

# Universal Prevention for Adolescent Depression

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KATIE A. MCLAUGHLIN

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Major depression among adolescents represents a serious public health problem. The prevalence of major depression among adolescents has been steadily increasing over time (e.g., Kessler & Walters, 1998), and adolescent-onset depression is associated with myriad negative consequences for affected individuals in both adolescence and later in adulthood (e.g., Georgiades, Lewinsohn, Monroe, & Seeley, 2006; Lewinsohn, Soloman, Seeley, & Zeiss, 2000; Pine, Cohen, Cohen, & Brooke, 1999). To address this growing public health problem, a number of preventive interventions for adolescent depression have been developed and tested. These interventions vary markedly across a number of dimensions, including the targeted population, the individuals who are trained to administer the intervention, the site for recruitment of participants, the outcomes assessed, and the ultimate efficacy of the intervention being tested. This chapter focuses specifically on universal preventive interventions for adolescent depression. Universal prevention programs for adolescent depression represent interventions that target all eligible adolescents rather than those selected to be at high risk for depression based on current symptom levels or family history of depression. Indicated prevention programs are reviewed by Judy Garber in Chapter 22 of this volume. Definitions relevant to the distinctions between the major types of preventive interventions are first covered, followed by reviews of the need for prevention of adolescent depression and of the current literature on universal preventive interventions. Finally, challenges to universal prevention research, and directions for future research are provided.

## PREVENTION DEFINITIONS

Prevention ultimately aims to prevent the occurrence of some event before it happens. Prevention, as it relates to mental health, is concerned with preventing the onset of psychopathological conditions before they emerge. In 1994, the Institute of Medicine (IOM) released definitions, guidelines, and recommendations for prevention research focused on mental disorders. The framework that was created to classify preventive interventions differs somewhat from the public health classification system for disease prevention. Within the public health nosology, three types of prevention are delineated: primary, secondary, and tertiary (Commission on Chronic Illness, 1957). Primary prevention involves efforts to reduce the incidence of a disease by decreasing the number of new cases. Secondary prevention aims to reduce the prevalence of a disease by decreasing the number of active cases in the population. Finally, tertiary prevention is concerned with reducing the amount of disability associated with a disease among already diagnosed cases. Within the IOM mental health framework, these definitions were modified somewhat to be more relevant to mental disorders, as opposed to medical diseases, and are referred to as universal, indicated, and selected prevention (IOM, 1994). *Universal* preventive interventions are those that are intended for all eligible individuals in the population, regardless of their risk status for a particular mental disorder. The benefits of universal preventive interventions should outweigh the risks for all individuals, and are particularly effective when the cost is low and efficacy is high across large segments of the population. *Indicated* prevention efforts target individuals who are already manifesting early signs or symptoms of a mental disorder, but who do not yet meet full diagnostic criteria. Indicated interventions may be warranted even if they involve higher costs and somewhat greater risk than universal interventions (IOM, 1994). *Selective* prevention targets individuals considered to be at high risk for developing a particular mental disorder based on the presence of an identified risk factor. The goal of all three types of preventive interventions is to reduce the incidence of new cases of a particular mental disorder (IOM, 1994).

## NEED FOR PREVENTION OF ADOLESCENT DEPRESSION

Adolescent depression is common and is associated with a multitude of deleterious consequences. By the end of adolescence the prevalence of depression is approximately the same as in adult populations, with approximately 15–20% of adolescents experiencing a major depressive episode by age 18 (Hankin et al., 1998; Kessler & Walters, 1998; Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). Depression in adolescents is associated with substantial functional impairment and an elevated risk for suicide attempts, with more than 20% of depressed adolescents reporting at least one lifetime suicide attempt (Kessler & Walters, 1998). Adolescents who have experienced a major depressive episode are at particularly high risk for experiencing recurrent problems with depression and for relapse in adulthood (Fombonne, Wostear, Cooper, Harrington, & Rutter, 2001; Lewinsohn, Rhode (STET—Rohde), Klein, & Seeley, 1999; Pine, Cohen, Gurley, Brook, & Ma, 1998). The vast majority of currently depressed adolescents have already experienced recurrent depressive episodes; the average number of episodes for a depressed adolescent is 5.4, and the average length

of the longest episode is 32.5 weeks (Kessler & Walters, 1998). Adolescent depression is also associated with an increased risk for the development of substance use disorders and anxiety disorders in adulthood (Georgiades et al., 2006; Lewinsohn et al., 2000; Pine et al., 1998). Although not all adolescents with depressive symptoms develop anxiety and depression in adulthood, the majority of adults with these conditions experienced problems with depressive disorders in adolescence. As such, adolescent-onset depression represents a particularly insidious condition because of its strong association with chronic and recurrent emotional problems in adulthood.

Prevention of adolescent depression represents an important goal for a number of reasons. Depression in this age group is not only associated with a host of negative consequences for adolescents during a depressive episode, but also portends the development of serious problems later in life. In addition, many adolescents who develop major depression do not receive adequate treatment. Lewinsohn, Rohde, and Seeley (1998) reported that 40% of depressed adolescents have never received treatment of any kind, and a recent community study found that only 23% of depressed adolescents had utilized mental health services (Essau, 2005). The number of adolescents who receive *adequate* treatment for depression is undoubtedly lower. Only a minority of adults with major depression receives adequate treatment. A large study found that only 30% of individuals with major depression or an anxiety disorder receive appropriate care (Young, Klap, Sherbourne, & Wells, 2001), and in the National Comorbidity Survey-Replication, only 37.5% with major depressive disorder (MDD) received adequate treatment (Wang et al., 2005). It is likely that adequate treatment is obtained even less commonly among adolescents given lower rates of treatment seeking in this population (e.g., Essau, 2005), given that empirically supported treatments for adolescent depression have only recently been identified relative to treatments for adult depression, and given the widespread use of selective serotonin reuptake inhibitors for adolescent depression despite their serious adverse side effects and questionable risk-benefit profile (e.g., Jureidini et al., 2004). Research suggests that depressed adolescents treated in the community have worse outcomes than adolescents treated in efficacy trials, and that community treatment results in outcomes no better than found among control groups in efficacy trials (Weersing & Weisz, 2002). Treatment of adolescent depression has not been found to have a positive impact on relapse in young adulthood (Lewinsohn et al., 1998), suggesting that treatments for adolescent depression do not have a lasting impact, and may not prevent the onset of future depressive episodes.

The negative consequences of adolescent depression are clear, and the majority of depressed adolescents do not receive adequate treatment. For these reasons, adolescent depression represents an important target for prevention efforts. For a complete review of the epidemiology of adolescent depression, please see Merikangas & Knight, Chapter 23 of this volume.

## **BENEFITS OF UNIVERSAL PREVENTION FOR ADOLESCENT DEPRESSION**

Universal prevention, by definition, involves delivering an intervention to a large number of individuals who are at varied levels of risk for developing a

disorder; those at high risk are not targeted exclusively. This type of prevention is most useful for disorders in which a much larger proportion of the population is at-risk for developing the disorder than the proportion that already has the disorder (e.g., McKinlay & Marceau, 2000; Rose, 1992). Major depression among adolescents represents an excellent candidate for such interventions, as the prevalence of depression among adults is relatively high (approximately 16–17%; Kessler et al., 1994; Kessler et al., 2003), while the prevalence among young adolescents is substantially lower (2–3%; e.g., Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). The risk for developing major depression increases substantially across adolescence, and by the end of this period the prevalence of depression is similar to the prevalence among adults (e.g., Hankin et al., 1998). As such, adolescence represents a particularly important period of risk for the development of depression. At the beginning of adolescence, a substantially higher proportion of adolescents are at-risk for developing major depression than those who already have the disorder, which makes adolescent depression an ideal candidate for universal prevention efforts.

Universal prevention has several benefits over indicated prevention that justify targeting larger unselected samples of individuals. The first advantage involves community implementation of interventions following research trials. Indicated prevention programs are typically delivered by mental health professionals or trained psychology graduate students (e.g., Clarke et al., 2001), because trained professionals may adhere more effectively to intervention manuals than other intervention deliverers. Unfortunately, using highly trained professionals reduces the likelihood that the intervention will actually be implemented in the community once the research trial is over (see Glasgow, Lichtenstein, & Marcus, 2003). This represents a serious problem with current prevention programs. A number of indicated interventions have been found to be effective in research trials (e.g., Clarke et al., 2001; Gillham, Reivich, Jaycox, & Seligman, 1995; Jaycox, Reivich, Gillham, & Seligman, 1994), but the methods used to test these interventions have rendered them unfeasible to sustain in community settings. In contrast, designing an intervention that is implemented by teachers or other individuals working with adolescents in the community, or that is bundled with delivery of other health services (e.g., Muñoz et al., 1995) and is readily transportable to other settings will greatly increase the chances that it will be sustained in the community if it is demonstrated to be effective. Given that the goal of prevention is to reduce the incidence of a disorder on a population level, interventions must be designed that are easily transportable to a variety of settings and that do not require substantial financial resources or highly trained professionals to implement.

Another advantage of universal prevention is that it targets a larger population of individuals at risk and, therefore, does not necessitate identification of those at highest risk for the development of depression. There are a number of difficulties associated with identifying high-risk adolescents to target with indicated preventive interventions. There have traditionally been two ways in which indicated and selective prevention research trials have identified high-risk participants: selecting adolescents with depressed parents (e.g., Clarke et al., 2001) and selecting adolescents with high scores on symptom measures of depression (e.g., Jaycox et al., 1994). Identification of adolescents with depressed parents represents a challenging endeavor for a number of reasons. Clarke and colleagues (2001) identified high-risk adolescents by searching a



large health care provider database for parents who had been treated for affective disorders. Out of a large pool of eligible individuals, a relatively small number of adolescents with depressed parents were identified. This strategy would also be difficult to implement on a large scale due to issues related to access to medical records and confidentiality. Other methods for identifying adolescents with depressed parents, such as screening in primary care or other health care facilities, require a lot of effort spent identifying each high-risk adolescent and are thus not feasible to implement in the community. Identifying high-risk adolescents on the basis of depressive symptomatology is also problematic. Adolescents who are not symptomatic at the time of assessment will not be included in indicated interventions, although this group may ultimately contribute more cases of major depression than the group who are already symptomatic (see Rose, 1992). Another problem associated with screening for adolescents with high levels of depressive symptoms involves stigma. This problem is particularly concerning if high-risk students are singled out for interventions that take place at school.

Other problems with identifying high-risk participants for indicated prevention studies are also noteworthy. Currently, screening instruments are not yet reliable at identifying adolescents who are experiencing problems with depression. A recent study examined the ability of widely used self-report measures of anxiety and depression to identify young adolescents experiencing high levels of symptomatology (Dierker et al., 2001). When the results of the self-report measures were compared to the results of a structured diagnostic interview, none of the self-report measures demonstrated high accuracy in identifying children with internalizing disorders based on the interview. Because screening instruments are not highly accurate at identifying adolescents with high levels of subdiagnostic depressive symptoms versus adolescents with MDD, our ability to accurately identify adolescents who should be targeted by indicated prevention using screening instruments is thus also poor. As such, many adolescents who are experiencing significant depressive symptoms, or who may go on to develop major depression, but would not be included in indicated preventive interventions, will receive an adequate dose of intervention in universal prevention. At the same time, those adolescents at highest risk (i.e., those who would be targeted by indicated prevention studies) will still receive the full dose of the intervention.

Targeting a larger population of adolescents is warranted for other reasons as well. Evidence suggests that the presence of even mild symptoms of depression in adolescence is associated with impairment and risk for future psychopathology. A substantial proportion of adolescents experience depressive symptoms in the absence of a full-blown diagnosis (Angold, Costello, Farmer, Burns, & Erkanli, 1999; Kessler & Walters, 1998), and subthreshold depressive symptoms also portend serious consequences later in life. Subthreshold depressive symptoms in adolescence have been consistently associated with significant functional impairment, reduced quality of life, and increased utilization of health services (e.g., Angold et al., 1999; Gonzalez-Tejera et al., 2005; Lewinsohn et al. 2000). The presence of subthreshold symptoms among adolescents is associated with an increased risk for developing MDD in adulthood (Fergusson, Horwood, Ritter, & Beautrais, 2005; Pine et al. 1999) and for attempting suicide (Fergusson et al., 2005; Judd, Akiskal, & Paulus, 1997). One-third of individuals who experience a first-onset of major

depression in adulthood, experienced at least one depressive symptom during adolescence compared to only 7% of adults with no history of depression (Wilcox & Anthony, 2003). Moreover, the presence of even one depressive symptom in adolescence is associated with greater risk for future psychopathology: sad mood has been demonstrated to predict the onset of MDD, and sleep disturbance had been found to predict the onset of substance abuse (Georgiades et al., 2006). Adolescent depressive symptoms are also associated with an increased risk for the development of substance use disorders (Georgiades et al., 2006; Lewinsohn et al., 2000) and for the onset of anxiety disorders in adulthood (Pine et al., 1998). Adolescents who experience only mild symptoms of depression or who experience one or two severe symptoms of depression may not be identified as candidates for indicated prevention efforts despite the significant impairment and future risk associated with this symptom profile. In contrast, this group would be included in universal prevention programs. As such, preventive interventions targeting depression among adolescents with mild to moderate but subthreshold symptoms have the potential to prevent some of the pernicious consequences associated with depressive symptoms among this age group.

A final advantage of universal prevention, particularly school-based universal prevention, involves the ability to deliver doses of the intervention over longer periods of time. Indicated prevention trials typically demonstrate a weakening of the preventive effects of the intervention over time (e.g., Clarke et al., 1995; Clarke et al., 2001). When the intervention is delivered after school or in special sessions outside of the typical school environment, the length of the intervention is somewhat limited and booster sessions can be difficult to implement. Interventions delivered in a classroom setting or via the Internet, on the other hand, can be implemented over longer periods of time. If weakening of preventive effects is observed, booster sessions can easily be delivered at a later point in time.

## REVIEW OF UNIVERSAL PREVENTION STUDIES

This section will provide a review of the extant literature examining the efficacy of universal prevention interventions for adolescent depression. To be included in the review, studies had to meet several criteria. First, the target population for the intervention had to include all eligible adolescents in the sampling frame. Studies that selected participants based on symptom levels, family history, or other indications of future risk for depression (e.g., Beardslee et al., 1993) were excluded. Second, the study had to compare a preventive intervention for adolescent depression to some type of control condition. Open trials and pilot studies that did not include control groups were excluded. Finally, the intervention being evaluated had to target adolescent depression specifically. Studies that examined more general interventions focused, for example, on the prevention of negative responses to stress (e.g., Hains & Ellman, 1994) or on promotion of general well-being among adolescents were excluded. Finally, doctoral dissertations that were not published as scholarly articles or book chapters were also excluded.

The first empirical evaluations of universal prevention programs for adolescent depression involved examination of two brief interventions that were presented in videotape format to participants during health class (Clarke,

Hawkins, Murphy, & Sheeber, 1993). The first intervention was a three-session educational intervention that provided information on the symptoms, causes, and treatments of depression, and encouraged participants to seek treatment if they were feeling depressed. The educational intervention also included a component focused on increasing pleasurable activities to prevent depression, but no active skill training took place. Participants were 622 ninth and tenth graders from two high schools and one middle school, and randomization to experimental and control groups occurred at the classroom level. Self-reported depressive symptoms served as the primary outcome. Following the intervention, a reduction in depressive symptoms was reported by boys who had received the educational program relative to controls, but no difference in symptoms was found among girls. At 12-week follow-up, no differences in depressive symptoms were found between the intervention and control groups. The intervention had no effect on knowledge about depression or willingness to seek treatment (Clarke et al., 1993); as such, the lack of intervention efficacy at reducing depressive symptoms is unsurprising.

The second intervention examined by Clark and colleagues (1993) was a five-session behavioral skills training program focused on increasing participants' engagement in pleasurable activities. Information regarding the symptoms, causes, and treatments of depression was also presented. Three hundred and eighty students in the ninth and tenth grade from the same schools that received the first intervention participated. Randomization again occurred at the classroom level, and self-reported depressive symptoms served as the primary outcome. The skills training program had no effect on depressive symptoms immediately following intervention administration or at the 12-week follow-up. Similar to the first intervention, the skills training program had no effect on knowledge about depression or willingness to seek treatment. The lack of efficacy of the programs evaluated in these studies likely resulted from an inadequate dose of intervention being administered to participants given that both interventions were brief and circumscribed in nature. Studies that followed this initial evaluation have focused on interventions that are longer and more comprehensive with respect to the therapeutic techniques intended to prevent the onset of depression.

The Penn Resiliency Program (PRP) represents an intervention intended to prevent the onset of depression in children and adolescents that has been demonstrated to be effective in adolescents across a number of indicated prevention trials (e.g., Gillham et al., 1995; Jaycox et al., 1994; Seligman, Schulman, DeRubeis, & Holland, 1999). The PRP is a 12-session cognitive-behavioral intervention that involves both cognitive restructuring and social problem-solving components. Cardemil, Reivich, and Seligman (2002) examined the efficacy of the PRP in preventing the onset of depressive symptoms in a sample of low-income minority adolescents. This study utilized a sample of low-income adolescents given that low socioeconomic status (SES) is a documented risk factor for depression (e.g., Blazer, Kessler, McGonagle, & Swartz, 1994); however, students were not individually selected for the study based on high-risk status. Rather, the entire population of students in grades 5 and 6 at two low-income schools participated. Because adolescents were not individually selected to participate based on pre-existing depressive symptoms, maternal depression, or other important risk factors for major depression, this study qualifies as a universal prevention study. The intervention was administered during school

hours in weekly 90-minute sessions by well-trained psychology graduate students. Self-reported depressive symptoms served as the primary outcome of the study. The results were presented separately for Latino and African-American participants given that the two participating schools differed markedly in their racial/ethnic composition. The PRP was found to be effective at reducing depressive symptoms among the Latino participants following the intervention, and these effects were maintained at 6-month follow-up (Cardemil et al., 2002). Importantly, these effects were found for participants both high and low in initial depressive symptomatology. The intervention was not found to be effective at reducing depressive symptoms among the African-American participants. This finding partially resulted from reductions in depressive symptoms among the control participants in that sample. The investigators speculated that differential treatment efficacy may have resulted from reductions over time in depressive symptoms among the entire African-American sample due to factors related to the school or other factors that differed systematically across the two study samples. These explanations were speculative, and to date no empirical evidence speaks to the issue of differential efficacy of universal programs for adolescent depression across racial/ethnic groups.

A more recent evaluation of the PRP examined the efficacy of the intervention when administered by school teachers and counselors to a large unselected sample of adolescents (Gillham et al., 2007). This study also included an attention control condition to provide a more methodologically sound evaluation of the efficacy of the PRP, and to examine the specificity of the intervention compared to other nonacademic school programming. Participants were recruited from three middle schools across a 3-year period, and were not selected based on elevated depressive symptoms at baseline. Six hundred and seventy-nine adolescents in sixth to eighth grade were randomly assigned to receive the PRP, a competing attention control intervention, the Penn Enhancement Program (PEP; Reivich, 1996), or were assigned to a control group. The PEP was a group intervention focused on discussion of stressors in adolescence including peer pressure, trust and betrayal, and body image, and a number of other developmentally relevant topics. Each intervention was delivered in twelve 90-minute sessions after school, and teachers, counselors, and graduate students not affiliated with the research program were trained to administer the intervention. In addition to an initial 30-hour training session, biweekly supervision was provided to all intervention administrators. All sessions were audiotaped, and four sessions from each administrator were coded for adherence. The primary outcome measure was self-reported symptoms of depression. In addition, participants reporting elevated depressive symptoms were asked to complete a semistructured interview designed to assess depressive symptoms in youth. Outcomes were assessed prior to the start of the intervention, 2 weeks following intervention completion, and every 6 months for a 3-year follow-up period.

The results indicated that the PRP did not reduce depressive symptoms over the course of the study compared to either of the control conditions (Gillham et al., 2007). The PRP was effective at preventing elevated levels of depressive symptoms (defined as depressive symptoms above a threshold established on the self-report measure) compared to the control condition, but was not more effective than the PEP attention control intervention. However, a school X intervention condition interaction was found such that the PRP was more

effective at reducing depressive symptoms and preventing elevated depression than both control conditions in two of the schools, but was not effective in one of the schools. The impacts of the PRP on depressive symptoms in the two schools in which it had an effect were maintained through the follow-up period. Differences between the schools were not found that could explain the differential school effects. Overall, the PRP did not impact depressive symptoms to a greater extent than an attention control in the full sample. However, the PRP led to lasting reductions in depressive symptoms in two of the schools in which the study was conducted, suggesting that it may be effective when administered as a universal prevention intervention.

Quayle, Dziurawiec, Roberts, Kane, and Ebsworthy (2001) examined the efficacy of a modified version of the PRP in preventing depression among a small sample of preadolescent females in Australia. The original PRP was modified in format from twelve 90-minute sessions to eight 80-minute sessions. The materials were also modified to be relevant to Australian youth. Forty-seven participants from an all-female school were randomized to intervention and control groups. The intervention was administered in small groups of approximately 12 participants during school hours. Two facilitators administered the intervention to each group, and facilitators were postgraduate clinical psychology students. Facilitators received 30 hours of training in intervention administration and received weekly supervision. The primary outcome was self-reported symptoms of depression, and outcomes were assessed prior to the start of the intervention, postintervention, and at a 6-month follow-up. Attendance to the intervention sessions was poor, with participants attending an average of 3.4 sessions, and attrition at the 6-month follow-up was high. Only 33 participants completed the follow-up assessment. The results indicated no difference in depressive symptoms between the intervention and control group postintervention; however, at 6-month follow-up, participants in the intervention condition reported fewer depressive symptoms than participants in the control group. Results of this study should be interpreted with caution given the extremely small sample size, poor attendance to intervention sessions, and high attrition.

While the PRP represents a depression prevention program that was designed as an indicated intervention used with high-risk groups that was modified to be applicable as a universal preventive intervention, a number of interventions have been designed specifically as universal prevention programs. All of these interventions have been designed and evaluated outside of the United States. The Resourceful Adolescent Program (RAP) represents the first of these interventions, and was designed to be implemented in schools to an unselected population of students. The RAP is a cognitive-behavioral intervention that occurs during 11 sessions lasting 40–50 minutes. Problem solving, cognitive restructuring, and self-management techniques are included. This intervention was first evaluated in a small trial in Australia (Shochet et al., 2001). Two hundred and sixty students in the ninth grade of one Australian high school participated in the study. The intervention was designed to be administered to small groups, typically 8–10 students. As such, classrooms were divided into 2–3 groups, each with a different intervention facilitator, and all facilitators were trained psychologists. This study did not randomly assign participants to groups: all ninth graders during one school year served as the control group, and all ninth graders during the following school year served as the intervention group. Within the intervention group, half of participants



were assigned to receive only the RAP and half were assigned to receive the RAP plus an additional three-session intervention for parents. The parental component included parenting, stress management, and familial conflict resolution components, as well as information on adolescent development and self-esteem. Self-report measures of depressive symptomatology were used as the primary outcomes for the study, and participants were followed for 10 months following completion of the intervention. Participants in both intervention conditions experienced a significantly greater reduction in depressive symptoms than participants in the control group, and the two intervention groups did not differ from one another. The reduction in depressive symptoms resulting from the intervention was maintained at 10-month follow-up.

An intervention that was recently evaluated in New Zealand, the RAP-Kiwi (Merry, McDowell, Wild, Bir, & Cunliffe, 2004b), was adapted from the RAP described above. The RAP-Kiwi is an 11-session intervention that includes both cognitive-behavioral and interpersonal components. The structure of the RAP was left unchanged, but some of the materials were modified to be relevant to adolescents in New Zealand as opposed to Australia. The RAP-Kiwi was evaluated in a trial that utilized an active placebo control group. The active placebo was focused on "having fun" (Merry et al., 2004b, p. 540) and contained no components thought to influence depressive symptoms. Participants were 392 students from two New Zealand schools: the participants were in the ninth grade class at one school and the tenth grade class at the other. The intervention was administered by teachers, who received two and a half days of training focused on implementation of the RAP-Kiwi. Self-report measures of depression served as the primary outcome. The results indicated that the intervention led to a greater decrease in depressive symptoms than the active placebo. At 18-month follow-up, the intervention group continued to experience lower levels of depressive symptoms than the control group, although the effect was small in magnitude.

Another universal preventive intervention, the Problem Solving for Life Program (PSLP), was developed in Australia (Spence, Sheffield, & Donovan, 2003), and evaluations of this intervention represent the largest investigations of universal prevention for adolescent depression to date. The PSLP is an eight-session cognitive-behavioral intervention that involves both cognitive restructuring and problem-solving skill training components. Each session takes approximately 45–50 minutes, and sessions are designed to be administered once a week. In the first evaluation of this intervention, 1,500 eighth grade students from 16 high schools in Australia participated, and randomization occurred at the school level. Teachers in the intervention condition received a 6-hour training session before implementing the intervention. Self-report measures of symptomatology were used as the primary outcome measures; however, a particular strength of this study involved the use of a structured diagnostic interview with all high-risk students (i.e., those scoring above a cutoff on symptom measures of depression). Participants were followed for 12 months following completion of the intervention. The results of this study indicated that the PSLP led to clinically significant reductions in depressive symptoms immediately following the intervention among high-risk adolescents, and a greater reduction in depressive symptoms among low-risk adolescents relative to participants in the control group (Spence et al., 2003). However, the effects of the intervention were not maintained at the 12-month follow-up. No significant



differences in the incidence of depressive disorders were found between the intervention and control groups over the follow-up period.

The PSLP was recently evaluated in a much larger sample of Australian adolescents in a study that aimed to examine the efficacy of both universal and indicated prevention programs alone and in combination (Sheffield et al., 2006). Approximately 5,000 ninth grade students in 36 schools participated in the study. Schools were matched on location (urban-rural), SES, and type of school (state, parochial, etc.) and randomized within strata to one of four experimental conditions: universal, indicated, universal plus indicated, and no-intervention control. Participants scoring in the highest 20% on a measure of depressive symptoms at baseline were considered high risk, and participated in the indicated program in those conditions that included the indicated intervention. The indicated intervention contained cognitive restructuring, problem-solving skill training, interpersonal skill training, and self-reward components and was administered in eight sessions to small groups of 8–10 students. In the combined universal and indicated condition, the universal program was completed during the first school semester and the indicated intervention was completed during the second semester. Self-report symptom measures served as the primary outcomes, and structured diagnostic interviews were also administered to all high-risk adolescents.

No effect of either the universal or indicated intervention was found in this study: neither intervention resulted in decreases in depressive symptoms or in a reduced incidence of depressive disorders compared to the no-intervention control condition. Moreover, the combined universal and indicated program was no more effective than either intervention administered alone and was not demonstrated to be superior to the control condition. The results of this study are inconsistent with previous findings suggesting that the PSLP is an effective universal prevention program (Spence et al., 2003) and with evidence that clearly supports the efficacy of indicated cognitive-behavioral interventions in preventing adolescent depression among high-risk individuals (e.g., Clarke et al., 2001; Gillham et al., 1995; Jaycox et al., 1994; Seligman et al., 1999). A potential explanation for these inconsistent findings is that participants did not receive an adequate dose of the intervention and therefore did not acquire the necessary skills (e.g., problem solving) to impact upon depression risk. Analyses indicated that students in the intervention conditions did not develop better problem-solving skills, one of the mechanisms by which the intervention is designed to reduce depressive symptoms, while a previous test of the PSLP found significant improvements in problem-solving skills for those in the intervention (Spence et al., 2003). This lack of skill acquisition may have occurred due to lower adherence to the intervention by teachers in the larger study compared to the initial study completed on a smaller, and potentially more well-controlled scale.

The final universal prevention program that has been evaluated empirically, the LISA-T (Pössel, Horn, Groen, & Hautzinger, 2004a), was developed and tested in Germany. The LISA-T was designed using Dodge's (1993) social information processing model of social competence, and utilizes traditional cognitive-behavioral techniques for treating depression. The program aims to teach participants the relationships between thoughts, emotions, and behaviors, to identify and modify dysfunctional thoughts, to increase self-confidence, and to

improve social competence. The LISA-T was examined in a study that randomized classrooms to intervention and control conditions in participating middle schools. Two hundred participants received the intervention and 174 served as the control group. The intervention was administered over 10 weekly sessions by trained psychologists or psychology graduate students. The intervention group classrooms were split by gender, and the LISA-T was administered separately to males and females. The primary outcome was self-reported depressive symptoms, and this was assessed prior to and immediately following intervention implementation, as well as at 3- and 6-month follow-up intervals. The results indicated that the intervention did not have an impact on the development of depressive symptoms for the entire sample, as there were no differences in symptoms for the intervention and control groups. However, participants who reported low levels of symptoms prior to the intervention did not report increases in symptoms over time in the intervention group, but did develop increased depressive symptoms in the control group. In addition, participants with subsyndromal depression reported a decrease in symptoms over time in the intervention group, and an increase in symptoms in the control group. As such, the LISA-T resulted in the prevention of the development of depressive symptoms, but only in participants who were experiencing minimal or subsyndromal depression at the beginning of the study. The intervention was not effective for those participants with clinically relevant depressive symptoms.

### **Summary of Universal Prevention Studies**

To date, a number of universal preventive interventions for depression have been empirically evaluated. All interventions have been cognitive-behavioral in nature and have been administered in school settings. Some studies have utilized teachers as intervention administrators, while others have used trained study personnel, typically mental health professionals or psychology graduate students. The majority of studies have utilized self-reported depressive symptomatology as the universal outcome, although two recent studies have also included structured diagnostic interviews of high-risk adolescents to examine depressive disorders in addition to symptoms. The efficacy of the interventions that have been examined in reducing depressive symptoms and the incidence of depressive disorders has varied markedly across studies.

A recent meta-analysis examined the efficacy of universal prevention studies targeting adolescent depression and concluded that such programs are not effective at reducing depressive symptoms (Merry, McDowell, Hetrick, Bur, & Muller, 2004a). When examining the efficacy of these programs at preventing the onset of depressive disorders, the analyses also indicated that universal prevention programs were not effective at reducing the incidence of depression over the follow-up period following the intervention. However, these analyses did not include all of the universal prevention studies reviewed above due to a number of exclusion criteria and because several studies were published after the meta-analysis was conducted (e.g., Gillham et al., 2007; Merry et al., 2004b; Sheffield et al., 2006). Only the studies conducted by Cardemil and colleagues (2002), Spence and colleagues (2003), and Quayle and colleagues (2001) were included in the meta-analysis. As such, the efficacy of existing universal prevention programs as a whole remains somewhat unclear. However, several consistent patterns of findings across the universal prevention studies that have been conducted are worth noting.

Among the comprehensive interventions that have been evaluated (i.e., those that include an adequate number of sessions and that cover a range of material), all have demonstrated some measurable effect on depressive symptoms immediately following implementation of the intervention. The PRP, RAP and its variants, and the PSLS have each demonstrated efficacy in this regard. However, the beneficial effects of these interventions typically disappear, or are at least substantially reduced, over the follow-up period (e.g., Spence et al., 2003). As such, one conclusion from the universal prevention literature is that comprehensive prevention programs are at least moderately successful at reducing depressive symptomatology in the short term, but do not have lasting effects once the intervention has been completed. Given that the goal of universal prevention is to reduce the incidence of depressive disorders, efforts must be made to improve preventive interventions to create more lasting effects on depression incidence over time.

Another consistent finding across universal prevention studies is that adolescents at low risk for depression, typically based on low levels of depressive symptomatology at the start of the intervention, benefit equally from preventive interventions as adolescents initially at high risk for depression (e.g., Cardemil et al., 2002). This finding is important, given that an argument against universal prevention is that it is inefficient because interventions will not be relevant or helpful to those individuals at low risk for developing the disorder in question. Given that universal preventive interventions for adolescent depression appear to be effective at reducing depressive symptoms even among low-risk adolescents, the potential benefits of these interventions for all adolescents are clear.

Across universal prevention studies, programs that utilize teachers as intervention administrators tend to be less efficacious (e.g., Sheffield et al., 2006) than programs that utilize mental health professionals or psychology graduate students (e.g., Shochet et al., 2001). This is not surprising, given that mental health professionals and graduate students are specifically trained in psychopathology and mental health interventions. This training likely leads to better adherence to the intervention techniques, better ability to manage and respond effectively to individual participant's reactions to the program, and better flexibility in tailoring the intervention to be appropriate for different groups of participants. Unfortunately, using mental health professionals and graduate students to administer preventive interventions does not represent a sustainable approach to prevention. As such, prevention researchers should focus efforts on improving teacher training, creating intervention materials that are straightforward and easy to follow, and utilizing other techniques that allow uniformity of intervention administration and fidelity to intervention techniques (e.g., Internet-based approaches, see Future Directions section).

## CHALLENGES TO UNIVERSAL PREVENTION OF ADOLESCENT DEPRESSION

A considerable amount of questions remain unanswered regarding the efficacy of universal preventive interventions for adolescent depression. However, this type of research faces a number of challenges that make it difficult to design and implement studies that are methodologically sound enough to make firm conclusions about the efficacy of universal prevention. The first challenge

involves the need to utilize large enough sample sizes and to include long enough follow-up periods to be able to detect preventive effects if they do, in fact, exist. If a preventive intervention is effective, the incidence of MDD will be lower among individuals who received the intervention than among those who did not. However, 1-year incidence rates of MDD are low among adolescents, even though this developmental period is marked by the highest risk for depression among any age group (e.g., Blazer et al., 1994). As such, samples must be large enough to have an adequate number of cases develop over the study period. Following that logic, the follow-up period of the study must also be long enough to allow an adequate number of cases to emerge. Inclusion of large samples and utilization of long follow-up periods is difficult due to high cost. To date, most studies examining the efficacy of universal preventive interventions have been relatively small in scale when one considers the sample size and follow-up period necessary to detect differences in depression incidence between study groups. Follow-up periods typically last 6–12 months, and most studies have not included participant assessments after 1 year of follow-up.

The largest preventive intervention that has been conducted (Spence et al., 2003) utilized a large sample and an adequate follow-up time. However, this intervention failed to find preventive effects for an intervention that was demonstrated to be effective in prior evaluations. The inconsistency in these findings likely relates to poorer adherence to the preventive intervention in the larger study, and demonstrates another challenge associated with universal prevention research. Larger studies that utilize more intervention administrators and sites inevitably involve the sacrifice of some degree of investigator control over intervention implementation. It is undoubtedly easier to train and monitor a small number of intervention administrators located at one site as opposed to a large number spread across many intervention sites. Studies that include a larger number of participants must typically utilize more intervention administrators and more intervention sites. As such, studies that include adequate sample sizes inherently involve some loss of experimental control.

Given that the goal of prevention is to reduce the incidence of MDD, a preventive intervention can be considered effective only if it is associated with a reduction in the number of new cases of major depression among those who received the intervention compared to controls. As such, studies of universal preventive interventions must measure the incidence of major depression among study participants to truly demonstrate intervention efficacy. None of the studies that have been conducted to date have measured depression incidence, although several studies have measured depression incidence among a small group of study participants (e.g., Sheffield et al., 2006). Instead, symptoms of depression have been used as the primary outcome in virtually all universal prevention studies. Given the cost associated with conducting diagnostic interviews with large numbers of participants, it is understandable that depression incidence has not been measured in prevention studies. However, the consequence is that conclusions about the actual preventive effects of interventions cannot be made. Interventions that reduce symptom levels may not have an impact on depression incidence. Measurement of the incidence of major depression in intervention and control groups represents a challenge faced by prevention researchers to which there are no easy solutions.

Another series of obstacles to conducting universal prevention research involves the need to rely on schools to conduct studies. All universal prevention studies for adolescent depression to date have been conducted within schools, and working with schools creates a unique set of challenges for conducting intervention studies. The first involves the vast number of other demands placed on teachers and schools and the existence of important academic standards that teachers and schools must meet. Since the inception of the No Child Left Behind (NCLB) legislation, teachers in public schools have been expected to meet benchmarks for student test scores on achievement tests, particularly in reading and math. NCLB standards are of critical importance for school districts to meet given that federal funds are withdrawn from districts that cannot meet federal achievement score benchmarks, and teachers who do not meet standards for test scores are at risk of losing their jobs (U.S. Department of Education, 2006). Given the importance of meeting achievement standards, classroom time must be prioritized for the academic material that is covered on achievement tests. The demands placed on teachers to improve test scores and meet academic benchmarks likely results in less investment in using classroom time to focus on mental health issues, and a decreased willingness to complete lengthy intervention components that detract from academic teaching. Even teachers who believe in the importance of these interventions probably have difficulty allocating enough classroom time to the intervention to result in good adherence to the materials, given the extent of competing academic demands.

Gaining access to schools that are willing to participate in intervention studies represents another challenge for school-based universal prevention research. Given the NCLB legislation and increased focused on standardized testing in the United States, finding schools that are willing to dedicate classroom time to mental health intervention represents a daunting challenge. Schools may also be hesitant to participate without evidence that the intervention being examined has been previously demonstrated to be effective. Even if school administrators are invested in an intervention, school boards must often approve curriculum-changes, and in many places, mental health interventions may be viewed as controversial or not appropriate for use during class time. Once a school has been found that is interested in mental health interventions, a number of other obstacles remain to conducting a sound research study. Randomization at the classroom or teacher level, which is necessary to conduct experimental research studies in the absence of recruiting a large number of schools, is often not appealing to school officials. School administrators typically prefer administering interventions to entire schools given the logistical difficulties associated with training some teachers in a school but not others, and the importance of randomization at the classroom level can be difficult to convey. These challenges to gaining access to schools appear to be particularly difficult to overcome in the United States, perhaps partly due to NCLB legislation. With the exception of Cardemil and colleagues (2002) and Clarke and colleague (1993), all universal prevention studies to date have been conducted outside the United States. Efforts must be made to create incentives for schools to participate in universal prevention studies or to find alternative methods for administering preventive interventions (see Future Directions section).



Perhaps the largest obstacle for universal prevention researchers to overcome involves intervention integrity. Intervention integrity involves the extent to which an intervention is implemented as intended (see Perepletchikova & Kazdin, 2005). To date, all universal preventive intervention targeting adolescent depression have been school-based, and have utilized mental health professionals, psychology graduate students, or teachers as intervention administrators. The problem of sustainability associated with using mental health professionals or graduate students in this capacity has already been reviewed. Training teachers to administer universal prevention may represent a more sustainable approach to intervention delivery, but ensuring adherence to the intervention techniques can be difficult. A number of characteristics of teachers and the school environment render it challenging to achieve good adherence to intervention materials. First, teachers' lack of training in psychopathology and mental health intervention delivery means that extensive training is likely necessary to ensure teacher competence with intervention materials. For good adherence to the intervention to be achieved, teachers should understand not only the intervention materials, but also the underlying mechanisms of change (e.g., cognitive restructuring). If the rationale for using intervention techniques and mechanisms of action are not well-understood, teachers may have difficulty adapting intervention delivery to the needs of different classrooms while maintaining the core intervention techniques. Moreover, adequate teacher training is often difficult to achieve. Schools cannot provide unlimited time to train teachers. District in-service days, which are limited in number, typically must be used, and for contractual reasons school districts cannot require teachers to stay after school for training even if they are being paid overtime. As such, providing adequate training to ensure competence with intervention materials is difficult. Another challenge to intervention integrity involves teacher investment in the intervention. Teachers may be resistant to the idea of using classroom time to administer mental health interventions, or may not believe that such interventions are worthwhile or likely to be effective with their students. A number of other factors may also contribute to low teacher investment in the intervention, and it is likely that teachers who do not believe in the importance of the intervention will administer the intervention in a way that does not involve optimal adherence. The numerous competing demands on teacher time in the classroom that were previously mentioned also serve as a challenge to good adherence to interventions. Even teachers who are invested in the intervention may not be able to devote the necessary classroom time to achieve good adherence.

Given lack of adequate time for teacher training, the competing demands for covering academic material and the importance of meeting NCLB benchmarks, and the probable lack of investment in the intervention from at least some teachers, ensuring that a universal preventive intervention is administered in the way that it is intended represents an enormous challenge. Even when these obstacles can be overcome, sound assessment of integrity of the intervention is difficult in classroom settings. Unlike psychotherapy trials in which every session of therapy can be videotaped, reviewed, and coded for adherence, videotaping a number of teachers administering an intervention across numerous classrooms at variable times of the day or week is difficult. As such, intervention integrity in universal prevention trials is often unknown.



## **FUTURE DIRECTIONS FOR UNIVERSAL PREVENTION RESEARCH**

In this section, suggestions for overcoming some of the challenges to universal prevention studies outlined in the previous section are made. Specific attention is paid to the use of innovative methods for recruiting participants and administering interventions with the goals of increasing access to preventive interventions, improving the efficacy of interventions and integrity to intervention techniques during administration, and increasing the sustainability of interventions following research trials.

One current challenge facing universal prevention researchers involves reliance on schools for recruitment of participants. Because schools provide access to large numbers of adolescents, and because youth are required to attend school and are thus a captive audience, using schools as sites for recruitment of participants and for intervention administration has been a logical choice. However, there are numerous problems to be faced when using schools as the sites for universal prevention studies, and the identification of sites other than schools to recruit participants for such studies represents an important area for future research. The number of demands placed on schools is myriad, particularly since the NCLB legislation was passed. Finding schools that are willing to commit classroom time to mental health interventions represents a challenging task, and many schools must often be approached before finding school administrators that are willing to even consider allocating time for mental health interventions. In addition, school boards often must approve the use of interventions. Given these challenges, identifying other opportunities for accessing large numbers of adolescents for participating in universal prevention studies is critical.

Primary care and family medicine clinics represent one alternative to using schools to recruit participants. These sites provide access to large numbers of adolescents, as do schools. Recruitment of participants through medical clinics would require cooperation from the clinic and the provision of study personnel at the clinic over a period of time to recruit participants. Although this method may appear to involve more work than recruiting a school to provide participants, it does not necessarily involve more effort. As stated previously, recruiting a school can require a large investment of time in order to gain support from school administrators at the district and building levels, the school board, and from teachers. Once a school has agreed to participate, individual consent from students and parents must also be obtained. This can be a lengthy and time-consuming process, particularly if institutional review boards require active consent from parents, and may involve multiple mailings and even direct calls to parents who do not return consent forms. As such, recruitment of adolescents through medical clinics would not necessarily involve greater expenditures of time and money for researchers. In fact, one of the first universal prevention studies targeting depression was conducted in primary care clinics (Muñoz et al., 1995). This study focused on adults rather than adolescents, but nevertheless demonstrates the feasibility of this approach to recruitment. In this study, approximately half of individuals who were approached by study personnel at the primary care clinic agreed to participate in screening for eligibility (Muñoz & Ying, 1993). Of 707 potential participants screened, 150 were eventually randomized to participate in the study (Muñoz & Ying, 1993). This study found positive effects of a group cognitive-behavioral intervention on the prevention

of increases in depressive symptoms over time, and suggests that recruitment of participants through medical clinics represents a viable approach for future universal prevention studies. One indicated prevention study targeting adolescent depression successfully used a health maintenance organization to recruit adolescents of depressed mothers for a preventive intervention (Clarke et al., 2001), indicating that other methods of recruitment of adolescents in particular are feasible alternatives to school-based methods. Recruitment of adolescents through such sites would be beneficial for trials of Internet-delivered interventions or group interventions led by facilitators other than teachers, and would eliminate the need to collaborate with schools.

Another large challenge facing universal prevention research involves the reliance on teachers, trained mental-health professionals, or graduate students to administer interventions. Given the adherence issues associated with using teachers as intervention administrators, and the sustainability issues associated with using trained professionals, other approaches to delivering universal preventive interventions targeting adolescent depression should be explored. Internet-based interventions represent an approach that may hold great promise in this regard. Internet-based interventions are increasingly being used in public health and in clinical psychology to administer treatments to large numbers of people. Evidence suggests that Internet-based approaches to intervention delivery can be equally effective as those delivered by clinicians and can reach a substantial number of individuals at a low cost. For example, an Internet-based intervention for smoking cessation that utilized cognitive-behavioral mood management techniques was found to be effective at increasing quit rates, particularly among previously depressed participants (Muñoz et al., 2006). This study recruited a large sample size over a short period of time given the ability of the Internet to attract large numbers of people and given the convenience of completing an intervention from home or work.

Internet-based preventive interventions targeting adolescent depression may solve many of the problems that arise when teachers are responsible for administering interventions during class time. In Internet-based approaches, the intervention is delivered exactly as intended and uniformly across all participants, making adherence a nonissue. Teacher investment in the intervention is unnecessary, given that the intervention can be completely administered in the absence of teacher participation. Intervention materials can be completed at home or during breaks in the school day (e.g., study halls) rather than during class time that would otherwise be devoted to academic material. Moreover, the exact dosage of the intervention that is received by each participant (e.g., how many modules, lessons, or activities were completed) can be carefully monitored. Internet-based approaches also solve the problems of sustainability that are associated with using mental health professionals or graduate students to administer interventions. Internet-based preventive interventions thus represent a sustainable and cost-effective method for providing access to effective interventions to large segments of the population.

Future studies should aim to modify existing interventions that have been found to be effective, such as the PRP, so that they may be administered via the Internet. Partnering with schools would aid in the testing of such interventions. Schools have the authority to assign intervention materials as homework and allow access to large populations of adolescents. Administrators tend to be invested in reducing mental health problems in schools given their negative

consequences for academic and social functioning, and would likely support mental-health interventions that do not require use of class time or teacher in-service time for training. The use of the Internet to deliver preventive interventions represents a strategy that, if effective, could be used to access large segments of the population and have substantial impacts upon public health. These approaches could solve many of the problems associated with using teachers to administer interventions, particularly problems of adherence, and the sustainability problems associated with using trained mental health professionals.

## CONCLUSION

To date, a number of universal preventive interventions for adolescent depression have been developed and empirically evaluated. The results of these evaluations have been decidedly mixed; many of the interventions that have been examined have been found to be effective in some trials (e.g., Spence et al., 2003) but not in others (e.g., Sheffield et al., 2006). The inconsistent results that have been typical in this literature have likely resulted from a number of methodological and logistical challenges that face universal prevention researchers. These challenges range from the need to test interventions on large samples of adolescents and utilize lengthy follow-up periods, to a host of difficulties inherent in working with schools to conduct intervention research. Universal prevention researchers must develop innovative strategies for designing and testing preventive interventions and for overcoming the myriad challenges that are present in this type of research. Until then, the true benefits of universal preventive interventions will remain unclear. Ultimately, universal preventive interventions for adolescent depression may provide the best strategy for reducing the incidence of major depression at a population level if researchers are able to design effective interventions that are sustainable in communities. The public health impact of such interventions would be far-reaching, and universal prevention researchers are encouraged to continue developing strategies to test interventions for adolescent depression in spite of the numerous challenges that must be overcome.

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