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Preventing depression, which story does the evidence tell?

A theoretical paper

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Abstract: Depression implies both an individual suffering and high financial costs for society. Even though evidence shows that some forms of psychological treatment for depression could be effective, there is still a large potential for improvement because a significant proportion of the patients in treatment studies do not convalesce and many patients that do experience relapses at follow up. Lately the focus on preventing depression has increased and the present paper is a review of empirical studies related to prevention of depression among children and adolescents. Collectively the evidence points to larger effect sizes for targeted intervention programs rather than universal programs, both measured at post-treatment and at follow-up. There are also better results for interventions implemented by psychologists than for interventions implemented by teachers and other professions. Targeted programs do not have the effects one would expect, and generally the effects of these interventions seem short lived. Possible reasons for these results are discussed and further directions for research of this field are suggested. It is essential that future work on the prevention of depression among children and adolescents is based on evidence and empirical findings.

Prevention of depression among children and adolescents

Depression is among the most frequent psychological disorders, and according to the WHO is now one of the most common causes of disability in the western world (Murry & Lopez, 1996). Depression is highly prevalent from early adolescence onwards, and is more frequent among women than men (Ayuso-Mateos, 2001). Studies indicate that the proportion of mild and moderate depressive episodes has increased in the latter half of the 20th century (Costello et al., 2002; Nilsson, Bogren, Mattison & Nettelbladt, 2007). Treatment of depression is

costly, e.g. in Norway the direct costs related to treating depression are estimated to be 220 million Euros per year (Dalgard & Bøen, 2008). Depressive disorders also cause about 30% of all disabilities in Norway (Mykletun & Øverland, 2006). In addition to these societal costs, depression also causes considerable subjective suffering and experiencing a depressive episode is also the primary risk factor for new episodes of depression (Lewinsohn, Seeley, Solomon & Zeiss, 2000; Fergusson, Horwood, Eidder & Beautrais, 2005).

There are several different treatments for depression. Research indicates that a large portion of the patients treated do not respond to treatment, which is the case both for pharmacological treatments (Kennard et al., 2006) and for psychological treatments (Elkin et al., 1989; Kennard et al., 2006; Weersing & Weisz, 2002). Only about 50% are cured after treatment (Dimidjian et al., 2006; Roth & Fonagy, 2005). According to several different treatment studies, relapses occurring after treatments are a common finding across several treatment studies. As many as 40% have a relapse within the first year after treatment has ended, and about half of the patients relapse within a period of 18 months (Dimidjian et al., 2006). The probability of a new relapse increases by 16% with every new episode (Solomon et al., 2000).

Cognitive behavioural therapy, (CBT), has been shown to be among the most effective methods in the treatment of depression (Blackburn, Eunson & Bishop, 1986; Dobson, 1989; Elkin et al., 1989; Lynch, Laws & McKenna, 2010; Teasdale et al., 2000; Weersing & Weisz, 2002), and seems to prevent relapses to a larger extent than pharmacological treatment alone (Blackburn et al., 1986; Lynch et al., 2010; Teasdale et al., 2000). Even though CBT is viewed as an effective treatment intervention, there is still a relatively large portion of the patients being treated that do not respond to the treatment (Elkin et al., 1989; Kennard et al., 2006).

Based on the magnitude of the problem depression poses and the general effectiveness of treatment, alternative approaches like prevention are receiving increased interest and prevention has become the focal point of new long-term aims in countries such as Norway.

Prevention for depressive disorders

The research literature is often a bit unclear regarding the difference between treatment and prevention. Gillham, Shattè and Freres (2000) has pointed out that several studies which claim to study prevention in reality explore the effect of a treatment. Treatment can be defined as controlled intervention with the aim of improving symptoms, while prevention focuses on hindering the development of disorders and symptoms. The goal of prevention thus is to reduce the prospective risk. If explored empirically the results would potentially indicate an increase in symptom levels for control groups, while for intervention groups the levels of symptoms remains stable. A prevention study should thus always contain a follow-up period (Gillham et al., 2000), and it is particularly the aspect of a follow-up time that has become problematic in distinguishing prevention and treatment (Gillham et al., 2000). One central issue is the duration of the effects of the intervention, and how long an effect must be maintained in order to call it prevention. Gillham et al. (2000) argue that the specification of months in such a context would be arbitrary. A meaningful test would be if an intervention offers protection during a period of increased risk. Their proposal is that the prevention intervention should be implemented prior to the development of a particular condition such as e.g. clinical depression.

Prevention interventions have traditionally been divided into constructs of primary, secondary and tertiary prevention. Primary prevention interventions are designed to prevent new cases of the disorder. Secondary prevention interventions, on the other hand, imply early detection and treatment, while tertiary prevention focuses on reducing the negative consequences of an already existing disorder (Gillham et al., 2000; Mrazek & Hagerty, 1994). It has proved difficult to differentiate between primary, secondary and tertiary prevention. Based on these problems related to differentiating these levels of interventions, a new three-partied classification of the construct has been suggested (Mrazek & Hagerty, 1994). It has been argued that the partition into universal, indicated and selective prevention could be more useful. Universal prevention is related to intervention for the entire population without differentiating between individual risks. Indicated prevention is directed at individuals in a risk zone for a given disorder based on the initial signs of disorder (such as heightened symptom levels) but not yet at a level sufficient for clinical diagnosis. Selective prevention focuses on individuals with heightened risk, defined by the individuals' living circumstances,

not based on heightened symptom levels. Indicated and selective prevention is often collectively termed as targeted prevention (Gillham et al., 2000; Mrazek & Hagerty, 1994).

An important question is also which age groups prevention should focus on. Depression is one of the most common psychological disorders among children and adolescents (Costello et al., 2002). The prevalence of depression increases in early adolescents for both girls and boys, but more profoundly for girls. This gender difference seems to arise around the age of 13 years, when the prevalence of depression among girls increases dramatically. This particular gender difference seems to be relatively unique to depression, even though it overlaps to some extent in other disorders such as anxiety and especially generalized anxiety disorder (Costello et al., 2002; Hankin & Abramson, 2001). The debut of depression in early childhood or adolescence is a strong risk factor for later episodes of depression (Costello et al., 2002; Fergusson et al., 2005), and an early debut is also associated with a chronic condition later in life. Preventing the first depressive episode in childhood or adolescence could therefore reduce the risk and severity of depression in adulthood. It is essential therefore to have empirical data on the effects of such intervention programs prior to implementing them on a larger scale in addition to evaluating whether to go for a universal, indicated or selective approach.

This paper will address the following issue in regard to depression: *Which type of prevention could be regarded as effective related to the studies that have been carried out so far and which implications could be drawn from the studies related to prevention of depression.* These issues are important to review in determining whether investing in a prevention program should be a prioritized task, and ultimately which interventions the research seems to support.

Method

The literature reviewed in this paper consists of publications prior to January 2012. Only studies that had a control group were included in this review. The review also includes studies with participants in the age span from 6 to 18 years of age. The key words used for searching were *depression* and *prevention* in combination. The searches were further limited by using

the key terms *school-age and adolescents*. The search engines used in the search was limited to PsychInfo and PsychArticles. The search using the key terms described above resulted in 31 studies which have explored prevention to depression. The studies are presented in Table 1. There were in all 12 universal interventions, of which two were follow-up studies reporting longitudinal data. Interventions were indicated in all 11 studies, of which two also reported follow-up data. Eight studies were identified as selective intervention programs, of which two of these also included follow-up assessments.

The effect sizes used in the present review is Cohen's *d*, if not otherwise specified. The effect sizes are important in addition to the significance of the results, because they give an indication of the magnitude of change (Flay et al., 2005; Meltzoff, 1997). Cohen's *d* smaller than .20 are regarded as small, effect sizes of .50 are regarded as medium and sizes of .80 are considered to be large (Meltzoff, 1997). Some studies also use Pearson's *r* where the effect sizes are related to *r*. Scores of .10 are small, .30 are medium and .50 are large (Meltzoff, 1997). Based on the new classification mentioned earlier in this paper it is natural to look at studies related to universal, indicated and selective approaches individually, and then discuss the findings collectively.

The effects of different approaches to prevention

Universal prevention programs.

Pössel, et al., (2004) designed a prevention program based on cognitive methods, called LISA-T. The program was administered in a classroom setting, two hours at a time once a week over a period of ten weeks. The intervention groups were divided into subgroups based on sex. The separation of the sexes seemed to increase collaboration within each groups. The program was implemented by clinical psychologists or students at the master level with experience from clinical work. The average age of the participants was 14 years. LISA-T contains both cognitive and social interpersonal components. The main focus of the interventions in this program was to illustrate the relation between cognitions, emotions and behavior, and to change dysfunctional cognitions. This was implemented by training self-assertion and expanding the participants' social competences. The researchers behind the

study claimed that the program would contribute to preventing depression among adolescents in two ways; 1) the cognitive interventions aimed at increasing the ability to reflect and question their own negative automatic thoughts and therefore develop more adaptive and functional thoughts and, 2) the social interventions aimed to promote pro-social and positive social behaviour. It was not assumed that people with a clinical depression would benefit from the intervention, because they would need a more intensive treatment. The results from the six month follow-up indicated that participants with initial minimal depressive symptoms showed no increase in symptom levels, but such a significant increase was found in the control group. The intervention significantly reduced the level of depressive symptoms among those with subsyndromal depression scores, which was also the case for participants in high risk groups. Participants with clinical depression did, however, not show any decrease in levels of symptoms (Pössel et al., 2004). No effect sizes were reported in this particular study. However, Spence and Shortt (2007) have in retrospect estimated the effect sizes for Pössel et al. (2004) to be .49 at post-test and .44 at six month follow-up. The results for the group with subsyndromal scores were non-significant at posttest, but significant at 6 months follow-up with an effect size of .50. There were, however, no significant changes in dysfunctional automatic thoughts or the social network as a consequence of the interventions. Therefore it is unclear what the active ingredients in the intervention are, and also the period of follow-up is short.

Spence, et al., (2003) classified their "Problem Solving for Life Program" (PSFL) as a universal prevention program. The intervention in their program is structured to one school hour per week over a period of 8 weeks, and the participants were between 12-14 years of age. Trained teachers delivered the intervention, which consisted of two main components: cognitive restructuring and problem solving training. The program was implemented by teachers. The results from the program indicated a significant reduction in depressive symptoms from pre to post intervention for the PSFL pupils that were classified in the high risk intervention group, compared to the high risk participants in the control group. The low risk intervention pupils saw small but significant changes. Spence and Shortt (2007) reported effect sizes of .36 and .32 for high and low symptom levels, respectively. The results were significant at post-test, but not at 1 year follow-up. The low risk control group participants had a small increase in the depression scores. The intervention group had a significant increase in problem solving ability compared to the control group. The problem solving

ability was found to mediate the relation between the intervention and the depressive symptoms. There were no differences in depression, social functioning and attribution style, problem-solving abilities or internalized or externalized problems at 12 months follow up. The only significant difference between the groups at 12 months follow-up was a reduction in avoidant problem solving style between the high risk intervention group compared to the control group. In a later paper Spence, Sheffield and Donovan (2005) reported the results from a two, three and four year follow-up. The results for Spence, et al., (2005) did not identify significant differences between the intervention group and the control group. So, even though there was a short term positive effect, it was not maintained neither at 1, 2, 3 nor 4 years of follow-up (Spence et al., 2003; Spence et al., 2005). Of the pupils that had heightened symptom levels at the start, 25% reported level of symptoms within clinical levels at the 4 year follow-up both in the control and intervention group (Spence et al., 2005). These findings underline the importance of long term follow-up in order to identify possible intervention effects.

”The Aussie Optimism Programme” (AOP, Roberts et al., 2010) consisted of two components, namely social skills and the development of an optimistic thinking style. The first component targeted interpersonal risk for depression, while the second component targeted the cognitive vulnerability factor of pessimistic attribution style (e.g. negative self-perception and negative expectations towards the future and problem solving skills). AOP was classified as a universal prevention program and was implemented in several schools. It was aimed at pupils in school areas with lower socioeconomic status, which were associated with a certain level of elevated risk such as poverty, higher divorce rates and interpersonal conflicts. The program had similar underlying theoretical framework as previously described programs, but additionally incorporated techniques for changing cognition, emotion and behaviour related both to anxiety and depression. The interventions were implemented once a week in classroom settings for children between the ages of 11 and 13 years over a 20 week period (Roberts et al., 2010). The participants’ self-reported levels of anxiety and depression indicated no group differences at post- test, and at 6 or 18 months follow-up. Sex and risk status prior to the interventions had no moderating effects. In fact, the only effect found was the parents’ reports of a reduction in internalizing problems at post-test, but this effect disappeared at 6 and 18 months follow-up. Compared to non-drop outs, the people who dropped out of the program had higher self-reports and higher parent reports of depressive

symptoms at pretest (Roberts et al., 2010). There were unfortunately no effect sizes reported for this study. The teachers which administered the intervention were reported to have a high fidelity to the manual. The attendance of the participants was also high throughout the intervention period. Therefore difficulties regarding implementing the program or reaching the pupils were not considered reasons for the missing effects.

“The Resourceful Adolescent Program” (RAP) is a universal program that is founded on cognitive behavioural therapy and interpersonal therapy (Rivet-Duval, et al., 2011; Shochet et al., 2001). Shochet et al. (2001) evaluated the effects of the program in a school setting with adolescents between 12 and 15 years of age. The study compared three interventions: a) RAP-A, where the adolescents participated in the intervention; b) Resourceful Adolescent Program-Family (RAP-F) where they added a component for the parents; c) a control group. RAP-A was administered in groups of 8 – 12 participants, with 11 weekly sessions implemented by psychologists. The parent intervention took place in the evening every three weeks, with psychologists as group leaders. The general participation in the interventions was high with an 88 % participation rate for the adolescents. Both the RAP-A and RAP-F had significant results with decreases in depressive symptoms compared to the control group at both post-test and 10 months follow-up. Spence and Shortt (2007) estimated this particular study to have an effect size of .47 at post- test and .34 at 10 months follow-up. However, no significant effects were found for the parent component. One possible reason for this was a low participation rate among the parents. No participants in the sub clinical symptoms group developed clinical depression neither in the intervention period nor in the follow-up. In comparison, 17.6% of the control group developed a clinical depression at post-test. Although this study reported some positive results, the sample size was small and there was also no randomization to the intervention groups.

Rivet-Duval et al. (2011) attempted to replicate the findings of Shochet et al. (2001), for the RAP-A with participants from Mauritius. The interventions were administered by teachers and not psychologists in this particular study and it was unable to replicate the same effects of Shochet et al. (2001). The results indicated a short term effect of the program on depressive symptoms, with lower scores in the intervention group compared to the control group at post-test. The effect size was reported at .32. These significant results disappeared at six months follow-up. The study did, however, find significant increases in self-confidence and coping behaviour at post-test and follow-up. The authors concluded that the RAP-A can

be effective in promoting positive health, but not as a direct intervention toward depression (Rivet-Duval et al., 2011). These particular findings are in accordance with two prior studies where the RAP was administered by teachers and not psychologists (Harnett & Dadds, 2004; Merry, McDowell, Wild, Bir & Cunliffe, 2004).

One of the largest universal prevention programs that has ever been implemented in school settings is the «Beyond Blue»- program. The interventions in this program was developed based on the experience with earlier school based interventions and included a sample with a mean age of 13 years of age (Sawyer, et al., 2010a; b). The program had a three year implementation period. It consisted of four specific components; a psycho-educational component, a component focusing on improving the quality of the social interaction between all members of the school, increased access to health care and information, and finally a component focused on forming appropriate forums or places where young people, their families and school employees could exchange information to help them identify problems, seek help and help peers. The study used a model of depression based on the dynamic interaction between risk and protective factors, stressful life events, and psychosocial adaptation. The psycho-educative component it was focused strongly on problem solving, social skills, (called resilient thinking styles), and coping strategies in class room settings administered by teachers in the particular schools (Sawyer et al., 2010a). Twenty-five secondary schools matched in relation to socioeconomic status were randomized to either intervention or control group conditions. The results indicated that there was no effect in reducing the level of depressive symptoms among the adolescents (Sawyer et al., 2010a; b). The results did not change at two years follow-up. Further analysis indicated that the participants with higher depression scores had higher drop-out rates, which could have influenced the results (Sawyer et al., 2010a). Other studies have found that participants with the highest level of symptoms had the highest probabilities of future depressive episodes and increased drop-out rates from such studies (Roberts et al., 2010; Spence et al., 2003; 2005). No effect sizes were reported for this study.

The Penn Resiliency Program (PRP) also known as the Penn Prevention Program, is among the programs that has generated the most research. It is a manualized intervention program for depression based on cognitive-behavioural therapy techniques. The interventions are group based, with twelve 90-minutes meetings. The adolescents who participated in the program were between 10 to 14 years of age (Reivich, Gillham, Chaplin & Seligman, 2005).

PRP has been tested both as a universal program (Cardemil, et al., 2002; Gillham et al., 2007) and an indicated program (Gillham, et al., 2006; Jaycox, et al., 1994). Cardemil et al. (2002) and have studied the effect of PRP as a universal program for minority groups in areas with low socioeconomic status, which is a known risk factor for developing depression (Goodman, Slap & Huang, 2003). The intervention yielded positive results for participants with a Latin American background with a follow-up period of 6 months. The intervention gave significant results for the groups with higher levels of symptoms at the start. The effect size was reported as 1.19 at post intervention and .90 at six months follow-up. They also found significant results for participants with low initial scores, however, they chose to use the significance level of .10. The effect sizes for the low symptom group was .67 at the end and .79 at six months follow-up, which was interpreted as a trend toward prevention. The intervention also seemed to have a positive effect both for groups with low and high symptoms. No effects were found for participants with an African-American background. One possible explanation for this may be that the Latin-American groups reported higher levels of depressive symptoms. The sample size was small, particularly in the Latin-American group with only 49 participants distributed across the interventions and control group.

Gillham et al. (2007) has evaluated the PRP as a universal intervention program implemented by teachers. This study included both an active and a passive control group. In the active control group they focused on factors associated with depression, without including the CBT content of the PRP. The Gillham et al. (2007) study included three schools. The results for the entire sample showed no effects of the program. PRP prevented the debut of depression compared the passive control groups, but not compared to the active control group. PRP did also not reduce the levels of depressive symptoms over a follow-up period over three years, neither compared to the passive nor the active control group. A more thorough analysis of the data indicated that there were differences between the schools. In two of the schools the PRP significantly reduced the depressive symptoms compared to the control group with an effect size of .24. In these particular schools the PRP prevented the debut of clinical depression. The effects were largest for the mild and moderate depressive symptoms of clinical depression. The effects of the interventions seem to depend on if they were administered by members of the research team or others (such as teachers) (Gillham et al., 2006; Harnett & Dadds, 2004; Merry et al., 2004; Rivet-Duval et al., 2011; Shochet et al.,

2001). The Gillham et al. (2007) study was influenced by low recruitment rates (15 -22 % participated) at all schools, and the drop-out rates were high in the follow-up period.

This short review of universal prevention programs shows that only two of the programs, LISA-T and RAP (Pössel et al., 2004; Shochet et al., 2001), have effects at six and 10 month follow-ups. Cardemil et al. (2002) found effects for participants with a Latin-American background but not for groups with an African-American background. Attempts to replicate the findings have found short term effects, but no effects on the long term (Harnett & Dadds 2004; Merry et al. 2004; Rivet-Duval et al. 2011). Some differences related to the effects have also been identified depending on the type of profession administering the interventions.

The effects of targeted prevention programs.

Indicated prevention.

Indicated intervention programs are aimed at individuals that already show signs of a condition, but do not yet satisfy the criteria of a clinical diagnosis. In depression prevention research these groups are often selected based on elevated or subclinical scores on inventories related to measure depressive symptoms (Gillham et al., 2000; Mrazek & Hagerty, 1994). Subclinical symptoms are thus a known risk factor for clinical depression, and therefore a particularly important group with regard to prevention programs.

Dobson, et al., (2010) explored the effect of "The Adolescent Coping with Stress Course" for anxiety and depression among adolescents with elevated depression scores. The program is based on cognitive behaviour therapy spanning over 15 group sessions, each lasting 45 minutes. Interventions were administered by students in clinical psychology. An active control group was included. There were no significant differences between the two groups. The drop-out rate was as high as 39.1% which gave a result of only 14 remaining participants in each group at six months follow-up.

Stice et al., (2006) compared a short CBT group intervention consisted of four sessions with four placebo groups: a support group, biblio-therapy, expressive writing and writing a diary. In all 255 people participated, within an age span of 15 to 22 years. The

participants were selected based on heightened depression scores. The results indicated that the CBT gave significant higher reduction in depressive symptoms than the waiting list, with the effect size of $r = .48$ at post-test and $r = .28$ at one month follow-up. These differences were non-significant at 6 months follow-up. The four placebo groups also had a significant reduction of depressive symptoms compared to the waiting list. Only biblio-therapy retained significant results at six months follow-up with the effect size of $.29$. CBT only significantly better compared to writing a diary at post-test with the effect size of $r = .23$. This result may raise the question if CBT techniques are necessary to reduce depressive symptoms in prevention of depression. The fact that the biblio-therapy did as well as the CBT group therapy, may indicate that the non-specific factors like social support and attention, could be associated with effects for both groups. The researchers pointed out some weaknesses of this study, including small group sizes, which reduced the statistical power of the study. There was no control over whether the participants actually understood and started using the techniques that they learned in the program. The drop-out rate was highest in the CBT group with rates going up to 24%.

Stice, Rohde, Seeley og Gau (2008) extended the Stice et al. (2006) intervention from 4 to 6 hours, hoping that a larger dose of the interventions would improve the results. The sample was larger than in the initial study with 341 participants in the age range of 14 to 19 years (Stice, et al., 2006). Biblio-therapy and supportive group therapy were chosen as placebo groups, in addition to a passive control group. Supportive group therapy was chosen because the researchers wanted an active intervention with a non-specific element also relevant in the CBT groups, but without the cognitive focus. The results indicated that the CBT gave a significant symptom reduction at post-test compared to the supportive group therapy, biblio-therapy and the control group, with effect sizes of $.28$, $.52$ and $.46$, respectively. Both CBT, biblio-therapy and supportive group therapy showed significant lower risk for developing clinical depression at the six month follow-up (Stice et al., 2008). The results for the CBT group for depressive symptoms were still significant after one and two years follow-up with effect sizes of $.30$ and $.29$, respectively, compared to the other interventions where reductions in depressive symptoms were marginal. The risk for future clinical depression were lower for participants in the CBT group and the biblio-therapy group compared to the control group (Stice, Rohde, Gau & Wade, 2010).

Clarke et al. (2001) explored the preventive effects of group CBT intervention for adolescents that had elevated subclinical depression scores and depressed parents. This approach was defined as a combination between indicated and selective intervention. It was based on known CBT techniques, with particular focus on the experiences of living with a depressed parent. The parents were invited to a meeting with information about the program and the theory behind it. The intervention in itself did not focus directly on the individual parent's depression. They found a significant prevention effect for suicidality and general functioning. The risk for developing clinical depression was significantly lower for the intervention group compared to the control group. The study included a two year follow-up period and the prevention effect subsided with time. Stice, Shaw, Bohon, Marti and Rohde (2009) reported effect sizes of $r = .22$ at post-test and $r = .16$ at one year follow-up from the Clarke et al (2001) study.

Jaycox et al. (1994) tested the PRP as an indicated intervention program. The participants were included based on heightened depression scores, as well as elevated reports of parental conflict, which is a known risk factor for developing depression (Lewinsohn et al., 2000; Nomura, Wickramaratne, Warner, Mufson & Weissman, 2002; Shaw & Emery, 1987; Sheeber, Hops, Alpert, Davis & Andrews, 1997). The adolescents (aged 10 to 13 years) experienced a significant reduction in depressive symptoms compared to the control group over the six month follow-up. The variable related to attributional style for negative life events seemed to mediate the outcome. The effect sizes were highest for children that reported the highest levels of symptoms, and for those that reported the highest levels of parental conflict. The follow-up at two years indicated that the interventions had a significant prevention effect, as the intervention group reported significantly lower depression scores compared to the control group. These results indicate that cognitive interventions in late childhood, early adolescents may prevent the development of depressive symptoms in adolescents (Gillham, Reivich, Jaycox & Seligman, 1995). The results were significant and had effect sizes of $.18$ at post-test, $.32$ at 6 months follow-up and $.20$ at two years (Horowitz & Garber, 2006).

Gillham et al. (2006) wanted to explore the effectiveness of the PRP in a natural setting, and therefore it was implemented for use in the health services. The intervention was directed toward adolescents (11 to 12 years), which were identified based on their elevated depression scores. An indicated program is more in accordance with the health services than

in schools, because in schools there is a general awareness and a focus on not stigmatizing groups of pupils. It may also be plausible that employees in the health services have a background that facilitates the implementation of such a program to a greater extent than employees in the schools. The results indicated an improvement in the attribution style of positive events. The effects of attribution style for negative life events and depressive symptoms were moderated by sex. The program significantly reduced depressive symptoms for girls who had an effect size of .31, but not significantly for the boys. The level of symptoms also moderated the reduction of the depression symptoms, so that significant results were found for those with high but not low symptom levels. Summarized, the effects on depressive symptoms were small and inconsistent over a two-year period. The study had a high drop-out rate with nearly a third dropping out over the two year period.

Sheffield et al. (2006) compared universal and indicated interventions and a combination of these for preventing depression among 13 to 15 year olds with elevated depression scores. The universal interventions are further described by Spence et al. (2003). Sheffield's study had several methodological strengths, including a large sample size of 2470 participants distributed across 354 schools, an independent research team, a randomization to different conditions of interventions, long term follow-up (12 months) and a low drop-out rate (Sheffield et al., 2006). The indicated interventions were based on cognitive techniques like cognitive restructuring and problem-solving, with longer sessions and in smaller group formats with a larger focus on interpersonal abilities. None of the interventions had an effect compared to the control group. They did not find intervention effect if the program was considered universal and included the entire sample, or when they isolated the group with heightened risk. None of the interventions had effects on hypothesized mediation factors like coping and social adaptation. This may indicate that the participants did not acquire skills or abilities associated with preventing depression or increasing resilience.

Young, Mufson & Gallop (2010) developed an intervention program based on interpersonal psychotherapy which was named "Interpersonal Psychotherapy-Adolescent Skills Training" (IPT-AST). They pointed out that interpersonal conflicts are a known risk factor for depression and that positive interpersonal relations have been found to protect toward the development of depression. The intervention consisted of eight 90 minute group sessions, but also included individual meetings and meetings with the parents. The control group had meetings with the school counsellor. The results from the IPT-AST group indicated

significant larger reduction of symptoms compared to the pupils that meet with the school counsellor, with effect sizes of .81. They reported fewer symptoms at six months follow-up with an effect size of .61. But at 12 months follow-up there were no significant differences between the groups.

Depression is a common mental disorder among individuals with epilepsy, and certain types of epilepsy seem to be a risk factor for depression (Grabowska-Grzyba, Jędrzejczaka, Nagańska & Fiszera, 2006). Martinovic, Simonovic & Djokic (2006) compared the effect of a CBT program with “treatment as usual” (TAU) in preventing depression among young epileptics. They classified their program as an indicated prevention program, because the participants included had heightened depressive scores. The CBT program was implemented over eight sessions for the first four months, then one session per month in the following four months. The results indicated changes, but these were non-significant.

Several of the interventions reviewed in this section of the paper show an effect at post- test (Stice et al., 2006) and at six months follow-up (Clarke et al., 2001; Dobson, et al., 2010; Young et al., 2010). In general these effects seem to disappear long term (Clarke et al., 2001; Dobson et al., 2010; Young et al., 2010), with few exceptions (Jaycox; et al., 1994; Stice et al., 2010). Sheffield et al. (2006) found no effects in their study, while Gillham et al. (2006) found small and inconsistent effects. The indicated approach to prevention of depression seems promising, but the results are inconclusive. Aiming the interventions at groups that have elevated symptoms seems to work better than offering it to a general group. Therefore, it is also interesting to consider programs aimed at individuals with increased risk.

Selective prevention.

This type of prevention programs targets individuals with an increased risk based on their life circumstances and not their elevated symptom levels. More specifically the participants in these programs are selected based on particular life events, demographic characteristics or other general factors that have been known to increase the probability of developing psychiatric disorders (Gillham et al., 2000; Mrazek & Hagerty, 1994). Death in close family (Cerel, Fristad, Verducci, Weller & Weller, 2006; Gray, Weller, Fristad & Weller, 2011), elevated conflict level in the home (Nomura et al., 2002; Shaw & Emery, 1987; Sheeber et al.,

1997), having divorced parents (Shaw & Emery, 1987) or having a parent with diagnosed clinical depression (Lieb, Isensee, Höfler, Pfister & Wittchen, 2002; Nomura et al., 2002) are all known risk factors for depression and adjustment difficulties for children and adolescents. Therefore, people that have experienced some of these life events may be relevant for selective prevention interventions. The sample in selected prevention programs is more heterogenic than for universal and indicated programs, therefore the interventions in the selective programs are more varied and have a broader aim as they do not only focus on depression (Horowitz & Garber, 2006). In the following section, we will primarily focus on the outcomes that are relevant for preventing depression. The selective prevention programs are often a combination of selective and indicated prevention (Gillham et al., 2000; Mrazek & Hagerty, 1994). Therefore, several of the interventions described below are a combination of these two approaches (Clarke et al., 2001; Jaycox et al., 1994; Martinovic et al., 2006).

Wolchik et al. (2002) explored the effects of two intervention programs for prevention of mental health problems among children and adolescents of divorced parents. The participants were between 9 and 12 years at the start of the study. The two interventions consisted of a group for mothers and one for mothers and children. Only families where the mother had full custody were included. The program was based on cognitive techniques with focus on parenting and the child – parent relation. The mothers groups also focused on reducing the conflicts between parents, and also increasing the contact with the child's father. This program had a positive effect on externalizing and internalizing symptoms at post-test. Only the effects related to externalizing problems were significant at three months follow-up. No additive effects were found for the combined program. The results were stable over a six year follow-up. No effect sizes were reported from this study. The researchers did however note that divorce is primarily a risk factor for externalizing problems, and that in this perspective the lack of effects on internalizing problems are not surprising (Nomura et al., 2002; Wolchik et al., 2002).

The loss of a parent is a known risk factor for depression and adjustment problems in children and adolescents (Cerel et al., 2006; Gray et al., 2011). Sandler et al. (1992) explored the effects of a theory driven family program called "The Family Bereavement Program" (FBP), in relation to preventing psychological problems in such a group. The program included group interventions that were meetings with other families experiencing the same situation, meetings with one family at a time, and individual meetings with parents. In

addition, the program focused on different coping strategies, conversations of grief related topics, the parent's perception of social support and the children's satisfaction with the support of the family. The participants were from 9 to 17 years of age. The program positively influenced the parents' perceptions of the family environment, as well as the parents' reports of depression and behavioural difficulties with older children, but not for the younger ones. The difference in the parents' reports may be related to the fact that the program was originally designed for adolescents. This underlines the important issue of adaptation. If a different age group is targeted, the program has to be adapted to this group. There were no reported effects on the children's perception of family environment or adaptation problems. The sample size was relatively low with only 72 families distributed between the intervention and the control group. In addition, only a third of the participants completed the program.

Sandler et al. (2003) tested the "The Family Bereavement Program" (FBP) with a larger sample size (156 families with 244 children and adolescents). They found that the program did improve family and individual risk and protective factors at post-test. No effects on internalizing or externalizing problems were found at post-test, but at 11 months both the parents and the children reported recovery on both of these problems. The effect was only evident for girls and for those with higher symptoms at pre-test. The effect size for caregiver's report of internalizing problems for girls was .24 and significant, while for the girls with elevated symptoms at post-test it was .61.

Compas et al. (2009) tested a family-based intervention program based on CBT principles aimed at depressed parents and their children. The intervention consisted of 12 sessions, with eight weekly sessions and four monthly booster sessions. The effect of the intervention was compared to a group that only received written information about depression and the effects such a disorder may have on families. The intervention gave a significant effect on the children's depressive symptoms, as well as for anxiety symptoms compared to the control group. The strongest effect was found at 12 months follow-up, with significant results and effect sizes of .42 and .50. The intervention also seemed to have a positive effect on the parents' depressive symptoms. These trends continued at 18 and 24 months follow-up, with slightly smaller effect sizes over time. For the ASEBA "Youth Self Report" the difference at 18 months had an effect size of .46, but at 24 months this effect was no longer significant (Compas et al., 2011). It was particularly interesting to note that the intervention prevented clinical depression among the children in the intervention group over a period of

two years (Compas et al., 2011). Changes in coping style at six months seemed to mediate the effects of the interventions on depression at 12 months follow-up. The parental behavior also seemed to mediate the outcome but the effects were limited in this particular relation (Compas et al., 2010).

Beardslee et al. (1997) developed and piloted a prevention program directed toward families with one depressed parent. The interventions built on the research on risk and protective factors and targeted non-depressed children and depressed parents. The intervention groups received a combination of meeting with only the parents, individual meetings with the children and family meetings, with booster sessions. The control group only took part in two lectures related to depression and their effects on children. The children included were between 8 and 15 years. The children in the intervention group reported a better understanding of the parent's illness and showed better adaptive functioning 18 months after the interventions. However, the interventions did not give any clear preventive effect for clinical depression with the children. The older children had a larger effect of the interventions, but no effect sizes were reported. The effect of larger benefits for older children was also the case of the study by Sandler et al. (1992). The interventions seemed to reduce the level of risk and increase the levels of protection for the families that participated in the program. The changes in the parents' understanding and behaviour mediated the changes in the children (Beardslee, Gladstone, Wright & Cooper, 2003). These effects were significant over a period of 4 1/2 years (Beardslee et al., 2003; Beardslee, Wright, Gladstone & Forbes, 2007).

Overall, we can see that the selective prevention programs effect a larger range of outcomes related to externalizing symptoms and behavioural difficulties (Compas et al., 2009; Sandler et al., 1992; Sandler et al., 2003; Wolchik et al., 2002), anxiety (Compas et al., 2009), depressive symptoms (Compas et al., 2009; Sandler et al., 1992; 2003) and clinical depression (Beardslee et al., 2003; 2007; Compas et al., 2009; 2011). The interventions did, however, seem to have the larger effect if directed towards specific risk factors associated with a depressive disorder. The results from selective prevention programs are also unclearly related to variables like sex (Sandler et al., 2003), age (Beardslee et al., 1997; Sandler et al., 1992), symptom level (Sandler et al., 2003) and whether the parents report or the children or adolescents report themselves (Sandler et al., 1992).

Discussion

Overall, the effects of the prevention programs are limited, which may be related to several issues. Most of the prevention interventions are based on techniques borrowed from cognitive behavioural therapy, which focus on changing intrapersonal cognitive factors such as attribution style and problem solving abilities, which are assumed to be a risk factor for depression (Cardemil et al., 2002; Clarke et al., 2001; Dobson et al., 2010; Gillham et al., 2006; Gillham et al., 2007; Jaycox et al., 1994; Martinovic et al., 2006; Pössel et al., 2004; Rivet-Duval, et al., 2011; Roberts et al., 2010; Shochet et al., 2001; Spence et al., 2003 Stice et al., 2006).

It also seems like most prevention approaches focus on changing cognitive and behavioural characteristics of the individual such as attribution style, ability to better self-regulate and problem solve, social skills and coping. Studies have shown that these factors predict the level of depression after stressful life events, but Abela and D'Alessandro (2002) pointed out that the effect sizes for these studies were only small to medium. In addition, several studies on prevention interventions have shown that the assumed active ingredients not always mediate the outcome (Cardemil et al., 2002; Pössel et al., 2004; Rivet-Duval et al., 2011; Stice et al., 2008), and that the interventions not always are better than placebo interventions (Beardslee et al., 2007; Dobson et al., 2010; Gillham et al., 2007; Stice et al., 2006; Stice et al., 2008). The reasons for this may be several, but may indicate that other factors are those that are the cause of the depressive reaction. Depression is a complex disorder and it is probable that there are several factors that can operate here such as risk or protective factors for and against depressive symptoms. Research related to children that grow up under difficult life circumstances has contributed to identify protective factors that appear in many studies. For children who have lost one parent, or have a parent that functions poorly, it seems important to have at least one other significant person or adult that is there for the child as it grows and develops, someone who cares and is there when needed (Masten, Best & Garmezy, 1990). Based on this type of research it is possible to question the prevention programs as having a somewhat biased focus on the capacity and skills of the individual. Perhaps this focus might contain some of the reasons for the small to medium effects of the programs aimed at preventing depression.

Studies related to selective prevention also primarily focuses on the individual's ability to cope, or the family's ability to cope, rather than social and interpersonal circumstances of the individual (Gillham et al., 2000; Mrazek & Hagerty, 1994). Some of the intervention in the programs like LISA-T (Pössel et al., 2004), AOP (Roberts et al., 2010), RAP (Harnett & Dadds, 2004; Merry et al., 2004; Rivet-Duval et al., 2011; Shochet et al., 2001) and PRP (Cardemil et al., 2002; Gillham et al., 2006; Gillham et al., 2007; Jaycox et al., 1994) focuses on the cognitive factors of social and relational factors, but principally the main focus seem to be intrapersonal, with, for example, skill training in the individual's social problem solving ability. It does seem relevant to address the relatively small focus on interpersonal factors, which may be interesting to explore more in relation to prevention studies in the future.

It should be pointed out that studies with a stronger focus on the parents generally seemed to have a positive effect on the children (Beardslee et al., 2003; Compas et al., 2009; Sandler et al., 2003; Wolchik et al., 2002), but it is difficult to evaluate the results because none of the programs mentioned here had a condition that only included improving the parents' functioning. One exception is the universal intervention program called "Beyond Blue" (Sawyer et al., 2010a; b) that, in addition to focusing on cognitive factors, also aimed at factors at school and local society (like school environment, access to mental health care, and information about psychological disorders). This intervention did not show any effects on the level of depressive symptoms. One of the possible reasons for this was that it took two years to implement the structural changes that were part of the program in schools. The intervention was not only focused on the individual, but also tried to change entire systems at schools, and it is possible that the follow-up period of three years was too short, and that pupils that started after the program ended benefited from the changes (Sawyer et al., 2010a; b). The basis for coming to a conclusion on the effects of including more external factors and more structural factors of prevention is weak and premature.

Another possible cause for these varied results may also be that the models for depression are inadequate. If our present understanding of depression is inadequate, it will be difficult to develop good prevention strategies and interventions. Selective interventions seem to work better, and it is possible in the near future for example to include genetic factors in selective prevention, because genetic components have been shown to be important for depression. Newer research has indicated that a different combination of alleles may influence

the risk for developing depression when faced with adversity (Koefoed et al., 2012). This would involve some kind of a genetic screening, which is considered ethically controversial.

Future directions and possible solutions for preventing depression

The third wave of cognitive therapies

Over the last couple of decades newer therapy directions have developed with a basis in CBT. These therapies derived from CBT in that they consider other factors as important in the development of psychological disorders in general and depression in particular.

Collectively these approaches are often called the third wave and include dialectic behaviour therapy (DBT), mindfulness-based cognitive therapy (MBST) and metacognitive therapy (MCT) (Hagen & Hjemdal 2012). These are different therapy forms with important differences. Generally, as oppose to CBT where one of the main aims is to reality test the content of the thought,; the third wave approaches are more concerned with the individual thinking style as opposed to the content in the particular thought. We will focus on a new approach (MCT), in order to illustrate how this particular therapy form may improve prevention programs for depression.

In MCT it is argued that very many people experience negative thoughts without developing psychological disorders, and therefore the content of the thoughts probably is not as important as first claimed by CBT. MCT builds on a cohesive model for cognitive processing of information called the Self-Regulatory Executive Function Model (S-REF). This model indicates that a thinking style called the Cognitive Attentional Syndrome (CAS), is universal and common for psychiatric disorders, and that the CAS is responsible for prolonging and intensifying distressing emotions. The CAS consists of several cognitive strategies like inflexible self-focused attention i.e. the focus is on self-observation. These mental processes are again linked to a perseverative processing style of worrying and ruminating (Wells, 2009). Initial studies of MCT for depression show promising results (Papageorgiou & Wells, 2000; Wells et al., 2009; Wells et al., 2012). If the CAS is the predominant feature of e.g. depression, then a negative attribution style may not be the decisive feature that contributes to the development of depression when faced with adversity.

In relation to future prevention studies this may be particularly relevant. If prevention interventions can be developed on newer theories and evidence which targets central processes involved in developing and maintaining psychological disorders, such interventions may very well have larger effects also related to prevention.

Based on the hypothesis of inadequate understanding of depression and its antecedents along with the existing evidence that biased focus on intrapersonal factors, it is possible to suggest four further developments to try to improve the prevention interventions for depression, which are:

Trying to explore the newer therapy development as described above in order to identify if the antecedents of depression can be better understood, and thus make the foundation for better interventions and thus increase the effects of these.

Another approach would be to increase the focus on external variables and thus increase the effects of such program. External variables may be related to social support and external social resources available to the individuals, but it is also the larger social structures and resources available to the individual. A conceptual framework that might be useful in this context could be the socio-ecological perspective of Bronfenbrenner (1977) that stresses the larger social structure as well as the intrapersonal systems. It would also be relevant to explore the external variables found to protect against psychological disorder when facing adversity, an area often associated with resilience research.

Several studies have indicated that exploring non-specific factors may play an important role in further understanding and developing interventions for preventing depression (Beardslee et al., 2007; Dobson et al., 2010; Gillham et al., 2007; Stice et al., 2006; Stice et al., 2008). In clinical psychotherapy research non-specific factors often refer to factors that are common for most therapy forms. These factors are often thought of as essential and part of the process that leads to healing for individuals with psychological problems. Some examples of non-specific factors are therapeutic alliance that has been understood as an empathic attention, sincere interest, and the possibility to discuss difficulties. The therapeutic setting also implies a degree of structure, and specific preset rules for interaction. Therapeutic work also promotes hope and realistic positive expectations. In prevention it would be relevant to explore how these common factors may be transformed into interventions and operationalized and if they were of relevance in contributing to maintaining mental health. Increased focus also on the non-specific factors may be relevant in

the future to develop a better understanding of which factors have effects for whom with which risk profiles.

A new possible way of approaching the challenges of prevention is to change towards a new paradigm. Resilience is a research field that focuses on adaptation and development of mental health in the face of adversity. It is defined as the dynamic process that involves positive adaptation and outcomes when faced with adversity shown to increase the probability of developing psychopathology (Luthar, Cicchetti & Becker, 2000). This research field may be particularly relevant as a theoretical ground for developing prevention interventions, as it has focuses on the protective factors that promote adaptation in the face of adversity.

Resilience has also in its early phases focused on personal attributes. However, later research has, to a larger extent, focused on the external and interpersonal protective factors and the interaction between the interpersonal and the intrapersonal level (Luthar et al., 2000). This research has also evolved to focusing on the processes that develops resilience, which means that the interest has turned towards understanding how different mechanisms and processes contribute to develop the capacity to adapt in the face of adversity. Knowledge of these naturally occurring processes may be of particular interest in exploring which interventions to give priority to in further prevention studies. Resilience is a naturally occurring process which may be of interest when exploring how to design interventions when such processes do not naturally occur. The field of resilience is also interesting because it represents a different approach than the traditional approach to prevention. Within this paradigm the primary interest is to know what promotes positive development rather than preventing or correcting a negative development. One particularly relevant and interesting aspect is whether some of the factors and processes involved in maintaining mental health are different from those that are needed for curing someone with a particular disorder. If this is the case, it may be conceptually wrong or less appropriate to import interventions from therapy, despite the fact that interventions may be effective for individuals with disorders. This is an interesting empirical question that needs further research.

Despite representing a different research paradigm, there are elements of danger by just importing the results from the resilience field to prevention. Resilience also focuses on many of the intrapersonal variables that already have been included in prevention interventions. The focus on self-efficacy, social skills, locus of control and problem solving ability are apparent in both research fields (Masten et al., 1990). The researches behind the

“Penn Prevention Program” changed the name of the program to “Penn Resiliency Program” when they wanted to use it as a universal prevention program. The change from prevention directed toward groups of risk toward the universal focus reflected an assumption that the program could contribute to develop resilience in adolescents. Despite this change, it was not reflected in changes in the content of the program (Reivich et al., 2005). And despite an explicit focus on building resilience, the PRP does not separate itself significantly from other prevention programs neither with regards to content or results.

Conclusions

Depression is a disorder that accounts for large problems in society with large financial losses, and severe suffering. Research shows that the treatment of depression, (even the best documented treatments) is less effective than desirable. Only half are cured, and of these, only half remain cured after a year and a half. An early debut of depression in childhood or adolescents is a predictor of the development of a more chronic disorder with multiple relapses.

This paper has given an overview of the empirical literature of prevention, identifying which preventions work and which seem less effective for preventing depression in this age group. Targeted prevention with indicated and selective programs overall seem to give better results with higher effect sizes than a universal approach. There is, however, large room for further improvement and the effects of many of the programs reviewed in this paper are generally short lived. Generally, the interventions seem to give better results if the implementation is made by psychologists or research teams compared to teachers.

Another explanation for the varying results within the field of prevention is that our models are incomplete in regards to understanding depression. Further research to ameliorate the understanding of the development and maintenance of depression is essential in order also to improve the effects of prevention. The existing research accentuated cognitive variables such as those that contribute to predicting depression, but based on the findings from the prevention studies, it is probably not the complete picture. Many of the interventions used in prevention programs are generated from cognitive therapy, which often focuses on

intrapersonal factors. Another possible approach is to include the focus on interpersonal factors in order to enhance the effect of the prevention programs.

Prevention of depression is, to a large extent, based on different therapy models, and thus it is very relevant that the prevention of depression closely follows the development within treatment research of depression. If better treatments are developed, they can become the source of further development of prevention interventions. One very interesting development within the cognitive therapy is third wave cognitive therapies. Especially MCT seems particularly interesting for the treatment of depression (Wells, 2009). This approach is in the early phases and further research is needed. A new possibility for the further research on prevention is to change paradigms completely. Other areas of research can possibly also serve as a point of departure for generating interventions that maintain mental health. Resilience research may be particularly interesting in this context, as it has identified protective factors and processes that promote mental health in the face of adversity.

It does, however, seem decisive that future emphasis on prevention is based on an empirical and solid theoretical foundation. If interventions are to be implemented, they should be based on actual knowledge of what works and such interventions should be rigorously evaluated.

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Table 1. An overview over the included studies, the sample size, age, country, effect size pre to post-test, and effect size pre to follow-up.

Universal prevention programs					
Study	Sample (n)	Sample age	Country	Effect size post-test	Effect size follow-up
Cardemil, Reivich & Seligman (2002) "The Penn Resiliency Program" (PRP)	Intervention group: Latino children (n = 23), African American children (n = 47). Control group: Latino children (n = 26), African American children (n = 56).	Average age: 11	USA	Latino children; high risk: 1,19, low risk: 0,67, African American children: no significant effects.	Latino children; high risk: 6 month follow-up: 0, 90, low risk 6 month follow-up: 0, 79 (significance level 0, 10). African American children: no significant effects.
Gillham et al. (2007) (PRP)	Intervention group PRP (n = 232), placebo group PEP (n = 231), control group (n = 234).	Average age: 12.13	USA	Complete sample (school A, B and C combined): no significant effects.	School A and B 3 year follow-up: 0, 24.
Harnett & Dadds (2004) "The Resourceful Adolescent Program" (RAP)	Intervention group RAP A (n = 96), control group (n = 116).	Age group: 12 – 16	Australia	No significant effects.	No significant effects at 1 or 2 years follow-up.
Merry, Mcdowell, Wild, Bir & Cunliffe (2004) "The Resourceful Adolescent Program" (RAP)	Intervention group RAP Kiwi (n = 192), placebo group (n = 172).	Age group: 13 – 14	New Zealand	Post-test: 0,04	18 month follow-up: no significant effects.

Pössel, Horn, Groen & Hautzinger (2004) LISA-T	Intervention group (n = 200), control group (n = 147)	Intervention group average age 13.82, control group average age 14.18.	Germany	Minimal depressive symptoms post-test: 0, 49, 6 months follow-up: 0,44 Subsyndromal score post-test: not significant.	Minimal depressive symptoms: 6 months follow-up: 0, 44. Subsyndromal score: 6 months follow-up: 0, 50.
Rivet-Duval, Heriot & Hunt (2011) "The Resourceful Adolescent Program" (RAP)	Intervention group RAP A (n = 80), control group (n = 80).	Age group: 12 – 16	Mauritius	Post-test: 0, 32	6 month follow-up: no significant effects.
Roberts et al., (2010) The Aussie Optimism Programme (AOP)	Intervention group (n = 247), control group (n = 222).	Age group: 11 – 13	Australia	No effect sizes reported.	No effect sizes reported.
Sawyer et al., 2010a; b "Beyondblue"	Intervention group (n = 3037), control group (n = 2597)	Average age: 13.1	Australia	No effect sizes reported.	No effect sizes reported.
Shochet et al. (2001) "The Resourceful Adolescent Program" (RAP)	Intervention group RAP A (n = 68), intervention group RAP F (n = 56), control group Adolescent Watch (n = 118).	Age group: 12 – 15	Australia	Post-test: 0, 47	10 month follow-up: 0, 34.
Spence, Sheffield & Donovan (2003); (2005) the Problem Solving for Life Program" (PSFL)	Intervention group (n = 751), control group (n = 749).	Age group: 12 – 14	Australia	High risk participants post-test: 0, 36. Low risk participants post-test: 0, 32.	High risk participants 1 year follow-up: not significant. Low risk participants 1 year follow-up: not significant.

Indicated intervention programs:					
Study	Sample (n)	Age group	Country	Effect size post test	Effect size follow-up
Clarke et al. (2001)	Intervention group (n = 45), control group (n = 49).	Age group: 13 – 18	USA	Post-test: r 0, 22.	1 year follow-up: r 0, 16.
Dobson, Hopkins, Fata, Scherrer & Allan (2010) "The Adolescent Coping with Stress Course"	Intervention group (n = 25), placebo group (n = 21).	Age group: 13 – 18.	Canada	No significant effects.	No significant effects found at 3 pr 6 months follow-up.
Gillham, Hamilton, Freres, Patton & Gallop (2006) "The Penn Prevention Program (PRP)"	Intervention group (n = 147), control group (n = 124).	Age group: 11 – 12	USA	Small and inconsistent effects.	
Jaycox, Reivich, Gillham & Seligman (1994); Gillham, Reivich, Jaycox & Seligman, 1995: "The Penn Prevention Program (PRP)"	Intervention group (n = 69), control group (n = 74).	Age group: 10 – 13	USA	Post-test: 0, 18. .	6 month follow-up: 0, 32
Martinović, Simonović & Djokić (2006)	Intervention group (n = 15), control group (n = 15).	Age group: 13 – 19	Serbia	No effect sizes reported.	No effect sizes reported.

Stice, Burton, Bearman & Rohde (2006)	CBT intervention (n = 50), supportive-expressive (n = 19), bibliotherapy (n = 28), expressive writing (n = 27), journaling (n = 34), waitlist control (n = 67).	Age group: 15 – 22	USA	CBT compared with waitlist post-test: r 0, 48. CBT compared with journaling post-test: r 0, 23.	CBT compared with waitlist; 1 month follow-up: r 0, 28, 6 month follow-up: no significant effects Bibliotherapy compared with waitlist; 6 month follow-up: r 0, 29.
Stice, Rohde, Seeley & Gau (2008); Stice, Rohde, Gau & Wade (2010)	CBT Intervention (n = 89), supportive-expressive (n = 88), bibliotherapy (n = 80), control group (n = 84).	Age group: 14 – 19	USA	CBT post-test; compared with supportive group therapy: 0,28, compared with bibliotherapy: 0,52, compared with control group: 0, 46	CBT 6 month follow-up; compared with supportive group therapy: no significant effects, compared with bibliotherapy: no significant effects, compared with control group: 0,42. CBT 1 year follow-up; compared with control group: 0, 30, compared with bibliotherapy: 0, 38, compared with supportive group therapy: no significant effects. CBT 2 year follow-up; compared with control group: 0, 29, compared with bibliotherapy: 0, 45, compared with supportive group therapy: no significant effects.
Young, Mufson & Gallop (2010), "Interpersonal Psychotherapy-Adolescent Skills Training" (IPT-AST)	Intervention group (n = 36), control group (n = 21).	Age group: 13 – 17	USA	Post-test: 0, 81.	6 month follow-up: 0, 61. 12 month follow-up: no significant effects.

Selective intervention programs:					
Study	Sample (n)	Age group	Country	Effect size post-test	Effect size follow-up
Beardslee et al. (1997)	Intervention group (18 families, 28 children), control group (18 families, 24 children).	Age group: 8 – 15	USA	No effect sizes reported.	No effect sizes reported.
Beardslee, Gladstone, Wright & Cooper, 2003; Beardslee, Wright, Gladstone & Forbes (2007)	Intervention group (53 families, 69 children), control group (40 families, 52 children).	Age group: 8 – 15	USA	No effect sizes reported.	No effect sizes reported.
Compas et al. (2009); Compas et al. (2011)	Intervention group (n = 56), control group (n = 55).	Age group: 9 – 15	USA	YSR (anxiety/ depression): 0, 37.	YSR (anxiety/ depression); follow-up 6 months: 0, 49, follow-up 12 months: 0, 50.
Sandler et al. (1992) "The Family Bereavement Program" (FBP)	35 families.	Age group: 9 – 17	USA	No effect sizes reported.	No effect sizes reported.
Sandler et al. (2003) (FBP)	Intervention group (90 families, 135 children), control group (66 families, 109 children).	Age group: 8 – 16	USA	Boys: no significant effects. Girls post-test: no significant effects.	Boys: no significant effects. Girls; 11 month follow-up; internalizing symptoms caregiver rapport: 0, 24, internalizing symptoms self rapport: 0, 61.
Wolchik et al. (2002)	Intervention group Mother Plus Child Program (n = 83), intervention group Mother Program (n = 81), control group (n = 76).	Age group: 9 - 12	USA	No effect sizes reported.	No effect sizes reported.

Combined programs:					
Study	Sample (n)	Age group	Country	Effect size post-test	Effect size follow-up
Sheffield et al. (2006)	Universal intervention (n = 634), universal + indicated intervention (n = 636), indicated intervention (n = 722), control group (n = 614).	Age group: 13 – 15	Australia	No significant effects.	No significant effects found at 12 months follow-up.