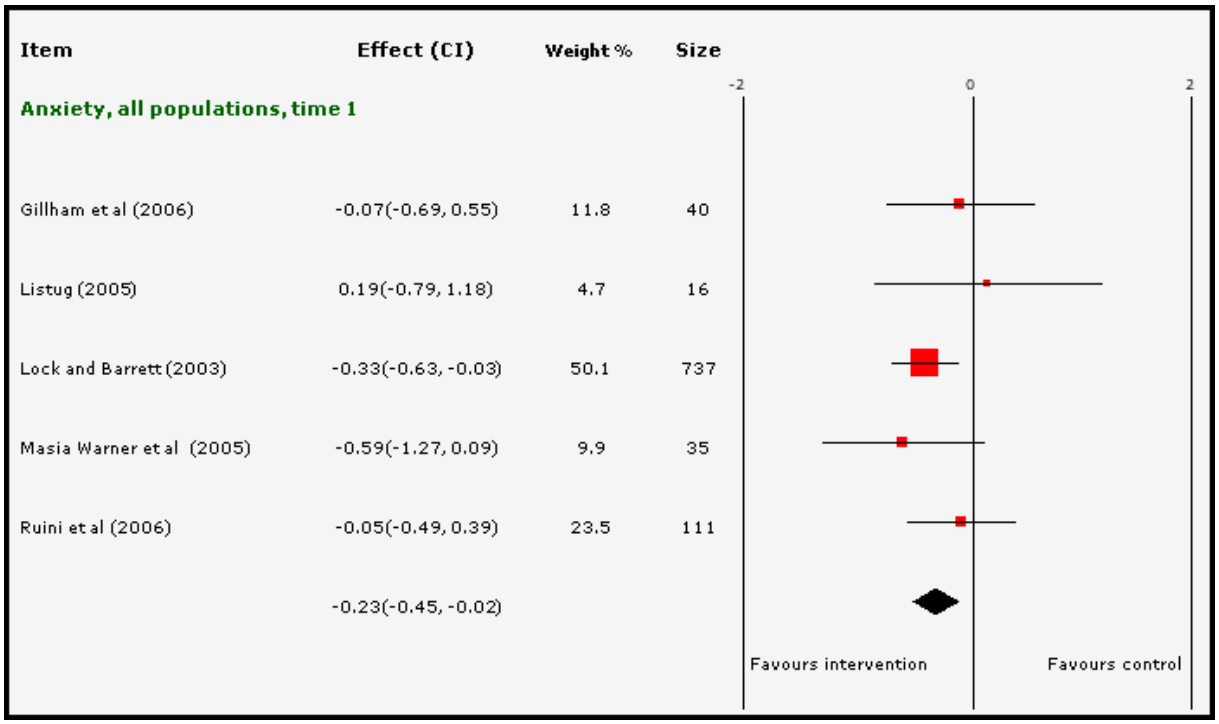


Figure 3.14: Anxiety, all populations, time 2

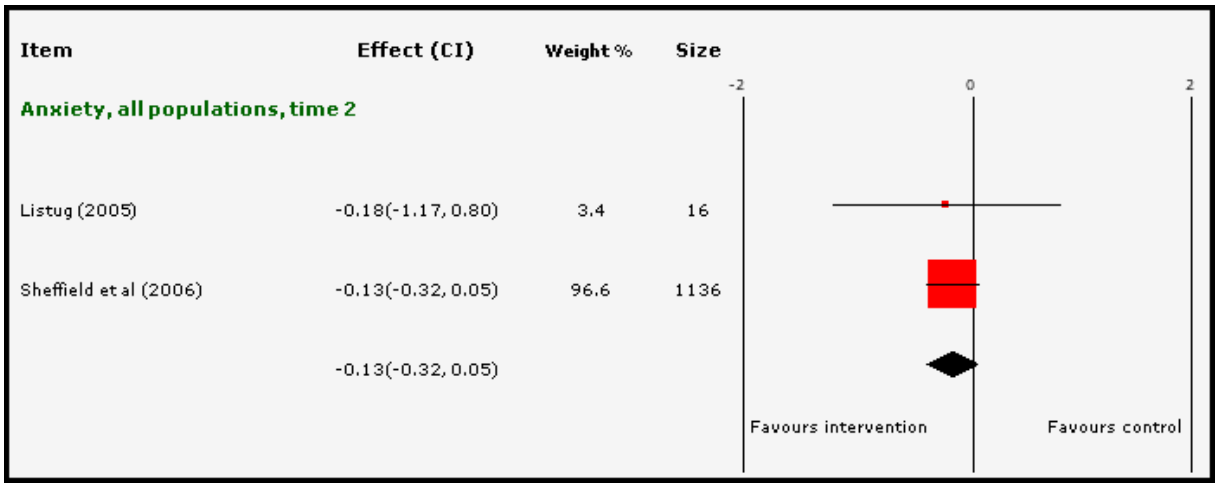
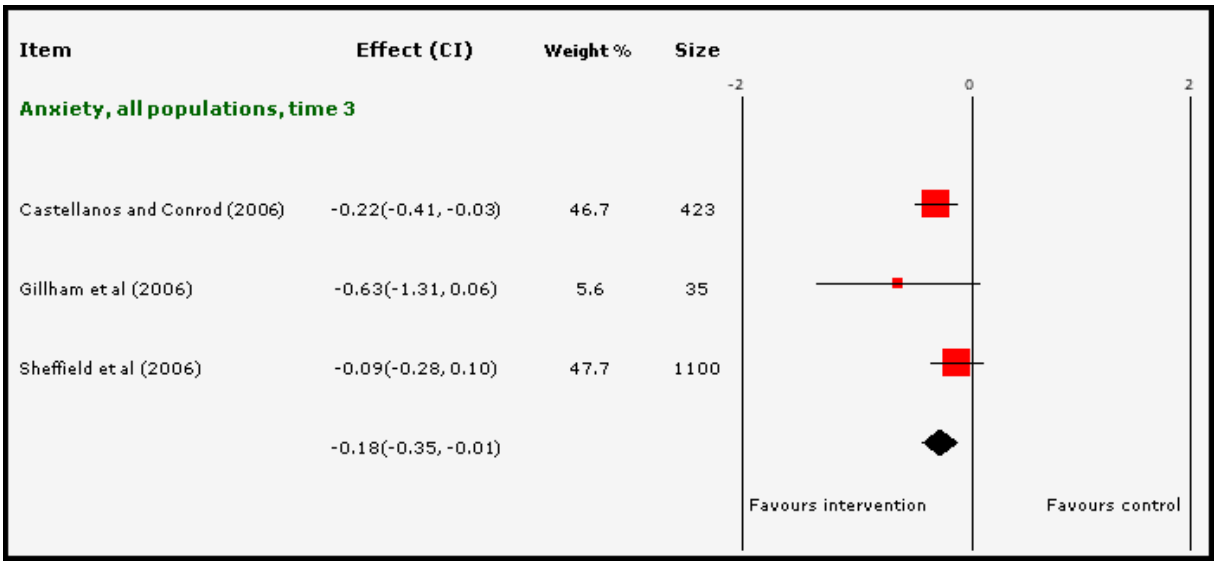


Figure 3.15: Anxiety, all populations, time 3



3.5.1 Characteristics of interventions

As with the analyses of the impact of CBT-type interventions on depression scores, we explored a range of intervention characteristics which might have increased or decreased effectiveness. We explored the impact of both universal and indicated intervention provision, whether the intervention was provided by existing members of school staff or by an external provider visiting the school; the intensity of the intervention; and whether the intervention was provided within or outside of regular school hours.

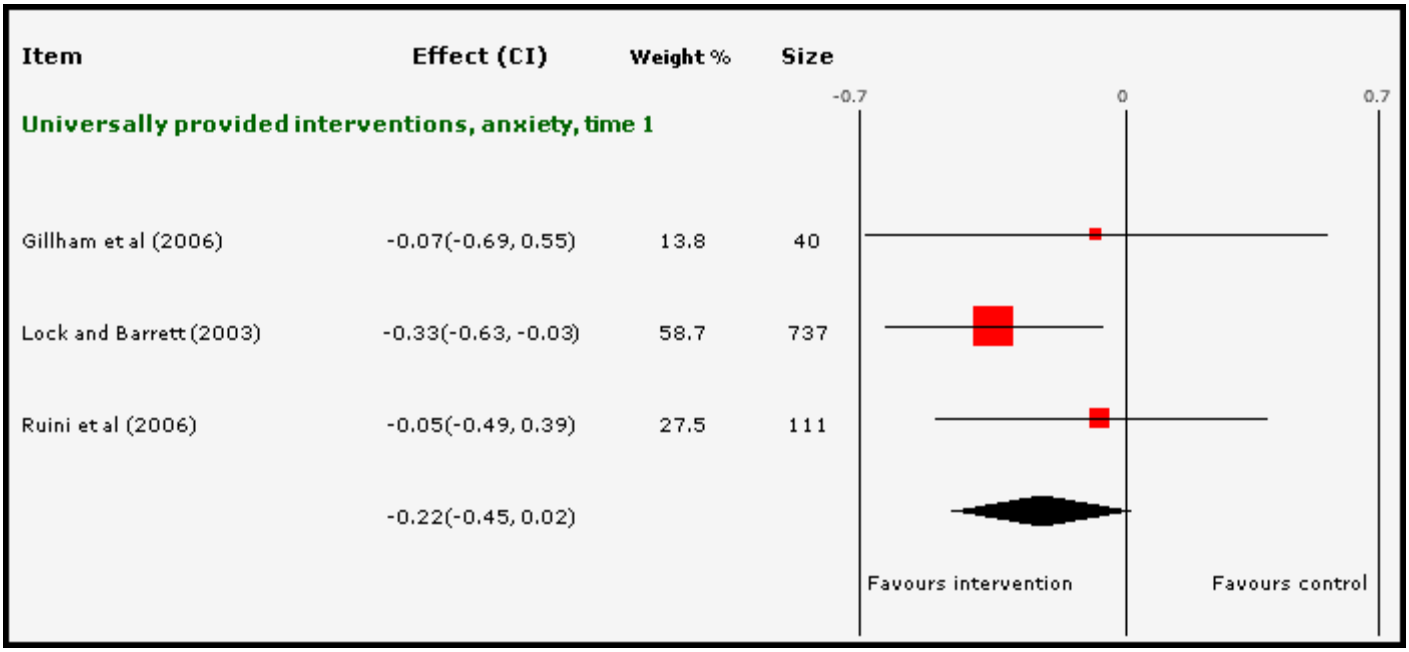
Universally provided interventions

Universally provided secondary school-based, CBT-type interventions do not appear to be effective in reducing symptoms of anxiety in young people.

Four universally provided interventions reported anxiety outcome measures (Gillham et al., 2006; Lock and Barrett, 2003; Ruini et al., 2006; Sheffield et al., 2006). Of these, only three provided data at Time 1; when the results of these studies were combined, the intervention was shown to be ineffective, with SMD=-0.22 CI=-0.45, 0.02) with no heterogeneity (see Figure 3.16). Insufficient data was available for meta-analysis at Time 2. Two studies reported data at Time 3 (Gillham et al., 2006; Sheffield et al., 2006), and the intervention remained ineffective, SMD=-0.25 (CI=-0.73, 0.23), with no heterogeneity.

There was insufficient data to analyse whether the interventions were more or less effective for high or low risk participants.

Figure 3.16: Universally provided interventions, anxiety, time 1



Indicated Interventions

Indicated secondary school based CBT-type interventions do not appear to be effective in reducing symptoms of anxiety in young people.

Four studies evaluated indicated interventions and also reported anxiety data (Castallanos and Conrod, 2006; Listug-Lunde, 2005; Masia Warner et al., 2005; Masia Warner et al., 2007). Of these, three provided Time 1 data which, when pooled, showed the intervention to be ineffective, SMD=-1.89 (CI=-4.47, 0.68); however, there was a significant and high level of heterogeneity with this finding (Q(2)=37.9, *p*=5. 5.94E-09, I^2 = 94.7%). Heterogeneity was explained by removing a small outlier (Masia Warner et al. ,2007). When this study was removed, the intervention remained ineffective, SMD=0.28 (CI=-1.03, 0.47) with no heterogeneity (Q(1)=1.64, *p*=0.201, I^2=39.1%). As with other explorations of heterogeneity, and given that only two studies were included in the meta-analysis, these results should be interpreted with caution. There was insufficient data available to conduct analyses beyond Time 1.

Intervention provider

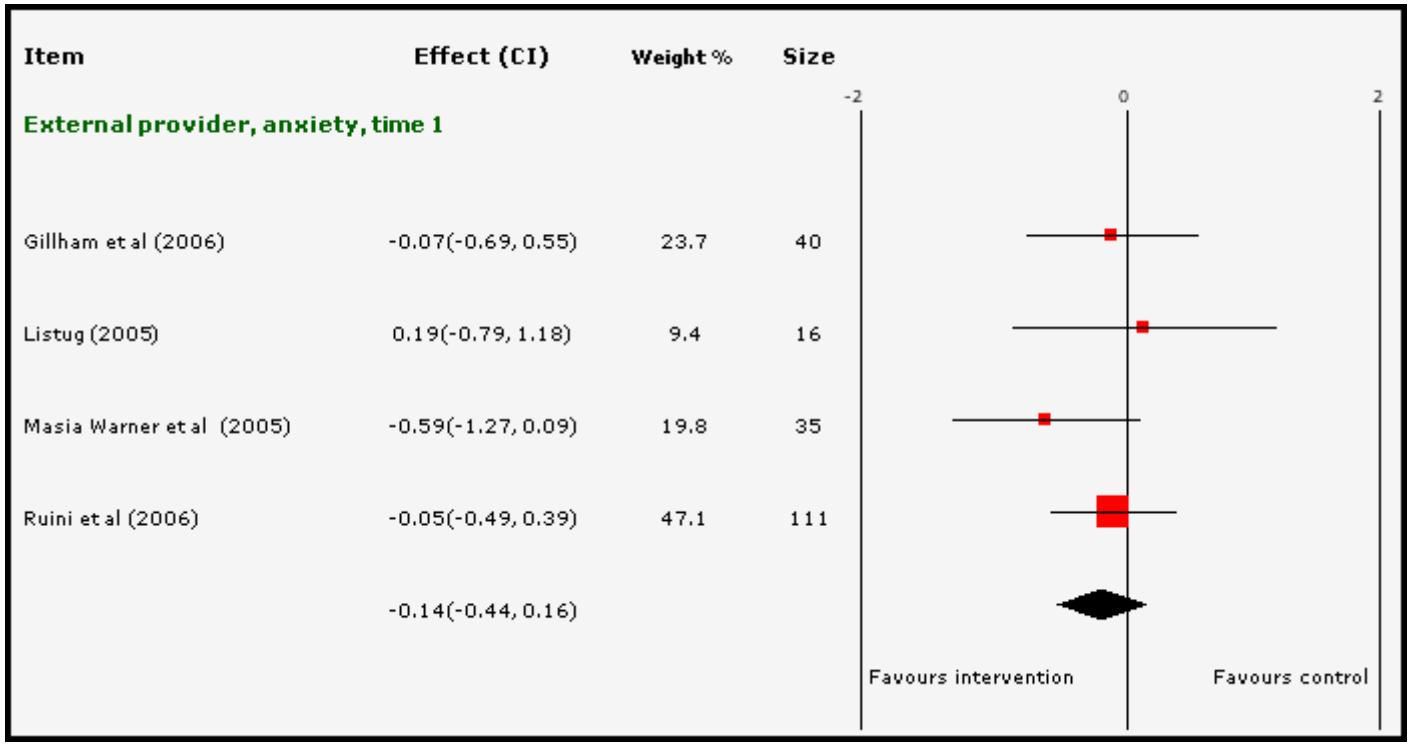
Interventions delivered by an external school provider were not shown to be effective at reducing anxiety scores in young people. There was insufficient data to evaluate the effectiveness of interventions provided by internal school staff for reducing anxiety.

Six studies evaluated interventions delivered by external providers, such as a psychologist or researcher (Castellanos and Conrod, 2006; Gillham et al., 2006; Listug-Lunde, 2005; Masia Warner et al., 2005; Masia Warner et al., 2007; Ruini et al., 2006). Of these, five provided data on anxiety at Time 1. When this data was pooled, the intervention was shown to be ineffective, SMD=-0.97 (CI=-2.06, 0.12). However, there was a significant and high level of heterogeneity with this finding (Q(4)=44.5, *p*=5.08E-09, I^2=91%). Heterogeneity was explained by

removing a small outlier (Masia Warner et al., 2007). When this study was removed, the intervention remained ineffective, SMD=-0.14 (CI=-0.44, 0.16) with no heterogeneity (Q(3)=2.32, *p*=0.51, I^2=0%). As with other explorations of heterogeneity, these results should be interpreted with caution (see Figure 3.17). Insufficient data was available to conduct a meta-analysis at Time 2, and when data from two studies reporting Time 3 data was pooled, the intervention remained ineffective, SMD=-0.28 (CI=-0.57, 0.00) with no heterogeneity.

Only two studies evaluated interventions delivered by internal school staff and also measured anxiety (Lock and Barrett, 2003; Sheffield et al., 2006). Data from these studies was not included in a meta-analysis as it measured anxiety at different time points.

Figure 3.17: External provider, anxiety, time 1



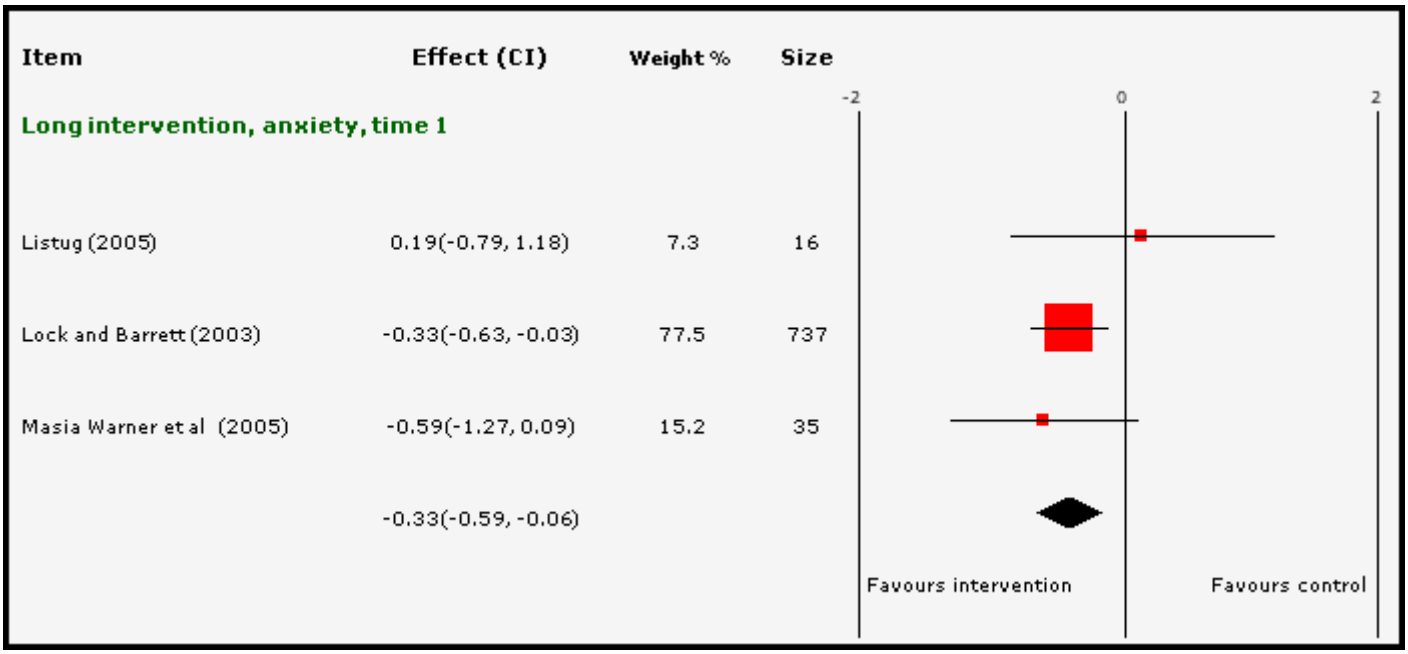
Intensity of intervention

Interventions of short duration (up to nine sessions) were not shown to be effective immediately post-intervention; however, they were effective at six months' follow-up. The reviewers consider the latter finding to be more reliable, given that it is based on three studies with over 1,500 participants, and the former is based on two small studies with fewer than 150 participants. Interventions of longer duration (ten sessions or more) were found to be effective immediately post-intervention.

Four studies reported data on interventions of longer duration (Listug-Lunde, 2005; Lock and Barrett, 2003; Masia Warner et al., 2005; Masia Warner et al., 2007). When Time 1 data from these studies was pooled, long interventions were found to be ineffective, SMD=-1.34 (CI=-2.70, 0.02). However, there was a high and significant level of heterogeneity associated with this result (Q(3)=41.2,

p=5.89E-09, I^2=92.7%). This was not explained by removing data from the one lower quality study (Lock and Barrett, 2003), but was explained by removing a small outlier (Masia Warner et al., 2007). When this study was removed, the intervention was shown to be effective, SMD=-0.33 (CI=-0.59, -0.06) with no heterogeneity (Q(2)=1.64, *p*=0.44, I^2=0%) – equivalent to a reduction on 2.2 points on the RCMAS (Figure 3.18.) As with other explorations of heterogeneity, these results should be interpreted with caution). Insufficient data was available for meta-analyses to be conducted at further time points.

Figure 3.18: Long intervention, anxiety, time 1



Four studies reported data on interventions of shorter duration (up to nine sessions) for reducing anxiety scores (Castellanos and Conrod, 2006; Gillham et al., 2006; Ruini et al., 2006; Sheffield et al., 2006). Time 1 data was reported by two small studies and when this data was pooled, the intervention was shown to be ineffective, SMD=-0.06 (CI=-0.41, 0.30) with no heterogeneity present (see Figure 3.19). Insufficient data was available for meta-analysis at Time 2. However, when data from three large studies was pooled at Time 3 (six months), the intervention was shown to be effective, SMD=-0.18 (CI=-0.35, -0.01) with no heterogeneity – equivalent to a reduction of 2.94 points on the SCAS (see Figure 3.20).

Figure 3.19: Short intervention, anxiety, time 1

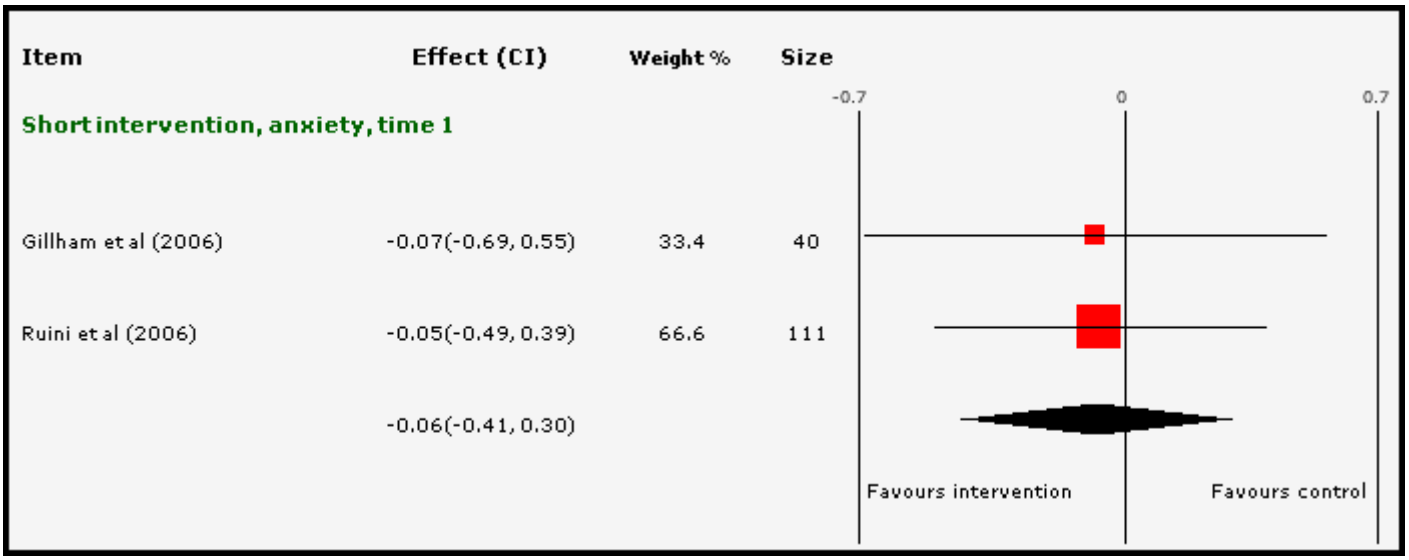
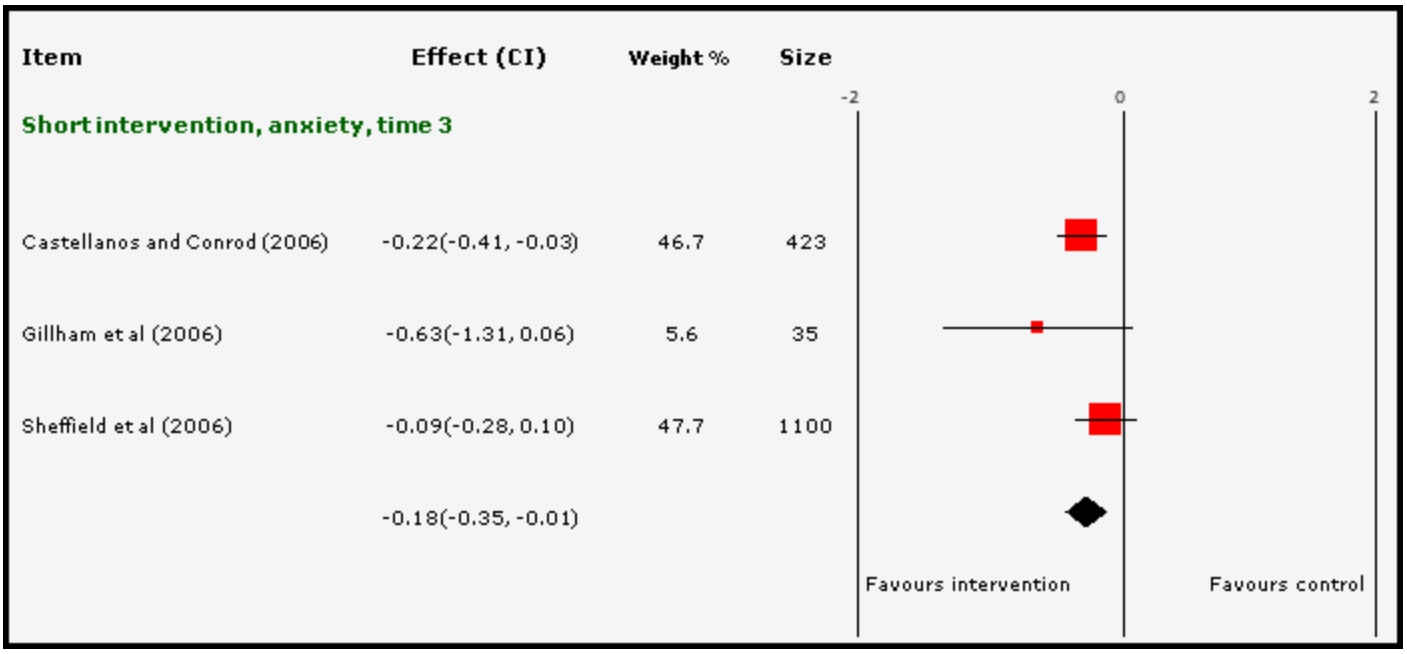


Figure 3.20: Short intervention, anxiety, time 3



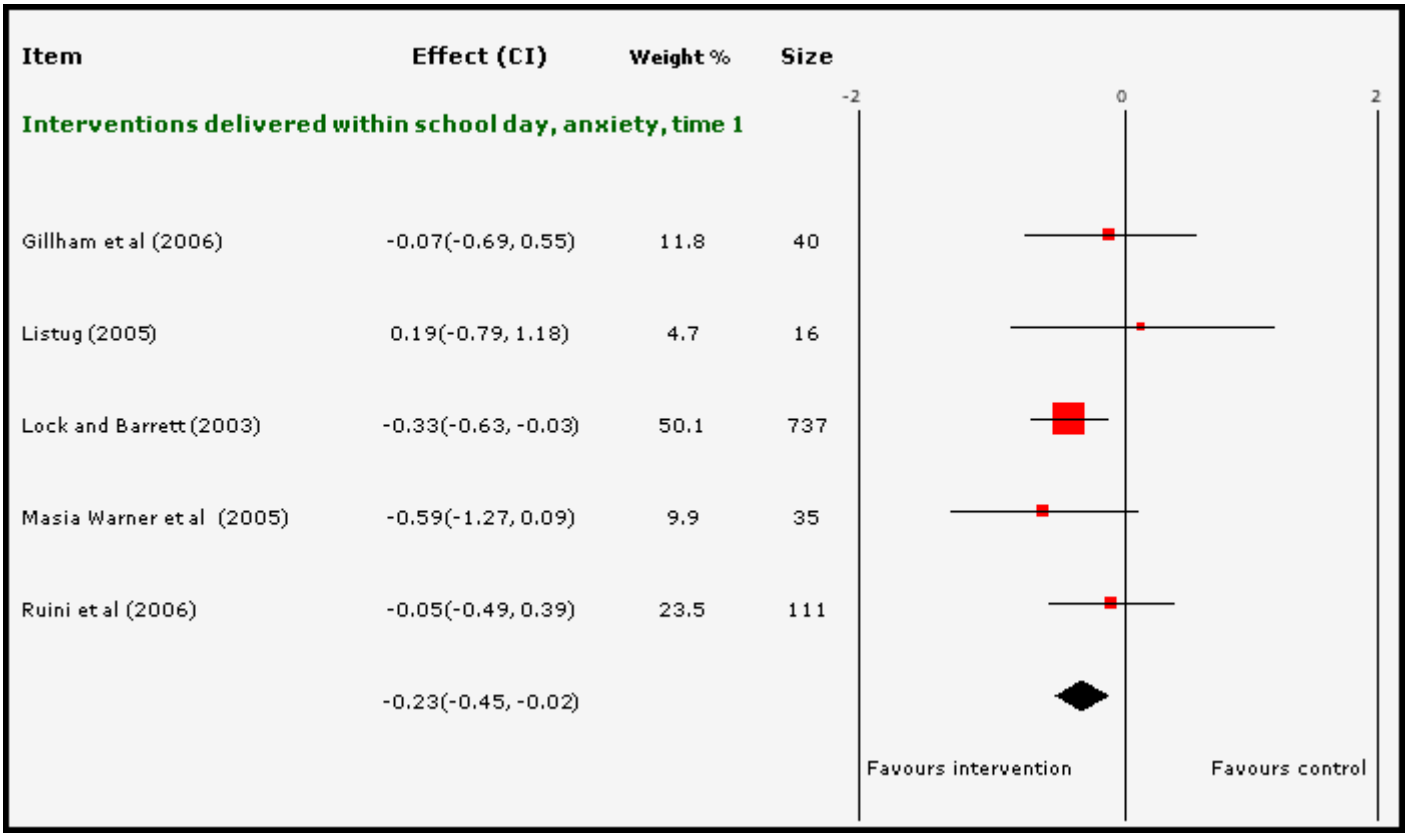
Timing of intervention

Interventions provided within school hours were effective for reducing anxiety scores immediately post-intervention. Insufficient data was available to analyse the impact of interventions provided outside the school day on anxiety scores.

Seven studies evaluated interventions provided within the school day and also reported anxiety outcomes (Gillham et al., 2006; Listug-Lunde, 2005; Lock and Barrett, 2003; Masia Warner et al., 2005; Masia Warner et al., 2007; Ruini et al., 2006; Sheffield et al., 2006). Of these, six provided data at Time 1, and when data

was pooled, the intervention was shown to be ineffective, SMD=-0.74 (CI=-1.47, 0.00); however, there was a significant and high level of heterogeneity associated with this finding (Q(5)=44.5, *p*=1.84E-08, I^2=88.8%). This was not explained by removing data from the one lower quality study (Lock and Barrett, 2003), but was explained by removing a small outlier (Masia Warner et al., 2007). When this study was removed, the intervention was shown to be effective, SMD=-0.23 (CI=-0.45, -0.02) with no heterogeneity (Q(4)=3.08, *p*=0.55, I^2=0%). This effect is equivalent to a reduction of 1.54 points on the RCMAS. As with other explorations of heterogeneity, these results should be interpreted with caution (see Figure 3.21). Insufficient data was available for meta-analyses to be conducted at further time points.

Figure 3.21: Interventions delivered within the school day, anxiety, time 1



3.6 Impact of CBT on suicidality

None of the studies included in this review presented data on the impact of interventions on suicidal thoughts or behaviours. However, none of the included studies explicitly stated that suicide prevention was an explicit aim of the intervention.

4. FINDINGS: INEQUALITIES IN MENTAL HEALTH

At the beginning of this review, we asked substantive questions about the effectiveness of secondary school-based CBT type interventions in promoting good mental health in young people. We also asked to what extent the interventions might reduce or increase inequalities in mental health status experienced by some groups of young people.

We anticipated a range of methodological challenges in applying an equity lens to a review of effectiveness. Nevertheless, we were able to compare the effects of interventions on groups with different socio-economic positions in a meta-analysis, even when this was not done in primary studies. This was achieved with established methods for conducting systematic reviews, meta-analyses, subgroup analyses and meta-regression which are commonly applied to investigate intervention effectiveness for different clinical risk factors. The most pressing challenge was that the included studies provided very little evidence with which to consider issues of health equity. We consider the seriousness of this challenge below, before reporting what can be learnt from this review about the effects of CBT on inequalities.

4.1 The evidence base

Given that this review aimed to demonstrate both the effectiveness of CBT interventions, and to apply an equity lens to the findings, we did not require that all included studies report data relevant to an analysis on health inequalities. We hoped that some of the included studies would:

- target a population group associated with unequal mental health outcomes (for example, low-income participants), or
- provide post-intervention subgroup data on one or more of these groups (for example, low, middle and high-income participants)

As a minimum, we hoped that studies would report adequate baseline demographic data in order to judge to whom the intervention was delivered, and its external validity.

4.1.2 What evidence was reported?

Very few studies provided any useful data that might be used to examine the impact of CBT-based interventions on inequalities in mental health. No studies presented findings relevant to evaluating the differential impact of interventions according to differences in the participants' age, religion, education or social capital. No subgroup analyses on the basis of sociodemographic group were reported in any of the included studies. Four studies reported that no difference in effectiveness was found between different socio-demographic groups, implying

that subgroup analyses had been conducted, but did not report data to support their findings. It is unclear to what extent restrictions on what can be reported in a journal article, due to space limitations or other editorial factors played a role in this finding.

We report below the type of data presented in the included studies according to the PROGRESS-Plus framework.

Place of residence

Two studies specifically targeted rural populations (Lamb et al., 1998; Puskar et al., 1997). No study conducted subgroup analyses according to any measure of place of residence that could be considered a proxy for SES.

Ethnicity

Of the included studies, 13 provided data on the ethnicity of the participants. One study from the USA targeted a Native American population (Listug-Lunde, 2005), and one stated that they had analysed outcomes according to ethnicity and found no difference, but did not present data to support this finding (Merry et al., 2004b). Of the remaining 12 studies which reported ethnicity data and were not targeted at a particular ethnic group, nine studies reported the proportion of the entire study population according to ethnic groups, and only three studies reported ethnicity according to control or intervention groups. Two studies confused country of birth with ethnicity, by reporting the numbers of people born in, or outside Australia (Lock and Barrett, 2003; Spence et al., 2003). No studies presented numeric subgroup analysis data according to ethnicity.

Gender

Only six studies considered whether interventions had a differential impact on depressive symptoms according to gender (Chaplin et al., 2006; Lock and Barrett, 2003; Merry et al., 2004a; Poessel et al., 2008; Spence et al., 2003; Yu and Seligman, 2002). However, none of the studies presented data suitable for a subgroup analysis. One study provided the numbers of males and females in each group, but did not then link this to outcome data (Yu and Seligman, 2002). Three studies reported that they found no difference in the impact of the interventions between males and females, but did not present data (Chaplin et al., 2006; Lock and Barrett, 2003; Merry et al., 2004a). One study reported that girls in the intervention group had significantly greater decreases in depression scores than boys; however, they did not compare this difference in the control group (Lamb et al., 1998).

SES

No studies reported subgroup analyses based on the SES of participants. One study reported that differences in SES did not predict change in depressive symptoms post intervention, but no data was presented (Spence et al., 2003).

Three studies recruited participants from low income areas (Lamb, 1998; Listug-Lunde, 2005; Stein et al., 2003). Three studies involved participants from middle income families (Lock and Barrett, 2003; Sheffield et al., 2006; Spence et al. 2003), and a further two studies evaluated interventions which had been delivered to participants from higher income families (Chaplin et al., 2006; Yu and Seligman, 2002). Analysis of the data on SES is discussed further in section 4.2

4.2 Analysing the evidence on CBT and inequalities

Data suggests that CBT interventions might be more effective for medium and high SES participants. However, this finding is not conclusive, being based on very few studies, and should only be considered as an hypothesis which requires further exploration.

Where sufficient demographic data was presented to assess whether the study evaluated an intervention directed at either a low, middle or high SES population, the results of those studies were pooled.

Only two studies reported Time 1 data with low SES participants (Lamb et al., 1998; Listug-Lunde 2005). When data from these studies was pooled, CBT-based interventions were shown to be ineffective SMD=0.44 (CI=-0.09, 0.97) with no heterogeneity present (see Figure 3.22). This finding should be interpreted with caution, given that it is based on only two small studies with a combined total of 57 participants.

A further two studies reported Time 1 data with medium SES participants (Lock and Barrett, 2003; Spence et al., 2003). When data from these studies was pooled, CBT-based interventions were shown to be effective SMD=-0.28 (CI=-0.44, -0.11) with no heterogeneity present (see Figure 3.23). The reviewers consider this finding to be more reliable than the previous finding, given that it is based on two large studies with just under 2,000 participants.

Two studies included high SES participants and reported Time 1 data (Chaplin et al., 2006; Yu and Seligman, 2002). When this data was pooled, the interventions were shown to be effective in reducing depression, SMD=- 0.31 (CI=-0.54,-0.07), with no heterogeneity present (see Figure 3.24).

CBT-based interventions proved to be effective for reducing depression scores with both medium SES and high SES participants. Figures 4.22-4.24 illustrate these findings, and appear to show a trend whereby the SES of participants appears to predict the size of effect, with higher SES participants appearing to gain a greater benefit from the intervention.

Results from these three analyses were entered into a meta-regression to examine whether the trend that had been identified was statistically significant, show that CBT-based interventions have a differential impact according to SES and that they might increase mental health inequalities. Meta-regression with the data showed that, as the groups increased in SES, the effect size went down by 0.25. This was not quite statistically significant, with a co-efficient of 0.25 (p=0.072), but it is close, so there is the possibility that this is either a real effect, or simply that the trend was the result of coincidence.

These findings should be treated with a high level of caution, as the three analyses which provided data for the meta-regression contain only two studies each. They are suitable only for generating hypotheses for future evaluation.

Figure 4.22: Low SES population, depression time 1

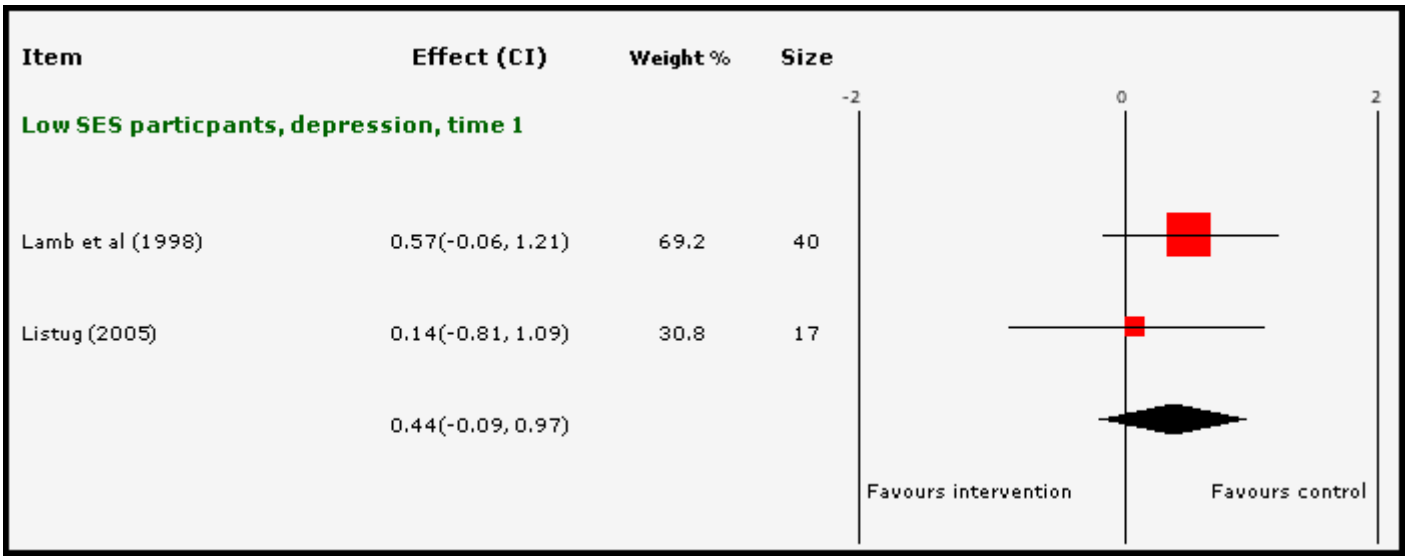


Figure 4.23: Medium SES population, depression time 1

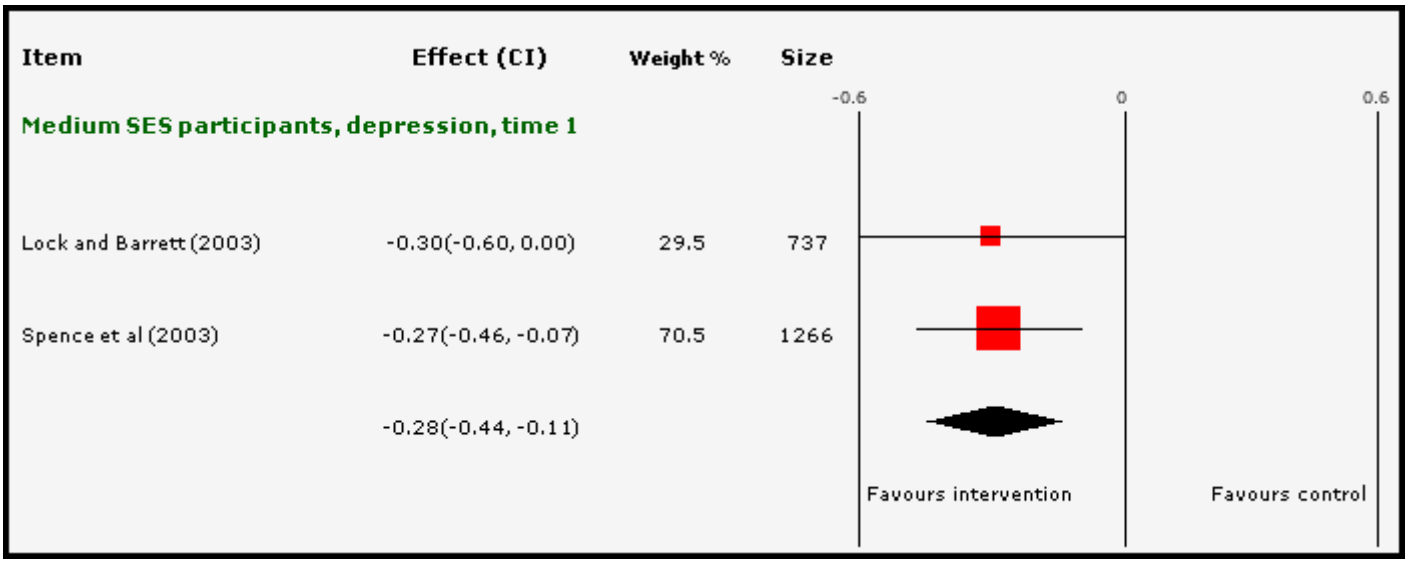
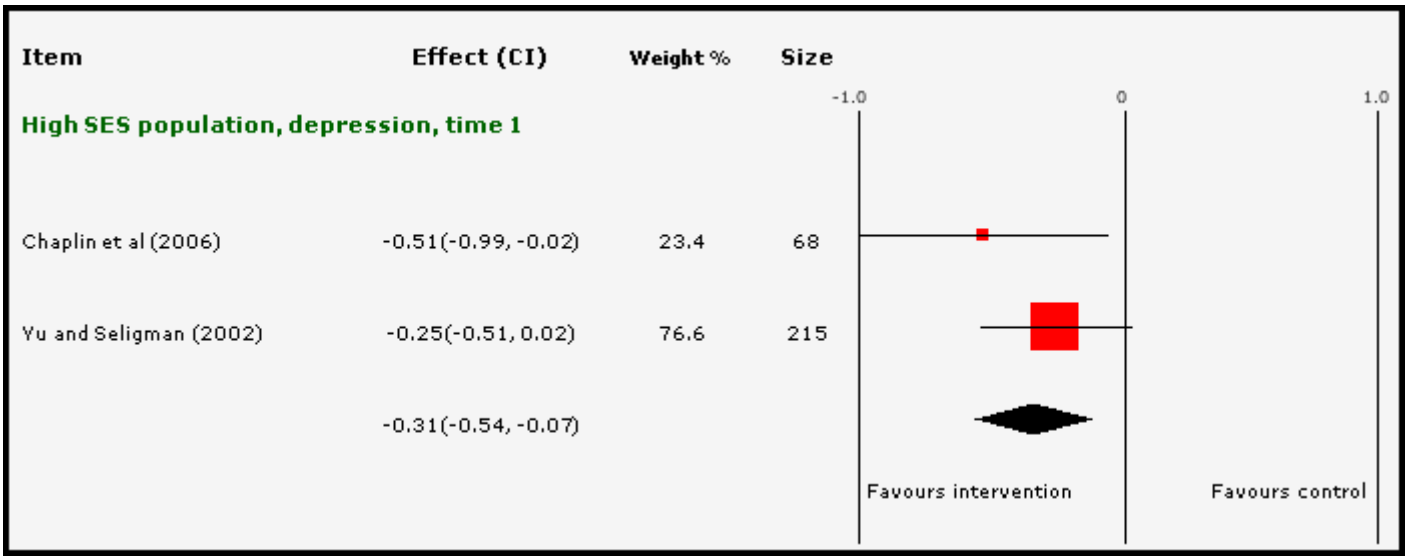


Table 4.24: Depression time 1, high SES population



5. DISCUSSION AND FINDINGS

5.1 Summary and discussion of findings

We found that CBT delivered to young people in secondary schools can reduce depression and anxiety. There was found no evidence to assess the impact of CBT on suicidal thinking or behaviours. CBT may be less effective for people who are more socio-economically disadvantaged. Conclusions about the impact of CBT on inequalities are tentative due to the lack of data and analyses reported in primary studies.

5.1.1 Impact of CBT on depression scores

- Secondary school-based CBT type programmes were effective for reducing depressive symptoms up to three months after the intervention had finished. The effect remained positive, although insignificant at six- and 12-month follow-up. No evidence of harm was detected in any of the analyses.
- Universally provided interventions were shown to improve depressive symptoms, up to four weeks after delivery.
- Indicated interventions were shown to improve depressive symptoms for young people with existing depressive symptoms, with the effect lasting up to six months after the intervention had been delivered.
- Interventions provided by an existing member of school-staff ('internal provider') were found to be effective, while those delivered by individuals external to the school structure were not.
- Interventions of longer duration (ten or more sessions) were effective up to three months post-intervention. Short interventions (up to nine sessions) proved to be ineffective for preventing depression in young people.
- Interventions delivered within the school day were shown to be effective for up to four weeks after the intervention had ended. Those delivered outside the school day were not effective.

These findings are consistent with other review level evidence which found that CBT-based interventions delivered to young people in a range of settings are effective for reducing the symptoms of poor mental health; and, that a range of school-based mental health promotion and prevention interventions are effective in preventing or reducing depression levels in young people. The review differs from previous reviews in that it focuses solely on secondary school-based interventions which use CBT techniques.

The differential efficacy of universal and indicated interventions suggests that interventions may need to take account of the differential capacity to benefit. While no studies of indicated interventions reported adverse outcomes, such as bullying, there is the potential risk that participants identified as receiving such interventions may suffer adversely due to the social stigma attached to suffering from an emotional or mental health problem, which might contribute to isolation or bullying from peers.

The finding that interventions of a longer duration were most effective is in keeping with the evidence of other systematic reviews. The effectiveness of interventions provided by existing members of school staff may relate to the creation or improvement of the school as a place of social support.

5.1.2 Impact of CBT on anxiety

- Secondary school-based CBT type interventions were found to be effective for reducing anxiety immediately post-intervention, and at six months follow-up. Interestingly, the results for three-month follow-up, while beneficial, were not shown to be significant.
- Universally provided secondary school based CBT type interventions do not appear to be effective in reducing symptoms of anxiety in young people.
- Indicated secondary school based CBT type interventions do not appear to be effective in reducing symptoms of anxiety in young people.
- Interventions delivered by an external school provider were not shown to be effective at reducing anxiety scores in young people. There was insufficient data to evaluate the effectiveness of interventions provided by internal school staff for reducing anxiety.
- Interventions of short duration (up to nine sessions) were not shown to be effective immediately post-intervention; however, they were effective at six months' follow-up. The reviewers considered the latter finding to be more reliable, given that it was based on three studies with over 1,500 participants, and the former is based on two small studies with fewer than 150 participants. Interventions of longer duration (ten sessions or more) were found to be effective immediately post-intervention.
- Interventions provided within school hours were effective for reducing anxiety scores immediately post-intervention. Insufficient data was available to analyse the impact of interventions provided outside the school day on anxiety scores.

Again, these findings appear to be in keeping with other review level evidence and they concur with the findings related to depression levels in that interventions of longer duration appear to be more effective. Interestingly, while indicated interventions were effective for preventing or reducing depression, they were ineffective for anxiety. It is not possible to say whether this was due to any increase in anxiety at being identified as having a problem which carries a social stigma.

5.1.3 Impact of CBT on suicidality

No studies presented data on the impact of these interventions on suicidal thoughts or behaviours. The absence of outcomes measuring suicide and attempted suicide in this data set may reflect the rarity of these events. Given the importance of suicidal ideation as a predictor of a suicide attempt, it might have been expected that some of the studies would have collected outcome data on this. However, none of the included studies explicitly stated that suicide prevention was an explicit aim of the intervention.

Given that two previous systematic reviews have found evidence that suicide prevention programmes may have both harmful and beneficial effects on young people (Harden et al., 2001; Ploeg et al., 1996) suicidality might justifiably be included as an outcome measure in future studies.

5.1.4 Impact of CBT on inequalities

- Data suggests that CBT type interventions might be more effective for medium and high SES participants. However, this finding is not conclusive, being based on very few studies, and should only be considered as an hypothesis which requires further exploration.

This analysis according to SES contained few studies, but illustrates how such an analysis can be conducted, and the importance of meta-regression in demonstrating whether identified trends represent significant differences. While our regression analysis did not demonstrate a significant degree of interaction between SES and intervention effect, it suggests that studies with lower-SES populations were less likely to demonstrate that interventions were effective. There are likely to be multiple reasons for this differential effect, including exposure to higher levels of stressful conditions and adversity that young people in lower SES families may face. Future research should examine differential effects of intervention programmes on lower- and higher-SES populations, and include process evaluations or qualitative components to identify possible reasons which might generate such differences. These results underline the central importance of monitoring the impact and implementation of interventions to ensure that they do not exacerbate existing inequalities.

5.1.5 Reporting

Few studies provided any useful data that might be used to examine the impact of CBT-based interventions on inequalities in mental health. No studies presented findings relevant to evaluating the differential impact of interventions according to differences in the participants' age, religion, education or social capital. While a number of studies include subgroup analyses according to clinical risk factors, no subgroup analyses on the basis of socio-demographic group were reported in any of the included studies.

Some studies reported conclusions on differential effectiveness between different socio-demographic groups, implying that subgroup analyses had been conducted, but did not report data to support their findings. This was a particular problem in relation to subgroup analyses based on gender difference. It is unclear to what extent restrictions on what can be reported in a journal article due to space limitations or other editorial factors played a role in this finding. The Revised Consolidated Standards of Reporting Trials (CONSORT) Statement provides guidance intended to improve the reporting of randomised controlled trials (RCTs) to increase understanding of a trial's design, conduct, analysis and interpretation, all of which are required to assess the validity of its results (Altman et al., 2001; Moher et al., 2001). The CONSORT statement also includes guidance on reporting methods for additional analyses, such as subgroup analyses.

More extensive reporting of outcome data by potential demographic determinants - such as gender, ethnicity and SES - would be of value in assessing the impact

of interventions on health inequalities. While the baseline demographics for studies' samples as a whole were reasonably well reported, this information is unlikely to be sufficient to identify significant differences in intervention effectiveness for relevant population subgroups. Our regression analysis of the interaction between SES and intervention effectiveness provides one example of how available information can be used by secondary researchers, but more consistent reporting of such inequalities-relevant information would enable more powerful analyses to be carried out.

5.2 Strengths and limitations of the study

A major strength of this study is that it is the only systematic review of which we are aware that evaluates secondary school-based cognitive behavioural interventions, while also evaluating, where possible, the impact of these interventions on mental health inequalities. The findings are based on the results of studies which have been identified through highly sensitive and comprehensive cross-disciplinary searches, which appear to have identified a number of studies not previously included in a systematic review.

A potential limitation of this study is that, while it does include international evidence, it does not include studies published in languages other than English. Given that this review is addressing questions of interest to policymakers and practitioners in the UK, it is disappointing that only one UK study was included in the review. We had hoped to be able to demonstrate the impact of these interventions on mental health inequalities much more comprehensively than was possible. This is not so much a limitation of the review methodology, but reflects the limits of the available evidence.

5.3 Recommendations and implications

We draw from this systematic review recommendations and implications for practice, future research and reporting of research.

5.3.1 Recommendations for practice

Providers wishing to implement preventive mental health programmes in secondary schools should consider the use of CBT-based interventions for reducing depression and anxiety levels. Given the uncertainties about the long-term benefits of universal interventions, efforts to prevent depression in young people might best be directed towards indicated interventions.

Providers of preventive mental health services to young people should:

- consider using adequately trained and supported school staff to provide CBT-based interventions to young people
- consider providing programmes of 10 or more weeks' duration
- be aware of, and consider, monitoring potential adverse effects

Providers of preventive mental health services to young people considering providing universal, rather than, indicated interventions, should evaluate the impact of the intervention on high and low risk groups. Providers implementing indicated interventions may wish to monitor any potential adverse effects due to stigma associated with mental health problems.

5.3.2 Recommendations for research

There is a need for well designed and conducted RCTs of CBT-based interventions with young people in UK secondary schools. Consideration should be given to developing and piloting a CBT-based intervention for the prevention of depression and anxiety, to be delivered in UK secondary schools. Intervention developers should:

- involve young people in the design of the intervention to increase its acceptability and appropriateness to young people
- consider using existing school staff to provide the intervention, with appropriate training and support
- include suicidal ideation and behaviours as outcome measures alongside depression and anxiety
- involve young people in the choice of outcome measures to ensure that these are meaningful to young people
- examine differential effects of the intervention on lower- and higher-SES populations, and include process evaluations or qualitative components to identify possible reasons which might generate such differences
- examine differential effects of the intervention on other PROGRESS-Plus populations, especially gender, and include process evaluations or qualitative components to identify possible reasons which may generate such differences

We recommend the PROGRESS-Plus framework as a useful core framework for describing and analysing data in systematic reviews. The PROGRESS-Plus terms may require further modification and definition to reflect the context and focus of particular research projects.

Future trials of health promotion interventions should consider including subgroup analyses of population groups at risk of inequalities on specified health measures. Choice of subgroup populations should be *a priori* and have an appropriate rationale. Underpowered subgroup analyses, which meet these criteria should be conducted only for the purposes of monitoring for potential adverse effects, or hypothesis generation.

5.3.3 Recommendations for reporting

- There needs to be better and fuller reporting of socio-demographic data of participants in reports of primary research.

- Research commissioners, journal editors and other relevant research stakeholders should encourage authors to report their data and methods of analysis for all reports of differential intervention effect according to different socio-demographic groups.

- Journal editors should subscribe to the Revised Consort Statement which is intended to improve the overall reporting of randomised controlled trials, and includes guidance on reporting methods for subgroup analyses.

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Appendix 1: Search strategy

PsycINFO

Dialog Datastar

1	STUDENTS#.W..DE.
2	COLLEGE-STUDENTS#.DE.
3	GRADUATE-STUDENTS#.DE.
4	COLLEGE-STUDENTS#.DE.
5	COMMUNITY-COLLEGE-STUDENTS#.DE.
6	EDUCATION-STUDENTS#.DE.
7	ELEMENTARY-SCHOOL-STUDENTS#.DE.
8	MIDDLE-SCHOOL-STUDENTS#.DE.
9	JUNIOR-HIGH-SCHOOL-STUDENTS#.DE.
10	HIGH-SCHOOL-STUDENTS#.DE.
11	PEDIATRICS#.W..DE.
12	SCHOOL-DROPOUTS#.DE.
13	(STUDENT OR STUDENTS).TI,AB.
14	(PUPIL OR PUPILS).TI,AB.
15	DROPOUT.TI,AB.
16	(PEDIATRIC OR PAEDIATRICS).TI,AB.
17	(CHILD OR CHILDREN).TI,AB.
18	(YOUTH OR YOUTHS).TI,AB.
19	(JUVENILE OR JUVENILES).TI,AB.
20	(TEEN OR TEENS OR TEENAGE OR TEENAGER OR TEENAGERS).TI,AB.
21	(ADOLESCENT OR ADOLESCENTS OR ADOLESCENCE).TI,AB.
22	(BOY OR BOYS OR SCHOOLBOY$).TI,AB.
23	(GIRL OR GIRLS OR SCHOOLGIRL$).TI,AB.
24	(KID OR KIDS).TI,AB.
25	(YOUNG ADJ (ADULT OR ADULTS OR PEOPLE OR PERSON)).TI,AB.
26	(YOUNG ADJ (MEN OR WOMEN OR MALE OR MALES OR FEMALE OR FEMALES)).TI,AB.
27	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26
28	SCHOOLS#.W..DE.
29	COLLEGES#.W..DE.
30	ACADEMIC-ENVIRONMENT#.DE.
31	SCHOOL-ENVIRONMENT#.DE.
32	COLLEGE-ENVIRONMENT#.DE.
33	(SCHOOL OR SCHOOLS).TI,AB.
34	(COLLEGE OR COLLEGES).TI,AB.

35 (ACADEMIC ADJ ENVIRONMENT).TI,AB.
36 ((YEAR OR YEARS) ADJ (SEVEN OR EIGHT OR NINE OR TEN OR ELEVEN OR TWELVE OR THIRTEEN)).TI,AB.
37 ((GRADE OR GRADES) ADJ (SIX OR SEVEN OR EIGHT OR NINE OR TEN OR ELEVEN OR TWELVE)).TI,AB.
38 (JUNIOR ADJ HIGH).TI,AB.
39 ((SECONDARY OR PRIMARY OR ELEMENTARY OR FURTHER) ADJ EDUCATION).TI,AB.
40 (ACADEMY OR ACADEMIES).TI,AB.
41 ((SECONDARY OR HIGH OR MIDDLE) ADJ (SCHOOL OR SCHOOLS)).TI,AB.
42 CAMPUS.TI,AB.
43 28 OR 29 OR 30 OR 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42
44 PROGRAM-EVALUATION#.DE.
45 HEALTH-PROMOTION#.DE.
46 HEALTH-EDUCATION#.DE.
47 PRIMARY-MENTAL-HEALTH-PREVENTION#.DE.
48 PREVENTION#.W..DE.
49 INTERVENTION#.W..DE.
50 SCHOOL-BASED-INTERVENTION#.DE.
51 SCREENING#.W..DE.
52 DIAGNOSIS#.W..DE.
53 HEALTH-BEHAVIOR#.DE.
54 LIFESTYLE#.W..DE.
55 BEHAVIOR-THERAPY#.DE.
56 PUBLIC-HEALTH.DE.
57 PREVENTIVE-MEDICINE#.DE.
58 MENTAL-HEALTH-SERVICES.DE.
59 SCHOOL-NURSES#.DE.
60 (PROGRAM ADJ EVALUATION).TI,AB.
61 (HEALTH ADJ PROMOTION).TI,AB.
62 (HEALTH ADJ EDUCATION).TI,AB.
63 (PRIMARY ADJ PREVENTION).TI,AB.
64 (PREVENTION OR PREVENTING OR PREVENTED OR PREVENTS OR PREVENT).TI,AB.
65 (INTERVENTION OR INTERVENTIONS).TI,AB.
66 (PREVENTIVE ADJ HEALTH ADJ SERVICES).TI,AB.
67 (SCREENING OR SCREEN OR SCREENED).TI,AB.
68 (DIAGNOSIS OR DIAGNOSE OR DIAGNOSED).TI,AB.
69 (PROGRAMMES OR PROGRAMME OR PROGRAM OR PROGRAMS).TI,AB.
70 (EDUCATED OR EDUCATION OR EDUCATING OR EDUCATE).TI,AB.
71 (PROJECT OR PROJECTS).TI,AB.
72 (CAMPAIGN OR CAMPAIGNS).TI,AB.

73 (MASS ADJ SCREENING).TI,AB.
74 (PUBLIC ADJ HEALTH).TI,AB.
75 (PREVENTIVE ADJ MEDICINE).TI,AB.
76 (BEHAVIOR ADJ THERAPY).TI,AB.
77 PSYCHOEDUCATION.TI,AB.
78 (PSYCHO ADJ (EDUCATION OR EDUCATIONAL OR EDUCATIONALLY)).TI,AB.
79 (HEALTHY ADJ PEOPLE).TI,AB.
80 (COMMUNITY ADJ HEALTH ADJ PLANNING).TI,AB.
81 (PROMOTION OR PROMOTING OR PROMOTED OR PROMOTES OR PROMOTE).TI,AB.
82 (SCHOOL ADJ NURSING).TI,AB.
83 (PENN ADJ RESILIENCY ADJ PROGRAM).TI,AB.
84 (SCHOOL ADJ HEALTH ADJ SERVICES).TI,AB.
85 (MENTAL ADJ HEALTH ADJ SERVICES).TI,AB.
86 44 OR 45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56 OR 57 OR 58 OR 59 OR 60 OR 61 OR 62 OR 63 OR 64 OR 65 OR 66 OR 67 OR 68 OR 69 OR 70 OR 71 OR 72 OR 73 OR 74 OR 75 OR 76 OR 77 OR 78 OR 79 OR 80 OR 81 OR 82 OR 83 OR 84 OR 85
87 43 AND 86

88 CLINICAL-TRIALS#.DE.
89 PLACEBO#.W..DE.
90 PROGRAM-EVALUATION#.DE.
91 EMPIRICAL-METHODS#.DE.
92 COHORT-ANALYSIS#.DE.
93 EXPERIMENT-CONTROLS#.DE.
94 EXPERIMENTATION#.W..DE.
95 RANDOM-SAMPLING#.DE.
96 SAMPLE-SIZE#.DE.
97 BIASED-SAMPLING#.DE.
98 TREATMENT-OUTCOMES#.DE.
99 EXPERIMENTAL-DESIGN#.DE.
100 CLUSTER-ANALYSIS#.DE.
101 EXPERIMENTAL-SUBJECTS#.DE.
102 BETWEEN-GROUPS-DESIGN#.DE.
103 HYPOTHESIS-TESTING#.DE.
104 NULL-HYPOTHESIS-TESTING#.DE.
105 REPEATED-MEASURES#.DE.
106 SAMPLING-EXPERIMENTAL#.DE.
107 (RANDOMISED OR RANDOMIZED).TI,AB.
108 (CLINICAL ADJ (TRIAL OR TRIALS)).TI,AB.
109 (PLACEBO OR PLACEBOS).TI,AB.
110 ((RANDOM OR RANDOMLY) NEAR (ASSIGN OR ASSIGNED OR ASSIGNATION OR ALLOCATE OR ALLOCATED OR ALLOCATION)).TI,AB.

111 (CROSSOVER OR CROSS ADJ OVER OR CROSS-OVER).TI,AB.
112 ((SINGLE OR DOUBLE OR TREBLE OR TRIPLE) NEAR (BLIND OR BLINDED OR BLINDING OR MASKED OR MASKING)).TI,AB.
113 (PROGRAM ADJ EVALUATION).TI,AB.
114 (EMPIRICAL ADJ (METHOD OR METHODS)).TI,AB.
115 (EMPIRICAL ADJ RESEARCH).TI,AB.
116 (EXPERIMENTAL ADJ DESIGN).TI,AB.
117 (EXPERIMENTAL ADJ (SUBJECT OR SUBJECTS)).TI,AB.
118 (EXPERIMENTAL ADJ CONTROL).TI,AB.
119 (COHORT ADJ (ANALYSIS OR ANALYSES)).TI,AB.
120 (COHORT ADJ STUDY OR STUDIES).TI,AB.
121 (HYPOTHESIS ADJ TESTING).TI,AB.
122 (LONGITUDINAL ADJ STUDIES).TI,AB.
123 (PROSPECTIVE ADJ STUDY OR STUDIES).TI,AB.
124 (REPEATED ADJ MEASURES).TI,AB.
125 (RANDOM ADJ SAMPLE OR SAMPLING).TI,AB.
126 (BIASED ADJ SAMPLE OR SAMPLING).TI,AB.
127 (EXPERIMENTAL ADJ SAMPLE OR SAMPLING).TI,AB.
128 (TREATMENT ADJ OUTCOMES).TI,AB.
129 (CONTROLLED ADJ TRIAL OR TRIALS).TI,AB.
130 (CONTROLLED ADJ STUDY OR STUDIES).TI,AB.
131 (MULTICENTRE OR MULTICENTER).TI,AB.
132 (COMPARATIVE ADJ STUD$ OR OUTCOME$).TI,AB.
133 (COMPARATIVE ADJ STUDY OR STUDIES OR OUTCOME OR OUTCOMES).TI,AB.
134 CLUSTER.TI,AB.
135 (TRIAL OR TRIALS).TI,AB.
136 BEFORE.TI,AB. AND AFTER.TI,AB.
137 (PRE-TEST OR POST-TEST OR PRE ADJ TEST OR POST ADJ TEST OR PRETEST).TI,AB.
138 (HUMAN ADJ EXPERIMENTATION).TI,AB.
139 (EVALUATION ADJ STUDIES OR EVALUATION ADJ STUDY).TI,AB.
140 88 OR 89 OR 90 OR 91 OR 92 OR 93 OR 94 OR 95 OR 96 OR 97 OR 98 OR 99 OR 100 OR 101 OR 102 OR 103 OR 104 OR 105 OR 106 OR 107 OR 108 OR 109 OR 110 OR 111 OR 112 OR 113 OR 114 OR 115 OR 116 OR 117 OR 118 OR 119 OR 120 OR 121 OR 122 OR 123 OR 124 OR 125 OR 126 OR 127 OR 128 OR 129 OR 130 OR 131 OR 132 OR 133 OR 134 OR 135 OR 136 OR 137 OR 138 OR 139
141 27 AND 87 AND 140
142 141

MEDLINE

The same search terms were used to search the Cochrane Library via Wiley InterScience.

Dialog Datastar

1 ADOLESCENT#.W..DE.
2 STUDENTS.W..DE.
3 STUDENT-DROPOUTS.DE.
4 (CHILD OR CHILDREN).TI,AB.
5 (YOUTH OR YOUTHS).TI,AB.
6 (JUVENILE OR JUVENILES).TI,AB.
7 (TEEN OR TEENS OR TEENAGE OR TEENAGER OR TEENAGERS).TI,AB.
8 (ADOLESCENT OR ADOLESCENTS OR ADOLESCENCE).TI,AB.
9 (BOY OR BOYS OR SCHOOLBOY$).TI,AB.
10 (GIRL OR GIRLS OR SCHOOLGIRL$).TI,AB.
11 (KID OR KIDS).TI,AB.
12 (YOUNG ADJ (PEOPLE OR ADULT$ OR MEN OR WOMEN OR MALE$ OR FEMALE$)).TI,AB.
13 (STUDENT OR STUDENTS).TI,AB.
14 (PUPIL OR PUPILS).TI,AB.
15 DROPOUT.TI,AB.
16 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15
17 SCHOOLS#.W..DE.
18 COLLEGES.W..DE.
19 ACADEMIC-ENVIRONMENT#.DE.
20 SCHOOL-ENVIRONMENT#.DE.
21 COLLEGE-ENVIRONMENT.DE.
22 (SCHOOL OR SCHOOLS).TI,AB.
23 (ACADEMIC ADJ ENVIRONMENT).TI,AB.
24 ((YEAR OR YEARS) ADJ (SEVEN OR EIGHT OR NINE OR TEN OR ELEVEN OR TWELVE OR THIRTEEN)).TI,AB.
25 ((GRADE OR GRADES) ADJ (SIX OR SEVEN OR EIGHT OR NINE OR TEN OR ELEVEN OR TWELVE)).TI,AB.
26 (JUNIOR ADJ HIGH).TI,AB.
27 ((SECONDARY OR PRIMARY OR ELEMENTARY OR FURTHER) ADJ EDUCATION).TI,AB.
28 (ACADEMY OR ACADEMIES).TI,AB.
29 ((SECONDARY OR HIGH OR MIDDLE) ADJ (SCHOOL OR SCHOOLS)).TI,AB.
30 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29
31 HEALTH-PROMOTION#.DE.
32 HEALTH-EDUCATION#.DE.

33	PRIMARY-MENTAL-HEALTH-PREVENTION#.DE.
34	PREVENTION#.W..DE.
35	INTERVENTION#.W..DE.
36	SCREENING#.W..DE.
37	PUBLIC-HEALTH.DE.
38	PREVENTIVE-MEDICINE#.DE.
39	MENTAL-HEALTH-SERVICES.DE.
40	SCHOOL-NURSES#.DE.
41	(HEALTH ADJ PROMOTION).TI,AB.
42	(HEALTH ADJ EDUCATION).TI,AB.
43	(PRIMARY ADJ PREVENTION).TI,AB.
44	(PREVENTIVE ADJ HEALTH ADJ SERVICES).TI,AB.
45	(SCREENING OR SCREEN OR SCREENED).TI,AB.
46	(MASS ADJ SCREENING).TI,AB.
47	(PUBLIC ADJ HEALTH).TI,AB.
48	(PREVENTIVE ADJ MEDICINE).TI,AB.
49	(BEHAVIOR ADJ THERAPY).TI,AB.
50	PSYCHOEDUCATION.TI,AB.
51	(PSYCHO ADJ (EDUCATION OR EDUCATIONAL OR EDUCATIONALLY)).TI,AB.
52	(HEALTHY ADJ PEOPLE).TI,AB.
53	(COMMUNITY ADJ HEALTH ADJ PLANNING).TI,AB.
54	(SCHOOL ADJ NURSING).TI,AB.
55	(PENN ADJ RESILIENCY ADJ PROGRAM).TI,AB.
56	(SCHOOL ADJ HEALTH ADJ SERVICES).TI,AB.
57	(MENTAL ADJ HEALTH ADJ SERVICES).TI,AB.
58	DIAGNOSIS.W..DE.
59	POSTVENTION.TI,AB.
60	31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44 OR 45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56 OR 57 OR 58 OR 59
61	30 AND 60
62	SCHOOL-BASED-INTERVENTION#.DE.
63	(SCHOOL NEXT (PREVENTION OR PREVENTING OR PREVENTED OR PREVENTS OR PREVENT)).TI,AB.
64	(SCHOOL NEXT (INTERVENTION OR INTERVENTIONS)).TI,AB.
65	(SCHOOL NEXT (PROGRAMMES OR PROGRAMME OR PROGRAM OR PROGRAMS)).TI,AB.
66	(SCHOOL NEXT (CAMPAIGN OR CAMPAIGNS)).TI,AB.
67	PSYCHOEDUCATIONAL-INTERVENTION.KW.
68	61 OR 62 OR 63 OR 64 OR 65 OR 66 OR 67
69	PSYCHIATRY#.W..DE.
70	MENTAL-HEALTH#.DE.
71	MENTAL-HEALTH-SERVICES#.DE.
72	MENTAL-DISORDERS#.DE.
73	DEPRESSION#.W..DE.

74 COMMITMENT-OF-MENTALLY-ILL#.DE.
75 SUICIDE#.W..DE.
76 COMORBIDITY#.W..DE.
77 ANXIETY#.W..DE.
78 BULIMIA-NERVOSA#.DE.
79 DEPRESSIVE-DISORDER#.DE.
80 BIPOLAR-DISORDER#.DE.
81 AFFECTIVE-DISORDERS-PSYCHOTIC#.DE.
82 SCHIZOPHRENIA#.W..DE.
83 SCHIZOPHRENIA-AND-DISORDERS-WITH-PSYCHOTIC-FEATURES#.DE.
84 ANOREXIA-NERVOSA#.DE.
85 EATING-DISORDERS#.DE.
86 PSYCHOTIC-DISORDERS.DE.
87 OBSESSIVE-COMPULSIVE-DISORDER.DE.
88 ADOLESCENT-PSYCHOLOGY#.DE.
89 DEPRESSIVE-DISORDER-MAJOR.DE.
90 SUICIDE-ATTEMPTED#.DE.
91 SELF-INJURIOUS-BEHAVIOR#.DE.
92 STRESS-PSYCHOLOGICAL#.DE.
93 MOOD-DISORDERS#.DE.
94 IMPULSIVE-BEHAVIOR#.DE.
95 COMPULSIVE-BEHAVIOR#.DE.
96 NEUROTIC-DISORDERS#.DE.
97 PSYCHIAT$.TI,AB.
98 (PSYCHIATRY OR PSYCHIATRIC).TI,AB.
99 (MENTAL ADJ HEALTH$).TI,AB.
100 (MENTAL ADJ DISORDER$).TI,AB.
101 DEPRESS$.TI,AB.
102 SUICID$.TI,AB.
103 PARASUICID$.TI,AB.
104 (SELF ADJ HARM$).TI,AB.
105 (SELF ADJ HARM).TI,AB.
106 (SELF ADJ HARMING).TI,AB.
107 (SELF ADJ INJUR$).TI,AB.
108 COMORBID$.TI,AB.
109 (ANXIETY OR ANXIOUS).TI,AB.
110 (BULIMI$ OR ANOREXI$ OR EATING ADJ DISORDER$).TI,AB.
111 BIPOLAR.TI,AB.
112 SCHIZOPHRENI$.TI,AB.
113 (PSYCHOTIC OR PSYCHOSIS OR PSYCHOSES).TI,AB.
114 (NEUROTIC OR NEUROSIS OR NEUROSES).TI,AB.
115 (OBSESSIVE ADJ COMPULSIVE).TI,AB.
116 OCD.TI,AB.
117 DYSTHYMIC-DISORDER#.DE.

118 (SELF ADJ CONCEPT).TI,AB.
119 FEAR.TI,AB.
120 PHOBI$.TI,AB.
121 (DYSTHYMIC ADJ DISORDER$ OR DYSTHYMIA).TI,AB.
122 PANIC.TI,AB.
123 (ADOLESCENT ADJ BEHAVIOR).TI,AB.
124 (ADOLESCENT ADJ PSYCHOLOGY).TI,AB.
125 (PSYCHOLOGICAL ADJ WELL-BEING OR PSYCHOLOGICAL ADJ WELLBEING).TI,AB.
126 (PSYCHOLOGICAL ADJ (DISTRESS OR STRESS)).TI,AB.
127 (MOOD-DISORDERS OR MOOD ADJ DISORDERS).TI,AB.
128 IDENTIFICATION.TI,AB.
129 (INTERPERSONAL ADJ RELATIONS).TI,AB.
130 (RECOGNITION OR UNRECOGNISED).TI,AB.
131 69 OR 70 OR 71 OR 72 OR 73 OR 74 OR 75 OR 76 OR 77 OR 78 OR 79 OR 80 OR 81 OR 82 OR 83 OR 84 OR 85 OR 86 OR 87 OR 88 OR 89 OR 90 OR 91 OR 92 OR 93 OR 94 OR 95 OR 96 OR 97 OR 98 OR 99 OR 100 OR 101 OR 102 OR 103 OR 104 OR 105 OR 106 OR 107 OR 108 OR 109 OR 110 OR 111 OR 112 OR 113 OR 114 OR 115 OR 116 OR 117 OR 118 OR 119 OR 120 OR 121 OR 122 OR 123 OR 124 OR 125 OR 126 OR 127 OR 128 OR 129 OR 130
132 RANDOMIZED-CONTROLLED-TRIALS#.DE.
133 CLINICAL-TRIALS#.DE.
134 PLACEBOS#.W..DE.
135 OUTCOME-ASSESSMENT-HEALTH-CARE#.DE.
136 PROGRAM-EVALUATION#.DE.
137 EMPIRICAL-RESEARCH#.DE.
138 COHORT-STUDIES#.DE.
139 LONGITUDINAL-STUDIES#.DE.
140 DOUBLE-BLIND-METHOD.DE.
141 CONTROL-GROUPS.DE.
142 RANDOM-ALLOCATION.DE.
143 SAMPLE-SIZE.DE.
144 BIAS-EPIDEMIOLOGY#.DE.
145 TREATMENT-OUTCOME#.DE.
146 MULTICENTER-STUDIES#.DE.
147 (RANDOMISED OR RANDOMIZED).TI,AB.
148 (PLACEBO OR PLACEBOS).TI,AB.
149 ((RANDOM OR RANDOMLY) NEAR (ASSIGN OR ASSIGNED OR ASSIGNATION OR ALLOCATE OR ALLOCATED OR ALLOCATION)).TI,AB.
150 (CROSSOVER OR CROSS ADJ OVER OR CROSS-OVER).TI,AB.
151 ((SINGLE OR DOUBLE OR TREBLE OR TRIPLE) NEAR (BLIND OR BLINDED OR BLINDING OR MASKED OR MASKING)).TI,AB.
152 (PROGRAM ADJ EVALUATION).TI,AB.
153 (EMPIRICAL ADJ METHOD$).TI,AB.
154 (EMPIRICAL ADJ RESEARCH).TI,AB.

155 (EXPERIMENTAL ADJ DESIGN).TI,AB.
156 (EXPERIMENTAL ADJ SUBJECT$).TI,AB.
157 (EXPERIMENTAL ADJ CONTROL).TI,AB.
158 (COHORT ADJ ANALYS$).TI,AB.
159 (COHORT ADJ STUD$).TI,AB.
160 (HYPOTHESIS ADJ TESTING).TI,AB.
161 (LONGITUDINAL ADJ STUDIES).TI,AB.
162 (PROSPECTIVE ADJ STUD$).TI,AB.
163 (REPEATED ADJ MEASURES).TI,AB.
164 (RANDOM ADJ SAMPL$).TI,AB.
165 (BIASED ADJ SAMPL$).TI,AB.
166 (EXPERIMENTAL ADJ SAMPL$).TI,AB.
167 (TREATMENT ADJ OUTCOMES).TI,AB.
168 (CONTROLLED ADJ STUD$).TI,AB.
169 (MULTICENTRE OR MULTICENTER).TI,AB.
170 (PRE-TEST OR POST-TEST OR PRE ADJ TEST OR POST ADJ TEST OR PRETEST).TI,AB.
171 CLUSTER-ANALYSIS#.DE.
172 HUMAN-EXPERIMENTATION#.DE.
173 (MODELS ADJ STATISTIC$).TI,AB.
174 (HUMAN ADJ EXPERIMENTATION).TI,AB.
175 (EVALUATION ADJ STUDIES OR EVALUATION ADJ STUDY).TI,AB.
176 ((CLINICAL OR CLUSTER OR CONTROLLED) ADJ (TRIAL OR TRIALS)).TI,AB.
177 (COMPARATIVE ADJ (STUDY OR STUDIES)).TI,AB.
178 (INTRA ADJ CLASS ADJ CORRELATION).TI,AB.
179 (BEFORE NEXT AFTER).TI,AB.
180 132 OR 133 OR 134 OR 135 OR 136 OR 137 OR 138 OR 139 OR 140 OR 141 OR 142 OR 143 OR 144 OR 145 OR 146 OR 147 OR 148 OR 149 OR 150 OR 151 OR 152 OR 153 OR 154 OR 155 OR 156 OR 157 OR 158 OR 159 OR 160 OR 161 OR 162 OR 163 OR 164 OR 165 OR 166 OR 167 OR 168 OR 169 OR 170 OR 171 OR 172 OR 173 OR 174 OR 175 OR 176 OR 177 OR 178 OR 179
181 16 AND 68 AND 131 AND 180
182 181 (date filter 19970101-)

CINAHL

Dialog Datastar

1. PEDIATRICS#.W..DE.
2. STUDENT-DROPOUTS#.DE.
3. STUDENTS-ELEMENTARY#.DE.
4. STUDENTS-COLLEGE#.DE.
5. (STUDENT OR STUDENTS).TI,AB.

6. (PUPIL OR PUPILS).TI,AB.
7. DROPOUT.TI,AB.
8. (PEDIATRIC OR PAEDIATRICS).TI,AB.
9. (CHILD OR CHILDREN).TI,AB.
10. (YOUTH OR YOUTHS).TI,AB.
11. (JUVENILE OR JUVENILES).TI,AB.
12. (TEEN OR TEENS OR TEENAGE OR TEENAGER OR TEENAGERS).TI,AB.
13. (ADOLESCENT OR ADOLESCENTS OR ADOLESCENCE).TI,AB.
14. (BOY OR BOYS OR SCHOOLBOY$).TI,AB.
15. (GIRL OR GIRLS OR SCHOOLGIRL$).TI,AB.
16. (KID OR KIDS).TI,AB.
17. (YOUNG ADJ (ADULT OR ADULTS OR PEOPLE OR PERSON)).TI,AB.
18. (YOUNG ADJ (MEN OR WOMEN OR MALE OR MALES OR FEMALE OR FEMALES)).TI,AB.
19. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18
20. (SCHOOL OR SCHOOLS).TI,AB.
21. (COLLEGE OR COLLEGES).TI,AB.
22. (ACADEMIC ADJ ENVIRONMENT).TI,AB.
23. ((YEAR OR YEARS) ADJ (SEVEN OR EIGHT OR NINE OR TEN OR ELEVEN OR TWELVE OR THIRTEEN)).TI,AB.
24. ((GRADE OR GRADES) ADJ (SIX OR SEVEN OR EIGHT OR NINE OR TEN OR ELEVEN OR TWELVE)).TI,AB.
25. (JUNIOR ADJ HIGH).TI,AB.
26. ((SECONDARY OR PRIMARY OR ELEMENTARY OR FURTHER) ADJ EDUCATION).TI,AB.
27. (ACADEMY OR ACADEMIES).TI,AB.
28. ((SECONDARY OR HIGH OR MIDDLE) ADJ (SCHOOL OR SCHOOLS)).TI,AB.
29. CAMPUS.TI,AB.
30. SCHOOLS#.W..DE.
31. SCHOOLS-SECONDARY#.DE.
32. 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30 OR 31
33. HEALTH-PROMOTION#.DE.
34. PREVENTIVE-HEALTH-CARE#.DE.
35. PUBLIC-HEALTH#.DE.
36. SCHOOL-HEALTH#.DE.
37. SCHOOL-HEALTH-SERVICES#.DE.
38. SCHOOL-HEALTH-NURSING#.DE.
39. NURSING-ASSESSMENT#.DE.
40. HEALTH-SCREENING#.DE.

41. MENTAL-HEALTH-SERVICES#.DE.
42. HEALTH-BEHAVIOR#.DE.
43. PSYCHOEDUCATION#.W..DE.
44. PATIENT-EDUCATION#.DE.
45. HEALTH-EDUCATION#.DE.
46. SCHOOL-HEALTH-EDUCATION#.DE.
47. (HEALTH ADJ PROMOTION).TI,AB.
48. (PRIMARY ADJ PREVENTION).TI,AB.
49. (PREVENTIVE ADJ HEALTH ADJ SERVICES).TI,AB.
50. (PREVENTIVE ADJ MEDICINE).TI,AB.
51. (PUBLIC ADJ HEALTH).TI,AB.
52. (HEALTHY ADJ PEOPLE).TI,AB.
53. (COMMUNITY ADJ HEALTH ADJ PLANNING).TI,AB.
54. (SCHOOL ADJ NURSING).TI,AB.
55. (SCHOOL ADJ HEALTH ADJ SERVICES).TI,AB.
56. (MENTAL ADJ HEALTH ADJ SERVICES).TI,AB.
57. (SCREENING OR SCREEN OR SCREENED).TI,AB.
58. (MASS ADJ SCREENING).TI,AB.
59. (PSYCHO ADJ (EDUCATION OR EDUCATIONAL OR EDUCATIONALLY)).TI,AB.
60. (HEALTH ADJ EDUCATION).TI,AB.
61. DIAGNOSIS.W..DE.
62. POSTVENTION.TI,AB.
63. 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44 OR 45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56 OR 57 OR 58 OR 59 OR 60 OR 61 OR 62
64. (SCHOOL NEXT (PREVENTION OR PREVENTING OR PREVENTED OR PREVENTS OR PREVENT)).TI,AB.
65. (SCHOOL NEXT (INTERVENTION OR INTERVENTIONS)).TI,AB.
66. (SCHOOL NEXT (PROGRAMMES OR PROGRAMME OR PROGRAM OR PROGRAMS)).TI,AB.
67. (SCHOOL NEXT (CAMPAIGN OR CAMPAIGNS)).TI,AB.
68. 63 OR 64 OR 65 OR 66 OR 67
69. 32 AND 68
70. PSYCHIATRY#.W..DE.
71. MENTAL-HEALTH#.DE.
72. MENTAL-HEALTH-SERVICES#.DE.
73. MENTAL-DISORDERS#.DE.
74. DEPRESSION#.W..DE.
75. INVOLUNTARY-COMMITMENT#.DE.
76. SUICIDE#.W..DE.

77. SUICIDE-ATTEMPTED#.DE.
78. SELF-INJURIOUS-BEHAVIOR#.DE.
79. ANXIETY#.W..DE.
80. Eating-Disorders#.DE.
81. AFFECTIVE-DISORDERS-PSYCHOTIC#.DE.
82. BIPOLAR-DISORDER#.DE.
83. SCHIZOPHRENIA#.W..DE.
84. PSYCHOTIC-DISORDERS#.DE.
85. MENTAL-DISORDERS#.DE.
86. COMORBIDITY#.W..DE.
87. ADOLESCENT-PSYCHOLOGY#.DE.
88. STRESS-PSYCHOLOGICAL#.DE.
89. Emotions#.W..DE.
90. SUBSTANCE-USE-DISORDERS#.DE.
91. COMPULSIVE-BEHAVIOR#.DE.
92. OBSESSIVE-COMPULSIVE-DISORDER#.DE.
93. BEHAVIOR-ADDICTIVE#.DE.
94. NEUROTIC-DISORDERS#.DE.
95. DYSTHYMIC-DISORDER#.DE.
96. PSYCHIAT$.TI,AB.
97. (MENTAL ADJ HEALTH).TI,AB.
98. (MENTAL ADJ DISORDER$).TI,AB.
99. (EMOTIONAL ADJ HEALTH).TI,AB.
100. (EMOTIONAL ADJ WELLBEING).TI,AB.
101. (EMOTIONAL ADJ WELL ADJ BEING).TI,AB.
102. DEPRESS$.TI,AB.
103. SUICID$.TI,AB.
104. PARASUICID$.TI,AB.
105. (SELF ADJ HARM$).TI,AB.
106. (SELF ADJ INJUR$).TI,AB.
107. COMORBID$.TI,AB.
108. (DUAL ADJ DIAGNOSIS OR DIAGNOSES).TI,AB.
109. (ANXIETY OR ANXIOUS).TI,AB.
110. (BULIMI$ OR ANOREXI$ OR EATING ADJ DISORDER$).TI,AB.
111. BIPOLAR.TI,AB.
112. SCHIZOPHRENI$.TI,AB.
113. (PSYCHOTIC OR PSYCHOSIS OR PSYCHOSES).TI,AB.
114. (NEUROTIC OR NEUROSIS OR NEUROSES).TI,AB.
115. (OBSESSIVE ADJ COMPULSIVE).TI,AB.

116. OCD.TI,AB.
117. (SUBSTANCE ADJ (ABUSE OR MISUSE)).TI,AB.
118. ((DRUG OR ALCOHOL) ADJ (ABUSE OR MISUSE OR ADDICT$)).TI,AB.
119. (SELF ADJ CONCEPT).TI,AB.
120. ANGST.TI,AB.
121. APPREHENSION.TI,AB.
122. FEAR.TI,AB.
123. PHOBI$.TI,AB.
124. (DYSTHYMIC ADJ DISORDER$ OR DYSTHYMIA).TI,AB.
125. PANIC.TI,AB.
126. (ADOLESCENT ADJ BEHAVIOR).TI,AB.
127. (ADOLESCENT ADJ PSYCHOLOGY).TI,AB.
128. (PSYCHOLOGICAL ADJ WELL-BEING OR PSYCHOLOGICAL ADJ WELLBEING).TI,AB.
129. (PSYCHOLOGICAL ADJ (DISTRESS OR STRESS)).TI,AB.
130. (MOOD-DISORDERS OR MOOD ADJ DISORDERS).TI,AB.
131. IDENTIFICATION.TI,AB.
132. (INTERPERSONAL ADJ RELATIONS).TI,AB.
133. (RECOGNITION OR UNRECOGNISED).TI,AB.
134. 70 OR 71 OR 72 OR 73 OR 74 OR 75 OR 76 OR 77 OR 78 OR 79 OR 80 OR 81 OR 82 OR 83 OR 84 OR 85 OR 86 OR 87 OR 88 OR 89 OR 90 OR 91 OR 92 OR 93 OR 94 OR 95 OR 96 OR 97 OR 98 OR 99 OR 100 OR 101 OR 102 OR 103 OR 104 OR 105 OR 106 OR 107 OR 108 OR 109 OR 110 OR 111 OR 112 OR 113 OR 114 OR 115 OR 116 OR 117 OR 118 OR 119 OR 120 OR 121 OR 122 OR 123 OR 124 OR 125 OR 126 OR 127 OR 128 OR 129 OR 130 OR 131 OR 132 OR 133
135. CLINICAL-TRIALS#.DE.
136. PLACEBOS#.W..DE.
137. PROGRAM-EVALUATION#.DE.
138. TREATMENT-OUTCOMES#.DE.
139. CLUSTER-ANALYSIS#.DE.
140. SAMPLING-METHODS#.DE.
141. (RANDOMISED OR RANDOMIZED).TI,AB.
142. (CLINICAL ADJ (TRIAL OR TRIALS)).TI,AB.
143. (PLACEBO OR PLACEBOS).TI,AB.
144. ((RANDOM OR RANDOMLY) NEAR (ASSIGN OR ASSIGNED OR ASSIGNATION OR ALLOCATE OR ALLOCATED OR ALLOCATION)).TI,AB.
145. (CROSSOVER OR CROSS ADJ OVER OR CROSS-OVER).TI,AB.
146. ((SINGLE OR DOUBLE OR TREBLE OR TRIPLE) NEAR (BLIND OR BLINDED OR BLINDING OR MASKED OR MASKING)).TI,AB.
147. (PROGRAM ADJ EVALUATION).TI,AB.
148. (EMPIRICAL ADJ (METHOD OR METHODS)).TI,AB.

149. (EMPIRICAL ADJ RESEARCH).TI,AB.
150. (EXPERIMENTAL ADJ DESIGN).TI,AB.
151. (EXPERIMENTAL ADJ (SUBJECT OR SUBJECTS)).TI,AB.
152. (EXPERIMENTAL ADJ CONTROL).TI,AB.
153. (COHORT ADJ (ANALYSIS OR ANALYSES)).TI,AB.
154. (COHORT ADJ STUDY OR STUDIES).TI,AB.
155. (HYPOTHESIS ADJ TESTING).TI,AB.
156. (PROSPECTIVE ADJ STUDY OR STUDIES).TI,AB.
157. (REPEATED ADJ MEASURES).TI,AB.
158. (RANDOM ADJ SAMPLE OR SAMPLING).TI,AB.
159. (EXPERIMENTAL ADJ SAMPLE OR SAMPLING).TI,AB.
160. (TREATMENT ADJ OUTCOMES).TI,AB.
161. (CONTROLLED ADJ TRIAL OR TRIALS).TI,AB.
162. (CONTROLLED ADJ STUDY OR STUDIES).TI,AB.
163. (TRIAL OR TRIALS).TI,AB.
164. (PRE-TEST OR POST-TEST OR PRE ADJ TEST OR POST ADJ TEST OR PRETEST).TI,AB.
165. (HUMAN ADJ EXPERIMENTATION).TI,AB.
166. (EVALUATION ADJ STUDIES OR EVALUATION ADJ STUDY).TI,AB.
167. (CONTROL ADJ GROUP OR GROUPS).TI,AB.
168. (COMPARATIVE ADJ STUDY OR STUDIES).TI,AB.
169. (CLUSTER ADJ TRIAL OR STUDY).TI,AB.
170. (BEFORE NEXT AFTER).TI,AB.
171. 135 OR 136 OR 137 OR 138 OR 139 OR 140 OR 141 OR 142 OR 143 OR 144 OR 145 OR 146 OR 147 OR 148 OR 149 OR 150 OR 151 OR 152 OR 153 OR 154 OR 155 OR 156 OR 157 OR 158 OR 159 OR 160 OR 161 OR 162 OR 163 OR 164 OR 165 OR 166 OR 167 OR 168 OR 169 OR 170
172. 19 AND 69 AND 134 AND 171
173. 172

EMBASE

Dialog Datastar

1 PEDIATRICS.W..DE.
2 ADOLESCENT#.W..DE.
3 STUDENTS.W..DE.
4 (CHILD OR CHILDREN).TI,AB.
5 (YOUTH OR YOUTHS).TI,AB.
6 (JUVENILE OR JUVENILES).TI,AB.
7 (TEEN OR TEENS OR TEENAGE OR TEENAGER OR TEENAGERS).TI,AB.
8 (ADOLESCENT OR ADOLESCENTS OR ADOLESCENCE).TI,AB.

9 (BOY OR BOYS OR SCHOOLBOY$).TI,AB.
10 (GIRL OR GIRLS OR SCHOOLGIRL$).TI,AB.
11 (KID OR KIDS).TI,AB.
12 (STUDENT OR STUDENTS).TI,AB.
13 (PUPIL OR PUPILS).TI,AB.
14 DROPOUT.TI,AB.
15 (PEDIATRIC OR PAEDIATRICS).TI,AB.
16 (YOUNG ADJ (ADULT OR ADULTS OR PEOPLE OR PERSON)).TI,AB.
17 (YOUNG ADJ (MEN OR WOMEN OR MALE OR MALES OR FEMALE OR FEMALES)).TI,AB.
18 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17
19 SCHOOLS.W..DE.
20 ((YEAR OR YEARS) ADJ (SEVEN OR EIGHT OR NINE OR TEN OR ELEVEN OR TWELVE OR THIRTEEN)).TI,AB.
21 ((GRADE OR GRADES) ADJ (SIX OR SEVEN OR EIGHT OR NINE OR TEN OR ELEVEN OR TWELVE)).TI,AB.
22 (JUNIOR ADJ HIGH).TI,AB.
23 (COLLEGE OR COLLEGES).TI,AB.
24 ((SECONDARY OR PRIMARY OR ELEMENTARY OR FURTHER) ADJ EDUCATION).TI,AB.
25 (ACADEMY OR ACADEMIES).TI,AB.
26 ((SECONDARY OR HIGH OR MIDDLE) ADJ (SCHOOL OR SCHOOLS)).TI,AB.
27 (SCHOOL OR SCHOOLS).TI,AB.
28 (ACADEMIC ADJ ENVIRONMENT).TI,AB.
29 CAMPUS.TI,AB.
30 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29
31 HEALTH-PROMOTION#.DE.
32 HEALTH-EDUCATION#.DE.
33 PREVENTION#.W..DE.
34 SCREENING#.W..DE.
35 PUBLIC-HEALTH.DE.
36 PREVENTIVE-MEDICINE#.DE.
37 (HEALTH ADJ PROMOTION).TI,AB.
38 (HEALTH ADJ EDUCATION).TI,AB.
39 (PRIMARY ADJ PREVENTION).TI,AB.
40 (PREVENTIVE ADJ HEALTH ADJ SERVICES).TI,AB.
41 (SCREENING OR SCREEN OR SCREENED).TI,AB.
42 (MASS ADJ SCREENING).TI,AB.
43 (PUBLIC ADJ HEALTH).TI,AB.
44 (PREVENTIVE ADJ MEDICINE).TI,AB.
45 (BEHAVIOR ADJ THERAPY).TI,AB.
46 PSYCHOEDUCATION.TI,AB.

47 (PSYCHO ADJ (EDUCATION OR EDUCATIONAL OR EDUCATIONALLY)).TI,AB.
48 (HEALTHY ADJ PEOPLE).TI,AB.
49 (COMMUNITY ADJ HEALTH ADJ PLANNING).TI,AB.
50 (SCHOOL ADJ NURSING).TI,AB.
51 (PENN ADJ RESILIENCY ADJ PROGRAM).TI,AB.
52 (SCHOOL ADJ HEALTH ADJ SERVICES).TI,AB.
53 (MENTAL ADJ HEALTH ADJ SERVICES).TI,AB.
54 DIAGNOSIS.W..DE.
55 POSTVENTION.TI,AB.
56 MENTAL-HEALTH-SERVICE#.DE.
57 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44 OR 45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56
58 30 AND 57
59 (SCHOOL NEXT (INTERVENTION OR INTERVENTIONS)).TI,AB.
60 (SCHOOL NEXT (PREVENTION OR PREVENTING OR PREVENTED OR PREVENTS OR PREVENT)).TI,AB.
61 (SCHOOL NEXT (PROGRAMMES OR PROGRAMME OR PROGRAM OR PROGRAMS)).TI,AB.
62 (SCHOOL NEXT (CAMPAIGN OR CAMPAIGNS)).TI,AB.
63 58 OR 59 OR 60 OR 61 OR 62
64 MENTAL-HEALTH#.DE.
65 MENTAL-DISEASE#.DE.
66 MENTAL-HEALTH-CARE#.DE.
67 MENTAL-HEALTH-SERVICE#.DE.
68 DEPRESSION#.W..DE.
69 SUICIDE#.W..DE.
70 SUICIDE-ATTEMPT#.DE.
71 ANXIETY#.W..DE.
72 ANXIETY-DISORDER#.DE.
73 EATING-DISORDER#.DE.
74 BIPOLAR-DISORDER#.DE.
75 SCHIZOPHRENIA#.W..DE.
76 COMORBIDITY#.W..DE.
77 MENTAL-STRESS#.DE.
78 EMOTION#.W..DE.
79 COMPULSION#.W..DE.
80 OBSESSIVE-COMPULSIVE-DISORDER#.DE.
81 ADDICTION#.W..DE.
82 NEUROSIS#.W..DE.
83 DYSTHYMIA#.W..DE.
84 PSYCHIAT$.TI,AB.
85 (MENTAL ADJ HEALTH).TI,AB.
86 (EMOTIONAL ADJ HEALTH).TI,AB.
87 (MENTAL ADJ DISORDER OR DISORDERS).TI,AB.

88 (EMOTIONAL ADJ WELLBEING).TI,AB.
89 (EMOTIONAL ADJ WELL ADJ BEING).TI,AB.
90 DEPRESSION.TI,AB.
91 SUICID$.TI,AB.
92 PARASUICID$.TI,AB.
93 (SELF ADJ HARM OR HARMING).TI,AB.
94 (SELF ADJ INJURY OR INJURIOUS).TI,AB.
95 COMORBID$.TI,AB.
96 (DUAL ADJ DIAGNOSIS OR DIAGNOSES).TI,AB.
97 (ANXIETY OR ANXIOUS).TI,AB.
98 (BULIMIA$ OR ANOREXIA$ OR EATING ADJ DISORDER).TI,AB.
99 BIPOLAR.TI,AB.
100 SCHIZOPHRENI$.TI,AB.
101 (PSYCHOTIC OR PSYCHOSIS OR PSYCHOSES).TI,AB.
102 (NEUROTIC OR NEUROSIS OR NEUROSES).TI,AB.
103 (OBSESSIVE ADJ COMPULSIVE).TI,AB.
104 OCD.TI,AB.
105 (SUBSTANCE ADJ (ABUSE OR MISUSE)).TI,AB.
106 ((DRUG OR ALCOHOL) ADJ (ABUSE OR MISUSE OR ADDICT$)).TI,AB.
107 (SELF ADJ CONCEPT).TI,AB.
108 ANGST.TI,AB.
109 APPREHENSION.TI,AB.
110 FEAR.TI,AB.
111 PHOBI$.TI,AB.
112 (DYSTHYMIC ADJ DISORDER OR DISORDERS OR DYSTHYMIA).TI,AB.
113 PANIC.TI,AB.
114 (ADOLESCENT ADJ BEHAVIOR).TI,AB.
115 (ADOLESCENT ADJ PSYCHOLOGY).TI,AB.
116 (PSYCHOLOGICAL ADJ WELL-BEING OR PSYCHOLOGICAL ADJ WELLBEING).TI,AB.
117 (PSYCHOLOGICAL ADJ (DISTRESS OR STRESS)).TI,AB.
118 (MOOD-DISORDERS OR MOOD ADJ DISORDERS).TI,AB.
119 IDENTIFICATION.TI,AB.
120 (INTERPERSONAL ADJ RELATIONS).TI,AB.
121 (RECOGNITION OR UNRECOGNISED).TI,AB.
122 64 OR 65 OR 66 OR 67 OR 68 OR 69 OR 70 OR 71 OR 72 OR 73 OR 74 OR 75 OR 76 OR 77 OR 78 OR 79 OR 80 OR 81 OR 82 OR 83 OR 84 OR 85 OR 86 OR 87 OR 88 OR 89 OR 90 OR 91 OR 92 OR 93 OR 94 OR 95 OR 96 OR 97 OR 98 OR 99 OR 100 OR 101 OR 102 OR 103 OR 104 OR 105 OR 106 OR 107 OR 108 OR 109 OR 110 OR 111 OR 112 OR 113 OR 114 OR 115 OR 116 OR 117 OR 118 OR 119 OR 120 OR 121
123 EXPERIMENTATION#.W..DE.
124 RANDOMIZATION#.W..DE.
125 SAMPLING.W..DE.

126 EXPERIMENTAL-DESIGN#.DE.
127 CLUSTER-ANALYSIS#.DE.
128 PLACEBO#.W..DE.
129 COHORT-ANALYSIS#.DE.
130 SAMPLE-SIZE#.DE.
131 (RANDOMISED OR RANDOMIZED).TI,AB.
132 (CLINICAL ADJ (TRIAL OR TRIALS)).TI,AB.
133 (PLACEBO OR PLACEBOS).TI,AB.
134 ((RANDOM OR RANDOMLY) NEAR (ASSIGN OR ASSIGNED OR ASSIGNATION OR ALLOCATE OR ALLOCATED OR ALLOCATION)).TI,AB.
135 (CROSSOVER OR CROSS ADJ OVER OR CROSS-OVER).TI,AB.
136 ((SINGLE OR DOUBLE OR TREBLE OR TRIPLE) NEAR (BLIND OR BLINDED OR BLINDING OR MASKED OR MASKING)).TI,AB.
137 (PROGRAM ADJ EVALUATION).TI,AB.
138 (EMPIRICAL ADJ (METHOD OR METHODS)).TI,AB.
139 (EMPIRICAL ADJ RESEARCH).TI,AB.
140 (EXPERIMENTAL ADJ DESIGN).TI,AB.
141 (EXPERIMENTAL ADJ (SUBJECT OR SUBJECTS)).TI,AB.
142 (EXPERIMENTAL ADJ CONTROL).TI,AB.
143 (COHORT ADJ (ANALYSIS OR ANALYSES)).TI,AB.
144 (COHORT ADJ STUDY OR STUDIES).TI,AB.
145 (HYPOTHESIS ADJ TESTING).TI,AB.
146 (PROSPECTIVE ADJ STUDY OR STUDIES).TI,AB.
147 (REPEATED ADJ MEASURES).TI,AB.
148 (RANDOM ADJ SAMPLE OR SAMPLING).TI,AB.
149 (EXPERIMENTAL ADJ SAMPLE OR SAMPLING).TI,AB.
150 (TREATMENT ADJ OUTCOMES).TI,AB.
151 (CONTROLLED ADJ TRIAL OR TRIALS).TI,AB.
152 (CONTROLLED ADJ STUDY OR STUDIES).TI,AB.
153 (TRIAL OR TRIALS).TI,AB.
154 (PRE-TEST OR POST-TEST OR PRE ADJ TEST OR POST ADJ TEST OR PRETEST).TI,AB.
155 (HUMAN ADJ EXPERIMENTATION).TI,AB.
156 (EVALUATION ADJ STUDIES OR EVALUATION ADJ STUDY).TI,AB.
157 (CONTROL ADJ GROUP OR GROUPS).TI,AB.
158 (COMPARATIVE ADJ STUDY OR STUDIES).TI,AB.
159 (CLUSTER ADJ TRIAL OR STUDY).TI,AB.
160 (BEFORE NEXT AFTER).TI,AB.
161 123 OR 124 OR 125 OR 126 OR 127 OR 128 OR 129 OR 130 OR 131 OR 132 OR 133 OR 134 OR 135 OR 136 OR 137 OR 138 OR 139 OR 140 OR 141 OR 142 OR 143 OR 144 OR 145 OR 146 OR 147 OR 148 OR 149 OR 150 OR 151 OR 152 OR 153 OR 154 OR 155 OR 156 OR 157 OR 158 OR 159 OR 160
162 18 AND 63 AND 122 AND 161
164 162

Applied Social Science Index and Abstracts (ASSIA)

CSA Illumina web version

((((DE="adolescence") or (DE="pupils") or ((child or children or youth) or (youths or juvenile or juveniles) or (teen or teens or or teenagers or adolescent) or (adolescents or adolescence or boy) or (boys or schoolboys or girl)) or ((girls or schoolgirls or kid) or (kids or student or students) or (pupil or pupils or dropout*)) or (((young adult) or (young adults) or (young person)) or ((young people) or (young men) or (young male)) or ((young males) or (young female) or (young females))) or (young women))

1AND

((DE=("healthpromotion" or "public health medicine" or "mental health promotion")) or(DE="behavioural health education") or (DE="prevention") or (DE="screening") or (DE="public health") or (DE=("mental health services"or "student health services")) or ((prevention or preventive or prevented) or (prevent or preventing or (health promotion)) or ((health education) or (screening or screen) or (screened or (public health) or (school nurs*)) or ((mental health service*) or (school health service*))) or ((intervention or interventions or postvention) or (program or programs or programme) or (programmes or campaign or campaigns) or (psychoeducation or psychoeducational)))

2AND

((DE=("school based" or "school environment"))
OR (((YEAR SEVEN) or (YEAR EIGHT) or (YEAR NINE)) or ((YEAR TEN) or (YEAR ELEVEN) or (YEAR TWELVE)) or (YEAR THIRTEEN)) OR (((YEARS SEVEN) or (YEARS EIGHT) or (YEARS NINE)) or ((YEARS TEN) or (YEARS ELEVEN) or (YEARS TWELVE)) or (YEARS THIRTEEN)) OR (((GRADE SIX) or (GRADE SEVEN) or (GRADE EIGHT)) or ((GRADE NINE) or (GRADE TEN) or (GRADE ELEVEN)) or ((GRADE TWELVE) or (GRADES SIX) or (GRADES SEVEN)) or ((GRADES EIGHT) or (GRADES NINE) or (GRADES TEN)) or ((GRADES ELEVEN) or (GRADES TWELVE))) OR (((JUNIOR HIGH) or (SECONDARY EDUCATION) or (PRIMARY EDUCATION)) or
((ELEMENTARY EDUCATION) or (FURTHER EDUCATION) or ACADEMY) or (ACADEMIES or SCHOOL or SCHOOLS) or ((ACADEMIC ENVIRONMENT) or (EDUCATIONAL ENVIRONMENT)))))

3AND

((DE="mental health") or (DE=("depression" or "affective psychoses" or "childhood depression" or "affective disorders")) or (DE=("suicide" or "parasuicide")) or (DE=("suicidal ideation" or "suicidal behaviour")) or (DE=("anxiety disorders" or "psychiatric disorders" or "acute stress disorder" or "generalized anxiety disorders" or "panic disorders" or "phobias" or "posttraumatic stress disorder")) or (DE=("eating disorders" or "anorexia nervosa" or "bulimia nervosa")) or (DE="bipolar affective disorder") or (DE=("schizoaffective disorder" or "psychiatric disorders" or "psychoses" or "schizophrenia")) or (DE="comorbidity") or (DE=("neuroses" or "obsessive compulsive neuroses")) or (DE=("adjustment disorder" or "attention deficit hyperactivity disorder" or "behaviour disorders" or "chronic psychiatric disorders" or

"head banging" or "impulse control disorders" or "insanity" or "mania" or "paranoia" or "schizophrenia")) or ((psychiat* or (mental health) or (mental disorder)) and ((mental disorders) or depression or depressive) and (depressed or suicid* or parasuicide) and ((self harm) or (self harming) or (self injury)) and ((self injuries) or (self injurious) or comorbid*)) or ((psychiat* or (mental health) or (mental disorder)) or ((mental disorders) or depression or depressive) or (depressed or suicid* or parasuicide) or ((self harm) or (self harming) or (self injury)) or ((self injuries) or (self injurious) or comorbid*)) or ((anxiety or (eating disorder) or (eating disorders)) or (anorexia or anorexic or bulimia) or (bulimic or bipolar or schiozophreni*) or (psychotic or psychoses or psychosis) or (neurotic or neuroses or neurosis)) or ((obsessive or compulsive or ocd) or (dysthymic or dysthymia or phobic) or (phobia or psychological or (mood disorder)) or ((mood disorders) or (affective disorder) or (affective disorders))))) and ((DE=("experiments" or "empiricism" or "experimental treatment")) or (DE=("random effects regression analysis" or "random sampling" or "random testing" or "sampling" or "testing")) or (DE=("randomization" or "unequal randomization" or "clinical randomised controlled trials" or "cluster randomized controlled trials" or "double blind randomized controlled trials" or "randomized consent design" or "randomized controlled trials" or "single blind randomized controlled trials" or "urn randomization")) or ((randomised or randomized or random) or (randomly or crossover or (cross over)) or (cross-over or blind or blinding) or (blinded or masked or masking) or ((program evaluation) or (programme evaluation) or empirical) or (experimental or cohort or hypothesis) or ((prospective study) or (prospective studies) or (repeated measures))) or (((treatment outcome) or (treatment outcomes) or (controlled trial)) or ((controlled trials) or (controlled study) or (controlled studies)) or ((control group) or (control groups) or (comparative study)) or ((comparative studies) or (evaluation study) or (evaluation studies)) or ((cluster trial) or (cluster trials))))

Social Science Citation Index (SSCI) and Science Citation Index (SCI)

Web of Science

(school*)
AND
(mental health or psychiatr* or mental illness or mental disorder* or suicid* or parasuicide or depress* or anxiety or psychotic or psychoses or psychosis or affective or bipolar* or schizophreni* or impulsive or obsessive or compulsive or eating disorder* or anorexi* or bulimi* or comorbid* or co-morbid* or self-harm* or self-injur* or mood disorder*)
AND
(intervention* or program* or health promoti* or prevention or preventive or health education)
AND
(trial* or random or randomly or randomisation or randomization or control group* or comparative stud* or treatment outcome*)

Educational Resources Information Center (ERIC)

Cambridge Scientific Abstracts (CSA) web version

1 (RANDOMISED OR RANDOMIZED).TI,AB.
2 (CLINICAL NEAR TRIAL$).TI,AB.

3	(PLACEBO OR PLACEBOS).TI,AB.
4	((RANDOM OR RANDOMLY) NEAR (ASSIGN OR ASSIGNED OR ASSIGNATION OR ALLOCATE OR ALLOCATED OR ALLOCATION)).TI,AB.
5	(CROSSOVER OR CROSS ADJ OVER OR CROSS-OVER).TI,AB.
6	((SINGLE OR DOUBLE OR TREBLE OR TRIPLE) NEAR (BLIND OR BLINDED OR BLINDING OR MASKED OR MASKING)).TI,AB.
7	(PROGRAM ADJ EVALUATION).TI,AB.
8	(EMPIRICAL ADJ METHOD$).TI,AB.
9	(EMPIRICAL ADJ RESEARCH).TI,AB.
10	(EXPERIMENTAL ADJ DESIGN).TI,AB.
11	(EXPERIMENTAL ADJ SUBJECT$).TI,AB.
12	(EXPERIMENTAL ADJ CONTROL).TI,AB.
13	(COHORT ADJ ANALYS$).TI,AB.
14	(COHORT ADJ STUD$).TI,AB.
15	(HYPOTHESIS ADJ TESTING).TI,AB.
16	(LONGITUDINAL ADJ STUDIES).TI,AB.
17	(PROSPECTIVE ADJ STUD$).TI,AB.
18	(PROSPECTIVE ADJ STUD$).TI,AB.
19	(REPEATED ADJ MEASURES).TI,AB.
20	(RANDOM ADJ SAMPL$).TI,AB.
21	(BIASED ADJ SAMPL$).TI,AB.
22	(EXPERIMENTAL ADJ SAMPL$).TI,AB.
23	(TREATMENT ADJ OUTCOMES).TI,AB.
24	(CONTROLLED ADJ TRIAL$).TI,AB.
25	(CONTROLLED ADJ STUD$).TI,AB.
26	(MULTICENTRE OR MULTICENTER).TI,AB.
27	(COMPARATIVE ADJ STUD$ OR OUTCOME$).TI,AB.
28	CLUSTER.TI,AB.
29	(TRIAL OR TRIALS).TI,AB.
30	BEFORE.TI,AB. AND AFTER.TI,AB.
31	(PRE-TEST OR POST-TEST OR PRE ADJ TEST OR POST ADJ TEST OR PRETEST).TI,AB.
32	(MODELS ADJ STATISTIC$).TI,AB.
33	(HUMAN ADJ EXPERIMENTATION).TI,AB.
34	(EVALUATION ADJ STUDIES OR EVALUATION ADJ STUDY).TI,AB.
35	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30 OR 31 OR 32 OR 33 OR 34
36	(SCHOOL OR SCHOOLS).TI,AB.
37	(COLLEGE OR COLLEGES).TI,AB.
38	(ACADEMIC ADJ ENVIRONMENT).TI,AB.
39	((YEAR OR YEARS) ADJ (SEVEN OR EIGHT OR NINE OR TEN OR ELEVEN OR TWELVE OR THIRTEEN)).TI,AB.
40	((GRADE OR GRADES) ADJ (SIX OR SEVEN OR EIGHT OR NINE OR TEN OR ELEVEN OR TWELVE)).TI,AB.
41	(JUNIOR ADJ HIGH).TI,AB.

42 ((SECONDARY OR PRIMARY OR ELEMENTARY OR FURTHER) ADJ EDUCATION).TI,AB.
43 (ACADEMY OR ACADEMIES).TI,AB.
44 ((SECONDARY OR HIGH OR MIDDLE) ADJ (SCHOOL OR SCHOOLS)).TI,AB.
45 CAMPUS.TI,AB.
46 EDUCATIONAL-ENVIRONMENT#.DE.
47 STUDENT-CHARACTERISTICS#.DE.
48 DROPOUT-CHARACTERISTICS#.DE.
49 (STUDENT OR STUDENTS).TI,AB.
50 (PUPIL OR PUPILS).TI,AB.
51 DROPOUT.TI,AB. OR DROPOUTS.TI,AB.
52 (PEDIATRIC OR PAEDIATRICS).TI,AB.
53 (CHILD OR CHILDREN).TI,AB.
54 (YOUTH OR YOUTHS).TI,AB.
55 (JUVENILE OR JUVENILES).TI,AB.
56 (TEEN OR TEENS OR TEENAGE OR TEENAGER OR TEENAGERS).TI,AB.
57 (ADOLESCENT OR ADOLESCENTS OR ADOLESCENCE).TI,AB.
58 (BOY OR BOYS OR SCHOOLBOY$).TI,AB.
59 (GIRL OR GIRLS OR SCHOOLGIRL$).TI,AB.
60 (KID OR KIDS).TI,AB.
61 (YOUNG ADJ (ADULT OR ADULTS OR PEOPLE OR PERSON)).TI,AB.
62 (YOUNG ADJ (MEN OR WOMEN OR MALE OR MALES OR FEMALE OR FEMALES)).TI,AB.
63 HEALTH-EDUCATION#.DE. OR PATIENT-EDUCATION.DE.
64 INTERVENTION#.W..DE.
65 PREVENTION#.W..DE. OR PROGRAMS#.W..DE.
66 (HEALTH ADJ PROMOTION).TI,AB.
67 (HEALTH ADJ EDUCATION).TI,AB.
68 (PRIMARY ADJ PREVENTION).TI,AB.
69 (PREVENTION OR PREVENTING OR PREVENTED OR PREVENTS OR PREVENT).TI,AB.
70 (INTERVENTION OR INTERVENTIONS).TI,AB.
71 (PREVENTIVE ADJ HEALTH ADJ SERVICES).TI,AB.
72 (SCREENING OR SCREEN OR SCREENED).TI,AB.
73 (PROGRAMMES OR PROGRAMME OR PROGRAM OR PROGRAMS).TI,AB.
74 (PROJECT OR PROJECTS).TI,AB.
75 (CAMPAIGN OR CAMPAIGNS).TI,AB.
76 (MASS ADJ SCREENING).TI,AB.
77 (PUBLIC ADJ HEALTH).TI,AB.
78 (PREVENTIVE ADJ MEDICINE).TI,AB.
79 PSYCHOEDUCATION.TI,AB.
80 (PSYCHO ADJ (EDUCATION OR EDUCATIONAL OR EDUCATIONALLY)).TI,AB.
81 (HEALTHY ADJ PEOPLE).TI,AB.
82 (COMMUNITY ADJ HEALTH ADJ PLANNING).TI,AB.
83 (PROMOTION OR PROMOTING OR PROMOTED OR PROMOTES OR

PROMOTE).TI,AB.
84 (SCHOOL ADJ NURSING).TI,AB.
85 (PENN ADJ RESILIENCY ADJ PROGRAM).TI,AB.
86 (SCHOOL ADJ HEALTH ADJ SERVICES).TI,AB.
87 (MENTAL ADJ HEALTH ADJ SERVICES).TI,AB.
88 PSYCHOLOGICAL-PATTERNS#.DE.
89 PSYCHIAT$.TI,AB.
90 (MENTAL ADJ HEALTH$).TI,AB.
91 (MENTAL ADJ DISORDER$).TI,AB.
92 (EMOTIONAL ADJ HEALTH).TI,AB.
93 (EMOTIONAL ADJ WELLBEING).TI,AB.
94 (EMOTIONAL ADJ WELL ADJ BEING).TI,AB.
95 DEPRESS$.TI,AB.
96 SUICID$.TI,AB.
97 PARASUICID$.TI,AB.
98 (SELF ADJ HARM$).TI,AB.
99 (SELF ADJ INJUR$).TI,AB.
100 COMORBID$.TI,AB.
101 (DUAL ADJ DIAGNOS$).TI,AB.
102 (ANXIETY OR ANXIOUS).TI,AB.
103 (BULIMI$ OR ANOREXI$ OR EATING ADJ DISORDER$).TI,AB.
104 BIPOLAR.TI,AB.
105 SCHIZOPHRENI$.TI,AB.
106 (PSYCHOTIC OR PSYCHOSIS OR PSYCHOSES).TI,AB.
107 (NEUROTIC OR NEUROSIS OR NEUROSES).TI,AB.
108 (OBSESSIVE ADJ COMPULSIVE).TI,AB.
109 OCD.TI,AB.
110 (SUBSTANCE ADJ (ABUSE OR MISUSE)).TI,AB.
111 ((DRUG OR ALCOHOL) ADJ (ABUSE OR MISUSE OR ADDICT$)).TI,AB.
112 (SELF ADJ CONCEPT).TI,AB.
113 ANGST.TI,AB.
114 APPREHENSION.TI,AB.
115 FEAR.TI,AB.
116 PHOBI$.TI,AB.
117 (DYSTHYMIC ADJ DISORDER$ OR DYSTHYMIA).TI,AB.
118 PANIC.TI,AB.
119 (ADOLESCENT ADJ BEHAVIOR).TI,AB.
120 (ADOLESCENT ADJ PSYCHOLOGY).TI,AB.
121 (PSYCHOLOGICAL ADJ WELL-BEING OR PSYCHOLOGICAL ADJ WELLBEING).TI,AB.
122 (PSYCHOLOGICAL ADJ (DISTRESS OR STRESS)).TI,AB.
123 (MOOD-DISORDERS OR MOOD ADJ DISORDERS).TI,AB.
124 (INTERPERSONAL ADJ RELATIONS).TI,AB.
125 IDENTIFICATION.TI,AB.
126 (RECOGNITION OR UNRECOGNISED).TI,AB.

127	36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44 OR 45 OR 46
128	47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56 OR 57 OR 58 OR 59 OR 60 OR 61 OR 62
129	63 OR 64 OR 65 OR 66 OR 67 OR 68 OR 69 OR 70 OR 71 OR 72 OR 73 OR 74 OR 75 OR 76 OR 77 OR 78 OR 79 OR 80 OR 81 OR 82 OR 83 OR 84 OR 85 OR 86 OR 87
130	88 OR 89 OR 90 OR 91 OR 92 OR 93 OR 94 OR 95 OR 96 OR 97 OR 98 OR 99 OR 100 OR 101 OR 102 OR 103 OR 104 OR 105 OR 106 OR 107 OR 108 OR 109 OR 110 OR 111 OR 112 OR 113 OR 114 OR 115 OR 116 OR 117 OR 118 OR 119 OR 120 OR 121 OR 122 OR 123 OR 124 OR 125 OR 126
131	127 OR 129
132	131 AND 128 AND 130
133	YEAR=2007 OR YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR YEAR=1997
134	132 AND 133
135	PT=BOOK-PRODUCT-REVIEWS OR PT=COLLECTED-WORKS$ OR PT=GUIDES-GENERAL OR PT=GUIDES-CLASSROOM-LEARNER OR PT=GUIDES-CLASSROOM-TEACHER OR PT=GUIDES-NON-CLASSROOM OR PT=HISTORICAL-MATERIAL OR PT=OPINION-PAPERS OR PT=TEST-QUESTIONNAIRES
136	134 NOT 135
137	35 AND 127 AND 128 AND 129 AND 130
138	133 AND 137
139	35 AND 128 AND 129 AND 130
140	133 AND 139
141	140 NOT 135

Appendix 2: Methods for calculating and pooling effect sizes

Standardised methods were adopted for conducting statistical meta-analysis, including weighting of individual studies (Egger et al., 2001; Higgins and Green, 2008). The methods used for calculating and pooling effect sizes in this review are adapted with permission from an earlier EPPI-Centre review on healthy eating in children (Thomas et al., 2003). A more detailed description, including the statistical formulae for calculating effect sizes, is included in the appendices to that report. The description of methods contained in this appendix duplicates much of that by Thomas et al. (2003), and the authors of this review are grateful for their permission to reproduce them.

2.1 Definitions

Mean: The average value, calculated by adding all the observations and dividing by the number of observations*

Standard deviation: A measure of dispersion or variation and the most widely used measure of dispersion of a frequency distribution. It is equal to the positive square root of the variance. The mean tells where the values for a group are centred. The standard deviation is a summary of how widely dispersed the values are around this centre.*

Standard error: The standard deviation of an estimate after adjusting for sample size. Used to calculate confidence intervals.

Standardised mean difference: The difference between two means divided by an estimate of the within-group standard deviation. When an outcome, such as pain, is measured in a variety of ways across studies (using different scales), it may not be possible directly to compare or combine study results in a systematic review. By expressing the effects as a standardised value, the results can be combined since they have no units.*

Pooled: Combined*

Effect size: A measure of the difference in outcome between the groups in a study

*These are taken from Clarke and Oxman (2002) and Last (2000).

2.2 Methods

A supplementary framework was used to extract data on the outcome variables from each evaluation in order to calculate effect sizes for the meta-analysis. In

order for the results of different studies that used different measurement tools to be combined, their results need to be standardised in some way. For this review, the standardised mean difference was selected; this is essentially the difference in means between the two groups in the evaluation divided by their pooled standard deviation. A measure of uncertainty, the standard error, accompanies the standardised mean difference. In order to calculate this effect size, all that is needed is the number of people in each group, their post-test means (adjusted for baseline measures, if necessary) and their standard deviations. Unfortunately, this data is not always reported and further calculation from the data presented becomes necessary before an effect size can be found. Specialised review software, EPPI-Reviewer, was adapted to calculate effect sizes from the range of data encountered. By combining the effect sizes from all the included studies statistically, it is possible to estimate an overall measure of effect for the interventions included.

The included studies presented outcome measures with both dichotomous and continuous data. We applied the Hedges's adjusted *g* formula to calculate effect sizes with continuous data, and when combining continuous data with dichotomous data. Hedges's adjusted *g* is a standardised mean difference which adjusts for small sample sizes (Egger et al., 2001). For dichotomous data we chose to use risk ratios (RR) as the effect measure. We adopted a random effects model, as this incorporates an estimate of between-study heterogeneity. The Der Simonian and Laird method was used to compute this.

One complicating factor is the issue of studies in which groups of individuals (for example, classes or schools) are assigned to intervention and comparison conditions, rather than individuals. In these 'cluster trials', outcomes may have been measured at the individual level but allocation occurred at the group level. Methods for analysing cluster trials are still developing and methods for including such studies in meta-analyses are still emerging. However, it is possible to extract outcome data and calculate the standardised mean difference from the reports of these studies for use in a meta-analysis. Detailed methods for this are reported in a paper by White and Thomas (2005). If a study has analysed clusters of individuals and presented standard errors, these standard errors need to be converted into standard deviations taking the *design effect* of the study into account (Murray, 1998). Methods for computing the design effect require data on both the cluster sizes and intra-class correlation (ICC). Few trials present data on the ICC: in this review, only one study presented an ICC (Gillham et al., 2007). We therefore imputed an ICC of 0.0225 from this study to those cluster trials in which ICC data was not reported. Data from cluster trials was also entered into EPPI-Reviewer, which has been adapted to calculate effect sizes from cluster trials where cluster-size and ICC data are available.

If no significant heterogeneity was found, the results of the studies were pooled and a final effect size was calculated. If significant heterogeneity was found, possible reasons for the differences between studies were explored through sensitivity analyses of subgroups of studies. In order to prevent this procedure from becoming an exercise in 'data dredging', the categorical variables which identified the subgroups used in this exercise were specified in advance of the meta-analysis. These categories were study type (RCT, CT), study quality (sound/sound despite discrepancies), and the feature of the study population and intervention referred to in Chapter 4.

For further information on the methods used in statistical meta-analysis, see Cooper and Hedges (1994), Egger et al. (2001), and Lipsey and Wilson (2001).

Appendix 3: Included studies evidence table

Study	Study design and quality	Intervention characteristics	Population	Inequalities data reported	Outcome measures (see key below)
Universally provided interventions					
Chaplin et al. (2006) USA	Intervention *vs.* No intervention control RCT Sound	Penn Resiliency Program (PRP) Intervention provider: School personnel (teachers, guidance counsellors) and research assistants Duration: Long Timing: After school hours	N = 68 Young people from a suburban school district in northeast USA Age: 11-14 (mean 12.16) Sex: Mixed (50% M) Ethnicity: 89% white, 4% African American, 1% Latino, 1% Asian American, 5% mixed	* Baseline demographic data on ethnicity * Found no difference in outcomes according to gender, but no methods or data reported * Participants from high-income families	Depression (CDI)
Gillham et al. (2006) USA	Intervention *vs.* No intervention control RCT Sound	Penn Resiliency Program for Children and Adolescents (PRP-CA) Intervention provider: Research assistants Duration: Short Timing: After school hours	N = 40 Students at a middle school in suburban Philadelphia Age: 6th-7th grade Sex: Mixed (70% M) Ethnicity: 91% Caucasian, 5% African American, 2% Asian, 2% other	*Demographic data on ethnicity reported	Depression (CDI) Anxiety (RCMAS)
Gillham et al. (2007) USA	Two interventions *vs.* No intervention control RCT Sound	Penn Resiliency Program (PRP) Intervention provider: School personnel (teachers, counsellors) and graduate students Duration: Long Timing: After school	N = 427 Young people from three schools in a suburban area; two predominantly low-SES, one high-SES Age: 6th-8th grade (mean 12.13 years) Sex: Mixed (54% M) Ethnicity: 75% Caucasian, 9% African American, 4% Asian American, 2% Latino/Latina, 11% other	* Demographic data on SES and ethnicity presented	Depression (CDI)
Lock and Barrett (2003)	Intervention *vs.* No intervention control	The FRIENDS Programme Intervention provider: Teachers and	N = 737 Young people from socio-economically diverse schools in the Brisbane area	* Demographic data on ethnicity reported * Participants from middle-	Depression (CDI) Anxiety

Study	Study design and quality	Intervention characteristics	Population	Inequalities data reported	Outcome measures (see key below)
Australia	Cluster-RCT Sound despite discrepancies	psychology graduates Duration: Long Timing: During school hours	Age: 9-10, 14-16 Sex: Mixed (50% F) Ethnicity: 87% born in Australia 'with the remainder coming from a wide variety of ethnic backgrounds'	income families * Found no difference in outcomes according to gender, but no methods or data reported	(RCMAS)
Merry et al. (2004a) New Zealand	Intervention *vs.* No intervention control RCT Sound	RAP-Kiwi adapted from Resourceful Adolescent Program (RAP) Intervention provider: Teachers Duration: Long Timing: During school hours	N = 331 Young people from two schools in Auckland; one school lower-SES, one higher Age: 13-14 (mean 14.2) Sex: Mixed (52% F) Ethnicity: 59% Pākehā (European origin), 27% Māori, 8% Pacific peoples, 1% Asian, 5% other	* Found no difference in outcomes according to ethnicity, or gender but no methods or data reported	Depression (BDI)
Poessel et al. (2008) Germany	Intervention *vs.* No intervention control Cluster-RCT Sound	Intervention provider: Psychologists and graduate students Duration: Long Timing: During school hours	N = 301 Young people from schools in Tübingen Age: Mean 13.7 Sex: Mixed (53% M) Ethnicity: Not stated	* Found no difference in outcomes according to gender, but no methods or data reported	Depression (SBB-DES)
Ruini et al. (2006) Italy	Intervention *vs.* No intervention control Cluster-RCT Sound	Intervention provider: Psychologist Duration: Short Timing: During school hours	N = 111 Young people from a middle school in a town in Italy Age: Mean 13.1 Sex: Mixed (54% M) Ethnicity: Not stated	No relevant data reported	Depression (KSQ) Anxiety (KSQ)
Sheffield et al. (2006) Australia	Intervention *vs.* No intervention control Cluster-RCT	Intervention provider: Teachers Duration: Short Timing: During school hours This RCT had three experimental	N = 1,136 Young people from schools in Queensland and New South Wales Age: Mean 14.3 Sex: Mixed (54% F)	*Participants from middle-income families * Demographic data on gender presented	Depression (CDI) Anxiety (SCAS)

Study	Study design and quality	Intervention characteristics	Population	Inequalities data reported	Outcome measures (see key below)
	Sound	(universal, indicated, universal and indicated combined) and one no-intervention control group. The universal intervention and control groups were included in this review.	Ethnicity: Not stated		
Spence et al. (2005) Australia	Intervention *vs.* No intervention control Cluster-RCT Sound	Problem Solving for Life (PSFL) Intervention provider: Teachers Duration: Short Timing: During school hours	N = 1,266 Young people from schools in the Brisbane area (11 private, 5 state schools). Age: Mean 12.9 Sex: Mixed (52% F) Ethnicity: 89% born in Australia 'with the remainder coming from a wide variety of ethnic backgrounds'	*Demographic data on ethnicity reported for control and intervention group, not linked to outcomes * Found no difference in outcomes according to gender but no methods or data reported * Participants from middle-income families	Depression (BDI)
Indicated interventions					
Castellanos and Conrod (2006) UK	Intervention *vs.* No intervention control RCT Sound	Intervention provider: Youth workers, counsellors and research assistant Duration: Short Timing: During school hours	N = 423 Young people from urban secondary schools in London Age: 13-16 (mean 14) Sex: Mixed (64% F) Ethnicity: 40% white, 18% black African, 14% black Caribbean, 6% South Asian, 2% East Asian, 20% mixed/other	* Demographic data on ethnicity reported	Depression (BSI) Anxiety (number of panic attacks)
Lamb et al. (1998) USA	Intervention *vs.* No intervention control RCT Sound despite discrepancies	Intervention provider: Psychiatric nurse Duration: Short Timing: During school hours	N = 40 Young people from rural areas Age: 14-19 (mean 15.8) Sex: Mixed (56% F) Ethnicity: 95% Caucasian, 5% Hispanic	* Targeted rural population * Demographic data on ethnicity reported * Participants from a low income area	Depression (RADS)

Listug-Lunde (2005) USA	Intervention *vs.* No intervention control RCT Sound	Coping with Depression Course for Adolescents (CWD-A) Intervention provider: Mental health professional and psychology graduate Duration: Long Timing: During school hours	N = 17 Young people living on a rural Midwestern Native American reservation Age: Mean 12.4 Sex: Mixed (64% M) Ethnicity: All Native American	* Targeted a Native American population * Participants from a low income area	Depression (CDI) Anxiety (MASC)
Masia-Warner (2005) USA	Intervention *vs.* No intervention control RCT Sound	Skills for Academic and Social Success (SASS) Intervention provider: Teachers, peers, clinical psychologist and psychology graduate Duration: Long Timing: During school hours	N = 35 Young people from schools in New York City Age: 13-17 (mean 14.8) Sex: Mixed (74% F) Ethnicity: 83% Caucasian, 9% African American, 3% Asian American, 3% Latin American, 3% other	* Demographic data on gender and ethnicity reported	Depression (CDI) Anxiety (SPAIC – participant rating)
Masia-Warner (2007) USA	Intervention *vs.* No intervention control RCT Sound	Skills for Academic and Social Success (SASS) Intervention provider: Peers, clinical psychologist and psychology graduate Duration: Long Timing: During school hours	N = 32 Young people from schools in New York City Age: 14-16 (mean 15.1) Sex: Mixed (83% F) Ethnicity: 72% Caucasian, 6% African American, 17% Hispanic, 6% other	* Demographic data on gender and ethnicity reported	Depression (BDI)
Puskar et al. (2003) USA	Intervention *vs.* No intervention control RCT Sound	Intervention provider: Psychiatric nurses Duration: Long Timing: During school hours	N = 89 Young people living in rural areas of southwestern Pennsylvania Age: 14-18 (mean 16) Sex: Mixed (82% F) Ethnicity: 99% white	* Targeted rural population * Demographic data on gender and ethnicity reported	Depression (RADS)
Stein et al. (2003) USA	Intervention *vs.* No intervention control RCT Sound	Cognitive Behavioral Intervention for Trauma in Schools (CBITS) Intervention provider: Psychiatric social workers Duration: Long Timing: During school hours	N = 117 Young people from east Los Angeles, a low-SES area Age: Mean 10.9 Sex: Mixed (56% F) Ethnicity: Area is primarily Latino; ethnicity of individuals is not stated.	* Participants from a low income area * Demographic data on gender and ethnicity reported	Depression (CDI)

Yu and Seligman (2002) China	Intervention vs. no intervention control RCT Sound	Penn Optimism Program (POP), amended for young Chinese people Intervention provider: Teachers Duration: Long Timing: After school hours	N = 215 Young people from a school in Beijing Age: Mean 11.8 Sex: Mixed (59% M) Ethnicity: Not stated	* Found no difference in outcomes according to gender, but no methods or data reported * Participants from high-income families	Depression (CDI)

* Key to outcome measures:
BDI refers to the Becks Depression Inventory.
BSI refers to the Brief Symptom Inventory.
CDI refers to the Children's Depression Inventory.
KSQ refers to Kellner's Symptom Questionnaire.
MASC refers to the Multidimensional Anxiety Scale for Children.
RADS rerers to the Reynolds Adolescent Depression Scale.
RCMAS refers to the Revised Children's Manifest Anxiety Scale.
SBB-DES refers to a measure of child and adolescent major depression and dysthymia symptoms outlined by the DSM-IV and ICD-10 (Döpfner & Lehmkuhl, 2000).
SCAS refers to the Spence Children's Anxiety Scale.
SPAIC refers to the Social Phobia and Anxiety Inventory for Children.
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Appendix 4: Characteristics of included studies

Castellanos and Conrod (2006)

Aim of the intervention: To reduce substance abuse, depression, panic and risk-taking behaviours

Content of the intervention: The intervention contained three main components: (a) psycho-education, (b) motivational intervention, and (c) cognitive-behavioural coping skills training. The psycho-educational component educated students in the personality variable in question and the problematic coping behaviours associated with that personality style. The motivational exercise addressed the use of problematic behavioural strategies for coping with that particular personality dimension. The cognitive-behavioural coping skills training involved learning how to identify and challenge personality-specific cognitive distortions.

Intervention provider: Youth workers or counsellors and a research assistant

Training for intervention provider: Unclear; interventions were based on standardised manuals.

Indicated / targeted / universal: Indicated (personality risk subscales of the Substance Use Risk Profile Scale)

Intensity: Short

Timing: During school hours

Involvement of participants in research: Not stated

Chaplin et al. (2006)

Aim of the intervention: To reduce or prevent depression, and to reduce or prevent two known risk factors for depression, hopelessness and explanatory style

Content of the intervention: The Penn Resiliency Program (PRP), a cognitive-behavioral and social problem-solving intervention designed to reduce and prevent depressive symptoms in children and adolescents. The cognitive-behavioral component focuses on teaching adolescents to identify and evaluate pessimistic thoughts. The social problem-solving component addresses interpersonal and conduct problems. Students are taught skills for assertiveness, decision making, and coping with conflict.

Intervention provider: School personnel (teachers, guidance counselors) and research assistants

Training for intervention provider: Intervention providers received a week's training from the developers of the intervention programme, and regular (bi-weekly) supervision with feedback on audio recordings of the sessions. Intervention providers followed a detailed manual.

Indicated / targeted / universal: Targeted at females, although delivered to young people of both genders

Intensity: Long

Timing: After school hours

Involvement of participants in research: Not stated

Gillham et al. (2006)

Aim of the intervention: To reduce and/or prevent depression in young people and parents by increasing resiliency and the ability to cope with adversity

Content of the intervention: The Penn Resiliency Program for Children and Adolescents (PRP-CA) with the addition of an extra component, the PRP-P for parents. PRP-CA is a school-based curriculum designed to teach cognitive and problem-solving skills to late elementary and middle school students. PRP-CA includes two major components. The cognitive-behavioural component is based largely on cognitive-behavioural theories and therapies for depression, addressing the impact of beliefs and interpretations on negative emotions. Students also learn to apply cognitive restructuring techniques to negative beliefs about the future. The second component of the programme focuses on social problem-solving techniques. The PRP-P is a group intervention designed to increase parents' resilience by teaching them core skills of the PRP-CA (adapted for adults) and to help parents incorporate the skills in their parenting through both modeling and supporting their children's use of the skills.

Intervention provider: Psychologist and research assistants

Training for intervention provider: Research assistants were trained and supervised by senior researchers.

Indicated / targeted / universal: Indicated (symptoms of depression)

Intensity: Short

Timing: After school hours

Involvement of participants in research: Not stated

Gillham et al. (2007)

Aim of the intervention: To reduce symptoms of depression

Content of the intervention: The study compared two intervention programmes with a control group: the Penn Resiliency Program (PRP) and the Penn Enhancement Program (PEP). PRP is a group intervention that teaches cognitive-behavioral and social problem-solving skills. Educational components cover the link between beliefs, feelings, and behaviors; cognitive styles, including pessimistic explanatory styles; and cognitive restructuring skills, including how to challenge negative thinking by evaluating the accuracy of beliefs and generating alternative interpretations. Students also learn a variety of

techniques for coping and problem-solving, including assertiveness, negotiation, decision making, and relaxation. Students apply the cognitive and problem-solving techniques in their lives through group discussions and weekly homework assignments. PEP is a group intervention that focuses on many of the stressors associated with adolescent depression. Topics include peer pressure, ethical dilemmas, trust and betrayal, improving communication, friendships, family conflict, setting and achieving goals, self-esteem, and body image. Each session includes structured activities, roleplaying, and guided discussion.

Intervention provider: School teachers, school counselors, graduate students in school psychology, education, and clinical psychology

Training for intervention provider: Intervention providers participated in a 30-hour training workshop and received bi-weekly supervision from the intervention developers.

Indicated / targeted / universal: Universal (participants with depressive disorder at baseline were excluded)

Intensity: Long

Timing: After school

Involvement of participants in research: Not stated

Lamb et al. (1998)

Aim of the intervention: To teach coping skills to help students with symptoms of depression deal more effectively with stressful situations

Content of the intervention: The intervention was based on a cognitive-behavioral model. Educational topics included common teen stresses, self-image, coping, family relationships, and communication. Students participated in experimental learning through identifying their problems and engaging in concrete problem-solving tasks.

Intervention provider: Psychiatric nurse

Training for intervention provider: Not stated; intervention was based on a standard protocol.

Indicated / targeted / universal: Indicated (depressive symptoms)

Intensity: Short

Timing: During school hours

Involvement of participants in research: Not stated

Listug-Lunde (2005)

Aim of the intervention: To decrease the symptoms of depression

Content of the intervention: The Coping with Depression Course for Adolescents (CWD-A) modified to be used with Native American middle-school students. CWD-A is a cognitive-behavioural intervention focussed on skills development. The intervention concentrated on

the following areas: (a) social skills development, (b) mood monitoring, (c) pleasant events scheduling and monitoring, (d) increased positive thinking, (e) communication training, (f) negotiation and problem solving, (g) goal setting, and (h) developing a plan for maintaining gains.

Intervention provider: Mental health professional, psychology graduate student

Training for intervention provider: Intervention providers received training and ongoing weekly supervision from the lead researcher and a clinical psychologist.

Indicated / targeted / universal: Indicated (depression) and targeted (Native Americans)

Intensity: Long

Timing: During school hours

Involvement of participants in research: Participants' views on the intervention were sought.

Lock and Barrett (2003)

Aim of the intervention: To reduce anxiety and depression and improve coping skills

Content of the intervention: The FRIENDS programme, a cognitive-behavioural intervention, teaches children strategies for coping with anxiety and challenging situations in a group format. The intervention incorporates physiological, cognitive and behavioural coping strategies.

Intervention provider: Teachers, psychologists, psychology graduate students

Training for intervention provider: Psychologists were trained 'extensively'; teachers participated in a one-day training workshop.

Indicated / targeted / universal: Universal

Intensity: Long

Timing: During school hours

Involvement of participants in research: Not stated

Masia Warner et al. (2005)

Aim of the intervention: To reduce anxiety levels in participants with social anxiety, and to increase recognition of students with social anxiety for referral to appropriate treatment

Content of the intervention: The Skills for Academic and Social Success (SASS) intervention included school-based sessions and weekend social events, assistance from nominated peers, and meetings for parents and teachers. School-based sessions focused on psychoeducation, realistic thinking, social skills training, exposure to anxiety-inducing

situations, and relapse prevention. Participants were taught to identify and address negative expectations and to develop practical skills for social interaction. The intervention delivered to the control group included support for social anxiety symptoms and related difficulties, and general relaxation strategies, but omitted therapeutic elements specific to reversing social anxiety.

Intervention provider: Clinical psychologist, psychology graduate student, teachers, peers

Training for intervention provider: Teachers participated in two 30-minute educational meetings and were supervised by group leaders. Peer assistants met twice with the group leaders.

Indicated / targeted / universal: Indicated (social anxiety)

Intensity: Long

Timing: During school hours

Involvement of participants in research: The intervention was piloted with a sample of the target population.

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Intervention provider: Clinical psychologist, psychology graduate student, peers

Training for intervention provider: Intervention was based on a standard manual; details of training not stated.

Indicated / targeted / universal: Indicated (social anxiety)

Intensity: Long

Timing: During school hours

Involvement of participants in research: Participants' and their parents' views were sought. The intervention was piloted with a sample of the target population.

Merry et al. (2004a)

Aim of the intervention: To prevent depression and/or reduce depressive symptoms

Content of the intervention: The intervention programme, RAP-Kiwi, was adapted from the Resourceful Adolescent Program (RAP), designed in Australia. The programme incorporates cognitive behavioural and interpersonal therapy principles. The sessions focus on self-esteem, identifying negative cognitions, stress management, cognitive restructuring, problem-solving techniques, humour and conflict resolution. The control group studied arts and crafts in a supportive environment, but without elements thought to be active in preventing depression.

Intervention provider: Teachers

Training for intervention provider: Teachers completed a 2.5-day training programme with the research team and met with a member of the research team weekly. Teachers delivering the control-group intervention were trained separately.

Indicated / targeted / universal: Universal

Intensity: Long

Timing: During school hours

Involvement of participants in research: Participants' views on the intervention were sought.

Poessel et al. (2008)

Aim of the intervention: To reduce and/or prevent depressive symptoms

Content of the intervention: The intervention was based on the social information processing model of social competence; methods used were taken from cognitive-behavioral therapy. The intervention focused on the relationship between cognition, emotion, and behavior; changing dysfunctional cognitions; assertiveness training; social competence training; and motivation.

Intervention provider: Psychologists and graduate students

Training for intervention provider: Each intervention provider first underwent the programme as a participant. They then studied the manual and led a group with a more experienced leader. Intervention providers also met weekly with the lead researcher for supervision, including feedback on video recordings.

Indicated / targeted / universal: Universal

Intensity: Long

Timing: During school hours

Involvement of participants in research: Not stated

Puskar et al. (2003)

Aim of the intervention: To enhance the coping repertoire of adolescents to reduce depressive symptomatology

Content of the intervention: The intervention involves education on cognitive coping methods to prevent depression and maximise coping in adolescence. The sessions focus on self-esteem, stress and coping, and include reframing, cognitive rehearsal, assertiveness and social skills training, relaxation training and self-understanding.

Intervention provider: Psychiatric nurses

Training for intervention provider: Intervention was based on a standard manual, and intervention providers had the opportunity to consult the research team.

Indicated / targeted / universal: Indicated (depression) and targeted (inhabitants of rural areas)

Intensity: Long

Timing: During school hours

Involvement of participants in research: Participants' views on the intervention were sought.

Ruini et al. (2006)

Aim of the intervention: To improve psychological well-being, taken as encompassing six dimensions: autonomy, personal growth, environmental mastery, purpose in life, positive relations and self acceptance.

Content of the intervention: Two interventions were compared: (a) a protocol for affective education, particularly focused on negative emotions, using theories and techniques derived from CBT; and (b) a protocol derived from well-being therapy (WBT), which was focused on positive emotions and on dimensions of psychological well-being. Two sessions, on the relation between thoughts and emotions, were similar in both programmes. The CBT intervention then focused on techniques such as identification of negative beliefs and interpretive styles, evidence for and against negative beliefs and alternative interpretations for problems. The WBT intervention emphasized the recognition, expression and communication of positive emotions, including interpersonal relationships, self-acceptance and personal growth.

Intervention provider: Psychologist

Training for intervention provider: Not stated; intervention was protocol-based.

Indicated / targeted / universal: Universal

Intensity: Short

Timing: During school hours

Involvement of participants in research: Not stated

Sheffield et al. (2006)

Aim of the intervention: To prevent depression in at-risk young people

Content of the intervention
Three groups were compared. One received a universal intervention, one an indicated programme, and one received both (universal followed by indicated). The universal intervention integrated two major cognitive-behavioral components (cognitive restructuring and problem-solving skills training) and included cognitive techniques and problem-solving skills. The indicated programme covered similar content, but employed longer sessions and a small group format, and was focused more on interpersonal skills and self-reward.

Intervention provider: Teachers (universal), school counsellors and mental health professionals (indicated)

Training for intervention provider: Universal intervention: teachers attended a six-hour training day, covering theory and implementation of the intervention. Indicated intervention: intervention providers attended a 1-day seminar/workshop. Both interventions were based on a standard manual.

Indicated / targeted / universal: Universal and indicated

Intensity: Short

Timing: During school hours

Involvement of participants in research: Participants' views on the intervention were sought.

Spence et al. (2003)

Aim of the intervention: To prevent depression

Content of the intervention: The intervention Problem Solving for Life (PSFL) was implemented by teachers as part of the curriculum. Teachers were provided with prepared curriculum materials designed to teach life problem-solving skills, positive problem-solving orientation, and optimistic-thinking styles. The intervention contains two components: cognitive restructuring and problem-solving skills training. The first component focuses on cognitive style and teaches young people to identify thoughts, feelings, and problem situations, and the relationships between these. The second phase focuses on teaching life problem-solving skills, including the development of positive problem-solving orientation. Teaching methods include didactic sessions; cartoons; individual, small group, and whole class interactive exercises and activities; home-tasks; and diary keeping.

Intervention provider: Teachers

Training for intervention provider: Teachers attended a training day (six hours) covering theory and implementation of the intervention, received prepared curriculum materials, and were offered ongoing support by the research team.

Indicated / targeted / universal: Universal

Intensity: Short

Timing: During school hours

Involvement of participants in research: Participants' views on the intervention were sought.

Stein et al. (2003)

Aim of the intervention: To reduce symptoms of post-traumatic stress disorder and depression resulting from exposure to violence

Content of the intervention: The CBITS intervention incorporates CBT skills in a group format (5-8 students per group) to address symptoms of PTSD, anxiety and depression related to exposure to violence. The intervention focused on developing skills and applying them to participants' own lives, including combating negative thoughts, developing alternative coping strategies, and learning about social problem solving. In each session, a new set of techniques was introduced by a mixture of didactic presentation, age-appropriate examples and games to solidify concepts; individual work on worksheets during and between sessions; and collaboratively developed homework assignments.

Intervention provider: Psychiatric social workers

Training for intervention provider: Intervention providers received two days of training from the research team and followed a standardised treatment manual.

Indicated / targeted / universal: Indicated (exposure to violence and symptoms of depression or PTSD) and targeted (low-SES, primarily Latino communities)

Intensity: Long

Timing: During school hours

Involvement of participants in research: School personnel were involved in a collaborative research partnership, but participants themselves were not directly involved. The intervention was piloted with a sample of the target population.

Yu and Seligman (2002)

Aim of the intervention: To prevent depression and increase resilience to negative life events

Content of the intervention: The intervention was a version of the Penn Optimism Program (POP) amended for use with Chinese children. Amendments to the programme included a revision of the assertiveness training component for appropriateness to Chinese cultural

values, and implementation by teachers rather than mental health professionals. The sessions focused on thinking styles, challenging negative thoughts, coping with conflict and social skills training.

Intervention provider: Teachers

Training for intervention provider: Teachers received a total of 40 hours' training from the lead researcher as well as weekly supervision meetings.

Indicated / targeted / universal: Indicated (risk of depression and family conflict)

Intensity: Long

Timing: After school hours

Involvement of participants in research: Not stated

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