OBJECTIVE. This study evaluated a parent-delivered intervention aiming to address the social difficulties of children with attention deficit hyperactivity disorder (ADHD). The intervention was evaluated from three perspectives: effectiveness, feasibility, and appropriateness.

METHOD. This one-group pretest–posttest study included 5 children with ADHD and their parents, who had previously participated in a therapist-delivered play-based intervention. The 7-wk parent-delivered intervention involved home modules (including a DVD, manual, and play dates with a typically developing playmate) and three therapist-led clinic-based play sessions. The Test of Playfulness was used as a pre- and postintervention and follow-up measure. Parents were interviewed 1 mo following the intervention, and data were analyzed for recurring themes.

RESULTS. Children's social play outcomes improved significantly from pretest to 1-mo follow-up ($Z = 2.02, p = .04, d = 1.0$). Three themes emerged: the clinic play environment as a sanctuary, parental barriers to intervention delivery, and tools for repeating learned lessons.

CONCLUSION. The parent-delivered intervention demonstrated preliminary evidence for feasibility and effectiveness. Further research is warranted regarding appropriateness.


Developing and evaluating psychosocial interventions for children is a complex task. Establishing optimal intervention intensity and mode of delivery, the interplay of parent–child characteristics, client acceptability, and effectiveness are all factors that contribute to the complexity (Campbell et al., 2007; Kazdin, 2007; Kazdin & Nock, 2003). For health care interventions to achieve a “gold standard,” evidence must be demonstrated in three areas: effectiveness (i.e., does the intervention work as intended?), feasibility (i.e., are adequate resources and funds available for implementation?) and appropriateness (i.e., what is the impact of the intervention from the participants’ perspective? Evans, 2003). A gold-standard approach has yet to be established for psychosocial interventions targeting the social skills of children with attention deficit hyperactivity disorder (ADHD).

The social deficits of children with ADHD are well documented as a costly and serious long-term problem (Doshi et al., 2012; Nijmeijer et al., 2008; Wehmeier, Schacht, & Barkley, 2010). Moreover, multiple systematic reviews have demonstrated that social skills training, the most common approach, demonstrates minimal effectiveness for children with ADHD (Antshel & Barkley, 2008; Pelham & Fabiano, 2008). In addition to limited effectiveness, the traditional approach of intensively teaching children socially acceptable behaviors in controlled clinic groups lacks evidence of feasibility and appropriateness (Antshel & Barkley, 2008).
**Previous Studies**

**Psychosocial Interventions With Parent Involvement**

Although parents are a natural and logical resource for promoting a child’s development, parents of children with ADHD may require support to facilitate their child’s social-emotional development. Compared with parents of typically developing children, parents of children with ADHD are known to experience increased stress, relational frustration, and lower parenting self-esteem (Theule, Wiener, Tannock, & Jenkins, 2012).

In recognition of the need to involve parents in psychosocial interventions, three promising interventions using varying degrees of parent involvement have focused on supporting parents of children with ADHD to promote their children’s friendships. First, Frankel, Myatt, Cantwell, and Feinberg’s (1997) social skills training program included child sessions involving behavioral rehearsal and coached interactions with peers. Coaches observed children’s peer interactions, delivered token reinforcement, and imposed consequences for misbehavior (e.g., timeout). Concurrent parent group sessions focused on the reinforcement of social skills at home. Although results for child outcomes demonstrated efficacy, neither feasibility nor appropriateness were addressed explicitly. This approach has limitations, among them that the intervention altered the natural process of interpersonal learning that unfolds during peer interactions.

Second, Mikami, Lerner, Griggs, McGrath, and Calhoun (2010) trained parents as friendship coaches by teaching them to create social opportunities (play dates) and provide corrective feedback. Children were observed interacting in a playgroup with unknown peers on three occasions for the purposes of parent training. The pilot intervention demonstrated effectiveness in parent-rated measures of social skills ($d = 0.25–0.59$), with parents reporting satisfaction with the intervention. However, no significant improvement was found in parent reports of play dates or in teacher reports of the child’s social skills. The researchers concluded that the intensive parent involvement required in delivering the intervention may limit feasibility for some families and that a more intensive child treatment component might improve effectiveness.

Third, in a summer-camp treatment program, Hoza, Mrug, Pelham, Greiner, and Gnagy (2003) conducted a friendship intervention, pairing children as “buddies.” Findings demonstrated greater parent involvement (i.e., more play dates scheduled with the buddy) and enhanced friendship quality as rated by teachers on a 5-point scale. However, feasibility is questionable because the intervention intensity and protocol would be difficult to replicate. Moreover, the researchers could not unequivocally attribute positive intervention outcomes to the friendship intervention over other program components. Thus, further research is required to evaluate effectiveness.

**Therapist-Delivered Play-Based Intervention**

In a previous study (Wilkes, Cordier, Bundy, Docking, & Munro, 2011), we applied the principles of a model for play-based intervention for children with ADHD to develop and test a therapist-delivered intervention (Cordier, Bundy, Hocking, & Einfeld, 2009). The therapist-delivered intervention involved each child with ADHD ($n = 14$) inviting a typically developing playmate to attend seven weekly clinic-based sessions (Wilkes et al., 2011). To motivate the children, the clinic was set up as an inviting playroom. A primary therapist worked closely with the children. Video self-modeling techniques (feedback and feed forward) were used; the therapist and children watched videotaped interactions from the previous week and had a problem-solving discussion to anticipate the skills required to make the subsequent play session enjoyable (e.g., “play my friend’s game”). The therapist then modeled desired social interactions in the playroom by playing with the children to promote cooperative play between them. Concurrently, a second therapist worked with the parents, providing feedback on playroom observations and suggestions for the application of techniques at home. The Test of Playfulness (ToP; Bundy, 2004) was used to examine the children’s social play (i.e., play within a social context involving peer-to-peer interactions).

The intervention demonstrated efficacy in improving the social play skills of children with ADHD ($n = 14$, $t = 8.1$, $p = .01$, $d = 1.5$). Moreover, the children maintained their gains 18 mo postintervention ($n = 5$, $Z = 0.14$, $p = .89$, $d = -0.4$; Wilkes-Gillan, Bundy, Cordier, & Lincoln, 2014). However, as in the interventions described above, evidence of feasibility and appropriateness is lacking. The cost of delivering an intervention requiring two therapists and the parent-identified need for support to refresh and reinforce learned techniques over time (i.e., appropriateness) require ongoing development of the intervention (Wilkes-Gillan et al., 2014).

**Development and Pilot of a Parent-Delivered Intervention**

To address these needs, we developed an alternate version of the intervention that could be delivered by parents. Adjustments included reduced therapist involvement (e.g., from two to one therapist per child and from seven to three
the following research questions were addressed:

1. **Effectiveness:** Were the social play skills of children with ADHD improved after a parent-delivered intervention?
   In addition, were the social play skills of these children generalized to home and retained 1 mo after participation?

2. **Feasibility:** What are the findings of a preliminary cost analysis comparing resources used in both play-based interventions?

3. **Appropriateness:** What were parents’ experiences of both play-based interventions?

**Method**

**Research Design**

A purposive sample was used for this one-group pretest–posttest study. Ethics approval was received from the University of Sydney’s Human Research Ethics Committee. All participants gave informed written consent or verbal assent (i.e., children age <7 yr) before participating in the study.

**Participants**

Families of children with ADHD who had participated in the therapist-delivered intervention 18 mo previously (Wilkes et al., 2011) were invited to participate in the current study. Because of time constraints (the school term was under way), only 5 of the original 14 families were available to participate in the parent-delivered intervention. Children included in the current study were ages 6–11 yr and had a primary diagnosis of ADHD.

Current ADHD symptoms were confirmed by parent ratings on the Conners Comprehensive Behavior Rating Scale (CCBRS; Conners, 2008). Children continued to take previously prescribed medications and did not commence new therapies during the study.

The children with ADHD invited a typically developing playmate to participate. To avoid unfamiliar playmates, who might influence the results in unacceptable ways, the child pairs were regular playmates and of similar age (maximum age difference between play partners = 3.1 yr, mean age difference = 2.1 yr, SD = 0.7). Playmates did not have ADHD as defined by the CCBRS, and no concerns were raised by parents or teachers about their development or behavior.

**Instruments**

**Test of Playfulness.** The ToP has evidence of excellent interrater reliability (data from 96% of raters fit the expectations of the Rasch model; Brentnall, Bundy, & Kay, 2008), moderate test–retest reliability (e.g., intraclass correlation = .67, p < .01; Brentnall et al., 2008), and construct validity (e.g., data from 93% of items and 98% of people fit Rasch expectations; Bundy, Nelson, Metzger, & Bingaman, 2001).

**Parenting Relationship Questionnaire.** The Parenting Relationship Questionnaire (PRQ) is a standardized parent-rated questionnaire with seven scales assessing parenting relationship factors that influence a child’s social–emotional development (Kamphaus & Reynolds, 2006): Attachment, Communication, Discipline, Involvement, Parenting Confidence, School Satisfaction, and Relational Frustration. PRQ reliability coefficients for test–retest and internal consistency ranged from .72 to .81, with evidence of moderate construct validity (Rubinic & Schwrickrath, 2010).

**Conners Comprehensive Behavior Rating Scales.** The CCBRS is a parent-rated questionnaire used as a screening measure to confirm the presence or absence of symptoms consistent with ADHD. Scores of >70 are above the clinical cutoff. The CCBRS has good evidence for reliability and validity: Cronbach’s α coefficients of .67–.97, 2–4-wk test–retest reliability of .56 to .96 (p < .001), interrater reliability of .50–.89 (p < .001), and good discriminative validity (mean overall classification accuracy of 78% across all forms; Conners, 2008).

**Procedure**

Participants engaged in a 7-wk intervention involving weekly home modules, three clinic-based play sessions, and a follow-up visit. In each clinic-based session, play...
pairs were invited into a room that contained a one-way mirror and that was set up to support social play (Cordier, Bundy, Hocking, & Einfeld, 2010a). During two clinic sessions, an occupational therapist (the first author, Wilkes-Gillan, or the third author, Cordier) played with the children for 20 min, supporting engagement in child-initiated free play. The two therapists had developed and administered the intervention techniques in a previous study (Wilkes et al., 2011). To ensure uniformity, the therapists met regularly to review previous video footage of their playroom interactions and to discuss the use of techniques.

During the clinic sessions, the therapists promoted prosocial behaviors such as sharing and responding to a playmate’s cues by engaging the children in mutually enjoyable, reciprocal social play, which often involved pretend play. The therapists also used key, consistent phrases while in the playroom to promote cooperation between children—for example, “Let’s share our ideas about the game.” Parents observed these sessions through the one-way mirror. Afterward, the therapists discussed the session with the parents.

To complete the home modules, parents received one-on-one training at the clinic for 1 hr involving interactive media (i.e., video footage, presentation, and website) and a practical demonstration of how to use the DVD and manual resource. Modules involved parents reading a prescribed manual chapter and watching a corresponding DVD episode with their child and then facilitating a play date at home. Parents were given a set of three colored play cards to use as visual cues when discussing the DVD and when giving their child feedback on their social interactions before, during, and after the play date. The green card was used to convey “Great play! Keep going!”; the red card, to convey “Stop! Let’s think about what happened”; and the purple card, to prompt discussion of “three things to remember while we play.” Twelve modules were available; each addressed interactional difficulties experienced by children with ADHD. Further information on the modules is reported in Wilkes-Gillan, Bundy, Cordier, and Lincoln (in press). The therapist prescribed three modules during Weeks 1–2 and a new module weekly thereafter.

A low-budget website was designed for contact between parents and the therapist (http://ug2adhdfriendships.com). Parents used the website to access an electronic version of the material and to log the completion of their weekly activity, notifying the therapist to prescribe the next module. However, parents preferred phone contact during school hours. The therapist prescribed modules on the basis of the child’s social play needs as reflected in baseline ToP scores and ongoing weekly phone discussions with parents.

All video recorded play sessions were scored by one of five trained and calibrated raters. Raters were unaware of all aspects of the study. Each scored 5–10 videos. No rater scored both pre- and posttest videos for a given child. The raters’ scores were interpreted to be reliable because their goodness-of-fit statistics were within the required parameters (mean square <1.4; standardized value ≤2; Bond & Fox, 2007).

The 1-mo follow-up included the therapist video recording a 20-min play session at the child’s home. This video footage enabled scoring of the ToP. Within the same week, individual semistructured interviews were conducted with parents to investigate their perceptions of the intervention. A researcher not closely involved with the families (the second author, Bundy) conducted the interviews. The parent who was most involved in the interventions participated. Parents were asked for the number of home modules they completed and their perspectives on both interventions (therapist and parent delivered) in relation to their child’s experience, their own experience, any benefits they or their children derived, and logistics that supported or hindered participation. Parents provided a summative rating for their responses by scoring both interventions on a 10-point scale ranging from 1 = not enjoyable or beneficial or hard and 10 = very enjoyable or beneficial or easy. Interviews were 30 to 50 min in length and were audiorecorded and transcribed verbatim.

Data Analysis

Effectiveness: Child Outcomes. Children’s raw ToP scores were entered into an existing database containing scores of children with ADHD and typically developing children ($N = 378$). The Facets Rasch analysis program (Version 3.70.1; Linacre, 2012) was then used to convert ToP raw scores into interval-level scores. Rasch analysis produces an overall measure score for each person, similar to a standard score (Bond & Fox, 2007).

Measure scores produced by Facets were then entered into IBM SPSS Version 19 (IBM Corporation, Armonk, NY). Because of the small sample size, Wilcoxon signed-rank tests for related samples were calculated to compare mean ToP scores from two points in time, before and after the parent-delivered intervention and preintervention to 1-mo follow-up (Siegal & Castellan, 1988). Significance was set at $p < .05$. Cohen’s $d$ values were calculated to examine effect size, interpreted as small, ≥0.20; medium, ≥0.50; or large, ≥0.80 (Cohen, 1992).

Feasibility: Cost Analysis. To evaluate intervention feasibility, we conducted a cost analysis. Program costs of both the therapist- and parent-delivered interventions were recorded to allow a comparative cost analysis. Costs were categorized as therapist or material costs (Creese & Parker, 1994). We
converted therapist hours into monetary amounts (e.g., hourly rate multiplied by intervention hours).

**Appropriateness: Parent Responses.** Analysis regarding intervention appropriateness involved parent interview data. Thematic analysis by means of an open and axial coding process (Strauss & Corbin, 1990) was used to analyze interview responses. Each transcript was broken down into discrete parts of text and then coded manually. Data were then compared to form subthemes and then core themes. Data interpretation was checked using peer review processes (Strauss & Corbin, 1990). Themes were reviewed by a research group of doctoral candidates. The first and second author then reexamined the themes to reach consensus. The means of parents’ summative ratings on the 10-point scale were also calculated.

**Results**

Recruitment yielded 5 boys with ADHD; 4 mothers and 1 father also participated. Regarding child and parent demographic variables, the participants differed from the original group on only one variable: The children presented with significantly lower levels of inattention ($Z = 2.03$, $p = .04$) as measured by the CCBRS. All participants were White. Information about child and parent participants is reported in Table 1. Additionally, descriptive information on parent–child relationships was collected using the PRQ (see Table 2).

**Effectiveness: Overall Improvements in Social Play Skills**

Wilcoxon signed-rank tests for related samples indicated no difference before and after intervention ($Z = 1.48$, $p = .14$). However, pretest to 1-mo follow-up findings demonstrated significant improvement ($Z = 2.02$, $p = .04$; see Table 3).

**Feasibility: Cost Analysis**

Results from the preliminary cost analysis indicated that the parent-delivered intervention was less costly. More information is presented in Table 4.

**Appropriateness: Parents’ Summative Ratings**

Parents’ mean responses indicated a higher preference for the therapist-delivered intervention (see Table 4). Thematic analysis revealed three core themes: (1) the clinic play environment as a sanctuary, (2) parental barriers to intervention delivery, and (3) tools for repeating learned lessons.

### Table 1. Participant Demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Participant ($N = 5$)</th>
<th>Playmate ($N = 5$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age, yr (SD)</td>
<td>45.4 (7.2)</td>
<td>44.2 (5.0)</td>
</tr>
<tr>
<td>Education level, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>High school</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Primary caregiver’s occupation not requiring a university degree, %</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td><strong>Child variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age (SD)</td>
<td>8 yr, 9 mo (1 yr, 6 mo)</td>
<td>8 yr, 7 mo (1 yr, 7 mo)</td>
</tr>
<tr>
<td>Gender, male, $n$</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>ADHD symptomatology (mean CCBRS scores)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>73.20$^a$</td>
<td>54.60</td>
</tr>
<tr>
<td>Inattention</td>
<td>75.80$^a$</td>
<td>56.60</td>
</tr>
<tr>
<td>Conduct behavior</td>
<td>67.40</td>
<td>53.20</td>
</tr>
<tr>
<td>Oppositional behavior</td>
<td>79.80$^a$</td>
<td>65.00</td>
</tr>
<tr>
<td>Generalized anxiety disorder</td>
<td>75.40$^a$</td>
<td>58.40</td>
</tr>
<tr>
<td>Academic difficulties</td>
<td>72.20$^a$</td>
<td>54.40</td>
</tr>
<tr>
<td>Social problems</td>
<td>75.00$^a$</td>
<td>74.00$^b$</td>
</tr>
<tr>
<td>ADHD subtypes, $n$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predominantly inattentive</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Predominantly hyperactive and impulsive</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Combined subtype</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Medication taken for ADHD, $n$</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Sibling as playmate, $n$</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Note. — = not applicable; ADHD = attention deficit hyperactivity disorder; CCBRS = Conners Comprehensive Behavior Rating Scales.

$^a$Above the clinical cutoff of 70. $^b$Playmates mean score was above the clinical cutoff (>70) on social problems (a non–ADHD symptom subscale), supporting the literature postulating that playmates of children with ADHD may mirror the negative behaviors exhibited by the child with ADHD (Cordier, Bundy, Hocking, & Einfeld, 2010b).
Table 2. Parent–Child Relationship Information as Measured by the Parenting Relationship Questionnaire (N = 4)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Scale Description</th>
<th>Mean T Score (SD)a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment</td>
<td>Affective and cognitive relationship between parent and child</td>
<td>37.0 (13.3)</td>
</tr>
<tr>
<td>Communication</td>
<td>Quality of information exchanged between parent and child</td>
<td>34.8 (9.4)</td>
</tr>
<tr>
<td>Discipline</td>
<td>Application of consistent consequences for misbehavior</td>
<td>40.5 (10.8)</td>
</tr>
<tr>
<td>Involvement</td>
<td>Level of parent participation in activities with the child</td>
<td>51.0 (9.9)</td>
</tr>
<tr>
<td>Parenting confidence</td>
<td>Confidence and comfort in the parenting process and decision making</td>
<td>28.8 (7.8)</td>
</tr>
<tr>
<td>School satisfaction</td>
<td>Parent belief that the school is meeting the child’s needs</td>
<td>42.0 (4.5)</td>
</tr>
<tr>
<td>Relational frustration</td>
<td>High levels of stress when relating to or controlling the child</td>
<td>76.5 (9.4)</td>
</tr>
</tbody>
</table>

Note. SD = standard deviation.

T scores are interpreted as follows: 10–30, lower extreme; 31–40, significantly below average; 41–59, average; 60–69, significantly above average; 70+, upper extreme. The 4 parents who completed the measure had mean scores significantly below average on three subscales and were in the lower or upper extreme range on two subscales.

The most frequently mentioned theme was that the clinic play environment was a sanctuary. Parents valued the experience of seeing their child enthusiastically engaged in prosocial interactions:

There [the clinic playroom], he is himself—he’s having a ball... It’s about an environment where he’s subtly learning about himself. He wasn’t angry or withdrawn... It was just fantastic; he was a real team player... Seeing your child at play, I think that’s really important, especially when you have a child like mine that has problems with socializing. (Parent 5)

Parents further noted that clinic visits enabled positive parent–child experiences. As Parent 4 noted, “He was engaged, and I didn’t have to battle him to be engaged—that’s huge benefits for me... in terms of managing my stress and how difficult it can be with him.” Parent 1 highlighted the opportunities for positive communication through a “common language for talking about specific, appropriate strategies for good play.”

A contrasting core theme, pertaining to when the parents delivered the intervention, was parental barriers to intervention delivery. This theme emerged from four subthemes:

1. Demands of family life: “Besides the extra spelling, speech, and messages, he got to the point where he just didn’t want me around... It was another thing I had to motivate him to do, which got really hard” (Parent 5).

2. Challenging child relationships: “It’s difficult to engage him... I didn’t persist, either; part of that was I’d run out of energy to do it and manage everything else. He’s quite a challenging child” (Parent 4).

3. Perceived skills: "This was well outside my skill set... I’m a parent (Parent 2). One skill described was “scheduling it in around everything else that’s going on... mobbing [moving] through slowly and sporadically” (Parent 1).

4. Need for further support to overcome these barriers.

The final core theme to emerge was that the parent-delivered intervention equipped parents with tools for repeating learned lessons:

Even if we get to the end of our involvement with the program, we can keep using it [DVD, manual, and play cards]... to get the best value... We needed to repeat and engage with the language of the visits and the lessons learned. (Parent 3)

These tools helped parents overcome barriers and engage in positive parent–child interactions, allowing them to support their child’s social skills:

I thought, “It’s to benefit my child—we have to do it.”... There were lots of things I’d forget... that’s why it’s good to have the manual. I think in any of the programs, the parent has to be involved. (Parent 3)

Parent 2 observed,

I might get them [intervention play cards] out, especially if they are playing well... I’ve not wanted to break the nice play with talking, so I’ve grabbed the little green card and gone up to him [and shown him the card], so he can smile at me and go, ‘Oh, that’s good.’” (Parent 2)

Table 3. Scores on the Test of Playfulness and Effect Sizes of the Parent-Delivered Intervention on Participants’ Social Play Outcomes

<table>
<thead>
<tr>
<th>Effectiveness</th>
<th>M (Range)a</th>
<th>SD</th>
<th>Cohen’s d8</th>
<th>Effect Sizec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest to posttest</td>
<td>11.1</td>
<td>0.5</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Pretest: Session 1</td>
<td>69.0 (53.1–79.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest: Session 7</td>
<td>74.3 (55.1–83.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest to 1-mo follow-up</td>
<td>9.6</td>
<td>1.0</td>
<td>Large</td>
<td></td>
</tr>
<tr>
<td>Pretest: Session 1</td>
<td>69.0 (53.1–79.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up</td>
<td>78.6 (71.5–83.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. M = mean; SD = standard deviation.
aMean scores and standard deviations were derived from interval-level measure scores. bCohen’s d effect sizes were calculated as follows: group (mean posttest – mean pretest)/pooled SD for group measure scores. cEffect sizes were interpreted as large (≥ 0.80), medium (≥ 0.50), or small (≥ 0.20; Cohen, 1992).
Discussion

We implemented and evaluated the results of a pilot parent-delivered, play-based intervention aimed at improving the social play skills of children with ADHD and compared results with those of a previously conducted, intensive therapist-delivered intervention (Wilkes et al., 2011). We aimed to refine the initial pilot of the intervention (Campbell et al., 2007) and adopted an evidence-based evaluation framework (Evans, 2003). We invited previous participants from the therapist-delivered intervention to participate in the current intervention. Both interventions were in the context of dyadic peer play and involved varying degrees of video self-modeling, peer and therapist modeling, and parent involvement.

Effectiveness

The pilot parent-delivered intervention demonstrated preliminary effectiveness in improving the social play skills of children with ADHD \( (d = 0.5, \text{ medium effect size}) \), which increased over time (pretest to 1-mo follow-up \( d = 1.0, \text{ large effect size} \)). These results are similar to the previously conducted therapist-delivered intervention \( (d = 1.5, \text{ large effect size}; \text{ Wilkes et al., 2011}) \), strongly supporting the combined use of these techniques as a potentially effective means to develop the social play skills of children with ADHD. Moreover, these results support previous research demonstrating that intervention outcomes \( (\text{medium to large effect sizes}) \) are better generalized with increased parent involvement \( (\text{Frankel et al., 1997; Hoza et al., 2003; Mikami et al., 2010; Wilkes et al., 2011}) \). Although preliminary, these results hold promise, even though psychosocial interventions targeting the social impairments of children with ADHD have previously demonstrated minimal effectiveness \( (\text{Antshel & Barkley, 2008; Antshel & Remer, 2003; Pelham & Fabiano, 2008}) \).

Feasibility

Although the parent-delivered intervention costs were less than those associated with the therapist-delivered intervention, as did Mikami et al. (2010) we found that an increase in parent involvement compromised feasibility, highlighting the interconnected nature of intervention effectiveness, feasibility, and appropriateness. This compromised feasibility was demonstrated by a lower effect size in the short term \( (i.e., \text{pre–post intervention}) \) paired with increased gains at follow-up as parents continued the intervention strategies with their child. Parent time was not considered in the cost analysis; however, it may have had feasibility implications for parents by decreasing parents’ engagement and the intensity with which they completed intervention home modules, in turn contributing to reduced effectiveness in the short term.

Appropriateness

Parent responses indicated greater satisfaction with the therapist-delivered intervention. As expected, the context of play increased intervention appropriateness for children by providing them with ample and enjoyable opportunities to regulate their emotions and develop prosocial skills.

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<table>
<thead>
<tr>
<th>Type of Evidence</th>
<th>Therapist-Delivered Intervention</th>
<th>Parent-Delivered Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feasibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summary of resources per child, AS</td>
<td>578.00 (17 hr × 2 therapists)</td>
<td>153.00 (4.5 hr × 1 therapist)</td>
</tr>
<tr>
<td>Estimated therapist cost per child^a</td>
<td>127.50</td>
<td>127.00</td>
</tr>
<tr>
<td>Materials cost per child^b</td>
<td>705.50</td>
<td>280.00</td>
</tr>
<tr>
<td>Parent self-reported compliance</td>
<td>With home play tasks</td>
<td>With home modules</td>
</tr>
<tr>
<td>Weekly activities completed (SD)</td>
<td>66% of 6 (1.9)</td>
<td>70% of 8 (2.9)</td>
</tr>
<tr>
<td>Mean parent summative ratings^c (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child’s experience</td>
<td>9.5 (0.6)</td>
<td>6.6 (2.2)</td>
</tr>
<tr>
<td>Parent’s experience</td>
<td>8.3 (2.5)</td>
<td>6.0 (1.6)</td>
</tr>
<tr>
<td>Benefits to child</td>
<td>8.1 (1.6)</td>
<td>7.1 (2.1)</td>
</tr>
<tr>
<td>Benefits to parent</td>
<td>8.4 (1.6)</td>
<td>5.9 (1.1)</td>
</tr>
<tr>
<td>Logistics</td>
<td>7.6 (2.9)</td>
<td>6.3 (2.1)</td>
</tr>
<tr>
<td>Mean overall rating</td>
<td>8.4</td>
<td>6.4</td>
</tr>
</tbody>
</table>

\^aTherapist costs were based on the Australian New South Wales Health Service Health Professionals (State) Award wage for a Level 2 occupational therapist (A$34 per hour). Therapist hours include face-to-face time (clinic intervention sessions) and non-face-to-face time (videomodeling or phone consultations). \^bMaterials included toys, intervention DVD and manual, and blank DVDs. Equipment and building costs (i.e., laptops, room hire, electricity) and parent time were not included. \^cParents provided summative ratings of the interventions using a 10-point ordinal scale, with 1 = not enjoyable or beneficial or hard and 10 = very enjoyable or beneficial or easy. When parents nominated two scores (e.g., “between 5 and 6”), an average was calculated (i.e., 5.5).
However, the degree of enjoyment that parents experienced in observing their child play was somewhat unexpected. In accordance with the play literature, parents discussed the benefits of observing their child succeeding at cooperative interactions (Ginsburg, 2007). They identified play as a valuable process that presented them with opportunities to support and communicate positively with their child and fostered positive parent–child interactions (Ginsburg, 2007; O’Neill, Rajendran, & Halperin, 2012).

As the intervention progressed, we suspected that some parents may have benefited from additional clinic visits and therapist support. Reflected in parents’ interview responses were a constellation of barriers to intervention delivery, which resulted in them moving “slowly and sporadically” through the parent-delivered intervention. These findings highlight the impact of intervention appropriateness on effectiveness.

Promoting positive parent–child interactions is likely foundational to successfully engaging and assisting parents of children with ADHD in efforts to facilitate their children’s social competence. Previous research has indicated that children with ADHD are at risk of continuing difficulties when negative parent–child interactions are present and when parental confidence is low (Fischer, Barkley, Fletcher, & Smallish, 1993; Lifford, Harold, & Thapar, 2008). These findings highlight the importance of intervention appropriateness to optimize parents’ engagement in the treatment process.

Two factors may have influenced parents’ preference for the therapist-delivered intervention. First, 18 mo before this study, the parents were involved in a therapist-delivered intervention that placed significantly fewer demands on parents. Second, this group of parents experienced particularly high levels of relational frustration and low levels of confidence in their parenting ability as measured by the PRQ (see Table 2; Rubinic & Schwickrath, 2010; Theule et al., 2012). This second factor is reflected in the qualitative subthemes of parental barriers to intervention delivery: demands of family life, challenging relationship with child, perceived skill set, and need for further support. We therefore postulate that parent–child relationship variables may have reduced intervention appropriateness for this particular group, thus possibly limiting short-term effectiveness. In addition to the level of difficulty experienced by the child, parent–child relationship factors may predict the level of intervention intensity and mode of delivery needed to ameliorate the social difficulties of children with ADHD.

Limitations and Future Research

The small, nonrandomized sample limits generalization of results to the broader population of children with ADHD. Additionally, a carryover effect may have been present because participants had received the therapist-delivered play-based intervention 18 mo previously. Further research on the parent-delivered intervention is required.

This study provides preliminary evidence that the parent-delivered intervention, characterized by increased parent involvement, may be feasible and effective. Intervention modifications could improve appropriateness and in turn enhance effectiveness. Further intervention development should target the following: decreasing the intensity of intervention delivery for parents, increasing therapist support, and trialing the intervention with larger numbers of families.

Longer-term outcomes should be evaluated to establish the optimal intervention intensity and a balance in feasibility that reduces the resources required while maintaining effectiveness and appropriateness. Additionally, continued collection and evaluation of parent–child relationship data are important. Such information could help future researchers determine the allocation of families to differing intervention duration and modes of delivery. We postulate that because of the heterogeneous nature of ADHD, varying severity of social impairments, and the complex nature of parent–child relationships, balanced use of both therapist- and parent-delivered interventions may ultimately be required to optimize intervention feasibility, effectiveness, and appropriateness. Larger-scale studies are required to investigate these possibilities and to investigate variables that may influence intervention outcomes. Moreover, larger scale studies will identify whether an intervention set in the context of play yields the gold-standard approach to addressing the social impairments of children with ADHD.

Implications for Occupational Therapy Practice

The findings of this study have the following implications for occupational therapy practice:

- Parents of children with ADHD may require support to facilitate their child’s social–emotional development.
- Play as a medium for intervention can increase intervention appropriateness and provide an enjoyable and supportive environment for both children and their parents.
- A play-based intervention may yield an effective, feasible, and appropriate approach for addressing the social impairments of children with ADHD.

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