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Long-Term Effects from a School-Based Trial Comparing Interpersonal Psychotherapy-Adolescent Skills Training to Group Counseling

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Abstract

Adolescence represents a vulnerable developmental period for depression and an opportune time for prevention efforts. In this study, 186 adolescents with elevated depressive symptoms (*M* age = 14.01, *SD* = 1.22; 66.7% female; 32.2% racial minority) were randomized to receive either Interpersonal Psychotherapy–Adolescent Skills Training (IPT-AST; *n* = 95) delivered by research clinicians or group counseling (GC; *n* = 91) delivered by school counselors. We previously reported the short-term outcomes of this school-based randomized controlled trial: IPT-AST youth experienced significantly greater improvements in depressive symptoms and overall functioning through 6-month follow-up. Here, we present the long-term outcomes through 24 months postintervention. We examined differences in rates of change in depressive symptoms and overall functioning and differences in rates of depression diagnoses. Youth in both conditions showed significant improvements in depressive symptoms and overall functioning from baseline to 24-month follow-up, demonstrating the efficacy of school-based depression prevention programs.

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However, the two groups did not differ in overall rates of change or in rates of depression diagnoses from baseline to 24-month follow-up. Although IPT-AST demonstrated advantages over GC in the short term, these effects dissipated over long-term follow-up. Specifically, from 6- to 24-month follow-up, GC youth showed continued decreases in depressive symptoms, whereas IPT-AST youth showed a nonsignificant increase in symptoms. GC youth remained relatively stable in overall functioning, whereas IPT-AST youth experienced a small but statistically significant worsening in functioning. This study highlights the potential of school-based depression prevention efforts and the need for further research.

Depression is a highly prevalent condition associated with marked disability and impairment (World Health Organization, 2017). Although effective treatments are available, many depressed individuals go untreated or receive inadequate care (Kessler et al., 2003). There is increasing recognition of the importance of developing preventive interventions that could prevent, or at least delay, the onset of depression. Given that adolescence represents a vulnerable period for a surge in depressive symptoms and diagnoses (Hankin et al., 2015), this age group is an ideal target for prevention efforts.

Schools provide an optimal venue for prevention because they offer access to youth who might not otherwise receive services due to barriers such as transportation, cost, or perceived stigma (Masia-Warner, Nangle, & Hansen, 2006). A recent meta-analysis concluded that school-based depression prevention programs demonstrate beneficial effects postintervention and through 6-month follow-up. However, effect sizes for longer term follow-up were small and of questionable clinical significance (Werner-Seidler, Perry, Calear, Newby, & Christensen, 2017). Similarly, in a recent review there was no evidence for effects of youth depression prevention programs (not just school based) on depression diagnoses, depressive symptoms, or global functioning beyond 12-month follow-up (Hetrick, Cox, Witt, Birr, & Merry, 2016).

One promising depression prevention program is Interpersonal Psychotherapy–Adolescent Skills Training (IPT-AST; Young, Mufson, & Schueler, 2016). IPT-AST is derived from interpersonal theories of depression, which posit that interpersonal risk factors, such as poor social skills and difficulties in relationships, increase susceptibility to depression (Rudolph, Flynn, & Abaied, 2008). Unlike cognitive-behavioral programs, IPT-AST aims to modify aspects of interpersonal relationships that contribute to negative emotions and increase the risk of depression in adolescence. Proposed mechanisms of change in interpersonal interventions include increasing interpersonal support, decreasing interpersonal conflict, and improving social skills (Lipsitz & Markowitz, 2013).

The efficacy of IPT-AST has been demonstrated in two small, randomized controlled trials (RCT) comparing IPT-AST to usual school counseling (SC) for youth with elevated symptoms. In the first RCT, IPT-ASTyouth had significantly fewer depressive symptoms and better overall functioning than SC youth at post-intervention and 6-month follow-up (Young, Mufson, & Davies, 2006). In the second RCT, IPT-AST youth showed greater improvements in depressive symptoms and overall functioning and fewer depression diagnoses than SC youth through 6-month follow-up. However, rates of change in symptoms and functioning slowed for IPT-AST youth in the subsequent follow-ups, whereas SC adolescents continued

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to show improvements (Young, Mufson, & Gallop, 2010), resulting in no significant differences in symptoms, functioning, or diagnoses at 12- and 18-month follow-up.

Building on the results from these two studies, we began a third school-based RCT, the Depression Prevention Initiative (DPI). One possible explanation for the poor sustainability of IPT-AST effects over long-term follow-up in the prior study is that, as time progressed, adolescents forget some of the interpersonal skills they learned or employed these skills less frequently or less adeptly. Therefore, in DPI, we added four postintervention booster sessions to evaluate whether this could help sustain intervention effects. In addition, we included an active control condition (group counseling [GC]) designed to closely match IPT-AST in terms of frequency and duration of sessions, resulting in a rigorous test of intervention effects. We recently reported the short-term outcomes from the DPI project. Through 6-month follow-up, IPT-AST adolescents showed significantly greater improvements in depressive symptoms and overall functioning relative to GC youth. However, the two groups did not differ in the onset of depressive disorders (see Young et al., 2016).

In this article, we present the long-term follow-up results on the primary outcomes from the DPI project. Specifically, we examine change in depressive symptoms and overall functioning from baseline through 24-month follow-up. We also report on long-term diagnostic outcomes. In addition, given evidence from our prior work and other intervention studies that change occurs in a piecewise fashion with improvements during the intervention followed by stabilization or worsening during follow-up (Benas et al., 2016; Gallop, Dimidjian, Atkins, & Muggeo, 2011), we examined rates of change from 6- to 24-month follow-up. This allowed us to examine how change during the long-term follow-up differed from short-term change reported in Young et al. (2016).

METHOD

Participants

The racially and socioeconomically diverse sample included 186 adolescents in the 7th through 10th grades enrolled in participating middle and high schools. See Table 1 for sample characteristics.

Procedures

Adolescents with elevated depressive symptoms were identi-fied via a two-stage screening (see Figure 1). First, we identified adolescents with scores of 16 or higher on the Center for Epidemiologic Studies–Depression Scale (CES-D; Radloff, 1977). Of the 593 youth with an elevated CES-D score, 271 (47%) consented/assented to complete the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS-PL; Kaufman, Birmaher, Brent, & Rao, 1997) in the second phase. Adolescents were eligible to participate if they had at least two subthreshold or threshold depression symptoms, one of which was depressed mood, anhedonia, or irritability. Adolescents were considered ineligible if they (a) did not meet the depression symptom criterion; (b) had a current diagnosis of major depression, dysthymia, bipolar disorder, psychosis, substance abuse, or conduct disorder; (c) reported

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current active suicidal ideation or significant and repeated nonsuicidal self-injury; or (d) had severe cognitive or language impairments. Adolescents were not excluded for psychotropic medication use.

Based on these criteria, 186 youth were eligible to participate. After stratifying by gender within each school, we used a computer-generated random number sequence to randomly assign the adolescents to IPT-AST ($n = 95$) or GC ($n = 91$). Study enrollment staff and evaluators were naïve to intervention condition. After completing final assessments, evaluators guessed participants' intervention condition. The mean correct guess rate was at chance level (51.4%), indicating that the mask was maintained. All procedures were approved by the Rutgers University Institutional Review Board and the school boards of the participating school districts.

Interventions

Interpersonal Psychotherapy–Adolescent Skills Training—IPT-AST involved two individual pregroup sessions, eight group sessions, and one individual midgroup session. All sessions were held in the participating schools. During the pregroup sessions, leaders orient adolescents to the IPT-AST framework and conduct an interpersonal inventory of relationships to establish interpersonal goals for the group. During the group sessions, leaders provide psychoeducation about depressive symptoms, interpersonal problems, and the link between relationships and emotions. Next, adolescents are taught communication strategies, such as acknowledging another person's perspective, and apply these strategies to improve their relationships using role-plays and work-at-home assignments. The midgroup session provides an opportunity for intensive work on the adolescents' interpersonal goals, either with the leader alone or in a joint session with parents. In this study, IPT-AST also included four individual booster sessions in the 6 months following the group sessions to reinforce the strategies learned in group, discuss the application of these strategies to current stressors, and monitor progress. There were 18 IPT-AST groups, all of which were co-led. Group leaders were clinical psychology graduate students and licensed clinical psychologists. As described previously (Young et al., 2016), the IPT-AST intervention was delivered with high fidelity.

Group Counseling—GC consisted of individual and group sessions led by school counselors and was designed to match IPT-AST in terms of frequency and duration of sessions, including the four booster sessions. The only differences were that GC included one individual pregroup session instead of two and some of the GC groups only had one group leader. There were 16 GC groups. Most counselors had a master's degree in education or a related field. GC leaders were not given explicit instructions or limitations on the content or focus of the sessions.

Counselors completed the Therapy Procedures Checklist (Weersing, Weisz, & Donenberg, 2002) to report their use of therapeutic techniques in the groups. In 12 groups, counselors reported using cognitive techniques most frequently; in four groups, they reported using psychodynamic techniques the most. We also coded a subset of GC sessions using the Therapy Process Observational Coding System for Child Group Psychotherapy (Bearman,

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Weisz, & McLeod, 2010). Across all 16 GC groups, nonspecific factors (e.g., empathy, information gathering) were used most frequently, followed by novel unsupported treatment strategies (e.g., self-disclosure, play/art). On average, GC counselors used nonspecific factors and novel unsupported strategies significantly more than IPT-AST group leaders and used evidence-based strategies significantly less frequently than IPT-AST group leaders. However, in five GC groups, counselors utilized a high frequency of evidence-based techniques, particularly psychoeducation and cognitive restructuring. The frequency of evidence-based techniques in these five GC groups was comparable to the frequency of evidence-based techniques observed in IPT-AST.

Measures

Depressive Symptoms—Past-week depressive symptoms were assessed with the 20-item CES-D (Radloff, 1977). The CES-D was administered at screening; baseline; midintervention; postintervention; and at 6-, 12-, 18-, and 24-month follow-up. Here, we focus on rates of change in depressive symptoms from baseline through 24-month follow-up (alpha for baseline through 24 months = .85–.91).

Depressive Disorders—Depression diagnoses were assessed with the K-SADS-PL (Kaufman et al., 1997) at baseline; postintervention; and at 6-, 12-, 18-, and 24-month follow-up. Evaluators received extensive training and completed a 10-case reliability assessment (intraclass correlation coefficient [ICC] = .96 for diagnoses). Ten percent of interviews were randomly selected and rerated by a senior investigator (ICC = .89).

Overall Functioning—Overall functioning was indexed by scores on the Children's Global Assessment Scale (CGAS; Shaffer et al., 1983), a clinician-rated scale of global functioning, completed at baseline; postintervention; and at 6-, 12-, 18-, and 24-month follow-up. Evaluators demonstrated high reliability in CGAS ratings in the 10 reliability cases (ICC = .89) and in the randomly selected cases that were rerated (ICC = .96).

Data Analysis Overview—All randomized participants were included in the analyses regardless of their degree of participation in the study. We implemented a three-level hierarchical linear model (HLM) to examine differences between the intervention conditions on rates of change in depressive symptoms and overall functioning from baseline through 24-month follow-up. The first-level models individual scores over time. At the second level, the individual intercept and slope are outcomes dependent on group. At the third level, the group-specific slopes are used as outcomes to examine if the rates of change differ between the two conditions. Intervention group was treated as a random effect, and school was treated as a fixed effect. In addition to overall rates of change, we examined change in two phases: change through the booster sessions reported in Young et al. (2016) and change from 6-month to 24-month follow-up. Goodness-of-fit tests indicated that a natural logarithmic transformation of time, which accounts for more rapid change early within phase followed by reduced change subsequently within phase, fits the data significantly better than linear time. Estimated change scores reflect the product of the slope estimate and mean elapsed log-time. A square root transformation was performed on CES-D scores to ensure multivariate normality of the residuals. We calculated the effect sizes (Cohen's d) using the

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formula described by Raudenbush and Liu (2001). To examine differences in rates of depressive disorder diagnoses, we used Cox regression. Models were fit using SAS 9.4.

RESULTS

Preliminary Analyses

As reported in Young et al. (2016), family income was included as a covariate in all analyses because it was significantly related to the intercepts of the main outcomes. Sex and race were unrelated to intercepts or slopes of the main outcomes and were not included as covariates. Screening CES-D score, measured on average 7.37 weeks ($SD = 1.66$) before the baseline evaluation, was included as an additional covariate in the models examining change in depressive symptoms. A baseline diagnosis of depressive disorder not otherwise specified was an additional covariate in the diagnostic analyses.

Attrition was minimal in this study. Retention rates were 93% through 12 months and 87% through 24 months. Pattern-mixture models (Hedeker & Gibbons, 1997) indicated that intervention effects were not dependent on missing data patterns.

Intervention Effects

Table 2 reports the model-based estimated means. CES-D scores have been back-transformed to be on the original scale. Estimated change scores are based on the estimated means. Table 3 reports the estimated slope per log-week over the respective period, adjusted for the covariates and the fixed effect of school, which did not account for a significant amount of variance in the outcomes. CES-D scores are on the square root transformed scale.

Depressive Symptoms—See Figure 2 for the observed mean trajectories of depressive symptoms. Both IPT-AST (−3.85 points) and GC (−5.36 points) youth showed significant decreases in depressive symptoms from baseline to 24 months. Rates of change in depressive symptoms did not differ significantly between the two intervention conditions across the duration of the study, $t(156) = -.57$, $p = .57$, $d = .08$, 95% confidence interval (CI) [−.28, .30]. Although IPT-ASTyouth showed significantly greater improvements in depressive symptoms than GC youth through 6-month follow-up, GC youth continued to experience significant improvements in CES-D scores (−2.35 points) from 6- to 24-month follow-up, whereas IPT-AST youth showed a nonsignificant increase in CES-D scores (+1.92 points). The difference in slopes from 6- to 24-month follow-up was statistically significant, $t(156) = -2.80$, $p < .01$, $d = .41$, 95% CI [.12, .70].

Overall Functioning—See Figure 3 for the observed mean trajectories of overall functioning. Both IPT-AST (+5.43 points) and GC (+6.05 points) youth demonstrated significant increases in functioning from baseline to 24 months. Rates of change in CGAS scores did not differ significantly between the two intervention conditions across the duration of the study, $t(157) = .55$, $p = .58$, $d = .08$, 95% CI [−.28, .30]. Although IPT-AST youth showed significantly greater improvements in overall functioning than GC youth through 6-month follow-up, rates of change from 6- to 24-month follow-up favored GC: GC youth experienced a small, nonsignificant decrease in functioning (−.47 points), whereas

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IPT-AST youth experienced a significant decrease in CGAS scores (−2.83 points). This difference in slopes was statistically significant, $t(157) = 2.26$, $p = .02$, $d = .33$, 95% CI [. 04, .62].

Depressive Disorder Diagnoses—Sixteen (16.8%) IPT-AST adolescents and nine (9.9%) GC adolescents received a diagnosis of major depression or dysthymia during the study. The difference in rates of diagnoses was not statistically significant ($\chi^2 = 2.08$, $p = .15$). Similar to the short-term results through 6-month follow-up, there were no significant differences in rates of depression diagnoses between the two intervention conditions from 6- to 24-month follow-up ($\chi^2 = 1.11$, $p = .29$).

DISCUSSION

Across the entire duration of the study, youth in both conditions showed significant improvements in depressive symptoms and overall functioning, with no significant differences in overall rates of change between IPT-AST and GC. There were also no significant differences in depression diagnoses between the two conditions. The significant improvements in depressive symptoms and overall functioning suggest that both interventions were effective at reducing symptoms and improving functioning for youth with elevated symptoms of depression. However, without an assessment-only control group, it is not clear whether these improvements are significantly different from what would have occurred without an intervention. Relatedly, it is unclear whether the rates of depression were lower than would have naturally occurred in this sample of adolescents with elevated symptoms. Using similar eligibility criteria, Stice, Rhode, Gau, and Wade (2010) found that 23% of youth in the no-intervention condition had a diagnosis in the 2-year follow-up. The fact that rates of diagnoses in both IPTAST and GC are lower than found in the control condition in this earlier study suggests a possible preventive effect on depression diagnoses, though this is speculative.

Despite the addition of booster sessions, the results from the DPI study are similar to our earlier study of IPT-AST, which demonstrated a significant impact on depression symptoms and functioning through the 6-month follow-up, with effects dissipating at later follow-up (Young et al., 2010). Although IPT-AST youth showed significantly greater improvement in depressive symptoms and overall functioning in the short term (Young et al., 2016), GC youth continued to show decreases in depressive symptoms and relatively stable overall functioning during the long-term follow-up, whereas IPT-AST youth showed a nonsignificant increase in depressive symptoms and a small but statistically significant worsening in functioning from 6 to 24 months. These results suggest that IPT-AST youth get better faster than GC youth, which may be important during this period of development, but that more needs to be done to enhance the long-term effects of IPT-AST.

Although these results are disappointing, they are not surprising. Reviews and meta-analyses summarizing decades of research on the treatment and prevention of youth depression have reported little evidence for long-term effects on depression symptoms and diagnoses, particularly when studies include an active comparison condition (Hetrick et al., 2016;

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Weisz et al., 2017; Werner-Seidler et al., 2017). Next, we discuss several possible explanations for the lack of long-term effects in the current study.

First, GC was a very active control condition. Most targeted prevention studies have used a treatment-as-usual comparison condition, with very few treatment-as-usual youth receiving any services. Among the studies that have included an active control comparison, there is no evidence of significant effects on depressive symptoms or diagnoses in the short term or long term (Hetrick et al., 2016). GC was a stringent comparison for a number of reasons. GC was matched to IPTAST on frequency and duration of sessions, with sessions occurring more frequently and for longer duration than groups delivered in these schools before the DPI project. Further, four of the GC groups utilized an evidence-based cognitive-behavioral prevention program; one additional GC group incorporated a large number of cognitive-behavioral techniques. In these five groups, evidence-based strategies were employed significantly more frequently and extensively than in the remaining GC groups, and at a level comparable to the IPT-AST groups. Moreover, within GC, use and extensiveness of evidence-based strategies predicted better depression and functioning outcomes through postintervention (Haimm, Moore, & Young, 2017). These findings indicate that a subset of youth in GC received evidence-based cognitive-behavioral techniques. Given that cognitive-behavioral approaches have demonstrated efficacy (e.g., Brent et al., 2015; Stice et al., 2010), it is not surprising that GC youth fared relatively well.

In addition, counselors were embedded in the schools, providing GC youth with the opportunity for ongoing contact and counseling during the follow-up period. By contrast, IPT-AST leaders were research clinicians who had no further contact with IPT-AST youth after the intervention ended. The lack of long-term effects of IPT-AST and the continued benefits of GC point to the importance of training school personnel in evidence-based prevention programs rather than relying on external group leaders who are not embedded in schools. This would allow youth to access support from these counselors in the years following the groups, which may enhance the long-term impact of these programs.

Another possible explanation for the lack of long-term benefits of IPT-AST is that the booster sessions were not appropriately timed for maximum benefit. Youth in both conditions were seen for four booster sessions in the 6 months following the last group session. In IPT-AST, these sessions occurred every 6 to 8 weeks. In GC, these sessions could be scheduled as desired, and GC youth were free to reach out to counselors whenever they wanted. In our experiences conducting IPT-AST booster sessions, we found that some adolescents had little to talk about during the sessions, whereas others used these sessions productively to address ongoing interpersonal issues. It is likely that this one-size-fits-all approach in which a set number of booster sessions are scheduled at a specific time regardless of one’s level of need may not be the best way to maximize the long-term effects of depression prevention programs. Training counselors to deliver these programs would allow them to deliver booster sessions more flexibly, which may enhance their impact. Further, we may need additional tools or a greater number of booster sessions to promote generalization and long-term use of the interpersonal skills. This needs to be explored in future studies.

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Finally, it is possible that the modest and short-lived benefits of IPT-AST, and other prevention programs, are because these programs have not been designed for individualization. IPT-AST addresses problematic interpersonal relationships. Although most adolescents could benefit from a program aimed at improving relationships and social skills, adolescents who are struggling with interpersonal relationships may benefit more than adolescents who do not share these interpersonal vulnerabilities. To boost effects, there may be value in developing strategies for matching adolescents to prevention programs based on their unique needs. We are in the process of conducting a personalized prevention study to examine whether youth who receive a match between risk factors and prevention program have better outcomes than youth who receive nonpersonalized prevention (Hankin, Young, Gallop, & Garber, 2018) to explore this possibility.

In closing, this study presents long-term follow-up data on the efficacy of IPT-AST, which has demonstrated beneficial effects in smaller trials. The findings from this study support the promise of delivering IPT-AST in school settings, although the diminishing long-term benefits over GC indicate that further work is needed to enhance the long-term impact of IPT-AST. However, it is important to consider two points: First, even short-term effects of prevention programs may be important. Delaying the worsening of symptoms or temporarily reducing symptom severity could have meaningful benefits, including a better long-term prognosis and reduced impairment and service utilization (Brunwasser & Garber, 2016; Muñoz, Cuijpers, Smit, Barrera, & Leykin, 2010). Second, despite no overall significant differences between the two prevention programs, youth in both conditions showed significant improvements in both depressive symptoms and overall functioning through long-term follow-up. This highlights the promise of school-based depression prevention initiatives, regardless of specific content, and emphasizes the need for further focus on depression prevention to decrease the substantial burden and costs associated with depression (Mihalopoulos, Vos, Pirkis, & Carter, 2012; Muñoz et al., 2010).

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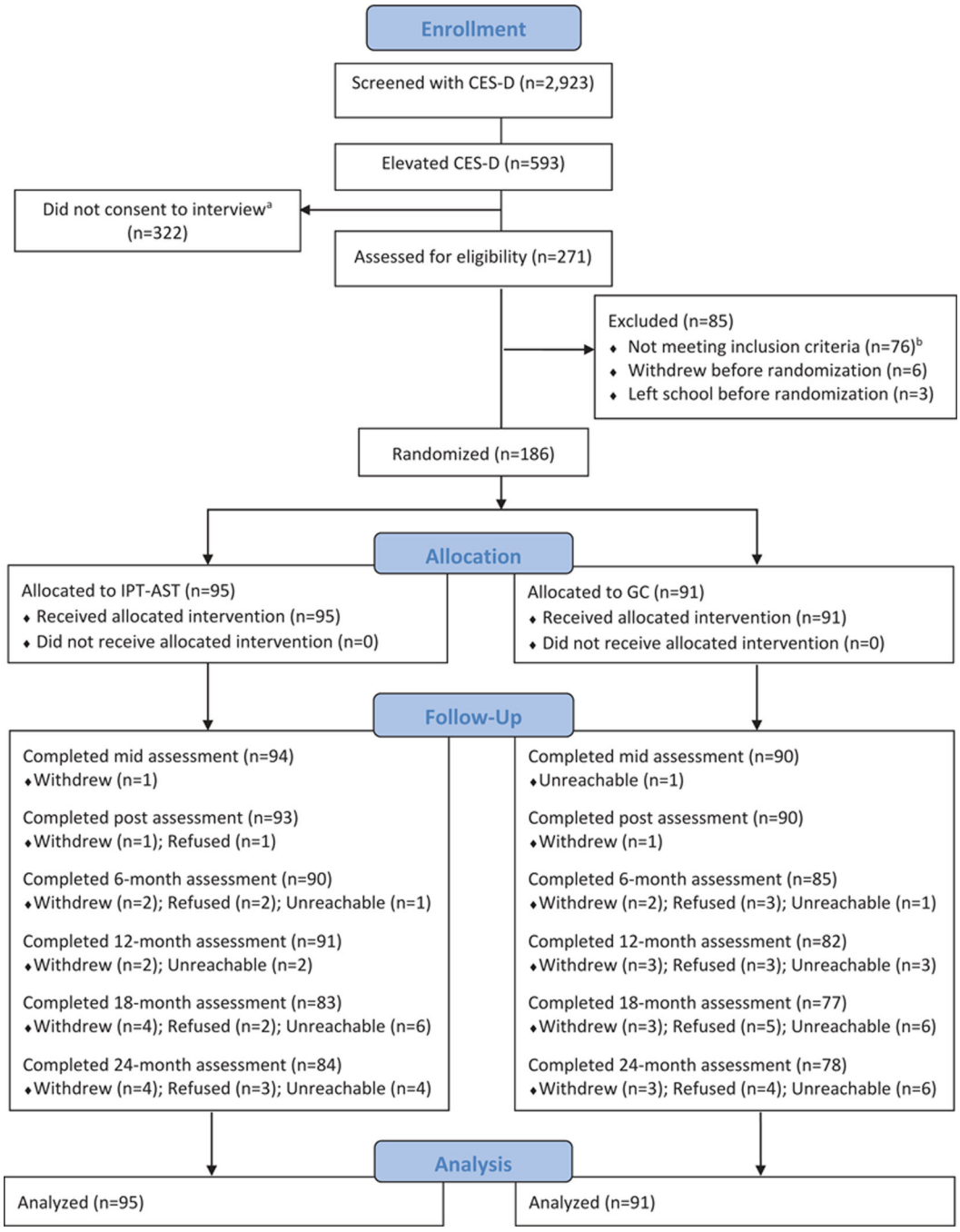

FIGURE 1.

Participant flow chart. Note. CES-D = Center for Epidemiologic Studies–Depression Scale; IPT-AST = Interpersonal Psychotherapy–Adolescent Skills Training; GC = group counseling. [a]Adolescents with elevated depressive symptoms who declined to participate in the eligibility evaluation did not differ from those adolescents who agreed to participate in terms of age, gender, or CES-D score. [b]Reasons for not meeting inclusion criteria: Did not endorse at least two threshold or sub-threshold depressive symptoms (n = 24); current diagnosis of major depression/dysthymia (*n* = 36), psychosis (*n* = 1), or conduct disorder (*n*

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= 3); significant suicidal ideation or nonsuicidal self-injury (n = 11); significant cognitive or language impairments (n = 1).

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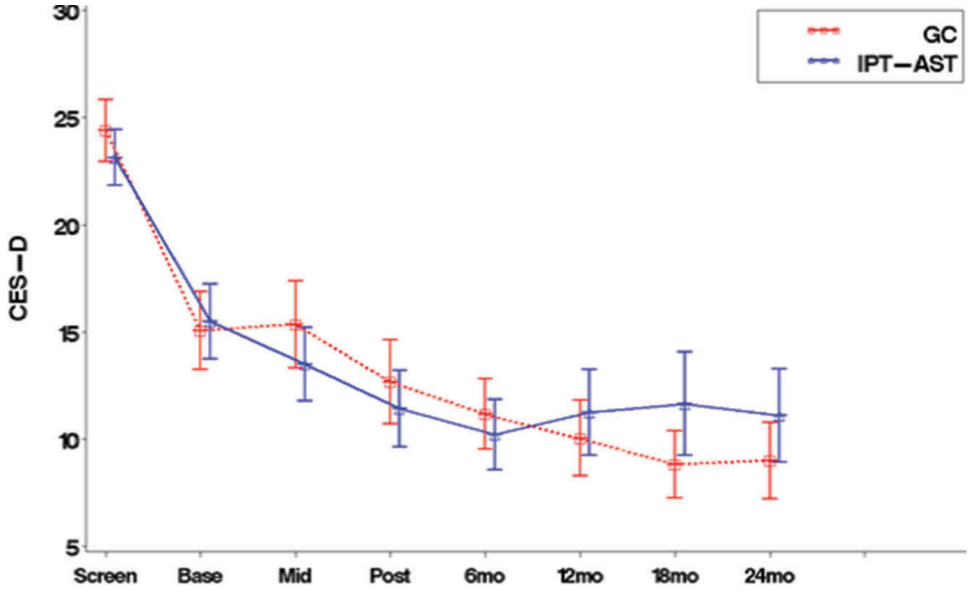

FIGURE 2.

Observed mean profile plots for the Center for Epidemiologic Studies-Depression Scale (CES-D).

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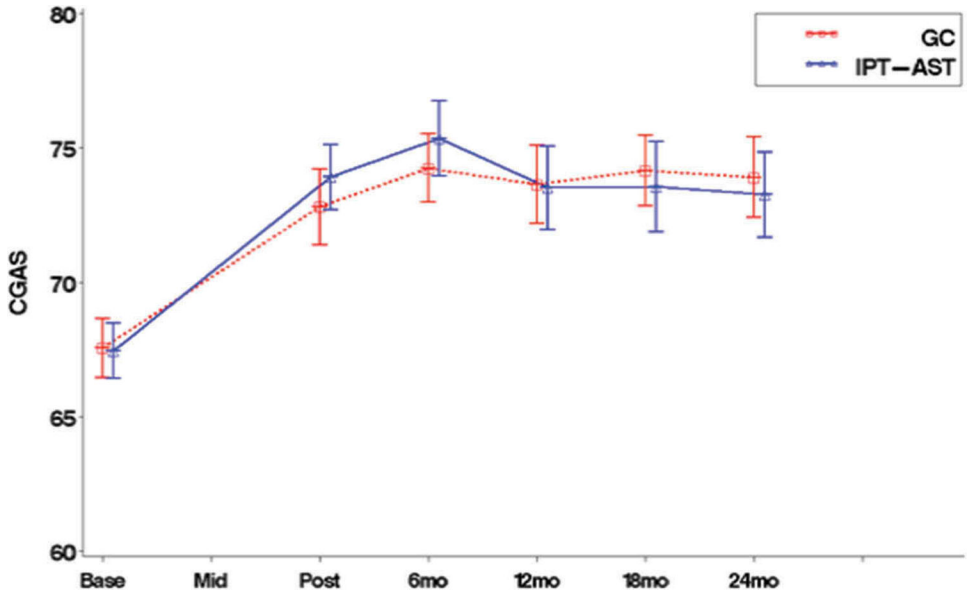

FIGURE 3.
Observed mean profile plots for the Children's Global Assessment Scale (CGAS).

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TABLE 1

Sample Demographics and Baseline Characteristics

	GC[a]	IPT-AST[b]	p Value
Demographics			
Age, *M (SD)*	13.42(1.18)	13.56(1.28)	.43
Female (%)	60 (65.9%)	64 (67.4%)	.84
Racial Minority (%)	29 (31.9%)	31 (32.6%)	.91
African American (%)	16 (17.6%+)	21 (22.1%)	.44
Asian (%)	5 (5.5%)	3 (3.2%)	.49[d]
American Indian (%)	1 (1.1%)	0 (0.0%)	.49[d]
More Than One Race(%)	7 (7.7%)	7 (7.4%)	.93
Hispanic (%)	36 (39.6%)	35 (36.8%)	.70
White, Nonminority, Non-Hispanic (%)	36 (39.6%)	35 (36.8%)	.70
Annual Income (%)[c]			
< $25,000	15 (16.5%)	17(18.1%)	.77
$25,000-$89,999	33 (36.3%)	38 (40.4%)	.57
> $90,000	43 (47.3%)	39(41.5%)	.43
Clinical Measures			
Screening CES-D, *M (SD)*	24.41 (6.88)	23.14(6.37)	.19
Baseline CES-D, *M (SD)*	15.07(8.65)	15.51 (8.52)	.73
Baseline CGAS, *M (SD)*	67.55 (5.24)	67.44 (4.98)	.89

Note: GC = group counseling; IPT-AST = Interpersonal Psychotherapy– Adolescent Skills Training; CES-D = Center for Epidemiologic Studies–Depression Scale; CGAS = Children's Global Assessment Scale.

[a] $N = 91$.

[b] $N = 95$.

[c] One participant in IPT-AST did not report annual income. Therefore, percentages are calculated out of 94.

[d] Fisher's exact test due to cell sizes smaller than 5.

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TABLE 2

Three-Level Hierarchical Linear Model Estimated Means

	GC			IPT-AST		
Outcome	***N***	***M***	***SD***	***n***	***M***	***SD***
CES-D						
Baseline	91	13.61	8.65	95	14.94	8.52
Mid	90	11.67	9.64	94	11.07	8.25
Post	90	11.37	9.28	93	10.49	8.57
6 Month	85	10.59	7.59	89	8.97	7.79
12 Month	82	9.33	8.06	91	9.33	9.54
18 Month	77	8.53	6.82	83	9.60	10.96
24 Month	78	7.96	7.90	84	9.79	9.94
CGAS						
Baseline	91	67.85	5.24	95	67.26	4.98
Post	90	72.55	6.69	93	73.22	5.80
6 Month	85	74.37	5.85	89	75.53	6.64
12 Month	82	74.16	6.60	89	74.25	7.32
18 Month	77	74.01	5.74	82	73.35	7.60
24 Month	77	73.90	6.53	82	72.70	7.18

Note: Means are model-based estimates within the three-level piecewise hierarchical linear model with two phases of change (baseline through 6-month follow-up and 6-month follow-up through 24-month follow-up), adjusted for school, the correlation attributable to participants nested within groups, as well as baseline covariates as warranted. Estimated means for the CES-D are back-transformed estimated means. GC = group counseling; IPT-AST = Interpersonal Psychotherapy–Adolescent Skills Training; CES-D = Center for Epidemiologic Studies–Depression Scale; CGAS = Children's Global Assessment Scale.

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TABLE 3

Three-Level Hierarchical Linear Model Estimated Slopes of Change per Log-Week

	Slope Estimates			
	GC(SE);	**IPT-AST (SE)**	***P* Value**	**Cohen's *d* [95% CI]**
CES-D				
Overall Slope (Baseline, 24 Month)	−.18 (.04)	−.15 (.04)	.57	.08 [−.28, .30]
Short-Term Slope (Baseline, 6 Month)	−.12 (.04)	−.23 (.04)	.02	.35 [.06, .63]
Follow-Up Slope (6 Month–24 Month)	−.41 (.15)	.13 (.14)	.01	.41 [.12, .70]
CGAS				
Overall Slope (Baseline, 24 Month)	1.26 (.19)	1.13 (.17)	.58	.08 [−28, .30]
Short-Term Slope (Baseline, 6 Month)	1.74 (.17)	2.20 (.17)	.04	.31 [.02, .60]
Follow-Up Slope (6 Month–24 Month)	−.45 (.77)	−2.73 (.76)	.02	.33 [.04, .62]

Note: Slopes are model-based estimates within the three-level piecewise hierarchical linear model with two phases of change (baseline through 6-month follow-up and 6-month follow-up through 24-month follow-up). In these models, we employed a natural logarithmic transformation of time. Thus, slope estimates indicate expected rate of change in outcome per log-week, adjusted for covariates. Slope estimates for the CES-D are based on the square root transformed outcome. Estimates are derived from the full longitudinal model whereas the results reported by Young et al. (2016) used only data from baseline through the 6-month follow-up. Overall slope is the average of the short-term and follow-up slopes weighted by elapsed log-time per phase. Average elapsed time on the log-week scale was 3.75 for the short-term follow-up period (baseline through 6 months) and 1.04 for the long-term follow-up period (6 through 24 months). GC = group counseling; IPT-AST = Interpersonal Psychotherapy–Adolescent Skills Training; CES-D = Center for Epidemiologic Studies–Depression Scale; CGAS = Children's Global Assessment Scale.