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The Incredible Years® Programs for ADHD in Young Children: A Critical Review of the Evidence

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Abstract

This study evaluated the effectiveness of Incredible Years® (IY) programs for Attention-Deficit/Hyperactivity Disorder (ADHD) in children aged 3 to 8 years based on a systematic literature review. Effects of IY programs for children with or at risk for ADHD are examined in addition to the impact on ADHD behaviors in young children identified as having conduct problems or disruptive behavior. Search strategies identified 17 publications reflecting 11 unique intervention studies, including three with samples demonstrating elevated ADHD symptoms or meeting criteria for ADHD. Effects on ADHD outcomes, primarily parent report, were positive and comparable to those seen for conduct problems; benefits were also seen on social skills. Smaller and more variable effects were seen on observational measures and teacher reports. The overall methodological strength of this literature was relatively strong, although lack of fidelity measurement is a weakness. Using criteria established by the American Psychological Association's Division 53 (Society of Clinical Child and Adolescent Psychology), the IY Basic Parent Program may be considered *Probably Efficacious* for young children at risk for ADHD. In addition, the combined IY parent and child treatment programs can be considered *Possibly Efficacious* for children aged 4 to 6 years with ADHD, based on one study by the developer with a diagnosed sample.

Keywords

ADD/ADHD, disorders/disabilities, behavioral, interventions, child, interventions, effectiveness, programs/practices

Effective early intervention is needed for young children with Attention-Deficit/Hyperactivity Disorder (ADHD) to prevent negative developmental trajectories that include development of other psychiatric disorders, school failure, and long-term social adjustment difficulties (McGee, Partridge, Williams, & Silva, 1991; Pierce, Ewing, & Campbell, 1999). Impairment during the preschool years can be particularly severe including not only difficulties meeting expectations at home and conflict with family members but also elevated risk of physical injuries and suspension or expulsion from child care settings (Angold & Egger, 2007; Gadow, Sprafkin, & Nolan, 2001). The importance of early intervention is highlighted by work showing that young children have more severe symptoms (Nolan, Gadow, & Sprafkin, 2001), which are stable across the elementary school years (Riddle et al., 2013). One important factor that predicts outcomes for preschoolers with ADHD is the presence of comorbid Oppositional Defiant Disorder (ODD) or Conduct Disorder (CD; Riddle et al., 2013), which co-occur at rates of up to 70% (Posner et al., 2007).

Presumably, the most effective intervention approaches would target young children with symptoms of ADHD who have not yet met full criteria for an ADHD diagnosis. Given high rates of comorbidity with oppositional and aggressive behavior and its strong negative prediction of outcomes, early interventions might instead target general disruptive behavior. Indeed, well-established treatments such as Parent Management Training (PMT) target patterns of ineffective and coercive parenting that have been identified in preschoolers with ADHD as well as those with broader conduct problems (Campbell, Shaw, & Gilliom, 2000; Cunningham & Boyle, 2002). However, there may be unique aspects of ADHD that require more targeted approaches for underlying neurodevelopmental deficits in emotion regulation and inattention (Bunford, Evans, & Wymbs, 2015; Sonuga-Barke, Thompson, Abikoff, Klein, & Brotman, 2006). Evaluating the efficacy of interventions originally developed for conduct problems on ADHD symptoms and impairment may shed light on this question. In addition,

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careful examination of intervention outcomes for ADHD behaviors and conduct problems may increase understanding of intervention mechanisms and inform the development of more targeted and effective treatments which are greatly needed for the most severe cases (Riddle et al., 2013).

Relevance of the Incredible Years Programs for ADHD

One specific program with an extensive evidence base for addressing these questions is the Incredible Years® (IY). IY is a comprehensive series of programs for parents, teachers, and children originally developed for children aged 3 to 8 years (Webster-Stratton & Reid, 2008, 2009) with or at risk for conduct problems. Numerous randomized controlled trials (RCTs) demonstrate efficacy in reducing children's behavior problems and improving parenting skills as well as enhancing children's social–emotional competence (see Menting, de Castro, & Matthys, 2013, for a meta-analytic review). The IY parent program also has strong support from independent research conducted by investigators other than the developer (Pidano & Allen, 2015) and is cited in the National Registry of Evidence-Based Program and Practices (2007).

Theoretically, there are several aspects of the IY series that are well-suited for young children with ADHD (Webster-Stratton & Reid, 2014) including its focus on delayed play and social skills as well as strategies to increase children's attention, frustration tolerance and ability to calm down when upset or overly excited. These latter areas are particularly relevant given the increasingly recognized importance of emotion dysregulation in ADHD (Bunford et al., 2015; Mullin & Hinshaw, 2007). In addition to parenting strategies that support children's social–emotional and self-regulation development, the child-directed IY program also provides instruction and repeated practice and reinforcement in ignoring distractions, emotion regulation, and friendship skills. Specific guidelines have also been developed to adapt the IY programs for children with ADHD (Webster-Stratton & Reid, 2008, 2014).

IY is grounded in relationship and social learning theory as well as active learning methods such as role-play practices, goal setting, and self-monitoring. All of the IY programs are group-based and include video vignettes designed to facilitate behavioral practices in a collaborative process following a set of core principles. The parent program varies in number of sessions (currently 16 for the Preschool Basic prevention program and 22 for the Treatment programs), with earlier versions evaluated in many research studies having fewer sessions. The Basic program for preschoolers teaches strategies such as building relationships, encouraging social–emotional development, and using effective praise, incentives, differential attention, ignoring, and time out. For school-aged children, more complex incentive systems and problem-solving strategies are addressed. These strategies include all the core components validated as effective in a meta-analysis of PMT components (Kaminski, Valle, Filene, & Boyle, 2008). The longer program recommended for children diagnosed with ADHD includes supplemental sessions addressing parent stress management, problem-solving, and building support networks including collaborating with teachers to develop home-school behavior plans (Webster-Stratton & Reid, 2014). A key caregiver strategy taught in all IY programs which is relevant for ADHD-related difficulties is "coaching" children's academic, persistence, social, and emotional skills. This involves targeted descriptive commenting and positive attention to scaffold children's abilities to remain calm, focus, be patient, cooperate, engage in friendly behaviors, and persist on challenging tasks. As parents (and other care providers) prompt, describe, and praise these specific targeted behaviors, children learn language and skills to regulate their emotions and behavior, are motivated to use these skills, and obtain external support and reinforcement to do so.

IY programs have also been developed for schools, including the Teacher Classroom Management (TCM) program (Webster-Stratton, 1994) which trains teachers in similar strategies during six full-day workshops with classroom coaching support. Another IY universal approach is the Classroom Dina Program, which provides direct skills instruction to children in a range of social skills, emotion literacy, self-regulation, and academic readiness behaviors through twice weekly teacher-led classroom sessions provided over the course of 2 years (Webster-Stratton, Reid, & Stoolmiller, 2008). Finally, there is a clinical version of this curriculum provided by therapists in small groups with sessions typically held concurrent to the parent training group over approximately 20 weeks (Webster-Stratton, Reid, & Beauchaine, 2011). Within this therapeutic setting, instructional methods shown to be effective with young children (Weare & Nind, 2011) are utilized including modeling, group discussions facilitated by life-sized puppets, role-play practices, and small group activities with prompting and scaffolding by group leaders who implement a highly structured behavior management system. This approach reflects the explicit and intentional skills instruction recommended by the What Works Clearinghouse (Epstein, National Center for Education Evaluation Regional Assistance (U.S.), Mathematica Policy Research, I., & Institute of Education Sciences, 2008) for children with biological, sociocognitive, or developmental deficits that interfere with the development of self-regulation skills.

Although the content of the IY series is similar to other parent management and social-learning programs, it has a strong basis in active learning methods and is unique in its multicomponent structure addressing both ineffective

caregiving behaviors as well as children's skills deficits. With regard to theoretical mechanisms, IY addresses disruptive behavior and conduct problems by increasing parenting sensitivity and consistency, strengthening the parent–child relationship, preventing coercive parent–child interaction patterns, and increasing children's social–emotional competence. Intervention mechanisms that target ADHD-related difficulties include increasing structure and consistency in the environment (through the parenting program) and increased response inhibition, persistence, and emotional regulation (through parental "coaching" and child skills instruction). In addition, the curriculum addresses working effectively with teachers and developing home-school behavior plans.

Recently, IY research has been conducted with ADHD-specific samples (e.g., Azevedo, Seabra-Santos, Gaspar, & Homem, 2013; Webster-Stratton et al., 2011), providing valuable data in addition to a much larger evidence base of studies that include high rates of children with significant ADHD symptoms (Beauchaine, Webster-Stratton, & Reid, 2005). Notably, Webster-Stratton et al. (2011) conducted a large RCT of the combined IY Parent and Child treatment program for children aged 4 to 6 years diagnosed with ADHD which demonstrated significant positive effects on ADHD behaviors, conduct problems, social skills, and emotion regulation. Earlier research found similar effects for children with ODD with and without comorbid hyperactivity and inattention (Hartman, Stage, & Webster-Stratton, 2003; Webster-Stratton, Reid, & Hammond, 2001). Moreover, boys with symptoms of ADHD showed stronger treatment effects when the IY teacher program was included in the intervention (Beauchaine, Webster-Stratton, & Reid, 2005). However, the overall strength of evidence of IY for ADHD is unclear, warranting a systematic review of the current literature, which to our knowledge does not exist.

The Present Study

The primary goal of this study is to evaluate the strength of evidence for IY for young children with or at risk for ADHD based on a systematic literature review. In particular for a commercially available program with widespread use such as IY, clarifying the level of evidence for ADHD should be valuable for community clinicians. In addition, given that IY is well-established for conduct problems, there are theoretical as well as clinical implications for understanding effects on ADHD behaviors and for young children diagnosed with ADHD. The present study therefore addresses two specific research questions:

Research Question 1: What is the effectiveness of IY for young children with or at risk for ADHD?

Research Question 2: What is the impact of IY on ADHD behaviors in young children identified as having conduct problems or being at risk with general behavior difficulties?

To address these questions, we conducted a systematic literature review to identify RCTs examining IY and ADHD-related outcomes. We then evaluated study quality and identified limitations and gaps in the research. We summarize study characteristics and describe characteristics of interventions, participants, and measures that may be related to outcomes. Finally, we consider the overall level of evidence supporting IY for ADHD.

To align our conclusions with other clinical reviews in a useful manner, we utilized guidelines from Division 53 of the American Psychological Association (APA)—the Society of Clinical Child and Adolescent Psychology (Southam-Gerow & Prinstein, 2014). These guidelines allow specific interventions to be identified as "Well-Established," "Probably Efficacious," "Possibly Efficacious," "Experimental," and "of Questionable Efficacy" based on the extent and rigor of the evidence. However, we slightly modified the Division 53 criteria (designed for treatment of clinical populations) to enable application to preventive studies with risk populations. To better characterize the studies, we also used a second method to evaluate study quality (Nathan & Gorman, 2002) which has been used in many similar reviews (e.g., Evans, Owens, & Bunford, 2014; Eyberg, Nelson, & Boggs, 2008). Specific methods criteria are described in detail below.

Search Parameters and Inclusion Criteria

Search Parameters

We first conducted a comprehensive search of ERIC, PsycINFO, PubMed, and Scopus, which capture the educational literature, behavioral and social science research, biomedical literature and life science journals. For each database, we searched the term "Incredible Years" along with each word from two separate lists. Our first list included *treatment*, *intervention*, *program*, *curriculum*, *prevention*, and *training*. Our second list included terms related to symptoms associated with ADHD: *ADHD*, *attent**, *hyper**, *inatt**, and *ADD* ("*" denotes a Boolean wildcard character). This method resulted in initial retrieval of 52 publications from ERIC, 182 publications from PsycINFO, 110 from PubMed, and 158 Scopus (total of 502). After combining the results from each of the searches and removing duplicates, 258 abstracts were identified.

Inclusion and Exclusion Criteria

Next, the 258 abstracts were screened to verify that papers were empirical studies of an IY program (Parent Basic [Preschool or School-Aged], Parent Advanced, TCM,

Classroom Dina, or Small Group Dina) published in peer-reviewed journals in the English language. Books and dissertations were also excluded. This screening step reduced the number of papers to 118. Additional inclusion criteria were then applied:

Evaluated child outcome effects. This excluded 30 empirical studies (e.g., cost-effectiveness studies, analysis of treatment predictors) that did not examine child outcomes.

Randomized controlled design. We excluded 42 non-RCT studies to yield meaningful and comparable effect sizes with the most rigorous intervention design.

Outcomes related to ADHD behaviors or its core symptoms (e.g., inattention, hyperactivity/impulsivity). This criterion enables us to evaluate IY's specific effects on ADHD symptoms (separate from more generalized behavioral effects), addressing our second research question. Studies evaluating *only* conduct problems, emotional dysregulation, oppositional behavior, or biological measures of reactivity were not included (total of 44 excluded).

Age range 3 to 8 years. This is the target age for which IY was developed and for which the evidence base is most well-established (two studies excluded).

Final Sample Identified

Of the 118 papers examined, 13 met full inclusion criteria. Our final search strategy involved reviewing references in these 13 for additional relevant citations ("snowballing technique"). This last step identified 10 additional publications, of which four met inclusion criteria. This resulted in a total of 17 publications, which comprise the sample for this review. This reflects only 11 unique intervention studies because six publications utilized the same sample (or a subsample) as other studies but reported on follow-up data or different outcome measures.

Evaluation of Study Quality and Level of Evidence

Evaluation of Study Quality

As noted, two different methods were used to evaluate study quality, with independent evaluation conducted by the first and third authors who resolved discrepancies through consensus discussion. The first method used APA's Division 53's Evidence-Based Treatment (EBT) methods criteria specified by Southam-Gerow and Prinstein (2014) (see Table 1), with minor wording adaptations from those criteria specified in Silverman and Hinshaw (2008). These criteria were adapted in prior work from APA Division 12 Task Force on Psychological Interventions reports (Chambless et al., 1998; Chambless & Hollon, 1998; Chambless et al., 1996). To apply these standards in a reliable manner, we further specified each criterion utilizing guidelines from the Coalition for Evidence-Based Policy (2010). As indicated in Table 1, this allowed us to define, for example, "reliable and valid outcome assessment measures" and "appropriate data analyses."

To compare our results to a broader literature, we next assessed the overall quality of each study using Nathan and Gorman's (2002) methods review criteria, with one modification (see Table 1). For our review of preventive interventions (the majority of our samples), we did not consider diagnostic procedures to be applicable and so excluded this specific criteria for what are considered Type 1 studies (high-quality RCTs). Type 2 studies lack at least one component of Type 1 studies such as fidelity data or clear inclusion criteria but are considered appropriate for answering research questions. Type 3 studies are significantly methodologically flawed and/or have no control group and were excluded for this review.

There are a few important differences in criteria between the two different methods evaluation systems. For example, the Division 53 criteria do not specify measurement of fidelity as do the Nathan and Gorman criteria and analyses are evaluated for "adequacy" for Division 53 whereas they are only required to be "clearly specified" in Nathan and Gorman. Thus, studies with no missing Methods criteria for Division 53 could be considered either "Level 1" or "Level 2" according to the Nathan and Gorman criteria. We considered these differences in systems to be complimentary and contributing to a more comprehensive assessment of the methodological quality of the literature.

Evaluation of Evidence for IY

Finally, we categorized the effectiveness of IY for ADHD behaviors in young children within samples identified as being at risk for or diagnosed with ADHD using EBT criteria recommended by APA's Division 53 (Southam-Gerow & Prinstein, 2014). Categorization as Well-Established, Probably Efficacious, and Possibly Efficacious requires that studies meet all five methods criteria described in Table 1. According to these criteria, *Well-Established Treatments* have demonstrated efficacy in at least two independent research settings and by two independent investigatory teams. In addition, they must also show either (1) statistically significant benefit over placebo or another active treatment or (2) have demonstrated statistical equivalence to an already established treatment. *Probably Efficacious Treatments* have at least two good experiments showing treatment is statistically superior to a wait-list control group or have at least one experiment meeting Well-Established Treatment criteria with the exception of having two independent research teams/settings. *Possibly Efficacious*

Table 1. Methods Review Criteria.

Method 1: APA, Division 53 (Society for Clinical Child and Adolescent Psychology)[a] with further specification from the Guidelines of the Coalition of Evidence-Based Policy[b]

M.1. **Group design**: Study involved a randomized controlled design.
RCT includes random assignment at the appropriate level, e.g., at the level of groups or classrooms where relevant.

M.2. **Independent variable defined**: Treatment manuals or logical equivalent were used for the treatment
Any modification of a manualized IY program is clearly described and could be replicated.

M.3. **Population clarified**: Conducted with a population treated for specified problems, for whom inclusion criteria have been clearly delineated
Clear inclusion criteria delineate the population targeted for intervention (e.g., conduct problems).

M.4. **Outcomes assessed**: Reliable and valid outcome assessment measures gauging the problems targeted[c] (at a minimum) were used
Reliable and valid outcome measures are defined as those whose ability to measure true outcomes is well-established, do not favor the intervention group over the control group, include blind assessments where relevant,[d] and assess outcomes of practical or policy importance.

M.5. **Analysis adequacy**: Appropriate data analyses were used and sample size was sufficient to detect expected effects
Appropriate analyses with statistical tests (a) account for key features of study design such as grouping or stratification, (b) are based on an intent to treat approach, (c) collect outcome data similarly across groups, and (d) report on outcomes of all measures studied. Adequate sample size is defined by presence of statistically significant effects or a power analysis indicating the sample was large enough to detect meaningful effects.

Method 2: Nathan & Gorman, 2002

Type 1 studies:
Randomized, prospectively designed clinical trials using randomly assigned comparison groups, blind assessments (where relevant),[c] clear inclusion/exclusion criteria, state-of-the-art diagnosis, adequate sample sizes to power the analyses, and clearly described statistical methods. Treatment fidelity measures (i.e., measurement of the degree to which the treatment as delivered adheres to the treatment model) are also expected to be included in Type 1 studies.

Type 2 studies:
Clinical trials using a comparison group to test an intervention. These have some significant flaws but not a critical design flaw that would prevent one from using the data to answer the study question.

[a]Criteria M1–M5 specified in Southam-Gerow and Prinstein (2014). [b]Specification in italics adapted from Coalition for Evidence-Based Policy (2010). [c]ADHD outcomes only were evaluated for this criterion. [d]Defined for this study as observations or direct child assessments.

Treatments have at least one good RCT showing treatment to be superior to a wait-list or no-treatment control group.

Description of Studies Reviewed

Study Characteristics

Details of all 17 publications (11 unique studies) reviewed can be seen in Table 2, including sample characteristics, a brief description of the intervention, outcomes with categories of effect sizes, and the methodological quality of the study. Of the 11 studies, there are three with samples at risk for ADHD or meeting ADHD diagnostic criteria. The majority of studies evaluated ADHD behaviors as an outcome with other samples, typically children targeted for intervention due to elevated behavior ratings on the *Eyberg Child Behavior Inventory* (ECBI; Eyberg & Pincus, 1999). However, a few recruited samples from outpatient mental health clinics. Because most studies implemented interventions in community settings, we describe results in terms of "effectiveness" rather than "efficacy."

In studies reporting clinical diagnoses, the majority of participants met criteria for ODD. The large majority of participants were male (60%–80%). Many studies spanned the age ranges we typically think of as preschool and early school aged (e.g., 3–6 years or 3–8 years), thus these could not be examined separately. Notably, only one study was conducted in the United States (by the developer); most were conducted in Western European countries including Great Britain, Wales, Ireland, Norway, Sweden, and the Netherlands.

Intervention Characteristics

The majority of studies (9 of 11) evaluated the IY parent program alone, with variation in number of sessions from 10 to 20 (typically 12–14 two-hour sessions); two studies also included follow-up or "booster" sessions. This number of sessions is slightly longer than the 8–16 sessions seen for other behavioral training programs for ADHD (Pelham & Fabiano, 2008). Attendance at parent groups also varied (and was measured in different ways) across studies. However, the majority of studies reported reasonably good attendance rates (62%–79% for studies with comparable data available) for at-risk samples. Two studies examined the efficacy of combined IY interventions: Drugli and Larsson (2006; parent + classroom) and Webster-Stratton et al. (2011; parent + small group child). Some of the studies specifically indicated that fidelity was monitored through consultation with the developer or assured via having a certified group leader (e.g., Hutchings and McGilloway); however, only two studies actually reported fidelity data. It is unclear whether fidelity data were collected for other studies and not reported in the papers.

Table 2. Characteristics, Outcomes, and Methodological Quality of Studies Reviewed.

Study	Demographic characteristics and inclusion criteria	IY intervention and setting	Outcomes by domain and type of measure	Follow-up outcomes	Methodological quality
At-risk for or diagnosed with ADHD					
Azevedo, Seabra-Santos, Gaspar, and Homem (2013, 2014)	*N* = 100 (2013: I = 52, WLC = 48; 2014: I = 50) Age: 3–6 Gender: 72% male Race/Ethnicity: Portuguese Country: Portugal Inclusion: (a) Exceeded cutoff on *Hyperactivity Scale* (≥7) or *Conduct Scale* (≥5) on SDQ and (b) ADHD behaviors ≥ 80% on the WWPAS	Type: Targeted/at risk Program: IY Basic Parent program Duration: 14 weeks, 2-hr sessions + 2 booster sessions Attendance: Mean of 11.10 sessions (79%) Fidelity data: None Setting: University facility and mental health centers	*ADHD behaviors:* Parent rating[a,b] η_p^2 = .11–.14 Teacher rating[a] η_p^2 = .06 Parent semistructured interview[c] η_p^2 = .03 *Conduct problems:* Parent rating[a] η_p^2 = .04 Teacher rating[a] η_p^2 = .04 Observed[d] η_p^2 = .01 *Social skills/peer problems:* Parent rating[c,e] η_p^2 = .06 Teacher rating[e] η_p^2 = .01 Observed[d] η_p^2 = .05 *Other:* Parent interview ADHD + conduct symptoms[c] η_p^2 = .02	Length of follow-up: 1 year Attrition: 15.4% Follow-up design/sample: Intervention group only Findings: Maintained gains; social skills increased over time	Nathan and Gorman Level 2 Missing EBT Methods Criteria: None
Jones, Daley, Hutchings, Bywater, and Eames (2007, 2008) (subset analyzed from Hutchings et al., 2007)	*N* = 79 (2007: I = 50, WLC = 29; 2008: I = 44) Age: 3–4 Gender: 68% male (64% at follow-up) Race/Ethnicity: Not specified Country: Wales and England Inclusion: (a) Exceeded clinical cutoff for CD on the ECBI and (b) exceeded clinical cutoff on the Hyperactivity subscale of the SDQ (≥7)	Type: Targeted/at risk Program: IY Basic parent program Duration: 12 weeks, 2.5-hr sessions Attendance: Mean of 9.47 sessions (78%) Fidelity data: None Setting: Sure Start (preschool program for low-income families)	*ADHD behaviors:* Parent rating[f,g] *d* = .20 *Conduct problems:* Parent rating[d] *d* = .09 & .27	Length of follow-up: 1 year after treatment Attrition: 12% Design/sample: Intervention group only Findings: Gains maintained - no significant decrease in benefit from posttreatment	Nathan and Gorman Level 2 Missing EBT Methods Criteria: None
Webster-Stratton, Reid, and Beauchaine (2011, 2013)	*N* = 99 (2011: I = 49, WLC = 50; 2013: I = 42) Age: 4–6 Gender: 76% male Ethnicity: 27% ethnic minority Location: USA (Seattle) Inclusion: (a) ≥ 95th percentile on the CBCL attention problems scale, (b) met *DSM-IV* criteria for hyperactive-impulsive or combined subtype of ADHD, (c) not taking ADHD medication	Type: Indicated (clinical) Program: IY Parent + IY Child (Small Group) Duration: 20 weeks, 2-hr sessions Attendance: Mean of 18.5 sessions (93%) Fidelity data: None Setting: University clinic	*ADHD behaviors:* Parent rating[f,h] η_p^2 = .03–.13 Teacher rating[i,j] η_p^2 = .01–.04 (NS) Observed[k] η_p^2 = .02 (NS) *Conduct problems:* Parent rating[f,l] η_p^2 = .04–.24 Teacher rating[i] η_p^2 = .01 (NS) Observed[d,k] η_p^2 = <.01 (NS) *Social skills/peer problems:* Parent rating[m] η_p^2 = .12–.17 Observed[k] η_p^2 = .08 Direct Child Assessment[b,n] η_p^2 = .04–.09 *Other:* Emotion Regulation Parent rating[m] η_p^2 = .22–.24	Length of follow-up: 1 year Attrition: 18.2% Design/Sample: Intervention group only Findings: Gains maintained—no significant change from end of treatment	Nathan and Gorman Level 2 Missing EBT Methods Criteria: None

(continued)

Table 2. (continued)

Study	Demographic characteristics and inclusion criteria	IY intervention and setting	Outcomes by domain and type of measure	Follow-up outcomes	Methodological quality
Other samples assessing ADHD behaviors					
Drugli and Larsson (2006; teacher outcomes); Larsson et al. (2009; parent outcomes)	*N* = 127 (2006: PT = 47, PT + CT = 52, WLC = 28; 2009: PT = 47, PT + CT = 52, WLC = 28) Age: 4–8 Gender: 80% male Race/Ethnicity: 99% Norwegian Country: Norway Inclusion: (a) >90th% on the ECBI, (b) possible or confirmed diagnosis of ODD or CD based on KIDDIE-SADS 35% met *DSM-IV* criteria for ADHD; 87% met criteria for ODD	Type: Indicated (clinical) Program: IY Basic parent program (PT) vs. IY Basic parent program + IY small group child program (Combined tx) Duration IY Parent: 12–14 weeks, 2-hr sessions (PT *n* = 47) Duration IY Child: 18 weeks, 2-hr sessions (PT + CT *n* = 52) Attendance: Not indicated Fidelity data: None Setting: 2 child psychiatric clinics	*ADHD behaviors:* PT Parent rating[h] *d* = .34–53 Combined tx—Parent rating[h] *d* = .50–.59 Teacher rating[j] *d* = .11 *Conduct problems:* PT Parent rating[h,l] *d* = .17–.80 Combined tx—Parent rating[h,l] *d* = .02–.75 Teacher ratings[a,j] *d* = .12 *Social skills/peer problems:* Teacher rating[o] *d* = .12 (NS) *Problem-solving skills:* Direct child assessment[n] *d* = 0 (NS)	Length of follow-up: 1 year after treatment Attrition: 11% Design/sample: Intervention group only Findings: For parent rating, maintained gains with no difference between active treatment groups. For teacher ratings, maintained gains with significant increase in aggression for combined treatment group.	Nathan and Gorman Level 2 Missing EBT Methods Criteria: M5
Hutchings et al. (2007)	*N* = 153 (2007: I = 104,WLC = 49) Age: 3–4 Gender: 60% male Race/Ethnicity: 14% Welsh Country: Wales and England Inclusion: Exceeded clinical cutoff on the ECBI	Type: Targeted/at risk Program: IY Basic parent program Duration: 12 weeks, 2–2.5-hr sessions Attendance: Mean of 9.2 sessions (77%) Fidelity data: None Setting: Sure Start (preschool program for low-income families)	*ADHD behaviors:* Parent rating[f,g] *d* = .41–.61 *Conduct problems:* Parent rating[g,l] *d* = .33–.89 *Social skills/peer problems:* Parent rating[p] *d* = .38	Length of follow-up: N/A	Nathan and Gorman Level 2 Missing EBT Methods Criteria: None
Leijten, Raaijmakers, Orobio de Castro, van den Ban, and Matthys (2015)	*N* = 154 (2015: I = 107,WLC = 47) Age: 3–8 Gender: 62% male Race/Ethnicity: (41% Moroccans, 19% Turks Country: Netherlands Inclusion: Referred to child outpatient clinic or recruited from low-income neighborhoods 65% met *DSM-IV* criteria for either ODD, CD or ADHD	Type: Indicated (clinical) Program: IY Basic parent program Attendance: 70% attended all sessions Duration: 12–18 weeks, 2-hr sessions Fidelity data: None Setting: Outpatient psychiatry clinic	*ADHD behaviors:* Parent rating[g] *d* = .31 (NS) Teacher rating[g] *d* = .38 *Conduct problems:* Parent rating[g,l] *d* = .45–.57 Teacher rating[g] *d* = .26 (NS)	Length of follow-up: 3 months Attrition: 46% Design/sample: Intervention sample combined with treated data from wait-list controls Findings: Gains maintained—no significant change from end of treatment	Nathan and Gorman Level 2 Missing EBT Methods Criteria: M3
McGilloway et al. (2012) and McGilloway et al. (2014)	*N* = 149 (2012: I = 103, WLC = 46; 2014: I = 95, WLC = 42) Age: 32–88 months Gender: 61% male Race/Ethnicity: Irish Country: Ireland Inclusion: Exceeded clinical cutoff on either the Intensity subscale (≥127) or the Problem subscale (≥11) of the ECBI.	Type: Targeted/at risk Program: IY Basic parent program Duration: 14 weeks, 2-hr sessions Attendance: 1st cohort mean of 10.8 sessions, 2nd cohort mean of 6.6 sessions (62%) Fidelity data: Leader self-report of content and parent homework completion Setting: Community-based family resource centers	*ADHD behaviors:* Parent rating[f] *d* = .92 *Conduct problems:* Parent rating[g,l] *d* = .48–.75 *Social skill/peer problems:* Parent rating[m] *d* = .83	Length of follow-up: 6 months Attrition: 16% Design/Sample: Intervention group only Findings: Gains maintained—no significant change from end of treatment	Nathan and Gorman Level 1 Missing EBT Methods Criteria: None

(continued)

Table 2. (continued)

Study	Demographic characteristics and inclusion criteria	IY intervention and setting	Outcomes by domain and type of measure	Follow-up outcomes	Methodological quality
Patterson et al. (2002)	*N* = 116 Age: 2–8 (2011: I = 60, C = 56) Gender: Not specified Race/Ethnicity: 91.4% White, 2.9% mixed race, 4.8% Asian, and 1% Black Country: United Kingdom Inclusion: Exceeded sample median score on ECBI	Type: Targeted/at risk Program: IY parent program (early version) Duration: 10 weeks, 2-hr sessions Attendance: 56% attended 50% or more Fidelity data: None Setting: Health center and community center	*ADHD behaviors:* Parent rating[g] *d* = .04 (NS) *Conduct problems:* Parent rating[l,n] *d* = .18–.32 *Social skills/peer problems:* Parent rating[g] *d* = .28–.63 *Other:* Emotion Regulation Parent rating[g] *d* = .42	Length of follow-up: 6 months Attrition: 21% Design/Sample: Intervention group and control group questionnaire data Findings: Gains maintained for conduct problems—no significant change from end of treatment	Nathan and Gorman Level 2 Missing EBT Methods Criteria: M3, M5
Scott et al. (2010)	*N* = 112 (2010: I = 61, Information hotline C = 51) Age: 5–6 Gender: 71% male Ethnicity: 38% ethnic minority, not specified Country: England (London) Inclusion: Elevated conduct problems on SDQ (≥5) or on DSM ODD rating 60% met criteria for ODD	Type: Targeted (at risk) Program: IY Basic Parent + reading program Duration: 28 weeks (12-weeks of IY Parent, 10-week literacy program, 6-week revision) Attendance: 67% attended at least 5/12 sessions Fidelity data: None Setting: 8 schools	No immediate end of treatment analysis	Length of follow-up: 4 months Attrition: 3% Design/Sample: Treatment vs. control *ADHD behaviors:* Parent rating[c] *d* = .44 *Conduct problems*: Parent rating[l] d = .34 Teacher rating[q] *d* = .03 (NS) *Social skills/peer problems*: Parent rating[c] *d* = .52 *Other*: Parent rating Emotion Regulation[c] *d* = .10 (NS)	Nathan and Gorman Level 2 Missing EBT Methods Criteria: None
Scott, Spender, Doolan, Jacobs, and Aspland (2001) and Scott (2005)	*N* = 141 (2001: I = 90, WLC = 51; 2005: I = 59) Age: 3–8 Gender: 74% male Ethnicity: Not specified Country: England (London) Inclusion: Referred for mental health services	Type: Indicated (clinical) Program: IY Basic parent program Duration: 13–16 weeks, 2-hr each Attendance: Mean number of sessions = 9 (56%–69%) Fidelity data: None Setting: National mental health service program	*ADHD behaviors:* Parent interview[h,r] *d* = .31–.55 *Conduct problems:* Parent interview[g,r] *d* = .51–.89	Length of follow-up: 1 year Attrition: 19% Design/Sample: Intervention group only Findings: Gains maintained—no significant change from end of treatment; 51% met criteria for ODD; 37% met criteria for ADHD	Nathan and Gorman Level 2 Missing EBT Methods Criteria: M3, M5
Stattin, Enebrink, Özdemir, and Giannotta (2015)	*N* = 122 I = 92 (85 at follow-up), WLC = 148 Age: 3–8 Gender: 67% male Ethnicity: 16% immigrants Country: Sweden Inclusion: Parent sought help from clinical or community service 48% had a parent-reported diagnosis of ADHD	Type: Targeted/at risk Program: IY parent program Duration: 12 weeks, 2–2.5-hr each Attendance: 25% did not participate at all; 72% overall attendance rate Fidelity data: Expert ratings of sessions Setting: Routine clinical and community based practices	*ADHD behaviors:* Parent rating[s] *d* = .18–.22 *Conduct Problems:* Parent rating[l] *d*= .27–.42	Length of follow-up: N/A	Nathan and Gorman Level 2 Missing EBT Methods Criteria: M3

Note. Effect sizes were reported based on ITT analyses when available and calculated when values were not provided in the papers.
I = intervention group; WLC = wait-list control group; C = control group; IY = Incredible Years; ADHD = Attention-Deficit/Hyperactivity Disorder; SDQ = *Strengths and Difficulties Questionnaire*; WWPAS = *Werry-Weiss-Peters Activity Scale*; EBT = Evidence-Based Treatment; CD = Conduct Disorder; ECBI = *Eyberg Child Behavior Inventory*; CBCL = *Child Behavior Checklist; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994); ODD = Oppositional Defiant Disorder; KIDDIE-SADS = *Schedule for Affective Disorders and Schizophrenia for School-Aged Children*; PT = parent training; CT = child training; Tx = treatment; NS = not significant; ITT = intent to treat.
[a]*Preschool Behavior Questionnaire*. [b]*Wally Feelings Test*. [c]*Parent Account of Child Symptoms*. [d]*Dyadic Parent-Child Interaction Coding System*. [e]*Preschool and Kindergarten Behavior Scales*. [f]*Conners' Abbreviated or Revised Parent Rating Scale*. [g]*Strengths and Difficulties Questionnaire*. [h]*Child Behavior Checklist–Attention Subscale*. [i]*Conners' Teacher Rating Scale*. [j]*Teacher Report Form*. [k]*Coder Observation of Child Adaptation–Revised*. [l]*Eyberg Child Behavior Inventory*. [m]*Social Competence Scale*. [n]*Wally Problem Solving Test*. [o]*Social Competence and Behavior Evaluation*. [p]*Kendall Self-Control Rating Scale*. [q]DSM rating scale. [r]*Parent Daily Report Questionnaire*. [s]*Swanson, Nolan, and Pelham Rating Scale*.

Measures

The most commonly used measures of ADHD were parent ratings on scales that combine inattentive and hyperactive-impulsive items such as the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997), the *Child Behavior Checklist–Attention* subscale (CBCL; Achenbach, 1991), and the *Conners' Abbreviated Parent Rating Scale* (Conners, 1994). Conduct problems were typically assessed on these same parent-report measures with broad externalizing subscales (e.g., Eyberg Children's Behavior Inventory). Almost half of the studies ($n = 5$) included an independent assessment of intervention efficacy, typically teacher ratings. Three studies included either observational measures or direct assessment of child skills. Thus, the greatest body of evidence in this review is derived from parent ratings.

Effectiveness Findings and Patterns of Results

Effectiveness for ADHD Samples

Regarding the effectiveness of IY for young children with or at risk for ADHD, two studies were found with at-risk samples (Azevedo et al., 2013; Jones, Daley, Hutchings, Bywater, & Eames, 2007, 2008) and one with a diagnosed sample (Webster-Stratton et al., 2011). Each study found significant positive effects on ADHD-specific measures as well as other outcome domains (social skills, emotion regulation). Effect sizes for ADHD behaviors rated by parents ranged from small to large. Teacher ratings (measured in two of the studies) were not significant but there was one small effect for an observed ADHD outcome. Intervention effects for ADHD behaviors were comparable (and equally variable) to those seen for conduct problems in these samples. In Webster-Stratton et al. (2011) which evaluated the much longer clinical version of the parent program in combination with the small group child program, large effects were seen on parent ratings of children's social skills and emotion regulation. Moderate effect sizes were also seen for observed and directly assessed measures of social skills/peer interactions.

Effectiveness for ADHD Outcomes in Other Samples

Regarding the efficacy of IY for ADHD behaviors in samples identified for other reasons, the majority found significant positive effects across a wide range of samples. Typical effect sizes were small to medium, although two studies reported effects on parent ratings in the large range (Hutchings et al., 2007; McGilloway et al., 2012). Of the non-ADHD specific studies that assessed ADHD behaviors using teacher ratings, one found medium effects (Leijten, Raaijmakers, Orobio de Castro, van den Ban, & Matthys, 2015) and one found a small effect (Drugli & Larsson, 2006). Effects on ADHD measures in these studies were generally similar to or slightly smaller than effects seen for conduct problems.

Maintenance of Intervention Effects

In all three studies with ADHD samples, 1-year follow-up assessments were conducted showing no significant decrease in benefits for the intervention participants from posttreatment. Six other studies evaluated maintenance in other samples with similar findings. It should be noted, however, that due to the wait-list control designs used, follow-up data were not collected on control groups in any of these studies. Thus, there is no direct comparison to account for developmental improvements that may occur over time. Nonetheless, these findings are comparable to the broader IY efficacy literature (Charach et al., 2011) and suggest that relatively short-term interventions are capable of creating long-term positive impact.

Types of Outcome Domains and Measures

Across different types of samples, the large majority of studies found positive effects on ADHD behaviors as well as conduct problems. In the six studies that assessed additional domains, all but one found benefit for children's social skills. One of three studies assessing emotion regulation found benefit, and this study included the IY child-directed component (Webster-Stratton et al., 2011). There are also data demonstrating benefits on observational and teacher report measures, although several studies assessing such outcomes also failed to find significant effects. The size of effects for such measures was also generally lower than those found on parent ratings. Similarly, observational measures and direct child assessments generally showed smaller effects on behavior, although two studies identified moderate benefit for social skills/peer problems (Azevedo et al., 2013, 2014; Webster-Stratton et al., 2011). With regard to ADHD outcomes specifically, significant teacher-reported effects were seen in two of the four IY studies assessing these outcomes (Drugli & Larsson, 2006; Leijten et al., 2015), neither of which were at-risk/ADHD samples. In a diagnosed ADHD sample, small observed improvements were seen in ADHD behaviors but not conduct problems (Webster-Stratton et al., 2011).

Other Patterns of Effects

The four studies with clinical populations (Drugli & Larsson, 2006; Leijten et al., 2015; Scott, Spender, Doolan, Jacobs, & Aspland, 2001; Webster-Stratton et al., 2011) did not appear to have a different pattern of results from those

targeting at-risk samples. Nor were there any consistent differences in effect sizes between studies that included more than one component of IY and those that utilized the parent program only. Only one study directly evaluated the combined effects of programs on ADHD behaviors (Drugli & Larsson, 2006), finding minimal evidence of added benefit.

Findings Related to Study Quality and Level of Evidence

Of the 11 studies, seven met all five Division 53 Methods criteria, reflecting a relatively strong level of methodological rigor. However, only one study was identified as Level 1 according to Nathan and Gorman's (2002) criteria, primarily because of a lack of fidelity measures, although a few also lacked clear inclusion/exclusion criteria (e.g., Leijten et al., 2015; Scott et al., 2001; Scott et al., 2005). These findings are generally consistent with a recent review of psychosocial treatments of ADHD in diagnosed samples (Evans et al., 2014).

There are four RCTs of the IY Basic Parent Program evaluating ADHD outcomes that meet all five EBT methods criteria (Azevedo et al., 2013; Hutchings et al., 2007 Jones et al., 2007, 2008; McGilloway et al., 2012). In addition, the developer has one study (Webster-Stratton et al., 2011) meeting criteria for a diagnosed clinical population. For samples at risk for ADHD, there are two studies from independent research teams evaluating the IY Parent Basic program for preschoolers (Azevedo et al., 2013; Jones et al., 2007) that met all five EBT methods criteria. Only one of these four studies were considered Level 1 according to Nathan and Gorman's Level 1 designation due to lack of fidelity measurement.

In categorizing the overall level of evidence supporting IY for ADHD, we considered only those three studies that defined samples either as at risk for ADHD or established clinical diagnoses of ADHD. Based on criteria specified by Southam-Gerow and Prinstein (2014) and described above, the IY Basic Parent Program may be considered *Probably Efficacious* for ADHD for young children at risk for ADHD. In particular, there are two RCTs conducted in independent research settings that meet all specified methods criteria (Azevedo et al., 2013; Jones et al., 2007) and show significant effects for ADHD behaviors and conduct problems for children aged 3 to 6 years identified as at risk for ADHD. To be considered *Well-Established*, evidence of statistical superiority to another treatment or comparative efficacy to another well-established treatment would be required.

In addition, the treatment version of the combined IY® parent and child programs can be considered *Possibly Efficacious* for children aged 4 to 6 years diagnosed with ADHD based on one RCT meeting all methods criteria conducted by the developer (Webster-Stratton et al., 2011). Additional research with diagnosed samples may support a stronger classification in the future. There is currently a comparative effectiveness trial underway that is examining the IY parent program relative to the New Forest Parenting Programme (NFPP) for preschoolers diagnosed with ADHD which may provide such data (McCann et al., 2014).

Conclusion

The present review indicates that the Incredible Years® Basic Parent Program can be considered a *Probably Efficacious* treatment for young children at risk for ADHD, using criteria outlined by APA's Division 53, the Society of Clinical Child and Adolescent Psychology. This evidence is provided primarily through parent report, with more limited support from observational measures and teacher report. Moderate improvements in ADHD behaviors are seen and sustained over time, generally similar to effects seen for conduct problems and on broader measures of disruptive behavior with at-risk/clinical samples. Relatively strong support was also found for enhancing children's social skills and peer interactions. Regarding effects of IY on ADHD behaviors in general at-risk samples, positive albeit variable findings also emerged, including evidence of teacher-reported changes in ADHD behaviors in two studies. This is quite encouraging in that ADHD symptoms were not necessarily identified as a target of intervention, although underlying and related impairments are certainly addressed in IY programs.

Regarding mechanisms of intervention effects, the clearest conclusion from these data is that nonspecific PMT programs can have positive effects for ADHD behaviors as well as conduct problems and social skills. This is consistent with studies of other interventions such as PCIT that have examined similar questions (Wagner & McNeil, 2008). Thus, it may be that there are common, critical elements of interventions that target broad behavioral outcomes across populations and domains. In addition, effects appear similar for those studies that targeted samples on the basis of ADHD behaviors and those that intervened with more general at-risk samples. This is very encouraging for preventive interventions, which can be implemented much more efficiently with broader populations. However, these conclusions must be moderated by the significant variability in effect sizes seen across studies. At this time the added benefits of combined IY interventions for ADHD is unclear given that only two studies have evaluated this. Such potential is suggested by Webster-Stratton et al. (2011) which found effects in additional outcome domains (social skills, emotion regulation) with a higher-dosage combination intervention that directly targeted child skills in a diagnosed sample.

Strengths and Limitations

Overall, there were a relatively large number of RCTs of IY programs that assessed ADHD outcomes, with considerable overlap in sample characteristics and measures. In addition, an adequate number of methodologically rigorous studies were found examining ADHD-specific samples to determine the level of evidence using criteria recommended by APA's Division 53. Another strength of the literature reviewed is the use of clearly defined and manualized interventions, although there was some variability in programs such as the length of the Parent Basic Program. Several studies also include multiple informants of outcomes (primarily teacher ratings) and collected follow-up data. Most studies clearly defined samples using cutoffs for at-risk behavior on widely used rating scales. Also important is that most studies evaluated IY interventions as implemented in community practice, increasing the generalizability of findings.

A major limitation of the studies reviewed is evaluation of outcomes based primarily on parent report only. This suggests potential for bias in parent report of improvement that may be related to parents' investment or participation in the program. As noted in the description of results, although there are some data supporting effects on observational and teacher report measures, these effects appear more inconsistent, particularly for ADHD outcomes in at-risk samples. The literature reviewed also provides limited evidence that IY parent interventions alone translate into classroom changes in children's behavioral functioning. This potential lack of generalizability has been seen in much of the ADHD treatment literature (Curtis, Chapman, Dempsey, & Mire, 2013; McGoey, Eckert, & DuPaul, 2002) but is notable given that school functioning is so often a critical area of impairment for young children with ADHD.

Another major limitation is a lack of fidelity data in all but two studies. Although this is not unusual for studies of preventive interventions with goals similar to those of IY (Murray, Rosanbalm, & Christopoulos, 2016), it raises questions about whether the interventions were implemented as intended to achieve the full potential impact. This is particularly relevant given that increased fidelity of delivery of IY parent programs is associated with better outcomes (Eames et al., 2009). The overall quality of the delivery of IY interventions in the present review is therefore unknown and likely variable. Thus, the present results could reflect an underestimate of the impact of well-delivered IY interventions.

Another general methodological limitation is that the majority of studies did not describe how missing data were handled, although interestingly, this is not a criteria considered in either of the systematic review criteria utilized. Also as noted, ethnic diversity is limited. Although IY research has found little evidence of differential outcome for minority groups (Reid, Webster-Stratton, & Beauchaine, 2001), other studies of ADHD behavioral treatment with ethnic minorities have found better response for African American and Hispanic subgroups (Arnold et al., 2003). Thus, inclusion of more diverse samples could yield somewhat different results.

Future Directions

Related to gaps identified in this literature review, future research examining IY for ADHD should include more objective measures of improvement (e.g., observations), consistent assessment of fidelity, and more diverse samples including ethnic subgroups in the United States. Questions remain regarding the dosage and specific curriculum elements needed for maximum efficacy of IY for ADHD outcomes, including the nature of potential additive benefits from the child training program. Given the more limited effects of IY parent programs on teacher ratings, intervention strategies targeting impairment in preschool and school settings (such as the IY TCM Program) warrant further investigation. Much also remains to be learned about potential outcome moderators, particularly sample characteristics that may warrant treatment tailoring such as age of child (e.g., preschool vs. school-aged). Finally, future research on core components of parenting and social–emotional programs for creating change across populations and domains would be valuable.

Clinical Significance

Although the present review did not provide strong evidence for the need for early interventions specific to ADHD, this may be due to IY's flexibility in adapting the curriculum to the behavioral needs of children with ADHD behaviors. It is also possible that more specific or intensive ADHD interventions may have effects on core underlying processes such as emotion regulation, which could impact functioning across domains, something not well assessed in the current literature. For young children with severe symptoms meeting full diagnostic criteria for ADHD, it would certainly make clinical sense to utilize higher dosage, combination IY treatments such as in Webster-Stratton et al. (2011). In addition, working with child care providers and teachers may be important in generalizing treatment effects into the school setting. For other children considered more at risk for ADHD, initial intervention with the IY Parent Basic program for preschoolers appears to be a relatively modest investment (4 month program) sufficient to obtain long-term benefits, at least by parent report. Other well-established behavioral parent training programs for ADHD also exist (Pelham & Fabiano, 2008). The present review adds to this literature by identifying an effective intervention approach for young children who may not yet be diagnosed

but who have significant and impairing symptoms of ADHD.

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