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The Impact of the Incredible Years Parent, Child, and Teacher Training Programs on Children's Co-Occurring Internalizing Symptoms

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Abstract

The Incredible Years (IY) Series includes separate group interventions to improve parenting interactions, teacher classroom management, and child social-emotional regulation. Although originally developed to treat early-onset conduct problems, IY targets many of the proposed mechanisms and risk factors for internalizing distress in early childhood. Prior studies have demonstrated the effects of the IY parent intervention on co-occurring depressive symptoms. We attempted to extend these findings by examining the unique and combined effects of IY interventions on children's co-occurring internalizing symptoms. Families of 159, 4- to 8-year-old children were randomly assigned to parent training (PT); parent plus teacher training (PT +TT); child training (CT); child plus teacher training (CT + TT); parent, child, plus teacher training (PT +CT+TT); or a waiting list control group. Children who received any of the intervention components were more likely to have lower mother-rated internalizing symptoms at post-treatment compared to children in a wait-list control group. Implications for future research and for designing interventions and prevention strategies for children with internalizing symptoms are discussed.

Keywords

Incredible Years; parent; teacher; children; internalizing symptoms

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Most psychosocial interventions for children were developed to target specific symptoms or disorders despite the fact that most children present with co-occurring syndromes (Hammen & Compas, 1994). For instance, most children with internalizing problems have one (40%–70%) or more (20%–50%) comorbid diagnoses with estimates as high as 83% for co-occurring depression and disruptive behaviors (Angold & Costello, 1993; Birmaher et al., 1996). A recent longitudinal study of children ages 2–12 reported similar rates of comorbidity (Fanti & Henrich, 2010). These high rates of co-occurrence are observed in

both clinic and community samples (Keller, Beardslee, Lavori, Wunder, & et al., 1988), as well as in geographically and ethnically diverse studies (Ruchkin, Sukhodolsky, Vermeiren, Koposov, & Schwab-Stone, 2006). Thus, interventions that impact multiple symptoms and disorders simultaneously may have great public health significance for addressing the most common types of childhood syndromes (Biglan, Brennan, Foster, & Holder, 2004).

Fortunately, theoretical and empirical evidence suggests that disruptive behaviors and internalizing symptoms have similar developmental antecedents and may respond to like interventions. Social learning theory, for instance, proposes that early childhood symptoms of mental disorders largely develop from “reciprocal psychological interactions” within the home environment (Bandura, 1986). Within child characteristics are shaped by and in turn influence parent behaviors. Particularly salient environmental risk factors for exacerbating child emotional or behavior problems include dysfunctional and non-nurturing parenting behaviors and family environments. Specific parenting practices that serve as risk factors for externalizing disorders include inconsistent and harsh discipline as well as low levels of support and nurturance (Patterson & Dishion, 1985). Likewise, parents play a central role in children’s development of cognitive coping styles and later internalizing problems through modeling and selective reinforcement of those behaviors (Ostrander & Herman, 2006).

Recent evidence supports these theorized cross-impact effects of parenting interventions. For instance, Webster-Stratton & Herman (2008) found that the Incredible Years (IY) Parent Training (PT) program reduced internalizing symptoms in children in addition to its well-established effects on child conduct problems (see Webster-Stratton & Reid, 2010 for a review). Specifically, they found that children whose parents participated in the PT program had reduced internalizing symptoms at post-treatment compared to children in a wait-list control condition. Effects were mediated by changes in parenting effectiveness.

Other IY programs that target child and teacher behaviors have been developed that hold similar promise for positively impacting multiple youth behavior problems. The IY Child Training (CT) program is a cognitive, emotional, and social skills small group intervention that targets anger management and self-regulation, problem-solving strategies, emotional literacy and awareness, friendship skills, and self-esteem. Two randomized trials have shown the CT program to produce improvements in problem-solving and conflict management strategies with peers compared to those who participated in parent training alone, and treatment effects were maintained at one-year follow-up (Reid, Webster-Stratton, & Hammond, 2003; Webster-Stratton & Hammond, 1997; Webster-Stratton, Reid, & Hammond, 2001). While CT originally targeted conduct problems, child depression and anxiety are also associated with social skill deficits and concomitant relational problems (Albano, Chorpita, & Barlow, 2003; Altmann & Gotlib, 1988). Moreover, other child-focused interventions with similar treatment targets (i.e., emotional regulation, coping skills, problem solving) have demonstrated improvements on child internalizing symptoms (Gillham et al., 2007; Kovacs et al., 2006). Further studies are needed in order to determine the CT program’s effects on internalizing symptoms in children.

The IY Teacher Training (TT) program is another IY intervention with potential to benefit youth internalizing problems. The TT program focuses on reducing coercive interactions

between teachers and students; increasing teacher classroom management skills and support for students' social and academic performance; and building a socialization process consistent across home and school settings (Webster-Stratton et al., 2004). In the first evaluation of the program (Webster-Stratton et al., 2004), teachers who participated in TT were observed to use more praise and be more nurturing, consistent, and confident than control teachers post-intervention. Concurrently, children in classrooms with teachers who received TT experienced improved relationships with peers and were more cooperative with teachers. Lack of positive supports at school and low academic and social success are also risk factors for child internalizing problems (Herman & Ostrander, 2007), thus the TT program may have similar impact on these symptoms.

Given the success of the full IY intervention series for treating and preventing conduct problems and preliminary evidence of the PT program's effectiveness in reducing internalizing symptoms, it is important to continue evaluations of this evidence-based, developmentally sensitive intervention. Because the IY series targets proposed mechanisms and risk factors in three domains for internalizing distress in childhood (i.e., inconsistent, non-nurturing, harsh parenting; child social skills deficits; and negative teacher-student interactions), children with internalizing symptoms could potentially experience significant improvements from their participation in one or more of the intervention components (Webster-Stratton & Herman, 2008). Moreover, there is potential for additive effects of the three IY programs because they simultaneously address multiple risk factors for child internalizing symptoms (e.g., disrupted parenting, low social skills, unpredictable school environments) rather than just a single risk in one setting. In support of this, Webster-Stratton & Hammond (1997) found that the benefits of single setting or target interventions can fail to generalize to other settings—for example, while PT and CT children both showed improvements in problem behaviors at home, follow-up revealed increases in problem behaviors at school (Webster-Stratton & Hammond, 1997).

The present study investigated the impact of various combinations of the IY PT, CT, and TT programs on child internalizing symptoms in a trial originally designed to test the programs' effects on conduct problems (for analyses focused on the impact on externalizing symptoms see Webster-Statton et al., 2004). We hypothesized that all treatment conditions would have significantly lower internalizing symptoms at post-treatment compared to children in a wait-list control condition. Further, we expected that children in the multi-component treatment conditions would have significantly lower internalizing symptoms compared to children in conditions with fewer components. Finally, we expected that effects would be even stronger for children who had elevated levels of internalizing symptoms at baseline. Our primary outcome analyses focused on mother reports of internalizing symptoms. There is general consensus about the importance of including parent ratings of internalizing symptoms, particularly for young children (Klein, Dougherty, & Olino, 2005; Silverman & Ollendick, 2005). We also examined teacher ratings of internalizing symptoms given that some of the interventions occurred across home and school contexts. However, we considered teacher ratings as secondary outcomes given the questionable validity of teacher-reports of internalizing symptoms, especially when teachers have not been trained to recognize these symptoms (Achenbach, McConaughty, & Howell, 1987; Auger, 2004; Kamphaus & Frick, 2005; Loeber et al., 1991).

Methods

Participants

The sample included 159 families recruited from those seeking treatment at the University of Washington Parenting Clinic. One-third of families were self-referred, with the remainder referred by professionals in the community (20% by teachers and 38% by physicians). Families entered the study in three cohorts (50 to 55 families per cohort) in the falls of 1995, 1996, and 1997. Each family participated in assessments that included parent and teacher reports of child and adult behavior, independent observations of children with parents at home and with peers during a structured play session in the laboratory.

Random assignment to treatment group occurred by lottery in the fall, with each family aware of the 1 in 6 chance of being assigned to the waiting list control condition that required waiting approximately 9 months before receiving treatment. Conditions that contained an IY Child Training (CT) component were closed at six families per group whereas conditions without the CT component were closed at eight to nine families per group depending on the number of two-parent families in attendance. Families in treatment groups did not cross condition. For instance, children in the CT-only condition were assigned to a group with other children receiving only CT. Initial sample size per condition was as follows: PT (31), PT+TT (24), CT (30), CT+TT (23), PT+CT+TT (25), and Control (26). Post invention assessments were completed before the end of the school year. Follow-up assessments were then repeated one year later during the subsequent spring.

Child characteristics—Eligibility criteria for study entry were (a) the child was between 4 and 8 years old; (b) the child had no debilitating physical impairment, intellectual deficit, or history of psychosis and was not receiving any form of psychological treatment at the time of referral; (c) the primary referral problem was child misconduct (e.g., noncompliance, aggression, oppositional behaviors) that had been occurring for at least 6 months; (d) parents reported more than 10 child behavior problems; (e) the child met *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [DSM-IV] American Psychiatric Association, 1994) criteria for oppositional defiant disorder (ODD); and (f) the child was enrolled in preschool or elementary school. Initial telephone screens established elevated Eyberg Child Behavior Inventory (ECBI; Robinson, Eyberg, & Ross, 1980) scores. Families that were still eligible participated in a 2- to 3-hour intake interview that contained a structured diagnostic interview to assess *DSM-IV* criteria for ODD. Skilled master's or doctoral-level therapists conducted the interviews which were videotaped and reviewed. A random sample of 15% of interviews were independently rated by last author (a clinical psychologist), and indicated 100% reliability of ODD diagnoses among the therapists.

Study children were 90% boys, with a mean age of 70.99 months (*SD* = 11.47), and 79% were European American. Twenty-six percent of the sample attended preschool, 28% kindergarten, 27% first grade, and 18% second grade. The mean number of pretreatment behavior problems according to the mother ECBI was 21.10 (*SD* = 5.44) which is in the clinical range for the normative nonclinic sample (M = 7.1, SD = 7.7; Robinson et al., 1980). Eighty-one percent of the sample had ECBI problem scores above the 90th percentile of the normative sample (>16).

Parent characteristics—Of the 159 families included in the study, 25.8% of parents were single mothers in which the father had minimal or no contact with the child (no father data collected), and the majority of the remaining 74.2% were married, although a few divorced parents with joint custody participated. In all cases in which two parents were involved in parenting, both parents agreed to participate in the assessment and treatment. The Hollingshead Social Position is a metric for gauging family social status by combining weighted occupational and educational statuses of parents (Hollinghead & Redlich, 1958). There were not significant differences between treatment conditions according to family demographic variables such as race of parent or child (71.0%–95.8% European American), marital or single-parent status (62.5%–88.5% partnered), or sex of child (84.0%–93.3% boys).

Teacher characteristics—Because this is an archival dataset from a study originally focused on child and family response to school- and clinic-based interventions, limited information was gathered about teacher characteristics. The dataset only contains information about the grade level taught by the teacher: preschool (n=42), kindergarten (n=45), 1st grade (n=43), and 2nd grade (n=29). Parents asked for their teachers' support in the study which would involve classroom observations and participation in the assessments. Teacher involvement was a requirement for family enrollment in the study. All teacher participants were the lead teachers in the classroom and completed all the assessments asked of them at baseline and follow-ups.

Interventions

IY Child Training (CT)—Children of families assigned to CT, CT + TT, and PT + CT + TT conditions came to the parenting clinic to attend "Dinosaur School," which was offered for 18–19 weekly, two hour sessions. On average, children attend 12.81 (*SD*=7.42) sessions. Groups contained two therapists and six to seven children. The CT program specifically targets interpersonal problems that research has shown are problematic for children with internalizing symptoms. These include social and conflict management skills deficits, loneliness and negative attributions, emotional literacy, and problems communicating and playing with peers. In addition to the core content delivered through group process and instruction, weekly letters were sent to teachers and parents to identify and provide rationale for key concepts. Teachers and parents were encouraged to reinforce targeted skills, and children were assigned weekly homework activities to complete with their parents. Children received bonus prizes for completing weekly good-behavior charts with their parents and teachers. A more complete description of the video-based training dinosaur curriculum and manuals are available (Webster-Stratton, 1990).

IY Parent Training (PT)—Parents of families assigned to PT, PT + TT, and PT + CT + TT conditions came to the parenting clinic to attend 22–24 weekly, two hour group sessions. On average, parents attended 21.94 (*SD*=2.66) sessions. Groups contained two therapists and 10 to 12 parents. During the course of the intervention, parents watched 7 video-based programs on parenting and interpersonal skills which were designed, in conjunction with collaborative group process, to reduce parents' coercive interactions and increase positive interactions and relationships with their children. The program also contains many other

elements that are relevant for preventing and reducing internalizing problems in young children. For instance, parents learn to model positive thoughts and attitudes for their children; to systematically reinforce positive, prosocial, and brave behaviors; to engage children in pleasurable activities; to teach and reinforce positive social skills; and to work with schools to bolster their children's academic competence. A more complete description of the theory, efficacy, and content of the intervention is available elsewhere (Webster-Stratton, Mihalic et al., 2001).

IY Teacher Training (TT)—Teachers in the PT + TT, CT + TT, and PT + CT + TT conditions attended 4 full days (32 hours) of group training conducted at the clinic throughout the school year. All teachers attended every session. Credits were offered and substitute teachers were provided in order to promote teacher attendance. Targets of the teacher curriculum include use of effective classroom management strategies for student misbehavior, promoting positive relationships with students, and strengthening social skills strategies in multiple school settings (i.e., classroom, playground, lunch room). Teachers also learned to prevent peer rejection by helping students learn effective problem-solving strategies and methods for reacting to other students' negative behaviors. Similar to the parent program, the IY TT intervention encourages teachers to support children in ways that will prevent or reduce their internalizing symptoms by systematic teaching, modeling, and reinforcing positive coping, social, and academic skills. More information about curriculum content is available (Webster-Stratton, 2004).

Child Outcome Measure

Child Behavior Checklist (CBCL)—The CBCL (Achenbach, 1991) is a 113-item scale that provides measures of two broad band factors, Internalizing and Externalizing, and several more specific subscales (e.g., Attention Problems, Anxious/Depressed). Behavioral items are rated by parents and teachers and scores are summed for each subscale. These scores are compared to national norms. For the present study, we used maternal reports of the broadband Internalizing factor. For secondary analyses, we examined teacher ratings on these two scales. Psychometric properties of the CBCL have been well documented (see Achenbach, 1991). The Internalizing broad score had a high level of internal consistency (α=.85 and .80, respectively).

Analytic Plan

Treatment effects on mother-reported internalizing symptoms (CBCL) were examined using analysis of covariance (ANCOVA) with pretest internalizing and externalizing scores as covariates for corresponding posttest scores. Next, we examined planned comparisons (on post scores adjusted for pretest scores) based on our hypotheses by contrasting each treatment condition with the control condition (5 contrasts) and then contrasting single component treatments with the multicomponent interventions (2 contrasts). We then examined changes from post-treatment to one-year follow-up for children in the treatment conditions (the wait-list control only had pre- and post-scores before receiving the intervention). We repeated all analyses focusing on the subsample of children with elevated internalizing symptoms at baseline (T-scores of 60 or higher). This provided a more realistic appraisal of the intervention effects on internalizing symptoms (e.g., it would be difficult for

the interventions to reduce internalizing symptoms in children who were not depressed at baseline). Unfortunately, the power for these analyses was limited by the further reduction in sample size necessitated by the focus on this subgroup. Finally, we repeated analyses with teacher-reported internalizing symptoms as the outcome of interest. We used an alpha level of .05. Cohen's *d* effect size values were calculated using post-treatment mean estimate differences between treatment conditions divided by the pooled standard deviations. Given the limited power associated with some subgroup comparisons, we reported any effect sizes larger than .40.

Results

Baseline Equivalence

The analysis of variance (ANOVA) and chi-square analysis for dichotomous variables revealed no significant differences among the conditions on the demographic or family background variables (i.e., marital status, education, income, social class, child's sex and age, percentage of children on psychostimulants). Neither were there were any significant differences between conditions at baseline on the internalizing scores. See Table 1 for demographics. At baseline, 42% of the children had T-scores of 60 or higher on the mother-rated Internalizing subscale of the CBCL (borderline-clinical range) and 14.6% had scores of 70 or higher (severe-clinical range). On the Anxious-Depressed scale, 46.5% had T-scores of 60 or higher at baseline, and 15.9% had scores of 70 or higher.

Attrition Analysis

From the entire sample that enrolled in the study, four families dropped out of the project prior to beginning treatment and refused to participate in postassessments. Because there is no postassessment data for these families, their data could not be included in analyses of treatment effectiveness. Nearly complete mother and teacher ratings at baseline (n=155) and post-treatment (n=150) were available for all participants, so we focused our analyses on these informants. There were no baseline differences between mothers or teachers who did and did not complete post-treatment assessments. Although we had some father ratings at baseline (n=119) and follow-up (n=105), we elected not to focus our analyses on these reports for two reasons. First, given the small number of children within each of the six conditions, missing 35% of post-treatment data (compared to total sample at baseline) variably across conditions limited any conclusions that could be drawn from these data. Perhaps more important, we found that fathers who did not complete the follow-up assessment reported significantly higher baseline child internalizing scores (M = 60.00) compared to those who did (M=53.72), (t[117]=2.23; p = .028). As internalizing symptoms were the primary outcome of interest, this pattern of missing data would further undermine any confidence in the conclusions based on the father data.

Post Intervention Effects: Mother-Ratings

Outcome Analyses: Any Treatment vs. Control—Given the small *n* in each condition and associated concerns about low power, we first conducted two-group (any treatment vs. control) analyses to determine if exposure to any IY condition was associated with better post-treatment outcomes. We controlled for baseline internalizing and

externalizing symptoms (CBCL) in all analyses to rule out the possibility of baseline symptoms or behavior problem severity driving the effects.

The two-group ANCOVA applied to mothers ratings of internalizing symptoms (on the CBCL) yielded a significant group effect, $F(1,147) = 4.17$, $p < .05$, $d = .44$, $\eta_p^2 = .028$. Post-treatment estimates of T-scores for children in the treatment conditions were 3.33 lower than children in the control group (57.89 vs. 54.56). The ANCOVA applied to children with elevated internalizing scores at baseline (T scores of 60 or greater) was also significant, $F(1,60) = 5.12$, $p < .05$, $d = .87$, $\eta_p^2 = .079$. Adjusted post-test mean scores were 67.38 vs. 60.10 in favor of the treatment conditions (see Table 2).

Outcome Analyses: All Group Comparisons—The six-group ANCOVA applied to mother internalizing scores was not significant $F(5,143) = 1.83$, $p = .11$, $\eta_p^2 = .06$. Significant omnibus results in ANCOVA are not required when planned contrasts are of most interest, as was the case in this study (Roberts & Russo, 1999). Preplanned comparisons indicated that fully combined intervention group (PT+CT+TT) mean estimated post-treatment scores were 6 points lower than the control group ($d = .64$; $p<.05$). Moreover, the PT-CT+TT mean scores were nearly 4 points lower than the two single component treatment conditions, CT and PT, but these differences not statistically significant (ds = .41 and .42; ps=.07 and .06, respectively). The other treatment condition with a teacher component (PT+TT) also showed a moderate effect ($d = .44$) that was not statistically significant; this treatment condition had mean estimate post-test T-scores 3 points lower than the control condition. The overall ANCOVA applied to children with elevated baseline internalizing symptoms was not significant $F(5,56) = 1.36$, $p > .10$. Preplanned comparisons indicated treatment benefit for the PT+CT+TT condition compared to the control group ($d = 1.18$; $p<.05$); the mean score estimate for this group was nearly 10 points lower than the control group at post-test (67.24 vs. 57.33). The two other conditions with a child component (CT and CT+PT) also had marginally significant benefits compared to the control group with mean scores for both of these groups falling 7 points lower than the control group at post-test (ds = .96 and 1.06, respectively).

Clinical Significance and Reliable Change

We used Jacobsen and Truax's (1991) Reliable Change Index (RCI) as a metric for determining symptom improvement on mother-rated internalizing scores. The RCI calculation involves dividing the pre- to post-score difference for each subject by the standard error of measurement. Scores above 1.96 are taken as evidence that the subject's symptom improvement exceeded change expected by chance (95% confidence interval). Using this formula and criteria, we calculated an RCI for each child based on their mother-rated internalizing symptoms. Children with RCI scores greater than or equal to 1.96 (representing a pre- to post- improvement of 13 points) were deemed to have experienced reliable change and were thus placed in the Improved category. All others were designated Not Improved. Given this stringent criteria, 24% of children in the treatment groups were deemed improved compared to 0% in the Control group. The observed differences between groups was statistically significant (*Cramer's phi* = .23; $p = .005$). When analyses were confined to children who presented with baseline internalizing symptoms (T-scores greater

than 59), 39% of children in the treatment groups were improved. versus none of the control children. This effect was also statistically significant (*Cramer's phi* = .27; p = .029).

Intervention Effects: One-Year Follow-Up

Because the control group was treated after the postassessments, we could assess only whether children in the treatment conditions changed from postassessment to the 1-year follow-up. Eighty-three percent (n=103) of families in the active treatment conditions provided 1-year follow-up data. Mixed design (Time × Condition) ANOVAs were computed on mother's CBCL Internalizing scores from post to follow-up; children in the control group were excluded from these analyses. The Condition × Time interaction was not significant $F(4, 95) = 2.38$, p = .057. However, contrasts comparing the post to the follow-up scores between conditions indicated that the PT+TT dual component groups had significantly lower scores at 1 year follow-up compared to the single component PT group (mean difference = 5.75; p= .025). All treatment groups sustained their post-treatment scores at 1-year follow-up. See Table 2 for 1-year follow-up results.

Secondary Outcome Analyses: Teacher Ratings

Our secondary hypotheses focused on whether teachers would report differential improvements for children in the intervention condition (table available upon request). The six-group ANCOVA applied to teacher internalizing scores (F[5,141] = 0.859, p = .51) was not significant and no subgroup differences emerged. However, the analyses focused on participants with elevated baseline internalizing symptoms suggested some benefit for children in the combined treatment and child-only conditions (F[5,47] = 1.52, p = .20). Preplanned comparisons indicated that children with elevated internalizing symptom scores at baseline (by teacher report) who were in the triple component intervention group (PT+CT +TT) had mean estimated post-treatment scores 7 points lower than those in the PT condition (d = .89; p<.05).

Discussion

Children who received a single or multi-component IY intervention (IY Parent, Child, and/or Teacher) had significantly lower mother-rated child internalizing symptoms at post-treatment compared to an untreated comparison group. As predicted, subsequent analyses comparing the six intervention conditions suggested that children who received the triple component parent, teacher, and child intervention may have benefited most. For instance, those receiving the triple component intervention (PT+CT+TT) were the only ones with statistically lower internalizing scores than the control group across all analyses with mother-rated outcomes. Prior studies with larger samples of children have found that the parent intervention alone produced significant reductions in child depressive symptoms (see Webster-Stratton & Herman, 2008). Thus, by addressing multiple risk factors simultaneously, multi-component interventions may bolster the effects of interventions that target only a single risk factor.

Given the low power associated with these small group comparisons, it is also important to note that all intervention conditions trended in the hypothesized direction (lessening

internalizing symptoms) compared to the comparison condition (steady symptoms). Effect sizes on internalizing symptoms (*d*=.41–.67) for the entire sample were comparable to effects on child behavior problems by mother-report that have previously been reported (*d*=. 41–.67; from Webster-Stratton et al., 2004). Consistent with hypotheses, effect sizes were even larger for analyses focused on children who had elevated internalizing symptoms at baseline. Children in the treatment conditions were also much more likely to experience reliable improvements (greater than chance) compared to children in the control condition. Further, results suggested that the treatment effects were sustained at one-year follow-up.

Secondary outcome analyses focusing on teacher ratings of internalizing symptoms were less compelling but still generally supported these primary findings. Although there were no group differences on teacher ratings when applied to the whole sample, analyses focused on children with baseline elevations showed benefit for those in the triple component teacher, parent, child intervention compared to those who received a single intervention (parent training) and to the control group. Without training to identify internalizing symptoms, teachers provide inconsistent ratings of child symptoms on a classwide level (Auger, 2004); so the lack of effects on teacher ratings for the whole sample was not entirely surprising. However, it is possible that teachers provide more accurate ratings of children whom they initially perceive as having internalizing symptoms; that is, once teachers are attentive to a child's internalizing symptoms they may monitor symptoms in these children more closely. Thus, the significant effects of the dual combined intervention on teacher ratings for children with baseline elevations may be due to more accurate teacher ratings for these children. This is an untested supposition that warrants further investigation. No other groups were significantly different than the control group on teacher ratings; however, nearly all groups trended in the hypothesized direction for analyses focused on children with baseline elevations.

Although promising, the findings must be tempered with an appreciation of the limitations of this study. First, the study relied on adult-report of child internalizing symptoms, rather than child-report, which was necessitated by the young age of the child. On the positive side, the CBCL is a widely-used and accepted method for rating child internalizing symptoms in young children. Still future research is needed that incorporates, when possible, child-reported depressive/anxious symptoms (e.g., for children 6 years and older).

Second, and perhaps most important, the study was originally designed to test the intervention's effects for children with conduct problems. All children were selected for study entry based on their conduct symptoms, not their internalizing symptoms. Thus, not all children were depressed or anxious at baseline. It is unknown if these findings will generalize to other samples of children or to children who are depressed/anxious only without any conduct problems. However, as noted above, a large percentage, if not a majority, of children who are depressed or anxious at this young age also have co-occurring conduct problems. Thus, an intervention study such as this with a high percentage of children who have co-occurring symptoms may have greater generalizability than a study involving only anxious/depressed children. Given the high prevalence of children with conduct problems and internalizing symptoms, some authors have suggested that it may represent a distinct disorder or subtype of an existing disorder (Angold et al., 1999).

Interventions like IY that can simultaneously impact multiple problem behaviors of youth hold great potential for reducing the public burden of youth emotional and behavior problems (Biglan et al., 2004).

Additional limitations included the liberal alpha levels used to assess treatment effects. We did not adjust for multiple comparisons given the limited power associated with most of our analyses. Although the sample size for the overall study was reasonably large for an intervention study, the sample size for each condition was relatively small. Thus, conclusions that can be drawn from this single study are limited. This is an ongoing challenge for studies attempting to assess the impact of multi-component interventions given the need for huge samples to randomly assign across multiple conditions, in this case six. Typically, intervention studies with two comparison conditions are powered on sample sizes of 60–80 per condition. A study like this with six conditions would require roughly 400 participants. It should also be noted that we did not adjust for the clustering of participants within groups. As this is an archival dataset that did not retain group-level information, it is unknown how the grouping of parents or children may have impacted the child's response to treatment. However, only one child from a given classroom participated in the intervention so there would not have been any classroom level effect driving any teacher training effects. Finally, the study did not include a TT-only condition so the unique effects of the TT program on child internalizing symptoms cannot be determined from this study. The findings do imply, however, that the TT program may have additive effects beyond the PT or CT programs. It is also unfortunate that we did not have access to demographic information about the teacher participants beyond their grade level.

In this study, we attempted to consider the role of co-occurring symptoms by controlling for baseline externalizing symptoms and by conducting analyses for children with and without baseline internalizing symptoms. Despite the limitations of existing methods for understanding co-morbidity (Herman et al., 2007), two features of the present study support the notion that IY may reduce internalizing symptoms for children. First, intervention effects held when controlling for baseline externalizing symptoms and when analyses were conducted only on children with clinically significant internalization. Second, the findings are entirely consistently with social learning explanations of child depression and with a growing body of research showing the links between parenting behaviors, school environments, child social skills, and depressive symptoms. Still, testing IY in a controlled trial with child anxious/depressed symptoms as entry criteria would be the best way to determine the specific effects of IY on child internalizing symptoms.

These findings have implications for school psychology researchers and clinicians. First, clinicians working with young children who have internalizing symptoms should promote coordinated and integrated behavior management practices for both teachers and parents. The findings from this study support the notion that effective behavior management practices for such children include many of the same practices used with children who have conduct problems: clear expectations, structured and predictable routines, consistent consequences for desired and undesired behaviors and teaching regarding emotional regulation and literacy, and friendship skills. Second, school psychologists have the skills to deliver all three of the interventions described in this study: parent behavior management

training, child social skill groups, and teacher classroom management training. If their current allocation of time does not allow for the delivery of all components, then school psychologists need to work with other mental health professionals in the schools (e.g., school counselors, social workers) and the community to provide these integrated services. Third, school researchers are encouraged to contribute to the emerging literature regarding effective interventions for anxiety and depression in young children. In particular, school psychologists can contribute their expertise in school-based interventions and supports to advance the practices to address the co-occurring presentations that most children experience.

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Table 1

Demographic Measures at Pretreatment

	PT (*n* = 31)		PT + TT (*n* = 24)		CT (*n* = 30)		CT + TT (*n* = 23)		PT + CT + TT (*n* = 25)		Control (*n* = 26)	
	***M* or %**	***SD***	***M* or %**	***SD***	***M* or %**	***SD***	***M* or %**	***SD***	***M* or %**	***SD***	***M* or %**	***SD***
Child's age (months)	70.17	11.47	67.42	14.26	73.50	12.05	74.48	12.87	69.84	11.31	70.35	16.54
Child's gender (% boys)	90.3%		91.7%		93.3%		91.3%		84.0%		88.5%	
Mother's age (years)	37.26	5.94	38.33	4.48	38.00	6.60	35.78	5.58	39.52	6.78	36.27	6.29
Mother's education[a]	2.68	0.94	2.50	0.93	2.27	0.98	2.39	1.03	2.48	1.00	2.38	0.94
Father's age (years)[b]	39.46	6.95	39.91	5.67	39.84	7.86	37.80	5.85	39.52	5.80	38.44	6.84
Father's education[ab]	2.43	1.19	2.73	1.32	2.00	1.06	2.43	1.54	2.38	1.24	2.35	1.41
Mother's partner status (% partnered)	71.0%		62.5%		76.7%		73.9%		72.0%		88.5%	
Hollingshead Social Position score[c]	30.50	13.70	30.50	14.15	28.50	15.18	28.43	15.78	32.60	17.26	25.42	13.26
Total no. children in home	2.13	1.20	1.71	0.75	2.13	0.90	2.39	1.37	2.04	0.89	2.00	0.89

Note: PT=parent training alone; CT = child training alone; PT+TT=parent training plus teacher training; CT + TT=child training plus teacher training; PT + CT + TT = parent and child training combined with teacher training.

[a]Education scale: 1 = graduate school; 2 = 4 years college; 3 = partial college; 4 = high school graduate; 5 = partial high school.

[b]Ns for father measures are PT = 30; PT + TT = 22; CT = 26; CT + TT = 21; PT + CT + TT = 21; control = 26.

[c]Social Position Score is a weighted composite based on parent occupation and education. High score denotes low social position.

Table 2

Mother-Rated Internalizing Symptoms at Baseline, Post-Treatment, and 1-Year Follow-up

Treatment Condition												
	PT		**PT + TT**		**CT**		**CT−TT**		**PT+CT+TT**		**Control**	
Mother CBCL Internalizing Scores[b]	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
Baseline	59.77	12.15	55.75	10.36	58.43	8.08	61.17	9.70	58.48	9.65	56.46	8.36
Post-Treatment	57.17	10.86	52.54	8.54	56.08	9.20	56.05	7.74	52.24	10.16	56.88	9.03
Adjusted Post Means (All)	56.33	-	54.14	-	55.85	-	54.81	-	51.94	-	57.91	-
Adjusted Post Means[c] *- (sub-groups with elevated baseline internalizing)*	61.90	-	61.52	-	59.97	-	59.77	-	57.33	-	67.24	-
1 Year Follow-Up[d]	57.64	12.03	49.90	8.60	53.91	10.58	52.73	11.50	55.45	9.08	n/a	n/a

Two-Group Contrasts for Group by Time: ***Difference (p-value)***							
	PT vs. Control	**PT + TT vs. Control**	**CT vs. Control**	**CT + TT vs. Control**	**PT+CT+TT vs. Control**	**PT+CT+TT vs. PT**	**PT+CT+TT vs. CT**
CBCL M Internal[b]	ns	−3.78 (.08)	ns	ns	−5.97 (.006)*	−4.39 (.04)*	−3.91 (.07)
Baseline Elevation Subgroup[c]	ns	ns	−7.27 (.07)	−7.47 (.07)	−9.91 (.016)*	ns	ns

Note:

*p < .05

[a]PT = parent training alone; CT = child training alone; PT + TT = parent training plus teacher training; CT + TT = child training plus teacher training; PT + CT + TT = parent and child training combined with teacher training.

[b]PT *n* = 29; PT + TT *n* = 24; CT *n* = 26; CT + TT *n* = 22; PT +CT+TT *n* = 23; control *n* = 26.

[c]PT *n* = 16; PT + TT *n* = 6; CT *n* = 11; CT + TT *n* = 12; PT +CT+TT *n* = 11; control *n* = 8.

[d]PT *n* = 27; PT + TT *n* = 21; CT *n* = 19; CT + TT *n* = 14; PT +CT+TT *n* = 22.