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Efficacy of Interpersonal Psychotherapy-Adolescent Skills Training: an indicated preventive intervention for depression

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Background: Indicated interventions for adolescents with elevated depressive symptoms may help decrease rates of depression. The current study reports on the efficacy of Interpersonal Psychotherapy-Adolescent Skills Training (IPT-AST), a group indicated preventive intervention. **Methods:** Forty-one adolescents with elevated depression symptoms were randomized to receive either IPT-AST or school counseling (SC) as delivered by guidance counselors and social workers. Adolescents in the two intervention conditions were compared on depression symptoms, overall functioning, and depression diagnoses post-intervention and at 3-month and 6-month follow-up. **Results:** Adolescents who received IPT-AST had significantly fewer depression symptoms and better overall functioning post-intervention and at follow-up. Adolescents in IPT-AST also reported fewer depression diagnoses than adolescents in usual care. **Conclusions:** These results provide preliminary evidence of the efficacy of IPT-AST as an intervention for adolescents with subthreshold depression. Future research is needed to confirm the efficacy of IPT-AST in a larger and more diverse sample and to determine its long-term impact on depression symptoms and depression diagnoses. **Keywords:** Prevention, depression, adolescence, psychotherapy.

Preventive interventions are classified as universal, selective, and indicated (Gordon, 1983). Universal interventions are provided to the entire population. Selective interventions are provided to a subsample with a known risk factor and indicated interventions target individuals with subthreshold symptoms of a disorder. Elevated depression symptoms are one of the biggest risk factors for developing a depressive disorder (Lewinsohn et al., 1994; Pine, Cohen, Cohen, & Brook, 1999). These symptoms are persistent over time (Garrison, Jackson, Marsteller, McKeown, & Addy, 1990) and are associated with considerable psychosocial impairment (Gotlib, Lewinsohn, & Seeley, 1995; Lewinsohn, Solomon, Seeley, & Zeiss, 2000). In recognition of the risk and impairment associated with depressive symptoms, there has been a call for an increase in indicated preventive intervention research (Mrazek & Haggerty, 1994; US Public Health Service, 2000).

A number of universal (e.g., Clarke, Hawkins, Murphy, & Sheeber, 1993; Petersen, Leffert, Graham, Alwin, & Ding, 1997; Shochet et al., 2001; Spence, Sheffield, & Donovan, 2003) and selective interventions (e.g., Beardslee et al., 1997; Clarke et al., 2001; Wolchik, West, Westover, & Sandler, 1993) have been tested for adolescent depression. To date, two indicated interventions for adolescents with elevated depressive symptoms have been studied. The Penn Prevention Program (Gillham & Reivich, 1999; Gillham, Reivich, Jaycox, & Seligman, 1995; Jaycox, Reivich, Gillham, & Seligman, 1994) is a 12-week cognitive-behavioral group for children, aged 10–13, with depressive symptoms and family conflict. The intervention includes cognitive and social skills components. Children who received this intervention demonstrated a reduction in depressive symptoms post-intervention and up to 2 years post-intervention. Later studies of this intervention have been less consistent, finding effects for females but not males (Freres, Gillham, Reivich, Shatté, & Seligman, 2002), Latino children but not African American children (Cardemil, Reivich, & Seligman, 2002). A replication study in Australia found no intervention effects for depression post-intervention or at 6-month follow-up (Roberts, Kane, Thomson, Bishop, & Hart, 2003).

Clarke and his colleagues (Clarke et al., 1995) employed a 15 session group cognitive-behavioral intervention (CBP) for 9th and 10th graders with elevated symptoms. The intervention focuses on modifying negative and irrational thoughts that may contribute to depression. Fewer adolescents who participated in CBP had depression diagnoses than adolescents in the control group during the 12-month follow-up period. These studies suggest that preventive interventions targeting children and adolescents with subthreshold symptoms may be effective in preventing future depressive symptoms and depressive disorders. Additional preventive

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interventions, particularly those based on other evidence-based treatments, may also be effective.

We report on an indicated prevention intervention, Interpersonal Psychotherapy-Adolescent Skills Training (IPT-AST), which is based on Interpersonal Psychotherapy for Depressed Adolescents (IPT-A; Mufson, Dorta, Moreau, & Weissman, 2004a). We chose to adapt IPT-A as a preventive intervention for several reasons. First, IPT-A is an effective treatment modality for adolescent depression (Mufson, Weissman, Moreau, & Garfinkel, 1999; Mufson et al., 2004b; Rosselló & Bernal, 1999). Second, IPT-A addresses interpersonal deficits and conflicts, which increase the risk for depression (e.g., Lewinsohn et al., 1994; Reinherz et al., 1989), and promotes skilled communication and positive relationships, factors that protect against the development of depression (Carbonell, Reinherz, & Giaconia, 1998). By directly targeting these risk and protective factors, the development of depression may be prevented. Third, IPT-A emphasizes psychoeducation and skill development, which are particularly relevant to prevention.

This paper presents results from a randomized trial comparing IPT-AST, a school-based group intervention, to school counseling (SC) as provided by school guidance counselors and social workers. We hypothesize there will be a significant difference in depressive symptoms and overall functioning between subjects who participated in IPT-AST and those who received SC at post-intervention, 3-month follow-up, and 6-month follow-up. We also anticipate that there will be different rates of depression disorders in the two intervention conditions.

Methods

Case-finding procedures

Adolescents with elevated symptoms of depression were identified through a two-stage case-finding procedure modeled after Clarke et al. (1995). The study was approved by the Institutional Review Board (IRB) at Columbia University/New York State Psychiatric Institute. Figure 1 provides an overview of study recruitment.

Screening. The first stage was a classroom-based screening in 3 Catholic schools in New York City. Parents of students in the 7th–10th grades were sent a letter about the screening from school administrators. If the parents did not want their child to participate, they sent back a notice of refusal. If we did not receive a refusal for a particular student, a second letter was sent. On the day of the screening, adolescents whose parents refused participation were not approached for the survey. All other adolescents were informed of the procedures and were given the opportunity to refuse participation. Those adolescents that wanted to participate signed a screening assent form.

Adolescents who assented to the screening completed the self-report Center for Epidemiologic Studies-Depression Scale (CES-D; Radloff, 1977). The CES-D has 20 items that assess depressive symptoms over the past week. We used a version of the CES-D that reworded 4 items to prevent the need for reverse scoring to compute a total score. For instance, rather than the item 'I felt I was just as good as other people,' this version had 'I felt that I was not as good as other people.' The adult literature recommends using a score of 16 or higher as indicative of a depressive illness. Because a cut-off of 16 leads to a number of false positives in adolescent populations, people have recommended various cut-off scores ranging from 12 to 24 (Garrison, Addy, Jackson, McKeown, & Waller, 1991; Roberts, Andrews, Lewinsohn, & Hops, 1990). We used the adult criterion of a score equal to or greater than 16 to identify as many adolescents as possible who may be experiencing symptoms of depression. Adolescents with a CES-D score between 16 and 39 were eligible to be approached for the prevention project; those with a score of 40 or higher were referred out for treatment as a requirement of the IRB.

The average CES-D score of the 365 adolescents screened was 15.1 (SD = 13.0); 112 adolescents (30.7%) scored between 16 and 39. Research personnel contacted the eligible adolescents and their parents to describe the prevention project. Interested families came to the school and met with study personnel to hear more about the project and provide informed consent and assent. Approximately half of the families (55 or 49.1%) agreed to participate in the project. Four adolescents were not offered the program because of involvement in child protective services or the known severity of their symptoms. Of the remaining 53 families, the most common reason for refusing participation in the project was general disinterest (in 18.9% the adolescent was not interested, in 22.6% the parent was not interested, and in 20.8% the adolescent and parent were not interested). Other reasons were: belief that the adolescent did not need the prevention program (22.6%); the parent's desire to handle the problems outside of school (9.4%); scheduling conflicts (3.8%); and the adolescent not wanting to be randomized to a group (1.9%).

The adolescents who consented to participate in the prevention component of the project were compared to those who did not participate on several key variables. There were no significant differences in screening CES-D score (25.2 versus 25.0; $t_{df} = 110 = -.11$), age (13.5 versus 13.7; $t_{df} = 110 = .76$), or gender (85.4% female versus 91.2% female; $\chi^2_{df} = 1 = .91$).

Diagnostic evaluation. Fifty-four of the 55 adolescents who consented to the project completed a structured diagnostic interview, the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS-PL) (Kaufman, Birmaher, Brent, & Rao, 1997) and the Children's Global Assessment Scale (CGAS) (Shaffer et al., 1983), to determine eligibility. One adolescent repeatedly failed to show for the eligibility evaluation and was dropped from the project.

Adolescents were eligible to participate in the study if they had at least 2 subthreshold or threshold depression symptoms on the K-SADS-PL and did not meet criteria for a current depressive episode. Elevated depressed mood, irritability, or anhedonia was required, as was a CGAS score of 61 or higher. Adolescents were

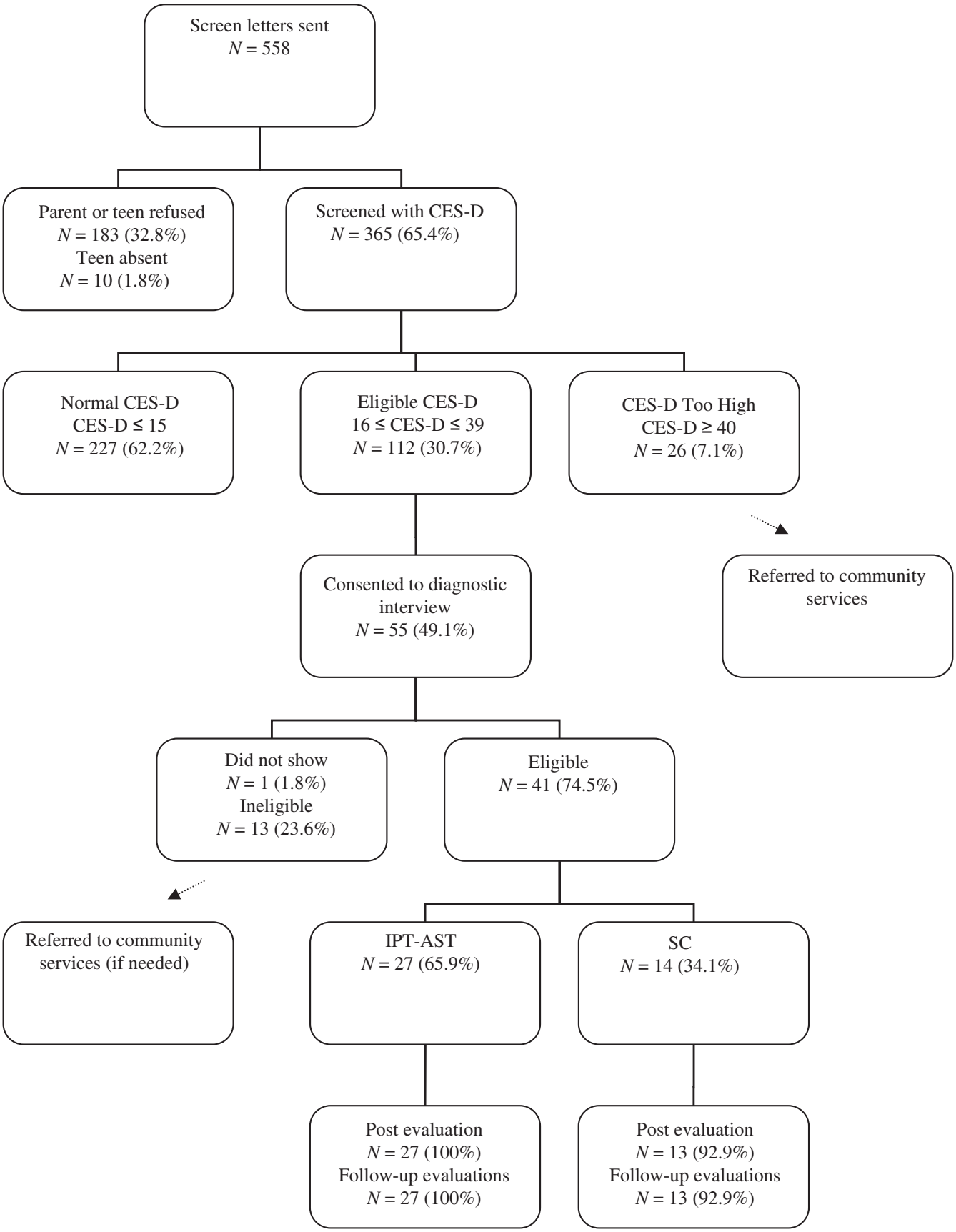

Figure 1 Recruitment flow chart

excluded from the prevention component if they did not have at least 2 depression symptoms or had a current diagnosis of depression, dysthymia, bipolar disorder, psychosis, panic disorder, obsessive-compulsive disorder, post-traumatic stress disorder, oppositional defiant disorder, conduct disorder, or untreated attention

deficit hyperactivity disorder. Three adolescents were excluded because they did not have enough depression symptoms; eight were excluded because they met criteria for one of the exclusionary diagnoses. In the first two months of recruitment, two additional adolescents were excluded from the project because they had a past depressive episode. This eligibility criterion was then modified to allow adolescents with a past depressive episode to participate in the intervention as previous studies had done (e.g., Clarke et al., 1995). Seventeen percent of the sample ($N = 7$) was enrolled prior to this change.

Randomization. Forty-one adolescents were randomly assigned to receive IPT-AST or SC using a table of random numbers. To ensure enough IPT-AST groups, the random number table was generated so that approximately two-thirds of adolescents would be randomized to the IPT-AST condition. Twenty-seven adolescents were randomized to IPT-AST and 14 adolescents were randomized to SC.

Participants

Participants were aged 11 to 16 in the 7th–10th grades at three Catholic schools (two coeducational middle schools and one all-girls high school). The average age was 13.4 (SD = 1.2) years and the sample was 85.4% female. The majority of the adolescents were Hispanic (92.7%). Sixty-six percent of the sample lived in a single-parent household and half reported a gross household income of $25,000 or less. Several of the adolescents met criteria for a current non-affective DSM-IV diagnosis, but the majority (75.6%) had only subthreshold depression symptoms with no current diagnosis. Two adolescents had a past diagnosis of dysthymia (one in each condition). There were no significant differences on baseline demographic and clinical variables between the two intervention conditions. See Table 1 for details.

Table 1 Demographic and sample characteristics

	IPT-AST ($N = 27$)	SC ($N = 14$)	p-value
Demographics			
Age, mean (SD)	13.5 (1.3)	13.1 (1.1)	.59
Female (%)	22 (81.5)	13 (92.9)	.65
Hispanic (%)	25 (92.6)	13 (92.9)	1.0
Baseline measures			
CES-D, mean (SD)	24.1 (6.9)	27.4 (6.6)	.16
CGAS, mean (SD)	68.9 (6.0)	65.9 (3.8)	.07
Current diagnoses			
No diagnoses (%)	21 (77.8)	10 (71.4)	.71
Generalized anxiety disorder (%)	3 (11.1)	1 (7.1)	1.0
Social phobia (%)	1 (3.7)	3 (21.4)	.11
Separation anxiety disorder (%)	0	1 (7.1)	.34
Adjustment disorder (%)	2 (7.4)	0	.54
Enuresis (%)	1 (3.7)	0	1.0
Past depression diagnoses			
No diagnoses (%)	26 (96.3)	13 (92.9)	1.0
Dysthymia (%)	1 (3.7)	1 (7.1)	1.0

Assessments

All adolescents completed assessments at baseline, post-intervention, and 3 and 6 months post-intervention. Adolescents were given $15 for completing each assessment. Each evaluation included the K-SADS-PL, CGAS, and CES-D. Scores on the CES-D range from 0–60, with higher scores indicating more symptoms. The K-SADS-PL interviews were performed by a clinical evaluator, a Masters-level psychologist who was blind to treatment condition. A diagnosis of Depressive Disorder Not Otherwise Specified (DD NOS) was given when an adolescent reported 3 or 4 threshold symptoms of depression, one of which was depressed mood, irritability, or anhedonia. Following each evaluation with an adolescent, the evaluator assigned a CGAS score. Scores on the CGAS range from 0–100, with higher scores indicating better functioning.

In addition to the assessments with the clinical evaluator, each adolescent completed the CES-D mid-intervention to assess clinical status. Any adolescent with a mid-intervention CES-D score of 40 or higher would meet with the Principal Investigator to assess the need for removal from the study. None of the adolescents had a mid-treatment CES-D that required further attention. The post-intervention assessments were scheduled after the last group session at each school and occurred on average 12.6 weeks after randomization. The follow-up assessments occurred approximately 3 and 6 months after the post-intervention assessments. If any assessment indicated a need for additional treatment, the family was given a referral for outside treatment. Two adolescents in SC received psychotherapy during the follow-up period. Twelve adolescents (7 in IPT-AST and 5 in SC) reported meeting with the school counselor during the follow-up.

Interventions

IPT-AST. IPT-AST, known to the adolescents as 'Teen Talk,' involves two initial individual sessions and eight weekly 90-minute group sessions. The group focuses on psychoeducation and general skill-building that can be applied to different relationships within the framework of three interpersonal problem areas: interpersonal role disputes, role transitions, and interpersonal deficits. The psychoeducation component includes defining prevention, educating members about depression, and discussing the relationship between feelings and interpersonal interactions. The interpersonal skill-building component consists of two stages. First, communication and interpersonal strategies are taught through didactics, games, role-plays, and communication analysis. Once group members understand the skills, they are asked to apply them to different people in their lives, practicing first in group and then at home. IPT-AST is a modification of the group IPT-A manual (Mufson, Gallagher, Dorta, & Young, 2004c). Primary modifications were: decreasing the number of group sessions from twelve to eight; adding activities to illustrate the link between what we say and how others respond; and teaching interpersonal techniques to group members using fictional scenarios before applying them to real-life situations.

All sessions took place in the schools. The individual sessions occurred during students' free periods or after school and the group sessions took place after school. Six groups were run over the course of two academic years. Three of the groups had one therapist; the other half had co-therapists. The therapists included the first author and Masters-level psychologists and social workers who were trained and supervised by the first author. Group size ranged from three to seven adolescents.

One adolescent dropped out of treatment prior to the first group session but completed all assessments. Among the remaining 26 adolescents in IPT-AST, youth attended an average of 2.0 pre-group sessions (SD = .2) and 6.9 group sessions (SD = 1.0). The range was 1–2 pre-group sessions and 5–8 group sessions over 10–12 weeks. One adolescent in IPT-AST attended a drop-in community mental health center during the course of the intervention. No adolescents in IPT-AST received medication.

School counseling. The remaining adolescents were referred to the school guidance counselor or social worker to be seen at a frequency determined by the adolescent and the clinician. Most adolescents in this condition received individual counseling, but in one school the guidance counselor provided group counseling ($N = 2$). Guidance counselors and social workers could also refer the adolescent for additional treatment if the problems worsened or the adolescent requested more services. Only one adolescent in SC received outside psychotherapy; no adolescents received medication.

School counseling was not intended to be an equivalent intervention to IPT-AST. It was chosen as the comparison group because it approximates what normally occurs in the schools when an adolescent is identified as having mild emotional difficulties. We were interested in whether IPT-AST was more effective at addressing depression symptoms than the counseling that normally occurred in these schools. Many of the adolescents might not have been identified without the screening, but once they were identified, SC mirrored typical school procedures.

One adolescent in SC dropped out of the study prior to receiving any treatment. Among the remaining 13 adolescents, participants had an average of 4.2 sessions (SD = 2.2), with a range of 0–7 sessions over 10–12 weeks. The SC sessions were typically 30–45 minutes in duration and consisted of supportive counseling. After each session, the counselor completed a form about the topics discussed. The most commonly discussed topic was relationships with parents (40.7%), followed by academic issues (22.2%), relationships with peers (14.8%), feelings of sadness and anxiety (14.8%), and 'other' (7.5%), including physical complaints, stress, and extracurricular activities.

Statistical analyses

Efficacy of the prevention interventions was assessed by conducting an analysis of covariance (ANCOVA) on the two main outcome measures by treatment condition post-intervention and at 3- and 6-month follow-up assessments. Baseline CES-D and CGAS scores were included as covariates. Effect sizes were estimated using Cohen's d (Cohen, 1988). The rates of depression diagnoses on the K-SADS were compared using Fisher's Exact Test. The significance level, for all tests, was .05 (two sided). All analyses used intent-to-treat principles, with the last observation carried forward.

Analyses of covariance assume independent observations from each individual. This assumption may be violated because IPT-AST is a group treatment and because the participants were nested within schools. We considered including random effects for group and school but decided against this model because the small number of groups and schools would result in statistically unreliable estimates.

Post hoc analyses were conducted to examine differential intervention effects by severity of initial depressive symptoms. Adolescents with a CES-D score of 16–23 were compared to adolescents with a CES-D score of 24 or higher on post-treatment depression symptoms and functioning using *t*-tests and on depression diagnoses using Fisher's Exact Test.

Results

Main outcomes

At post-intervention, adolescents in IPT-AST reported significantly fewer depression symptoms on the CES-D ($M = 6.4$, SD = 4.8) than adolescents in SC ($M = 17.4$, SD = 10.5), controlling for baseline CES-D scores, $F_{1,38} = 18.0$; $p < .001$; ES = 1.52. At 3-month follow-up (IPT-AST: $M = 5.5$, SD = 4.0; SC: $M = 12.7$, SD = 9.8; $F_{1,38} = 12.6$; $p < .001$; ES = 1.10) and 6-month follow-up, there continued to be significant differences between the two groups (IPT-AST: $M = 6.3$, SD = 5.4; SC: $M = 13.9$, SD = 9.3; $F_{1,38} = 10.7$; $p < .01$; ES = 1.09).

Regarding overall functioning, there was a significant difference between the two groups on the CGAS at post-treatment (IPT-AST: $M = 74.6$, SD = 6.1; SC: $M = 68.5$, SD = 7.3; $F_{1,38} = 5.2$; $p < .05$; ES = −.96). There continued to be a significant difference at 3-month follow-up (IPT-AST: $M = 78.9$, SD = 5.8; SC: $M = 73.3$, SD = 8.6; $F_{1,38} = 4.7$; $p < .05$; ES = −.82), and 6-month follow-up (IPT-AST: $M = 80.0$, SD = 5.1; SC: $M = 71.4$, SD = 10.0; $F_{1,38} = 10.3$; $p < .01$; ES = −1.21). See Table 2 for details.

Diagnoses

At the post-intervention assessment, none of the adolescents in IPT-AST met diagnostic criteria for a depression diagnosis at post-treatment compared to 3 adolescents in SC (1 for major depressive episode, 2 for DD NOS). At 3-month follow-up, 1 adolescent in IPT-AST had developed a major depressive episode. No adolescents in SC had developed a new episode but 2 of the adolescents continued to have a depressive episode (1 continued DD NOS, 1 DD NOS developed into a major depressive episode). At the 6-month assessment, no adolescents in IPT-AST had

Table 2 Depression symptoms and functioning at baseline, post-intervention, and follow-up

Measure	IPT-AST ($N = 27$)	SC ($N = 14$)	F	*df*	*p*-value	Cohen's d
CES-D, mean (SD)						
Baseline	24.1 (6.9)	27.4 (6.6)				
Post-intervention	6.4 (4.8)	17.4 (10.5)	18.0	1, 38	.001	1.52
3-month follow-up	5.5 (4.0)	12.7 (9.8)	12.6	1, 38	.001	1.10
6-month follow-up	6.3 (5.4)	13.9 (9.4)	10.7	1, 38	.002	1.09
CGAS, mean (SD)						
Baseline	68.9 (6.0)	65.9 (3.8)				
Post-intervention	74.6 (6.0)	68.4 (7.3)	5.2	1, 38	.029	−.96
3-month follow-up	78.9 (5.8)	73.3 (8.6)	4.8	1, 38	.035	−.82
6-month follow-up	80.0 (5.1)	71.4 (10.0)	10.3	1, 38	.003	−1.21

a depression diagnosis. In SC, a new adolescent met criteria for DD NOS and the two adolescents with diagnoses at 3 months continued to meet criteria (1 now met criteria for dysthymia, 1 had a continuing major depressive episode). Looking at these data collectively, 1 of the 27 (3.7%) IPT-AST adolescents had a depression diagnosis at any time during the 6-month follow-up period compared to 4 of the 14 (28.6%) SC adolescents, Fisher's Exact Test, $p = .08$.

Post hoc analyses of treatment effects by severity

Twenty-one adolescents in the sample had an initial CES-D score of 16 to 23. They were compared to the 20 adolescents with a CES-D score of 24 or higher to examine potential differential effects of the interventions as a function of initial depression severity. There were no significant differences on post-treatment or follow-up CES-D or CGAS scores between adolescents with low versus high initial severity in the overall sample or by intervention condition. One of the 21 (4.7%) adolescents with a low baseline CES-D score developed a depression diagnosis during the follow-up period compared to four of the 20 (20%) adolescents with a high baseline CES-D. The difference in rates was not significant.

Discussion

The results demonstrate the preliminary efficacy of IPT-AST compared with SC as an intervention for adolescents with elevated depressive symptoms. Adolescents in both conditions showed an improvement in depression scores and overall functioning from baseline to post-treatment, but the improvement in the IPT-AST group was significantly greater than in SC. The same was true at the 3-month and 6-month follow-up. There were no differential intervention effects by illness severity. The effect sizes for the main outcomes at post-treatment and at follow-up are large. Using the same method to compute Cohen's d, effect sizes in prior successful prevention studies range from .27 (Jaycox et al., 1994) to .46 (Clarke et al., 2001). The large effect sizes in the current study are particularly noteworthy because this is one of the first prevention studies to include a control condition that received some, albeit limited, counseling.

The one exception to the small to medium effect sizes found in prior studies is Cardemil et al.'s (2002) study with Latino middle school students. They found a post-intervention effect size of 1.19 for children with high initial CDI scores and an effect size of .67 for children with low initial symptoms. Effect sizes at 3-month follow-up were .90 for the high symptom group and .34 for the low symptom group. Both Cardemil et al.'s (2002) study and the current study included primarily inner city Hispanic samples. Given the high rates of depression found in low-income Hispanic populations (e.g., Blazer, Kessler, McGonagle, & Swartz, 1994; Potter, Rogler, & Moscicki, 1995) and the high unmet need for mental health services in this population (Kataoka, Zhang, & Wells, 2002), these adolescents may be particularly likely to benefit from a school-based preventive intervention. As Rosselló and Bernal (1999) suggest, interpersonal psychotherapy, with its focus on relationships, may resonate with the Hispanic value of placing the family before the individual, making it a particularly potent intervention model for this population. Future research should examine whether other interventions are particularly efficacious with Hispanic adolescents, as well as whether IPT-AST is equally effective in non-Latino populations.

A distinction has been made in the prevention literature between treatment and preventive effects. Some researchers base this distinction on time, such that immediate treatment effects are differentiated from long-term preventive effects (Compas, Connor, & Wadsworth, 1997; Jaycox et al., 1994). Others suggest that the word 'treatment' be used when symptoms or disorders decline in the intervention group relative to the control group and the term 'prevention' be used when there is an increase in symptoms or disorders in the control group and no such increase in the intervention group (Gillham, Shatté, & Freres, 2000). According to both models, the immediate changes in continuous measures of depression and overall functioning in the current study are treatment effects. According to the second model, the follow-up findings on the continuous measures would also be classified as treatment since there was no increase in symptoms in the control group at the follow-up assessments. However, the

trend toward a higher onset of depression diagnoses in the control condition over the follow-up period suggests a preventive effect for IPT-AST.

According to the report by the Institute of Medicine, the goal of prevention is to reduce the occurrence of new cases (Mrazek & Haggerty, 1994). With the exception of the studies by Clarke and his colleagues (Clarke et al., 1995, 2001), most depression prevention studies have only looked at symptom-level change. The current study examined both symptoms and diagnoses, though our ability to analyze the diagnostic data was limited by small sample size. Within the IPT-AST condition, one adolescent (3.7%) became depressed in the 6 months following the completion of the intervention compared to four adolescents (28.6%) in SC. Although the follow-up time period is limited, the diagnostic findings are quite promising and suggest that IPT-AST may be effective at preventing the onset of depression diagnoses in the 6 months following the completion of the intervention.

The main limitation of this study is that less than half of the eligible adolescents agreed to participate in the eligibility evaluation. Although there were no significant differences between adolescents who enrolled in the study and those who refused, the high refusal rate limits our ability to generalize these findings. High refusal rates have been found in other indicated depression prevention studies, with acceptance rates ranging from 18.4% to 47.1% (e.g., Clarke et al., 1995, 2001). As Clarke et al. (2001) argue, the low enrollment rate suggests that adolescents and their families may not be interested in preventive services. Future research will need to determine whether indicated prevention, with low participation rates and relatively large effect sizes (as compared to universal programs), is the appropriate level of prevention (Horowitz & Garber, 2006; Shochet et al., 2001). If it is, then future programs may want to utilize a motivational enhancement component to increase participation.

Another limitation is the small sample size. The small number of groups and schools prevented a statistically reliable examination of the effect of group and schools. Third, the unbalanced randomization resulted in a small number of adolescents who received school counseling. Fourth, the majority of the sample was Hispanic females. The inclusion of Hispanic adolescents is an asset of the study since most prevention studies have been with Caucasian adolescents, and inner city Hispanic adolescents are an underserved population (Kataoka et al., 2002). However, the make-up of the sample did not allow us to test for differences in treatment outcome as a function of gender or ethnicity. This will be important to examine in future studies since there is mixed evidence about gender (e.g., Clarke et al., 1993; Freres et al., 2002; Petersen et al., 1997) and ethnicity (e.g., Cardemil et al., 2002) as moderators of prevention effects. Fifth, because this was a preliminary study of a prevention intervention, we excluded adolescents with certain comorbidities. This also limits the generalizability of the data. Lastly, the follow-up time period is relatively short, limiting our ability to discuss long-term prevention effects.

Conclusion

The findings from this study suggest that IPT-AST can decrease symptoms and improve functioning in adolescents with elevated depression symptoms. Furthermore, adolescents who participate in IPT-AST may be less likely to develop a depressive illness than adolescents who receive regular school counseling. These results point to the promise of IPT-AST as an intervention for adolescents with subthreshold depression. Future research is needed to confirm the efficacy of IPT-AST with a larger and more diverse sample and to determine its long-term impact on depression symptoms, depression diagnoses, and overall functioning.

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