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The Depression Prevention Initiative: Impact on Adolescent Internalizing and Externalizing Symptoms in a Randomized Trial

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Abstract

This randomized controlled trial examined the longitudinal effects of two school-based indicated depression prevention programs on adolescents' internalizing and externalizing symptoms, as measured by adolescents, their parents, and their teachers. One hundred eighty-six adolescents participated in this study. The average age was 14.01 ($SD = 1.22$) years, and the sample was 66.7% female. One third of the sample belonged to a racial minority. Youth received either Interpersonal Psychotherapy–Adolescent Skills Training or group counseling. Symptoms were assessed using adolescent, parent, and teacher reports on the Achenbach System of Empirically Based Assessment at baseline, postintervention, and 6-month follow-up. Adolescents reported the most robust effects in favor of Interpersonal Psychotherapy–Adolescent Skills Training. Adolescents in Interpersonal Psychotherapy–Adolescent Skills Training reported significantly greater reductions in internalizing symptoms through the 6-month follow-up and significantly greater reductions in externalizing symptoms during the intervention as compared to group counseling. Less robust effects were found when examining parent and teacher reports, although there was evidence of significant within-group change in parent- and teacher-reported internalizing symptoms for both interventions and significant between-group differences in teacher-reported externalizing symptoms. This study provides additional evidence supporting the efficacy of Interpersonal Psychotherapy–Adolescent Skills Training as a depression prevention program for adolescents. Interpersonal Psychotherapy–Adolescent Skills Training appears to have fast-acting

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effects on broadband internalizing and externalizing symptoms as reported by adolescents. This suggests that Interpersonal Psychotherapy–Adolescent Skills Training may serve as a transdiagnostic preventive intervention. Moreover, given the disparate reports of adolescents, parents, and teachers, this study demonstrates the significance of collecting information from multiple sources when possible.

Depression is a debilitating illness that is associated with enormous burden worldwide (Ferrari et al., 2013). Research has indicated that rates of depression spike dramatically during adolescence (Hankin et al., 2015), and adolescents who experience depression remain at significantly higher risk for future episodes in adulthood (Pine, Cohen, Gurley, Brook, & Ma, 1998). In addition, adolescent-onset depression is associated with a number of adverse outcomes including substance abuse, educational underachievement, and suicide (Williams, O'Connor, Eder, & Whitlock, 2009). Therefore, preventively addressing depressive symptoms has become increasingly important and received increased attention. Fortunately, research findings thus far have largely supported the efficacy of programs aiming to prevent youth depression, though the effects of these programs have been small to moderate (Stice, Shaw, Bohon, Marti, & Rohde, 2009).

One promising preventive intervention is Interpersonal Psychotherapy–Adolescent Skills Training (IPT-AST; Young & Mufson, 2003). In studies to date, IPT-AST has received research support as both a universal (Horowitz, Garber, Ciesla, Young, & Mufson, 2007) and indicated preventive intervention for adolescents (Young et al., 2016; Young, Mufson, & Davies, 2006; Young, Mufson, & Gallop, 2010). In two previous studies on adolescents with elevated depressive symptoms, those who received IPT-AST had significantly fewer symptoms and better overall functioning than their counterparts who received usual school counseling. IPT-AST participants were also less likely to have depression diagnoses than those who received usual school counseling for up to six months following the intervention (Young et al., 2006; Young et al., 2010).

Although it is encouraging that depression prevention programs positively impact depressive symptoms, it is also important to examine the broader effects of these interventions on other outcomes (Cuijpers, Beekman, & Reynolds, 2012; Kazdin, 2002). Internalizing problems, such as anxiety, and externalizing problems, such as disruptive behavior, are particularly relevant given their high rates of comorbidity with depression in childhood (Angold, Costello, & Erkanli, 1999). Depression and anxiety, for example, have several shared factors that contribute to and maintain the disorder, such as peer rejection and early attachment difficulties (for a review, see Young, Mufson, & Benas, 2014), and there is evidence that anxiety itself serves as a risk factor for the future onset of depression (Goodwin, Fergusson, & Horwood, 2004; Pine, Cohen, & Brook, 2001). Likewise, depression and disruptive behavior problems have shared risk factors, such as lack of family cohesiveness and family conflict (George, Herman, & Ostrander, 2006), as well as peer rejection (Keiley, Lofthouse, Bates, Dodge, & Pettit, 2003). Furthermore, externalizing problems may be associated with more severe depression and increased risk of suicide (Angold & Costello, 2001).

Although the research to date has been limited, a few depression prevention programs have demonstrated positive effects on internalizing and externalizing symptoms. For example, the

Penn Resiliency Program (PRP), a group intervention focused on cognitive-behavioral and problem-solving techniques (Jaycox, Reivich, Gillham, & Seligman, 1994), led to significant improvements in participants' anxiety symptoms postintervention and at 6-month follow-up (Roberts, Kane, Thomson, Bishop, & Hart, 2003). In a separate study, Gillham and colleagues (2006) found that over a 2-year follow-up, PRP significantly reduced depression, anxiety, and adjustment disorder symptoms among participants with high depressive symptoms at baseline. Similarly, IPT-AST has been shown to be effective in reducing both anxiety and depressive symptoms (Young et al., 2012). Research also has found initial evidence for the impact of depression prevention interventions on externalizing symptoms. For instance, one study found that PRP led to a reduction in externalizing symptoms postintervention, though the effects were not sustained at the 6-month follow-up (Roberts et al., 2003). In another study, Cutuli and colleagues (2013) compared PRP to an alternative group intervention (the Penn Enhancement Program [PEP]) and a no-intervention control condition. Although there were no apparent effects on externalizing symptoms immediately postintervention, results indicated that PRP had a delayed effect on externalizing symptoms, leading to a significant reduction in externalizing symptoms during the follow-up period (Cutuli et al., 2013).

In addition to this empirical support for possible transdiagnostic effects, there are other reasons to expect a transdiagnostic impact of IPT-AST. First, IPT-AST is an adaptation of interpersonal psychotherapy (IPT), which has been demonstrated as useful for a number of other psychiatric conditions, including eating disorders, bipolar disorder, and anxiety disorders (for a review, see Young et al., 2014). Given that IPT-AST preserves the essential elements of IPT, it may be a promising preventive intervention for disorders other than depression. Second, as just discussed, many of these disorders share common interpersonal risk factors that are targeted in IPT-AST. Thus, addressing these interpersonal difficulties that are universally applicable across diagnoses and developmental levels may lead to improvements in internalizing and externalizing problems.

In examining the effects of prevention programs on diverse adolescent outcomes, it is useful to gather information from multiple informants (e.g., adolescents, parents, and teachers). Multi-informant assessment approaches are able to capture contextual variations in behavioral and emotional symptoms (De Los Reyes et al., 2015) and are therefore particularly salient for the assessment of adolescents (Kraemer et al., 2003), as adolescent functioning has been shown to vary across situations (Kolko & Kazdin, 1993). Parents, teachers, and adolescents have access to distinct information about an adolescent's behavior in different contexts. Therefore, each may contribute a unique and valid perspective on variations in an adolescent's functioning across different settings (e.g., at home, at school, and with peers; De Los Reyes, Thomas, Goodman, & Kundey, 2013). However, given that a multi-informant approach is sensitive to contextual variations in behavior, assessments from different informants often yield discrepant results. Although traditionally informant discrepancies have been considered measurement error (De Los Reyes et al., 2013), recent research suggests that meaningful information can be gleaned from these discrepancies, such as where youth express certain behaviors and who has access to their limited expression (De Los Reyes, 2011). Therefore, collecting data from various informants has both clinical and

research utility (Achenbach, 2006) and constitutes a key component of best practices in evidence-based assessment (Hunsley & Mash, 2007).

The Achenbach System of Empirically Based Assessment (ASEBA; Achenbach & Rescorla, 2001) utilizes multiple informants to assess internalizing and externalizing behaviors among children and adolescents. It has been widely used in treatment studies of youth with internalizing disorders (e.g., Clarke et al., 2005; Gonzales et al., 2012; Kendall, Hudson, Gosch, Flannery-Schroeder, & Suveg, 2008; McArdle et al., 2002), as well as in depression prevention studies (e.g., Compas et al., 2009; Cutuli et al., 2013; Dobson, Hopkins, Fata, Scherrer, & Allan, 2010; Roberts et al., 2010). In the PRP study discussed previously (Cutuli et al., 2013), for instance, adolescents' internalizing and externalizing symptoms were assessed using adolescent, parent, and teacher reports from the ASEBA battery. In this study, PRP was shown to reduce parent-reported internalizing and externalizing symptoms compared to a no-intervention control; however, there were no significant differences in adolescent- or teacher-reported symptoms.

A multi-informant approach has also been used in selective prevention programs that target children of depressed parents. For instance, Compas and colleagues (2009) found that adolescents who received a family preventive intervention endorsed significantly fewer internalizing symptoms on the youth version of the ASEBA scales through the 12-month follow-up compared to those who did not receive an intervention and were instead provided with written information about depression to read on their own. There were not, however, significant differences in parent-reported internalizing symptoms between conditions. In addition, no significant effects emerged when examining externalizing symptoms, by either adolescent or parent report (Compas et al., 2009).

The primary aim of the current study was to examine the effects of school-based depression prevention programs on internalizing and externalizing symptoms as part of a larger randomized controlled trial, the Depression Prevention Initiative. Specifically, we compared IPT-AST to groups delivered by school counselors (group counseling [GC]) in a randomized controlled trial. Previous analyses on the study's main outcomes indicated that IPT-AST produced significantly greater reductions in depressive symptoms and significantly greater improvements in overall functioning than GC through the 6-month follow-up. In this study, we examined the important question of whether IPT-AST differentially impacts internalizing symptoms more broadly. Moreover, we also examined whether the intervention had any impact on externalizing symptoms, which are not specifically targeted in IPT-AST. To capture a complete picture of functioning, we utilized the ASEBA measures and obtained adolescent, parent, and teacher reports on symptoms. We hypothesized that similar effects to our main outcomes would emerge; specifically, IPT-AST would produce significantly greater symptom improvements as compared to GC, particularly for internalizing symptoms, given that IPT-AST was designed to prevent depression.

METHOD

Participants

One hundred eighty-six adolescents participated in this study. At the time of consent and assent, adolescents were in Grades 7 through 10 at participating middle and high schools. The average age was 14.01 ($SD = 1.22$) years, and the sample was 66.7% female. One third of the sample identified as racial minorities (19.9% African American, 4.3% Asian, and 8.1% who specified other or mixed race); 38.2% were Hispanic and 38.2% were White, non-Hispanic. Regarding gross family income, 17.3% earned less than \$25,000, 38.4% between \$25,000 and \$90,000, and 44.3% earned more than \$90,000.

Procedures

Adolescents and their families were recruited from local public schools in the surrounding suburban area. After receiving school board approval from the various districts and our own university's Institutional Review Board, families were recruited for a depression screening via a number of methods: summer mailings, e-mails and calls to parents, back-to-school nights, flyers, and in-class announcements. Interested parents consented to have their child participate in the screening at their school. Adolescents then assented on screening day. Adolescents were screened in large groups and completed the Center for Epidemiologic Studies–Depression Scale (CES-D; Radloff, 1977). The CES-D is a 20-item measure that assesses depressive symptoms over the past week. Scores range from 0 to 60, with higher scores indicative of greater symptom severity. Adolescents with a CES-D score between 16 and 39 were approached for the next phase of the project. Those with a score of 40 or higher were assessed by a psychologist on the screening day to determine risk and potential eligibility.

The average CES-D score of the 2,923 adolescents screened was 10.00 ($SD = 9.51$). Five hundred ninety-three adolescents had an elevated CES-D score and thus were eligible to be approached about the second phase of the study. Those eligible families were contacted, informed about the prevention program, and invited to attend an in-person meeting with research staff at their child's school. Interested families then consented and assented to the project. Each family identified one parent who would participate in addition to the adolescent. Almost half of the adolescents with an elevated depression score agreed to participate in an eligibility evaluation ($N = 271$). There were no significant differences between adolescents who consented to participate and those who did not in terms of age (consented: $M = 13.59$ years, did not consent: $M = 13.61$ years), $t(591) = 0.20$; gender (consented: 62.4% female and 37.6% male adolescents; did not consent: 63.4% female and 36.6% male adolescents; $\chi^2 = 0.06$); or screening CES-D score (consented: $M = 24.65$; did not consent: $M = 23.99$), $t(591) = -1.16$. Reasons for opting out of the study included adolescent or parent disinterest and lack of perceived need. Based on an eligibility evaluation, adolescents were considered eligible for the prevention program if they endorsed at least two subthreshold or threshold symptoms of depression as assessed by the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS-PL; Kaufman, Birmaher, Brent, & Rao, 1997). Adolescents were considered ineligible for the study if they endorsed significant suicidal ideation or nonsuicidal self-injury (as assessed by

relevant items on the K-SADS-PL); had significant cognitive or language impairments; or had a current *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994) diagnosis of major depressive disorder, dysthymia, bipolar disorder, psychosis, substance abuse, or conduct disorder.

The 186 eligible youth were randomly assigned to receive either IPT-AST ($n = 95$) or GC ($n = 91$). Both conditions consisted of at least one individual pregroup session, eight weekly group sessions, and an individual midgroup session. In addition, both conditions offered up to four individual booster sessions, which occurred within the six months following the final group meeting. All participants, regardless of their degree of future participation, were considered part of the study once they were randomized (an intent-to-treat design). Details of the flow of participants in the Depression Prevention Initiative are provided in Figure 1. As can be seen in the figure, there was little attrition from the assessments. Only one participant did not complete any of the follow-up assessments. For a more in-depth description of the procedures, please see Young et al. (2016).

Interventions

IPT-AST consists of two individual pregroup sessions, eight group sessions, and one individual midgroup session. In total, there were 18 IPT-AST groups, ranging in size from three to seven adolescents each. All groups were co-led; most groups were co-led by a clinical psychologist and a graduate student in clinical psychology. For the pregroup sessions, an IPT-AST group leader met with each adolescent individually and provided psychoeducation, gave an orientation to the group sessions, and set goals for the group. During the group sessions, adolescents were provided with additional psychoeducation; learned about the relationship between mood and interpersonal interactions; and participated in activities, such as role-plays, to practice helpful interpersonal strategies. For the individual midgroup session, adolescents had the opportunity to practice the interpersonal skills they learned in group and apply them toward their own goals. Parents were encouraged to attend these sessions so that the adolescent could practice their interpersonal skills in a conversation with the parent, utilizing the leader as a coach. In addition, in this study there were four individual booster sessions, which occurred within the six months following the final group session. These booster sessions were used to check on the adolescent's progress with his or her goals and work through any interpersonal problems that arose following the completion of group.

Prior to conducting groups, all IPT-AST leaders read the IPT-AST manual and attended a training workshop. All group sessions were audio-recorded, and an experienced IPT-AST clinician listened to the audio recordings, provided supervision to the group leaders, and rated session fidelity using the IPT-AST supervision checklist (Young & Mufson, 2005).

Group Counseling

GC was matched to IPT-AST on frequency and duration of sessions (eight group sessions, individual pregroup, midgroup, and booster sessions), with the exception that GC leaders conducted one pregroup session. In total, there were 16 GC groups, ranging in size from two to eight adolescents each. GC leaders did not receive any limitations on or instructions for

the content of the groups; leaders were allowed to choose their own curriculum and did not follow a provided manual. Midway through the group and at the end of group, counselors completed the Therapy Procedures Checklist (Weersing, Weisz, & Donenberg, 2002) to report on their use of various therapeutic techniques. The most common approach used by GC group leaders was cognitive, followed by psychodynamic. Further, some leaders opted to run their groups without a coleader. Group leaders came from a variety of educational backgrounds, with most leaders holding master's degrees in education.

Assessments

Assessments were completed at baseline, postintervention, and 6-month follow-up. All participants were compensated for their time completing assessments. Outcomes were measured using the ASEBA scales (Achenbach & Rescorla, 2001). This integrated system comprised forms completed by adolescents (Youth Self-Report [YSR]), parents (Child Behavior Checklist [CBCL]), and teachers (Teacher's Report Form [TRF]). These three measures have two broadband scales (i.e., Internalizing and Externalizing), which are then broken down into syndrome scales (i.e., Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Rule-Breaking Behavior, and Aggressive Behavior).

On the respective scales, adolescents, parents, and teachers indicated whether a particular item was not true (scored 0), somewhat or sometimes true (1), or very true or often true (2) of the adolescent. Sample items include "Unhappy, sad or depressed," "Feels worthless or inferior," and "Too fearful or anxious." For each scale, item scores were summed to create raw scores, with higher scores indicating greater impairment (Achenbach & Rescorla, 2001).

The ASEBA scales have been shown to be valid and reliable measures (Achenbach & Rescorla, 2001). At the various time points, there was variability in Cronbach's alphas for the scales used in the study, ranging from a low of .65 to a high of .92. Across all time points, mean Cronbach's alphas for the YSR ranged from .71 (Rule-Breaking Behavior) to .88 (Internalizing); alphas for the CBCL were .87 for both the Internalizing and Externalizing scales; alphas for the TRF were .87 for Internalizing and .92 for Externalizing scales. Construct validity has been supported by the syndrome scales' agreements with DSM diagnoses, other behavioral assessment measures, and cross-cultural replications (Achenbach & Rescorla, 2001). Previous research has indicated that the use of *t* scores on the Achenbach measures might distort the differences between adult and youth reports (Thurber & Sheehan, 2012). Thus, raw scores were used in our statistical analyses of ASEBA measures.

Statistical Analyses

We implemented a three-level hierarchical linear model (HLM) to examine differences between the interventions on rates of change from baseline through the 6-month follow-up evaluation. We chose HLM to address the clustering due to repeated measures per person, as well as the clustering attributable to the group intervention process. The first-level models individual scores over time. At the second level, we used the individual intercept and slope as outcomes within group; at the third level, we used group-specific slopes as outcomes to examine if the rates of change differed between IPT-AST and GC. This three-level HLM

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treats group as a random effect in all analyses; school was treated as a fixed effect to allow the average values of the outcome measures to vary between schools. In addition, we examined whether gender, age, family income, or minority status was significantly related to the intercept or slope of the main outcomes. Any significant demographic variables were retained in the model as covariates.

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Typical use of HLM assumes a linear trend across time for each person, which may not be valid for modeling clinical change trajectories. Many extensions of the HLM model have been implemented in recent years to accommodate nonlinear changes of time, such as log-linear change (Gibbons et al., 1993), piecewise linear models (Verbeke & Molenberghs, 2000), and quadratic change (Cook, Rosner, Wei, Srinivasan, & Berenson, 2004). Similar to the work of Keller et al. (2000), we fit a piecewise model that quantified change from the baseline to postintervention as the first phase of change (subsequently referred to as active phase change), followed by change from the postintervention to 6-month follow-up as the second phase of change (subsequently referred to as follow-up phase change). To further compare the intervention arms, we derived the overall change as change from the baseline through the 6-month follow-up assessment. When there were significant differences in rates of change (between-group differences) on the broadband scales (Internalizing and Externalizing), we examined the specific syndrome scales to determine which scales may have contributed to the differences in rates of change; we examined whether there was potential change during the active phase, follow-up phase, or overall. Effect sizes for HLM models (Cohen's *d*) were derived using the formula specified by Raudenbush and Liu (2001). In addition, as per the recommendation set forth by Kraemer and Kupfer (2006), we measured clinical significance as the number needed to treat (NNT; Walter, 2001), which represents the expected number of additional adolescents who would need to receive IPT-AST as compared to GC to prevent nonresponse. A 50% reduction on the subscale scores from baseline to a particular time point (postintervention or 6-month follow-up) was defined as a response. NNTs are reported for all significant between-group differences. An NNT of 2.3 is a large effect, 3.6 is a medium effect, and 8.9 is a small effect (Kraemer & Kupfer, 2006).

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While the HLM models are relatively flexible, they fall under the classification of general mixed models, which require multivariate normality of the residuals. Assessment of the distribution of each outcome indicated that a square root transformation was needed for the YSR and the CBCL to guarantee multivariate normality of the residuals. For the TRF, a large proportion of the data was stacked at zero (i.e., most scales had a large number of adolescents who received a score of 0, meaning the teacher endorsed no symptoms). When this happens, no transformation can spread out the observed stack of zeroes. We examined each TRF scale to determine the impact of the stacking at zero, as well as descriptives of each scale. The Internalizing broadband scale was positively skewed but was able to be normalized utilizing a shifted Logarithm transformation. The Externalizing broadband scale had a large number of zeroes; we therefore fit a three-level Hierarchical Generalized Linear model (HGLM), which modeled the occurrence of any teacher endorsement per scale versus no endorsements under the HLM structure just described. The HGLM produces parameter estimates under the logit scale; slope estimates correspond to the rates of change in the log-odds of endorsing any item on the subscales.

Both HLM and HGLM are flexible in handling missing data. All subjects are retained in the analysis, making it a full intent-to-treat analysis. Missed assessments are not included or imputed. Pattern-mixture models assessed whether intervention effect was dependent on these missing data patterns (Hedeker & Gibbons, 1997). If deemed dependent, then the missing data pattern would be informative, which would imply that inferences are dependent on missing data. Our pattern-mixture model indicated no significant effects of missing data. To ease interpretation, rates of change for all measures were back-transformed to represent change in actual unit points on each of the measures. For the HGLM, estimated prevalence of any endorsements is estimated per time point as well as the change in prevalence as a function of time. All models were fit using SAS 9.3 (SAS Institute, 2011).

RESULTS

Means and standard deviations of the scales used in analyses are included in Table 1. There were no significant differences between interventions at baseline. Table 2 provides the slope estimates from the piecewise models (active phase: baseline to postintervention; follow-up phase: postintervention to 6-month follow-up; overall change: baseline to 6-month follow-up) for the three measures. On the left side of the table are the within-group estimates, which indicate whether there were significant rates of change within each of the two conditions. On the right side of the table are the between-group contrasts. Significant differences indicate that there were differential ($p < .05$ or $p < .01$) rates of change between IPT-AST and GC. The following section highlights the significant findings that were observed.

Youth Self-Report

Although youth in both IPT-AST and GC demonstrated significant reductions in internalizing symptoms during the active phase as measured by the Internalizing broadband scale, there was a significant difference in rates of change favoring IPT-AST, $t(177) = 3.56$, $p < .01$, $d = 0.54$, 95% confidence interval (CI) [0.25, 0.83]. Utilizing a back-transformation, IPT-AST youth decreased 5.23 points from baseline through the post-intervention assessment, whereas GC youth decreased 1.68 points. Using a 50% reduction from baseline scores as an indicator of response, response rates at postintervention were 35.8% in IPT-AST and 17.6% in GC (NNT = 5.49). During the follow-up period, there was no significant difference in rates of improvement, although there was some evidence that GC youth began to catch up over time, as GC youth had a significant rate of improvement in internalizing symptoms during the follow-up period and IPT-AST youth did not (see Figure 2). Despite the gain observed for GC during the follow-up phase, there was still a significant difference favoring IPT-AST in overall rates of change from baseline through 6-month follow-up, $t(177) = 2.18$, $p = .03$, $d = 0.33$, 95% CI [0.04, 0.62]. IPT-AST youth experienced an overall reduction of 5.53 points, and GC youth experienced an overall reduction of 3.62 points; 34.7% of youth in IPT-AST and 22.3% in GC experienced a 50% reduction in internalizing scores from baseline to the 6-month follow-up assessment (NNT = 10.57).

To assess whether outcomes on certain subscales were driving these intervention effects, we next examined rates of change in the individual subscales that compose the Internalizing broadband scale (i.e., the Anxious/Depressed, Withdrawn/Depressed, and Somatic

Complaints subscales). For the Anxious/Depressed subscale, although both groups had significant change during the active phase, there were significant between-group differences favoring IPT-AST, $t(177) = 2.31, p = .02, d = 0.35, 95\% \text{ CI } [0.06, 0.64]$. Response rates at postintervention were 42.1% in IPT-AST and 24.2% in GC (NNT = 5.58). There were no significant differences between groups during the follow-up phase. However, overall change favored IPT-AST, $t(177) = 1.96, p = .05, d = 0.29, 95\% \text{ CI } [0.00, 0.58]$, despite both groups evidencing significant overall within-group changes. From baseline through 6-month follow-up, IPT-AST youth demonstrated a 2.07-point reduction in Anxious/Depressed symptoms (40.0% response rate at the 6-month follow-up); GC youth had a 1.37-point reduction (25.3% response rate at the 6-month follow-up), corresponding to a NNT of 6.79.

On the Withdrawn/Depressed subscale, IPT-AST participants exhibited significant improvement during the active phase, whereas GC participants did not, leading to a significant between-group difference, $t(177) = 2.81, p = .01, d = 0.42, 95\% \text{ CI } [0.13, 0.71]$; response rates at postintervention were 28.4% in IPT-AST and 17.6% in GC (NNT = 9.22). There were no between- or within-group differences during the follow-up phase. Finally, IPT-AST evidenced significant overall rates of change, whereas GC did not, and there were significant differences in overall rates of change between the two groups, $t(177) = 2.23, p = .03, d = 0.33, 95\% \text{ CI } [0.04, 0.62]$. From baseline through 6-month follow-up, IPT-AST youth had a 1.33-point reduction and GC youth had a 0.60-point reduction. Response rates at the 6-month follow-up assessment were 31.6% in IPT-AST and 17.6% in GC (NNT = 7.15).

A different pattern of findings emerged on the Somatic Complaints subscale. On this subscale, IPT-AST youth had significantly greater decreases during the active phase, $t(177) = 2.47, p = .01, d = 0.37, 95\% \text{ CI } [0.08, 0.66]$, with response rates at postintervention of 38.9% in IPT-AST and 24.2% in GC (NNT = 6.77). However, GC youth had significantly greater decreases during the follow-up phase, $t(177) = -2.34, p = .02, d = -0.35, 95\% \text{ CI } [-0.64, 0.06]$. As a result, there was no significant difference in overall rates of change on the Somatic Complaints subscale (IPT-AST youth had a 1.51-point reduction; GC youth had a 1.50-point reduction).

Regarding externalizing symptoms, although youth in both conditions demonstrated significant reductions during the active phase, IPT-AST youth showed significantly greater decreases on the Externalizing broadband scale than GC youth, $t(177) = 2.46, p = .01, d = .37, 95\% \text{ CI } [0.08, 0.66]$. IPT-AST youth decreased 2.51 points, whereas GC youth decreased 0.90 points (postintervention response rates of 16.8% for IPT-AST and 14.3% for GC; NNT = 39.11). GC youth continued to show marginally significant decreases during the follow-up period, $t(177) = -1.87, p = .06, d = -.28, 95\% \text{ CI } [-0.57, 0.01]$, whereas IPT-AST youth showed a nonsignificant increase in symptoms. However, rates of change between the two conditions were not significantly different during the follow-up phase, or overall. Both intervention conditions demonstrated significant reductions in externalizing symptoms (IPT-AST = 2.22, GC = 2.00) from the baseline through 6-month follow-up (see Figure 3).

Similar to our analyses for the Internalizing broadband scale, we examined changes on the specific subscales that compose the Externalizing broadband scale (i.e., the Rule-Breaking Behavior and Aggressive Behavior subscales). Significant between-group differences

emerged on the Aggressive Behaviors subscale during the active phase. Although both groups had significant reductions in aggressive behavior during the active phase, IPT-AST youth exhibited significantly more improvement than GC youth, $t(177) = 2.02$, $p = .04$, $d = 0.30$, 95% CI [0.01, 0.59]. Response rates at postintervention were 14.7% in IPT-AST and 9.9% in GC (NNT = 20.63). Rates of change were not significantly different during the follow-up phase or overall. Over the course of the entire period, IPT-AST youth had a 1.94-point reduction in aggressive behaviors and GC youth had a 1.45-point reduction. There were no significant differences on the Rule-Breaking Behavior subscale.

Child Behavior Checklist

On the CBCL Internalizing broadband scale, there were no significant differences in rates of change between the two conditions during the active phase, as neither IPT-AST nor GC youth showed significant decreases in parent-reported symptoms. IPT-AST youth did, however, show significant decreases on the Internalizing broadband scale during the follow-up phase, $t(177) = -2.22$, $p = .03$, $d = -0.33$, 95% CI [-0.62, -0.04], as well as significant decreases in overall change, $t(177) = -3.05$, $p < .01$, $d = -0.46$, 95% CI [0.17, 0.75]. Although GC youth did not have significant decreases in parent-reported internalizing symptoms—follow-up phase, $t(177) = -1.18$, $p = .24$, $d = -0.18$, 95% CI [-0.47, 0.11]; overall change, $t(177) = -1.31$, $p = .19$, $d = -0.20$, 95% CI [-0.49, 0.09]—the rates of change were not significantly different between the two interventions (see Figure 2). Utilizing the back-transformation, IPT-AST youth had an overall reduction of 1.91 points and GC youth had a reduction of 0.55 points from baseline through the 6-month follow-up.

On the Externalizing broadband scale, there were no significant differences in rates of change between interventions. From baseline through 6-month follow-up, there was evidence of a marginally significant change in externalizing symptoms in IPT-AST, $t(177) = -1.71$, $p = .09$, $d = -0.26$, 95% CI [-0.53, 0.03], corresponding to a 1.11-point decrease in externalizing scores. There was no evidence of change in the GC condition, $t(177) = 0.16$, $p = .87$, $d = 0.02$, 95% CI [-0.27, 0.31]; GC youth demonstrated a 0.20-point decrease (see Figure 3).

Teacher's Report Form

Because there was a large number of reported zeroes by teachers (i.e., teachers did not endorse much deviant behavior), we could not proceed with analyses in the same way that we did for the YSR and CBCL. For the Internalizing broadband scale, teachers endorsed a sufficient number of items at baseline to transform the data to meet the requirements for normality. For the Externalizing broadband scale, approximately 46% of data reported by teachers was zero, indicating that the scale was highly skewed and teachers endorsed few externalizing behaviors in their students; therefore we proceeded to analyze the Externalizing broadband scale with HGLM.

For the Internalizing broadband scale, there were no differences between the rates of change in the interventions during the active phase, $t(177) = 1.31$, $p = .19$, $d = 0.20$, 95% CI [-0.09, 0.49], despite significant decreases in IPT-AST, $t(177) = -2.04$, $p = .04$, $d = -0.31$, 95% CI [-0.60, -0.02], and not in GC, $t(177) = -0.18$, $p = .86$, $d = -0.03$, 95% CI [-0.32, 0.26].

During the active phase, IPT-AST youth had a 0.25-point reduction and GC youth had a 0.19-point reduction. There were also no significant differences in rates of change during the follow-up phase. Both IPT-AST and GC participants had significant decreases in internalizing symptoms: IPT-AST, $t(177) = -2.35$, $p = .02$, $d = -0.35$, 95% CI [-0.64, -0.06]; GC, $t(177) = -3.11$, $p = .002$, $d = -0.47$, 95% CI [-0.76, -0.18]. Similarly, there were no significant differences in rates of change during the overall period; IPT-AST scores decreased by 2.25 points, and GC scores decreased by 2.47 points (see Figure 2).

For the Externalizing broadband scale, there were significant differences during the active phase, $t(177) = 2.17$, $p = .03$, $d = 0.33$, 95% CI [0.04, 0.62], with marginal decreases for IPT-AST, $t(177) = -1.92$, $p = .06$, $d = -0.28$, 95% CI [-0.58, 0.01], and none in GC, $t(177) = 1.15$, $p = .25$, $d = 0.17$, 95% CI [-0.12, 0.46]. During the active phase, IPT-AST youth had a decrease of 10.7% in any endorsements, whereas GC youth had an increase of 6.7%. Response rates at postintervention were 21.1% in IPT-AST and 13.2% in GC (NNT = 12.71). There were no significant differences in rates of change during the follow-up phase. IPT-AST had a nonsignificant decrease, whereas GC participants had significant decreases in externalizing endorsements: IPT-AST, $t(177) = -1.40$, $p = .16$, $d = -0.21$, 95% CI [-0.54, 0.08]; GC, $t(177) = -2.32$, $p = .02$, $d = -0.35$, 95% CI [-0.64, -0.06]. During the follow-up phase, IPT-AST youth had a reduction of 8.3% in any endorsements, whereas GC youth had a decrease of 14.5%. There were no significant differences in rates of change during the overall period; IPT-AST youth had a reduction of 19.1% in any endorsements, whereas GC youth had a reduction of 7.7%. Because the two subscales composing the TRF Externalizing broadband scale (i.e., Rule-Breaking Behavior and Aggressive Behavior) had a very large number of zeroes across the various time points (ranging from 50% to 77%), we were unable to examine which subscale was driving the significant between-group difference in externalizing symptoms during the active phase.

DISCUSSION

This study aimed to examine the effects of two adolescent depression prevention interventions on internalizing and externalizing symptoms in a randomized controlled trial based on adolescent report, parent report, and teacher report. Analyses indicated that adolescent report, as compared to those of parents and teachers, demonstrated the most robust effects in favor of IPT-AST. Overall, adolescents in the IPT-AST condition reported significantly greater reductions in internalizing symptoms than their counterparts in the GC condition, with significant differential rates of change observed during the active phase of the intervention and in the overall period. The effect sizes for the active phase were in the medium range. This suggests that IPT-AST may serve as a transdiagnostic preventive intervention for internalizing problems in the short term. This corroborates and expands on previous research regarding the transdiagnostic impact of this approach, in that IPT-AST has been shown to be effective in reducing anxiety as well as depressive symptoms (Young et al., 2012). We plan to examine possible mediators of this transdiagnostic effect to better understand the mechanisms through which IPT-AST impacts depression and anxiety.

During the follow-up period, there were no differential rates of improvement in internalizing symptoms between the two groups. Thus, the significant difference in overall rates of change

in internalizing symptoms (a small to medium effect) was largely driven by the powerful effects of IPT-AST during the active phase. Although the current study attempted to maximize IPT-AST's long-term effects by incorporating booster sessions into the six months following group completion, we nevertheless found stronger effects for IPT-AST during the active phase with stabilization in the follow-up period, whereas GC youth continued to report significant reductions in internalizing symptoms during the follow-up period. This mirrors findings from prior IPT-AST research, which has found similar patterns that the control group catches up over time (Young et al., 2012; Young et al., 2010). This may have been a function of extraneous factors that were not measured in the study. For example, GC adolescents had school counselors as their group leaders and may have had continued informal contact with their group leader due to the relationship established in group sessions, whereas the IPT-AST adolescents were limited to four booster sessions with their IPT-AST group leader, who did not continue to work in the school after the final booster session was completed. We hope that the long-term effects of IPT-AST can be enhanced by training school counselors to deliver the program so they can continue to provide booster sessions to adolescents on an as-needed basis.

Rates of change were also examined on the syndrome scales for internalizing problems. On both the Anxious/Depressed and Withdrawn/Depressed subscales, adolescents in IPT-AST reported significantly greater rates of change during the active phase of the intervention and the overall period compared to youth in the GC condition. The largest effect sizes were seen on the Withdrawn/Depressed subscale, suggesting that IPT-AST exerts its most powerful effects on depression-related symptomatology. This is not surprising, given that the main goal of IPT-AST is to target depressive symptoms. Of note, GC youth did not exhibit significant rates of change on the Withdrawn/Depressed subscale, but they did have improvements on the Anxious/Depressed subscale. Thus, GC appears to have a greater impact on anxiety-related symptomatology than depressive symptomatology. On the other hand, IPT-AST successfully reduced symptoms in both of these domains. On the Somatic Complaints subscale, IPT-AST youth reported a significantly greater rate of change than GC youth during the active phase of the intervention, but GC youth demonstrated delayed reductions on this subscale, resulting in overall rates of change that were not significantly different between the two conditions. These different patterns of change suggest that IPT-AST has an immediate, and possibly direct, effect on somatic symptoms, whereas GC may address these symptoms indirectly by first reducing broader anxiety symptoms. We are in the process of coding GC sessions to gather information about the techniques used, which may help explain these differential trajectories.

This study extends prior research on IPT-AST by examining effects on externalizing symptoms. Adolescents in IPT-AST reported significantly greater reductions in externalizing symptoms during the active phase of the intervention than adolescents in GC, with a small to medium effect size. However, the NNT was high, suggesting that the effects of IPT-AST on externalizing symptoms are modest. Nonetheless, this is notable given the flexibility granted to GC counselors to address a broad range of emotional problems as compared to IPT-AST's narrower focus on depression. The effects on externalizing symptoms appear to be primarily attributable to IPT-AST adolescents' greater decreases in self-reported aggressive behaviors over that period. It is important to note, however, that the advantages of IPT-AST over GC

were short-lived, as GC youth continued to show improvements in externalizing symptoms during the follow-up period. Research should continue to examine the effects of IPT-AST and other prevention programs on externalizing symptoms to see if these findings are replicated. To our knowledge, this is one of only a few studies to find immediate effects on adolescent-reported externalizing symptoms following depression prevention programs, though other studies have found delayed effects (e.g., Compas et al., 2009). IPT-AST's immediate effects on externalizing behaviors may have stemmed from the intervention's focus on interpersonal relationships and interactions, which may have increased adolescents' mindfulness of prosocial behaviors. Compas et al. (2009), on the other hand, provided a family group intervention that focused on stress management and parenting; changes in those domains may have had less direct (and therefore more delayed) effects on externalizing behaviors. These findings suggest that the transdiagnostic effects of IPT-AST may extend to behavioral problems, though the modest differences and lack of sustained effects point to the need for further study and replication.

Less profound results were observed when examining reports from parents and teachers. This finding is consistent with other depression treatment and prevention studies, wherein youth tend to report significantly greater treatment effects than their parents (Compas et al., 2009; Weisz, McCarty, & Valeri, 2006). Although parents' reports still demonstrated the positive impact of IPT-AST on internalizing symptoms, they did not align with adolescents' indication that IPT-AST was superior to GC in reducing internalizing symptoms. According to parents, IPT-AST adolescents experienced significant reductions in internalizing symptoms during the follow-up period and in overall rates of change, whereas GC adolescents did not experience significant changes at any time. Despite this, differences in rates of change between the two conditions did not reach statistical significance. Regarding externalizing symptoms, parents reported a marginally significant overall reduction for adolescents in IPT-AST but not in GC. However, there were no significant between-group differences in rates of change.

Taken together, our findings suggest small and inconsistent effects on parent-reported symptoms. Of interest, the changes that parents noted within the IPT-AST condition did not occur during the active intervention, but rather during the 6-month follow-up. This suggests that parents were less aware of the immediate changes in symptomatology that were reported by their children. As previously mentioned, Compas and colleagues (2009) examined youth and parent reports of internalizing and externalizing symptoms in a randomized controlled trial of a family cognitive-behavioral preventive intervention. In that study, youth indicated significant group effects on internalizing symptoms and marginally significant delayed effects on externalizing symptoms, whereas there were no significant differences in parent-reported internalizing or externalizing symptoms. This suggests that, within the depression prevention literature, there may be fewer robust findings utilizing parent report than adolescent report. One exception is a study by Cutuli and colleagues (2013), in which PRP led to significant improvements in parent-reported internalizing symptoms compared to a no-intervention control group; however, there were no intervention effects on the YSR. These inconsistent findings point to the continued need to examine outcomes from multiple perspectives.

As for teacher reports, whereas both groups had significant reductions in internalizing symptoms during the follow-up period and significant overall change, only IPT-AST adolescents had significant changes during the active phase of the intervention. The lack of significant differences between conditions mirrors the lack of intervention effects on the TRF in the PRP study (Cutuli et al., 2013). However, the findings of within-group change are notable given that teachers were generally unaware that their students were participating in depression prevention groups. These findings suggest that teachers saw small but notable reductions in internalizing symptoms over time. Further, although no significant differences emerged during the follow-up phase or for overall change in teacher-rated externalizing symptoms, IPT-AST youth had significantly greater reductions in externalizing symptoms during the active phase as compared to GC. These findings are preliminary, given that so few teachers endorsed any externalizing symptoms, but are in line with the findings on the YSR, where IPT-AST youth experienced significantly greater decreases in externalizing symptoms than GC youth during the course of the program. Taken together, these findings suggest a possible transdiagnostic impact of IPT-AST on externalizing symptoms; however, more research is needed to replicate these interesting findings.

The discrepancy between adolescent, parent, and teacher reports of change in internalizing and externalizing symptoms in the current study is consistent with the larger child mental health literature (De Los Reyes et al., 2013), as well as findings from prior depression prevention studies. As argued by Kraemer and colleagues (2003), such interinformant discrepancies are meaningful, as informants provide different perspectives on youths' behaviors and emotions and their manifestations across contexts. Discrepant reports do not indicate that certain informants are providing invalid information; rather, multiple reporters each provide data that uniquely predict outcomes (Klein, Dougherty, & Olino, 2005). That said, the relevance of informants' contributions does appear to vary across symptom domains and developmental stages (Kraemer et al., 2003). On the ASEBA scales, there is lower correspondence on reports of internalizing symptoms, which are harder to observe, compared to externalizing behaviors (De Los Reyes et al., 2015) or other more easily observable symptoms. For example, research has demonstrated the usefulness of parent and teacher report for assessing externalizing symptoms (Klein et al., 2005) and of parent report for assessing bipolar diagnoses (Youngstrom, Findling, Youngstrom, & Calabrese, 2005). On the other hand, child reports are critical for many internalizing symptoms, as parents and teachers tend to endorse them at lower levels than children on their self-reports (Klein et al., 2005), and children may provide incrementally more valid reports than their parents (De Los Reyes et al., 2015). This does not mean that parents provide poor quality reports; instead, it suggests that children may become more important reporters of their internalizing symptoms as they enter adolescence (Kraemer et al., 2003).

Evidence of more robust effects on the YSR, as compared to the CBCL or TRF, is consistent with this finding, as is the fact that adolescents reported significantly more internalizing symptoms than parents or teachers at baseline. Of interest, adolescents also reported greater externalizing symptoms than parents or teachers in our study. This is divergent from the larger mental health literature but is likely explained by this being a prevention sample with relatively low levels of externalizing problems. Thus, it is possible that results were less robust on parent and teacher reports because they generally endorsed fewer symptoms than

adolescents on their respective measures, with means on the parent and teacher forms closely resembling means of the nonreferred population in the normative sample. The disparate findings may also be explained by the different settings in which adolescents, parents, and teachers observe behaviors. Perhaps adolescents reported the most significant changes because their reports reflect behavior across multiple settings, whereas parents and teachers observe adolescents only in more limited settings. Regardless of the explanation, the discrepant findings in the current study and other prevention studies highlight the importance of continuing to use multiple informants to examine youth mental health symptoms and functioning (Achenbach, McConaughy, & Howell, 1987; Comer & Kendall, 2004).

The larger study of which these analyses were part (the Depression Prevention Initiative) included follow-up assessments until 24 months postintervention. Thus, we plan to examine these outcomes over all remaining time points to see if any different patterns emerge. This is plausible given findings that differences in parent-reported externalizing symptoms appeared 24 months postintervention in the PRP study (Cutuli et al., 2013). Similarly, Compas et al. (2009) found the strongest intervention effects on youth-reported externalizing symptoms at 12-month follow-up, as compared to earlier assessment points. These findings suggest that IPT-AST may have continued and perhaps more robust effects on internalizing and externalizing symptoms over time.

This study has a number of strengths, including a considerably large sample size and a stringent comparison condition. However, some limitations should be noted. First, although we consider GC to be a strong comparison condition, there was considerable flexibility in group structure and content. Unlike the IPT-AST group leaders, who all followed the same manual, each GC group leader used his or her own chosen curriculum, resulting in much variability. Relatedly, GC was often run by one group leader, whereas IPT-AST had co-leaders, and GC leaders had significantly more years of counseling experience than the IPT-AST leaders. A second, related limitation is the absence of a no-intervention control group. The inclusion of such an assessment-only condition would help differentiate between natural symptom improvement and intervention effects. As others have argued, the positive effect of prevention programs on internalizing and externalizing outcomes may be more apparent when a no-intervention control condition is employed (Merry et al., 2011). If such a condition was included in this study, larger effects of IPT-AST might have been observed, though this is speculative. Important to note, Cutuli and colleagues (2013) found that although both PRP and PEP led to reductions in parent-reported internalizing and externalizing symptoms compared to a no-intervention control condition, there were no significant differences between PRP and PEP at most assessment points. This is significant because our current study utilized a strong and active comparison condition that is more similar to PEP than to a no-intervention condition. Therefore, in light of this literature, the differences we found in outcomes favoring IPT-AST are notable.

In conclusion, this study provides additional evidence supporting the efficacy of IPT-AST as a depression prevention program for a diverse sample of adolescents. Despite only explicitly addressing depressive symptoms in the intervention, IPT-AST appears to have fast-acting and sustained effects on adolescents' experiences of anxiety, as well as immediate and

modest effects on aggression. Moreover, given the disparate reports of adolescents, their parents, and their teachers, this study demonstrates the significance of collecting information from multiple sources when possible. We hope these findings positively contribute to the growing body of research on prevention programs for adolescents.

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References

- Achenbach TM. 2006; As others see us: Clinical and research implications of cross-informant correlations for psychopathology. *Current Directions in Psychological Science*. 15(2):94–98. DOI: 10.1111/j.0963-7214.2006.00414.x
- Achenbach TM, McConaughy SH, Howell CT. 1987; Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*. 101(2):213–232. DOI: 10.1037/0033-2909.101.2.213 [PubMed: 3562706]
- Achenbach, TM, Rescorla, LA. Manual for the ASEBA school-age forms & profiles. Burlington: University of Vermont, Research Center for Children, Youth, & Families; 2001.
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th. Washington, DC: Author; 1994.
- Angold, A, Costello, EJ. The epidemiology of disorders of conduct: Nosological issues and comorbidity. In: Hill, J, Maughan, B, editors. *Conduct disorders in childhood and adolescence*. Cambridge, UK: Cambridge University Press; 2001. 126–168.
- Angold A, Costello EJ, Erkanli A. 1999; Comorbidity. *Journal of Child Psychology and Psychiatry*. 40:57–87. DOI: 10.1111/jcpp.1999.40.issue-1 [PubMed: 10102726]
- Clarke G, Debar L, Lynch F, Powell J, Gale J, O'Connor E, Hertert S. 2005; A randomized effectiveness trial of brief cognitive-behavioral therapy for depressed adolescents receiving antidepressant medication. *Journal of the American Academy of Child & Adolescent Psychiatry*. 44(9):888–898. DOI: 10.1016/S0890-8567(09)62194-8 [PubMed: 16113617]
- Comer JS, Kendall PC. 2004; A symptom-level examination of parent-child agreement in the diagnosis of anxious youths. *Journal of the American Academy of Child & Adolescent Psychiatry*. 43(7):878–886. DOI: 10.1097/01.chi.0000125092.35109.c5 [PubMed: 15213589]
- Compas BE, Forehand R, Keller G, Champion JE, Rakow A, Reeslund KL, Cole DA. 2009; Randomized controlled trial of a family cognitive-behavioral preventive intervention for children of depressed parents. *Journal of Consulting and Clinical Psychology*. 77(6):1007–1020. DOI: 10.1037/a0016930 [PubMed: 19968378]
- Cook NR, Rosner BA, Wei C, Srinivasan SR, Berenson GS. 2004; Using the area under the curve to reduce measurement error in predicting young adult blood pressure from childhood measures. *Statistics in Medicine*. 23:3421–3435. DOI: 10.1002/sim.1921 [PubMed: 15505884]
- Cuijpers P, Beekman AT, Reynolds CF. 2012; Preventing depression: A global priority. *Journal of the American Medical Association*. 307:1033–1034. DOI: 10.1001/jama.2012.271 [PubMed: 22416097]
- Cutuli JJ, Gillham JE, Chaplin TM, Reivich KJ, Seligman ME, Gallop RJ, Freres DR. 2013; Preventing adolescents' externalizing and internalizing symptoms: Effects of the Penn resiliency program. *The International Journal of Emotional Education*. 5(2):67–79. [PubMed: 24634897]
- DeLosReyes A. 2011; Introduction to the special section: More than measurement error: Discovering meaning behind informant discrepancies in clinical assessments of children and adolescents. *Journal of Clinical Child & Adolescent Psychology*. 40(1):1–9. DOI: 10.1080/15374416.2011.533405 [PubMed: 21229439]

- De Los Reyes A, Augenstein TM, Wang M, Thomas SA, Drabick DA, Burgers DE, Rabinowitz J. 2015; The validity of the multi-informant approach to assessing child and adolescent mental health. *Psychological Bulletin*. 141(4):858–900. DOI: 10.1037/a0038498 [PubMed: 25915035]
- De Los Reyes A, Thomas SA, Goodman KL, Kunder SM. 2013; Principles underlying the use of multiple informants' reports. *Annual Review of Clinical Psychology*. 9:123–149. DOI: 10.1146/annurev-clinpsy-050212-185617
- Dobson KS, Hopkins JA, Fata L, Scherrer M, Allan LC. 2010; The prevention of depression and anxiety in a sample of high-risk adolescents: A randomized controlled trial. *Canadian Journal of School Psychology*. 25(4):291–310. DOI: 10.1177/0829573510386449
- Ferrari AJ, Charlson FJ, Norman RE, Patten SB, Freedman G, Murray CJ, Whiteford HA. 2013; Burden of depression disorders by country, sex, age, and year: Findings from the global burden of disease study 2010. *PLoS Medicine*. 10:e1001547.doi: 10.1371/journal.pmed.1001547 [PubMed: 24223526]
- George C, Herman KC, Ostrander R. 2006; The family environment and developmental psychopathology: The unique and interactive effects of depression, attention, and conduct problems. *Child Psychiatry and Human Development*. 37(2):163–177. DOI: 10.1007/s10578-006-0026-5 [PubMed: 16858639]
- Gibbons RD, Hedeker D, Elkin I, Waternaux C, Kramer HC, Greenhouse JB, Watkins JT. 1993; Some conceptual and statistical issues in analysis of longitudinal psychiatric data. *Archives of General Psychiatry*. 50:739–750. DOI: 10.1001/archpsyc.1993.01820210073009 [PubMed: 8357299]
- Gillham JE, Hamilton J, Freres DR, Patton K, Gallop R. 2006; Preventing depression among early adolescents in the primary care setting: A randomized controlled study of the Penn resiliency program. *Journal of Abnormal Child Psychology*. 34(2):203–219. DOI: 10.1007/s10802-005-9014-7 [PubMed: 16741684]
- Gonzales NA, Dumka LE, Millsap RE, Gottschall A, McClain DB, Wong JJ, Kim SY. 2012; Randomized trial of a broad preventive intervention for Mexican American adolescents. *Journal of Consulting and Clinical Psychology*. 80(1):1–16. DOI: 10.1037/a0026063 [PubMed: 22103956]
- Goodwin RD, Fergusson DM, Horwood LJ. 2004; Early anxious/withdrawn behaviours predict later internalising disorders. *Journal of Child Psychology and Psychiatry*. 45:874–883. DOI: 10.1111/jcpp.2004.45.issue-4 [PubMed: 15056317]
- Hankin BL, Young JF, Abela JRZ, Smolen A, Jenness J, Gulley L, Cohen J. 2015; Development of depression from childhood into late adolescence: Influence of gender, development, genetic susceptibility, and peer stress. *Journal of Abnormal Psychology*. 124:803–816. DOI: 10.1037/abn0000089 [PubMed: 26595469]
- Hedeker D, Gibbons RD. 1997; Application of random-effects pattern-mixture models for missing data in longitudinal studies. *Psychological Methods*. 2:64–78. DOI: 10.1037/1082-989X.2.1.64
- Horowitz JL, Garber J, Ciesla JA, Young J, Mufson L. 2007; Prevention of depressive symptoms in adolescents: A randomized trial of cognitive-behavioral and interpersonal prevention programs. *Journal of Consulting and Clinical Psychology*. 75:693–706. DOI: 10.1037/0022-006X.75.5.693 [PubMed: 17907851]
- Hunsley J, Mash EJ. 2007; Evidence-based assessment. *Annual Review of Clinical Psychology*. 3:29–51. DOI: 10.1146/annurev.clinpsy.3.022806.091419
- Jaycox LH, Reivich KJ, Gillham J, Seligman MEP. 1994; Prevention of depressive symptoms in school children. *Behaviour Research and Therapy*. 32:801–816. DOI: 10.1016/0005-7967(94)90160-0 [PubMed: 7993324]
- Kaufman J, Birmaher B, Brent D, Rao U. 1997; Schedule for affective disorders and Schizophrenia for school-age children-present and lifetime version (K-SADS-PL): Initial reliability and validity data. *Journal of the American Academy of Child & Adolescent Psychiatry*. 36:980–988. DOI: 10.1097/00004583-199707000-00021 [PubMed: 9204677]
- Kazdin AE. 2002; The state of child and adolescent psychotherapy research. *Child and Adolescent Mental Health*. 7:53–59. DOI: 10.1111/camh.2002.7.issue-2
- Keiley MK, Lofthouse N, Bates JE, Dodge KA, Pettit GS. 2003; Differential risks of covarying and pure components in mother and teacher reports of externalizing and internalizing behavior across

- ages 5 to 14. *Journal of Abnormal Child Psychology*. 31(3):267–283. DOI: 10.1023/A:1023277413027 [PubMed: 12774860]
- Keller MB, McCullough JP, Klein DN, Arnow B, Dunner DL, Gelenberg AJ, Zajecka J. 2000; A comparison of nefazodone, the cognitive behavioral-analysis system of psychotherapy, and their combination for the treatment of chronic depression. *New England Journal of Medicine*. 342(20):1462–1470. DOI: 10.1056/NEJM200005183422001 [PubMed: 10816183]
- Kendall PC, Hudson JL, Gosch E, Flannery-Schroeder E, Suveg C. 2008; Cognitive-behavioral therapy for anxiety disordered youth: A randomized clinical trial evaluating child and family modalities. *Journal of Consulting and Clinical Psychology*. 76(2):282–297. DOI: 10.1037/0022-006X.76.2.282 [PubMed: 18377124]
- Klein DN, Dougherty LR, Olino TM. 2005; Toward guidelines for evidence-based assessment of depression in children and adolescents. *Journal of Clinical Child & Adolescent Psychology*. 34(3):412–432. DOI: 10.1207/s15374424jccp3403_3 [PubMed: 16026212]
- Kolko DJ, Kazdin AE. 1993; Emotional/behavioral problems in clinic and nonclinic children: Correspondence among child, parent and teacher reports. *Journal of Child Psychology and Psychiatry*. 34(6):991–1006. DOI: 10.1111/jcpp.1993.34.issue-6 [PubMed: 8408380]
- Kraemer HC, Kupfer DJ. 2006; Size of treatment effects and their importance to clinical research and practice. *Biological Psychiatry*. 59:990–996. DOI: 10.1016/j.biopsych.2005.09.014 [PubMed: 16368078]
- Kraemer HC, Measelle JR, Ablow JC, Essex MJ, Boyce WT, Kupfer DJ. 2003; A new approach to integrating data from multiple informants in psychiatric assessment and research: Mixing and matching contexts and perspectives. *American Journal of Psychiatry*. 160(9):1566–1577. DOI: 10.1176/appi.ajp.160.9.1566 [PubMed: 12944328]
- McArdle P, Moseley D, Quibell T, Johnson R, Allen A, Hammal D, leCouteur A. 2002; School-based indicated prevention: A randomised trial of group therapy. *Journal of Child Psychology and Psychiatry*. 43:705–712. DOI: 10.1111/jcpp.2002.43.issue-6 [PubMed: 12236606]
- Merry SN, Hetrick SE, Cox GR, Brudevold-Iverson T, Bir JJ, McDowell H. 2011; Psychological and educational interventions for preventing depression in children and adolescents. *Evidence-Based Child Health: A Cochrane Review Journal*. 7:1409–1685. DOI: 10.1002/ebch.1867
- Pine DS, Cohen P, Brook J. 2001; Adolescent fears as predictors of depression. *Biological Psychiatry*. 50:721–724. DOI: 10.1016/S0006-3223(01)01238-0 [PubMed: 11704080]
- Pine DS, Cohen P, Gurley D, Brook J, Ma Y. 1998; The risk for early adulthood anxiety and depressive disorders in adolescents with anxiety and depressive disorders. *Archives of General Psychiatry*. 55(1):56–64. DOI: 10.1001/archpsyc.55.1.56 [PubMed: 9435761]
- Radloff LS. 1977; The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1:385–401. DOI: 10.1177/014662167700100306
- Raudenbush SW, Liu X. 2001; Effects of study duration, frequency of observation, and sample size on power in studies of group differences in polynomial change. *Psychological Methods*. 6(4):387–401. DOI: 10.1037/1082-989X.6.4.387 [PubMed: 11778679]
- Roberts CM, Kane R, Bishop B, Cross D, Fenton J, Hart B. 2010; The prevention of anxiety and depression in children from disadvantaged schools. *Behaviour Research and Therapy*. 48(1):68–73. DOI: 10.1016/j.brat.2009.09.002 [PubMed: 19786274]
- Roberts C, Kane R, Thomson H, Bishop B, Hart B. 2003; The prevention of depressive symptoms in rural school children: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*. 71(3):622–628. DOI: 10.1037/0022-006X.71.3.622 [PubMed: 12795585]
- SAS Institute Inc. SAS/STAT 9.3 user's guide. Cary, NC: Author; 2011.
- Stice E, Shaw H, Bohon C, Marti CN, Rohde P. 2009; A meta-analytic review of depression prevention programs for children and adolescents: Factors that predict magnitude of intervention effects. *Journal of Consulting and Clinical Psychology*. 77:486–503. DOI: 10.1037/a0015168 [PubMed: 19485590]
- Thurber S, Sheehan WP. 2012; Note on truncated T scores in discrepancy studies with the child behavior checklist and youth self report. *Archives of Assessment Psychology*. 2(1):73–80.
- Verbeke, G, Molenberghs, G. *Linear mixed models for longitudinal data*. New York, NY: Springer-Verlag; 2000.

- Walter SD. 2001; Number needed to treat (NNT): Estimation of a measure of clinic benefit. *Statistics in Medicine*. 20:3947–3962. DOI: 10.1002/sim.1173 [PubMed: 11782045]
- Weersing VR, Weisz JR, Donenberg GR. 2002; Development of the therapy procedures checklist: A therapist-report measure of technique use in child and adolescent treatment. *Journal of Clinical Child & Adolescent Psychology*. 31:168–180. DOI: 10.1207/S15374424JCCP3102_03 [PubMed: 12056101]
- Weisz JR, McCarty CA, Valeri SM. 2006; Effects of psychotherapy for depression in children and adolescents: A meta-analysis. *Psychological Bulletin*. 132(1):132–149. DOI: 10.1037/0033-2909.132.1.132 [PubMed: 16435960]
- Williams SB, O'Connor EA, Eder M, Whitlock EP. 2009; Screening for child and adolescent depression in primary care settings: A systematic evidence review for the US Preventive Services Task Force. *Pediatrics*. 123(4):e716–e735. DOI: 10.1542/peds.2008-2415 [PubMed: 19336361]
- Young JF, Benas JS, Schueler CM, Gallop R, Gillham JE, Mufson L. 2016; A randomized depression prevention trial comparing interpersonal psychotherapy-adolescent skills training to group counseling in schools. *Prevention Science*. 17:314–324. DOI: 10.1007/s11121-015-0620-5 [PubMed: 26638219]
- Young JF, Makover HB, Cohen JR, Mufson L, Gallop R, Benas JS. 2012; Interpersonal psychotherapy-adolescent skills training: Anxiety outcomes and impact of comorbidity. *Journal of Clinical Child & Adolescent Psychology*. 41:640–653. DOI: 10.1080/15374416.2012.704843 [PubMed: 22891881]
- Young, JF, Mufson, L. *Manual for Interpersonal Psychotherapy-Adolescent Skills Training (IPT-AST)*. New York, NY: Columbia University; 2003.
- Young, JF, Mufson, L. IPT-AST supervision checklist. 2005. Unpublished measure
- Young, JF, Mufson, L, Benas, JS. Interpersonal Psychotherapy for youth depression and anxiety. In: Ehrenreich-May, J, Chu, BC, editors. *Transdiagnostic treatments for children and adolescents*. New York, NY: Guilford Press; 2014. 183–202.
- Young JF, Mufson L, Davies M. 2006; Efficacy of interpersonal psychotherapy-adolescent skills training: An indicated preventive intervention for depression. *Journal of Child Psychology & Psychiatry*. 47(12):1254–1262. [PubMed: 17176380]
- Young JF, Mufson L, Gallop R. 2010; Preventing depression: A randomized trial of interpersonal psychotherapy-adolescent skills training. *Depression & Anxiety*. 27(5):426–433. DOI: 10.1002/da.20664 [PubMed: 20112246]
- Youngstrom EA, Findling RL, Youngstrom JK, Calabrese JR. 2005; Toward an evidence-based assessment of pediatric bipolar disorder. *Journal of Clinical Child & Adolescent Psychology*. 34(3):433–448. DOI: 10.1207/s15374424jccp3403_4 [PubMed: 16026213]

FIGURE 1.

Participant flow chart. *Note:* CES-D = Center for Epidemiologic Studies–Depression Scale; IPT-AST = Interpersonal Psychotherapy–Adolescent Skills Training; GC = group counseling.

FIGURE 2.

Changes in the Internalizing broadband scale for the Youth Self-Report (YSR), Child Behavior Checklist (CBCL), and Teacher's Report Form (TRF). *Note:* FU = follow-up; IPT-AST = Interpersonal Psychotherapy-Adolescent Skills Training; GC = group counseling.

FIGURE 3.

Changes in the Externalizing broadband scale for the Youth Self-Report (YSR), Child Behavior Checklist (CBCL), and Teacher's Report Form (TRF). *Note:* FU = follow-up; IPT-AST = Interpersonal Psychotherapy–Adolescent Skills Training; GC = group counseling.

TABLE 1

Means and Standard Deviations for the Outcome Variables at Each Time Point

<i>Outcome</i>	<i>GC</i>			<i>IPT-AST</i>		
	<i>Baseline</i>	<i>Postgroup</i>	<i>6-Month Follow-Up</i>	<i>Baseline</i>	<i>Postgroup</i>	<i>6-Month Follow-Up</i>
Youth Self-Report						
Internalizing	14.85 (8.42)	13.14 (8.61)	11.21 (7.41)	15.39 (7.65)	10.61 (8.02)	10.58 (7.89)
Anxious/Depressed	6.21 (3.90)	5.02 (3.72)	4.91 (3.65)	5.93 (3.82)	3.80 (3.64)	4.03 (3.82)
Withdrawn/Depressed	4.76 (2.99)	4.43 (3.39)	3.94 (2.69)	5.10 (2.49)	3.83 (2.93)	3.63 (2.75)
Somatic Complaints	3.88 (2.91)	3.69 (3.05)	2.36 (2.34)	4.36 (2.97)	2.99 (2.93)	2.92 (2.92)
Externalizing	10.17 (7.01)	9.27 (6.75)	8.27 (6.08)	11.06 (6.85)	8.92 (6.56)	9.36 (6.93)
Rule-Breaking Behavior	3.62 (2.92)	3.52 (2.70)	3.08 (2.56)	3.80 (2.94)	3.38 (2.85)	3.63 (3.23)
Aggressive Behavior	6.55 (4.62)	5.74 (4.47)	5.19 (4.14)	7.26 (4.49)	5.55 (4.28)	5.73 (4.21)
Child Behavior Checklist						
Internalizing	9.56 (7.59)	10.02 (7.69)	9.30 (7.29)	10.75 (7.58)	10.34 (7.08)	9.19 (6.99)
Anxious/Depressed	4.19 (3.60)	4.71 (4.07)	4.06 (3.62)	4.22 (3.71)	4.34 (3.51)	3.80 (3.25)
Withdrawn/Depressed	3.24 (3.20)	3.38 (3.20)	3.31 (3.21)	3.78 (2.95)	3.58 (2.79)	3.16 (2.85)
Somatic Complaints	2.13 (2.43)	1.94 (2.05)	1.93 (1.90)	2.75 (2.81)	2.42 (2.62)	2.24 (2.65)
Externalizing	6.15 (7.11)	6.15 (6.49)	6.05 (6.22)	7.55 (6.34)	6.87 (5.73)	6.77 (5.67)
Rule-Breaking Behavior	1.73 (2.64)	1.77 (2.27)	1.91 (2.76)	2.39 (2.68)	2.20 (2.37)	2.17 (2.44)
Aggressive Behavior	4.43 (4.89)	4.38 (4.64)	4.14 (3.99)	5.16 (4.27)	4.67 (4.01)	4.60 (3.85)
Teacher's Report Form						
Internalizing	6.40 (6.51)	6.30 (7.26)	3.95 (5.55)	5.05 (5.77)	4.89 (6.43)	2.67 (3.35)
Anxious/Depressed	2.68 (3.67)	2.41 (3.76)	1.74 (2.85)	2.30 (3.66)	2.32 (3.78)	1.06 (2.16)
Withdrawn/Depressed	3.21 (3.65)	3.23 (3.71)	2.10 (3.16)	2.44 (2.76)	2.11 (3.13)	1.51 (1.89)
Somatic Complaints	0.51 (1.52)	0.66 (1.52)	0.10 (0.35)	0.32 (0.89)	0.45 (1.17)	0.11 (0.38)
Externalizing	3.53 (6.84)	3.36 (6.42)	1.82 (5.31)	3.06 (4.35)	3.83 (6.58)	1.82 (3.92)
Rule-Breaking Behavior	0.98 (1.93)	0.94 (1.78)	0.68 (1.71)	0.89 (1.33)	1.14 (1.83)	0.55 (1.63)
Aggressive Behavior	2.55 (5.13)	2.41 (4.86)	1.14 (3.93)	2.16 (3.60)	2.69 (5.34)	1.27 (2.50)

Note: GC = group counseling; IPT-AST = Interpersonal Psychotherapy—Adolescent Skills Training.

TABLE 2

Estimates of Within-Group and Between-Group Differences

Outcome	GC: Slope Estimates of Within-Group Differences			IPT-AST: Slope Estimates of Within-Group Differences			t Scores of Between-Group Differences			
	Active	Follow-Up	Overall	Active	Follow-Up	Overall	Active	Cohen's d	Follow-Up	Cohen's d
Youth Self-Report										
Internalizing	-0.26*	-0.30*	-0.56**	-0.85**	-0.08	-0.93**	3.56**	0.54	-1.33	-0.20
Anxious/Depressed	-0.30**	-0.06	-0.36**	-0.60**	-0.02	-0.62**	2.31*	0.35	-0.30	-0.05
Withdrawn/Depressed	-0.11	-0.05	-0.16	-0.42**	0.01	-0.41**	2.81**	0.42	-0.53	-0.08
Somatic Complaints	-0.10	-0.39**	-0.49**	-0.46**	-0.05	-0.50**	2.47**	0.37	-2.34**	-0.35
Externalizing	-0.15	-0.18	-0.33**	-0.45**	0.01	-0.43**	2.46**	0.37	-1.55	-0.23
Rule-Breaking Behavior	-0.03	-0.12	-0.15	-0.11	-0.01	-0.11	0.79	0.12	-1.09	-0.16
Aggressive Behavior	-0.22**	-0.14	-0.36**	-0.44**	-0.02	-0.47**	2.02*	0.30	-1.05	-0.16
Child Behavior Checklist										
Internalizing	-0.02	-0.14	-0.16	-0.11	-0.25*	-0.36**	.055	0.08	0.72	0.11
Externalizing	0.07	-0.05	0.02	-0.06	-0.12	-0.18	0.86	0.13	0.48	0.07
Teacher's Report Form										
Internalizing	-0.02	-0.38**	-0.40**	-0.22*	-0.27*	-0.49**	1.31	0.20	-0.68	-0.10
Externalizing	0.27	-0.58*	-0.31	-0.46	-0.34	-0.80**	2.17*	0.33	-0.71	-0.11

Note: Included numbers reflect analyses that were able to be conducted. Slopes represent rates of change per phase on the respective outcome. Positive effect sizes denote a difference favoring Interpersonal Psychotherapy-Adolescent Skills Training (IPT-AST); negative effect sizes denote a difference favoring group counseling (GC). For the Externalizing scale of the Teacher's Report Form, slope estimates are on the logit scale, which represents the change in the logarithm (i.e., the odds of any externalizing over the respective period).

* $p < .05$.

** $p < .01$.