What are the Effects of Parent Involved Interventions on Functional Outcomes for Children with ADHD?

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Key Words

- Attention Deficit Hyperactivity Disorder (ADHD)
- Pediatrics/ Children
- Parent Involvement
- Behavior
- Mindfulness
- Cointervention/ Dyadic
- Cognitive
- Occupational Therapy

Abstract

This rapid systematic review examined the effectiveness of parent-involved interventions on functional outcomes for children with ADHD. Family-centered care is an important component of pediatric occupational therapy since parents contribute to maintaining their child's environment emphasizing the importance of including parents in the treatment approach. Within the research, a variety of parent-involved interventions were found to have implications on functional outcomes for children with ADHD, including behavioral, mindfulness, dyadic, and cognitive approaches. The results found that there is strong evidence to support the effectiveness of parental involvement in enhancing functional outcomes for children with ADHD. However, with the limitations of this rapid systematic review, further research needs to be conducted. Occupational therapists have the potential to play a crucial role in addressing barriers to occupational performance and supporting families in establishing effective strategies to enhance functional outcomes for children with ADHD.

Focused Clinical Question

The purpose of this rapid systematic review (RSR) was to search and critically examine the literature to address the following research question: What are the effects of parent-involved interventions on functional outcomes for children with ADHD?

Statement of Problem and Background

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM), attention deficit hyperactivity disorder (ADHD) is a disorder that is characterized by inattention and/or hyperactivity (American Psychiatric Association, 2013). These factors can hinder a person's ability to engage in daily life. Occupations affected by

ADHD in children are education, social participation, play, activities of daily living (ADLs), and instrumental activities of daily living (IADLs). ADHD can affect these areas by inhibiting a child's ability to attend to, organize, and complete tasks. Symptoms of ADHD typically present during elementary school years (American Psychiatric Association, 2013). As of 2022, 11.4% of children who are ages 3-17 located in the United States have been diagnosed with ADHD (CDC, 2024a).

This RSR evaluated and examined the findings of studies that utilized parent-involved interventions for children with ADHD. This research was done in an effort to find evidence to support family-centered care in the provision of ADHD interventions. Family-centered care is an important component of pediatric occupational therapy (O'Brien & Kuhaneck, 2020). Parents factor into their child's client constellation and contribute to maintaining their child's environment, which makes including them in the treatment approach an important part of providing effective, client-centered care (O'Brien & Kuhaneck, 2020). This creates a gap in services if providers involve only the child in the intervention. This rapid systematic review seeks to address this gap in order to provide focus for parent-involved interventions that occupational therapists can facilitate. By including parents in the intervention process, occupational therapists have the opportunity to improve outcomes for children with ADHD.

Method

The current review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (Moher et al., 2009). This approach minimized study selection bias and ensured a more rigorous review process for this rapid systematic review. Covidence (Version 2), a software platform, streamlined the process of screening and study extraction (Covidence, n.d.). The development of search terms and refinement of the research objective were completed by all authors, further contributing to an unbiased review process.

Selection Criteria

The parameters of this RSR followed strict inclusion and exclusion criteria to increase relevance to our topic of interest. The inclusion criteria were as follows: (a) participants with an ADHD diagnosis, (b) children under 18 years of age, (c) parental involvement in interventions, (d) articles published within the last 10 years, (e) peer-reviewed studies, (f) articles with level 1B-3B strength. These inclusion criteria were designed to analyze the literature for the strongest evidence, ensuring reliability and validity of the current RSRs findings. Additionally, the focus on population-specific criteria aimed to enhance the applicability and relevance of the study results to the target population.

The exclusion criteria aimed to ensure the analyzed participant population highlighted individuals with ADHD and studies with high evidence. Articles were excluded if they met the following criteria: (a) systematic reviews, (b) meta-analyses, (c) individuals older than 18, (d) examining ADHD in adults, (e) autism spectrum disorder, (f) oppositional defiant disorder. These exclusion criteria ensured the studies' results had the potential for high validity and reliability.

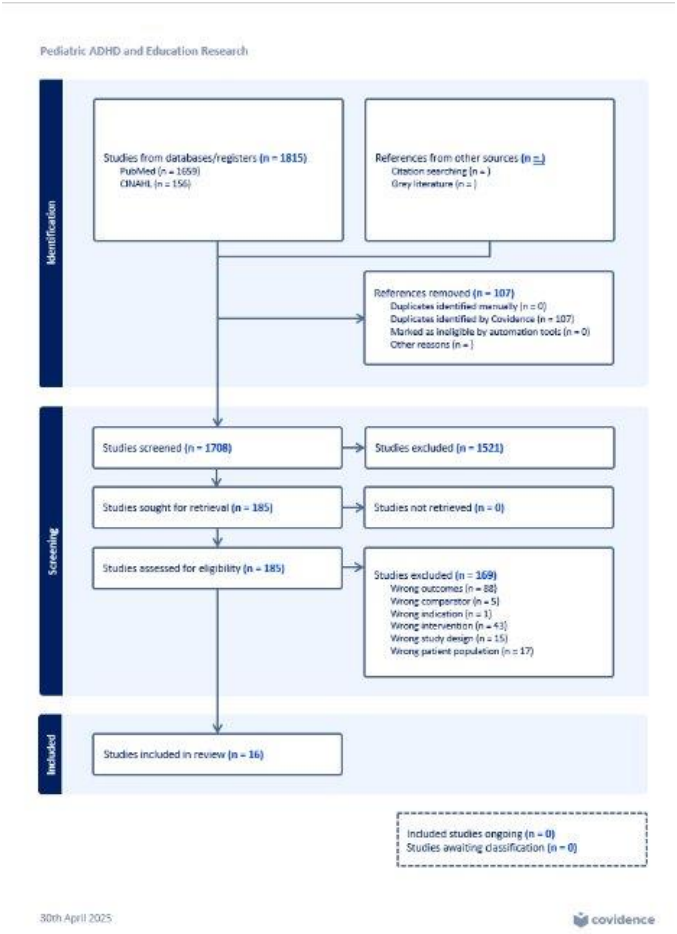
The following level of evidence requirements and guidelines were taken from the American Occupational Therapy Association (AOTA). (n.d.).

- Level 1A: systematic review of RCTs
- Level 1B: Individual RCT
- Level 2A: Systematic review of cohort studies
- Level 2B: Individual cohort study, low-quality RCT (<80% follow-up or low number of participants; pilot and feasibility studies); two-group nonrandomized studies
- Level 3A: Systematic review of case-control studies
- Level 3B: Individual retrospective case-control study; one-group nonrandomized pre-post cohort studies
- Level 4: Case series
- Level 5: Expert opinion without explicit critical appraisal

Data Extraction

There were 1815 study articles imported into Covidence. 1659 studies were from PubMed and 156 were from CINHAL. Of those, 107 studies were duplicates found by Covidence. The remaining 1707 articles were screened for study inclusion criteria, study design, and outcome measures. 136 studies were eligible for full text screening. A total of 16 articles met the inclusion criteria for this current RSR. Four parent-involved intervention approaches were identified from the articles: cognitive, mindfulness, dyadic, and behavioral. See Figure 1 for further information.

Figure 1: Prisma Flow Diagram



Results

Behavioral Interventions

A total of five studies utilized behavior and educational interventions to examine the effectiveness of parental involvement on improving behaviors related to ADHD in children. Of the five studies, three were level 1B (Chesterfield et al., 2021; Mehri et al., 2020; Pachiti et al., 2023), one was level 2B (Amiri et al., 2023) and one was level 3B (Morgan & Keefe, 2021). A variety of assessments were used to monitor the data across the studies, which include: Vanderbilt ADHD Diagnostic Rating Scale, The Parenting Scale, Parenting Styles and Dimensions Questionnaire-Short Version, ADHD Rating Scale-IV, Parenting Sense of Competence Scale, Parenting Stress Index Short Form, Child Behavior Checklist, Children Adaptive Behavior in Home Questionnaire, Children's Sleep Habits Questionnaire, Conners 3rd Edition- Parent Short Form, and Eyberg Child Behavior Inventory. Morgan and Keefe (2021) found a significant decrease in parental over-reactivity in parenting strategies following the implementation of The Behavioral Parent Training Program. While performance scores decreased, indicating a decrease in child behavior problems, this reduction did not reach statistical significance. Pachiti et al., (2023) found a statistically significant decrease in parenting stress, and increases in parental self-efficacy and parenting practices. Additionally, there was a significant decrease in inattention, impulsivity, and hyperactivity scores among the children. Amiri et al., (2023) found that Barkley's Parent Training Program was effective in reducing behavior problems in children with ADHD, specifically improving behavior at home and decreasing aggression at school. Mehri, et al., (2020) found that the intervention group experienced a significant improvement in total sleep scores and a significant decline in total sleep problems. Chesterfield, J.A., et al., (2021) reported a significant decrease in child problem behaviors, dysfunctional parenting, parental depression and parental stress at post-intervention as compared to the control group. For additional information regarding parent-involved behavioral interventions, see intervention 1 in Supplemental Table 1.

Mindfulness Interventions

There were four total studies that utilized parent-involved mindfulness interventions to examine their impact on child ADHD symptoms and other functional outcomes. Of the four studies, three were level 1B (Mah et al., 2021; Behbahani et al., 2018; Elzohairy et al., 2024). One study was level 2B (Amiri et al., 2022). Mindfulness interventions included mindful parent training, mindful child training, group sessions, and home learning. The outcome measures were a decrease in ADHD symptoms such as hyperactivity/impulsivity, inattention in children, improved emotional regulation, decreased stress in parents, and decreased negative parent-child interactions. Outcomes were measured with the ADHD Rating Scale IV (ADHD IV), Behavior Assessment System for Children-Second Edition (BASC-2), Conners Rating Scale, Parenting Stress Index-Short Form, Vanderbilt ADHD Diagnostic Parent Rating Form (VADPRS), and the Emotion Regulation Checklist (ERC). Results showed significant improvements from the use of parent-involved mindfulness interventions. Amiri et al. (2022) found a significant effect of mindful parent training on ADHD symptoms such as inattention and impulsivity in the experimental group. Behbahani et al. (2018) found that mindful parent training reduced negative interactions between parents and children and in child behaviors that were perceived as negative. Elzoiry et al. (2024) found significant improvements in child attention three months after mindfulness-based training. Mah et al. (2021) did not find a significant difference in ADHD symptoms between the intervention and control group. For additional information regarding parent-involved mindfulness interventions, see intervention 2 in Supplemental Table 1.

Cointervention Dyadic Interventions

A total of five studies examined the effect that dyadic interventions had on children with ADHD and their family or social environments. Out of the five studies, two were level 1B (Yang Dong et al., 2022; Smit et al., 2022), one was a level 2B (Hosseinnia et al., 2024), and two were level 3B (Wilkes-Gillan et al., 2016; Cordier et al., 2016). Across these studies, a range of outcome measures were used, including the Child Symptom Inventory (CSI-4), pragmatic observational measure, vocabulary and literacy assessments, the Test of Playfulness (ToP), Conner's comprehensive behavior rating scale, and the Child Behavior Checklist (CBCL). These assessments measured outcomes such as inattention, hyperactivity, pragmatic language, emotional regulation, peer relationships, social interaction, and caregiver education. The findings from these studies revealed that dyadic interventions, particularly those involving parents and teachers or parent facilitated peer engagement, were associated with improvements in children's behavioral and social functioning. Despite variability in intervention formats, the consistency in reported social and behavioral improvements across study designs lends support to the potential utility of dyadic interventions. Hosseinnia et al. (2024) found significant reductions in ADHD symptoms and increased caregiver knowledge, while Wilkes-Gillan et al. (2016) and Cordier et al. (2016) both reported improvements in social and pragmatic language skills among children with ADHD. Yang Dong et al. (2022) found that dialogic reading with siblings yielded greater expressive language gains than with parents, although both were effective. Smit et al. (2022) found that parent training helped reduce withdrawn and depressive behaviors but did not significantly affect positive affect or aggression. However, some aspects of emotional regulation, such as aggression and positive affect, showed limited responsiveness, indicating that dyadic interventions may need to be supplemented by other strategies for comprehensive impact. Despite these promising results, several studies noted limitations, including small sample sizes or the absence of control groups, which may affect the generalizability of the findings. For further details regarding the individual studies, refer to Intervention 3 in the Supplemental Table.

Cognitive- Based Interventions

A total of two studies utilized cognitive-based parent involved interventions to target functional outcomes for children with ADHD. Of the two studies included in this intervention approach, one was level 1B (Hahn-Markowitz et al., 2017) and the other was level 2B (Frisch et al., 2020). Both studies included education for parents regarding executive-functioning and strategies for daily functioning. Across these studies, a variety of measures were used to assess executive function and occupational participation. These measures included the BRIEF, COPM, and a two-item questionnaire developed by researchers. Results for these cognitive-based parent-based interventions showed significant improvements in children's functional outcomes. Frisch et al. (2020) found statistically significant improvements in executive functioning and clinically significant improvements in daily functioning in children with ADHD following the Parental Occupation Executive Training (POET) intervention, which uses occupational performance coaching and education to improve the children's executive functions and daily routine management. Hahn-Markowitz et al. (2017) found that the Cog-Fun intervention found significant improvements in executive functioning both immediately after the intervention and in the 3-month follow-up, in addition to reporting significant improvements in occupational participation for children with ADHD. Findings across both cognitive-based parent involved interventions appear to have a positive effect on improving executive functioning and daily routines. For additional details about the cognitive-based parent-involved interventions, refer to Intervention 4 in Supplemental Table 1.

Discussion and Implications for Practice

This RSR analyzed 16 articles supporting parent-involved interventions to promote functional outcomes in children with ADHD, focusing on cognitive, mindfulness, dyadic, and behavioral approaches. There is strong evidence that parent-involved cognitive interventions improve executive functioning in children with ADHD (Hahn-Markowitz et al., 2017; Frisch et al., 2020). Cognitive approaches, including Cog-Fun and POET, can be used by occupational therapists to improve executive functioning and enhance occupational participation in areas such as academics, play, and social engagement. Behavioral intervention such as the 1-2-3 magic program, Barkley's training, and structured parent education models, were shown to decrease symptoms of disruptive behaviors, increase parental self-efficacy, and improve overall home routines, showing the relevance of caregiver coaching and behavior management within the Occupational Therapy practice (Chesterfield et al., 2021; Mehri et. al. 2020; Amiri et al., 2023; Pachiti et al., 2023; Morgan & O'Keefe., 2021). There is moderate evidence that parent-involved mindfulness interventions reduce impulsivity, negative parent-child interactions, and problem behaviors as well as improve attention and emotional regulation (Behbahani, 2018; Amiri et al. 2020; Elzohairy et al., 2024). The evidence supports mindfulness-based interventions as useful tools for

occupational therapists to promote self-regulation, mental wellness and executive functioning in children with ADHD. Additionally, there is strong evidence that these interventions decrease overall ADHD symptomatology (Mah et al., 2021; Behbahani, 2018). Moderate evidence supports that parent-involved dyadic interventions improve language skills and listening comprehension and reduce withdrawn/depressive behaviors (Yang Dong et al., 2022; Cordier et al., 2016; Smit et al., 2022). Interventions like dialogic reading and parent-delivered play-based activities not only addressed language and social communication deficits but also promoted co-occupation and naturalistic learning within the child's natural environment However, there is low evidence that dyadic interventions improve empathy, social skills, and ADHD symptoms (Wilkes-Gillan et al., 2016; Hosseinnia et al., 2024). Parent training in behavioral management and/or medication and/or behavioral classroom interventions are the standard of care for the treatment of children with ADHD (CDC, 2024b). However, there is strong evidence that other parent-involved interventions, such as mindfulness, dyadic, and cognitive approaches, improve functional outcomes in children with ADHD. These interventions are applicable to the occupational therapy (OT) practice, supporting the use of holistic and family-centered approaches to address ADHD symptoms in children and improve participation in meaningful daily activities.

Limitations

This paper utilized an extensive and rigorous review process to eliminate bias, however, some limitations are still present. A notable limitation within our research process was the exclusive use of PubMed and CINAHL. While these platforms offer high-quality, evidence-based articles, only using two databases may have narrowed the scope of available studies and limited the diversity of perspectives included in our research articles. Another significant limitation within the research lies in the broad and inconsistent definition of parent involvement, which varies across the studies used. This made it challenging to compare the findings effectively. Additionally, within the studies used in the research, many studies failed to include comparisons to the standard of care. This caused limitations in evaluating whether the outcomes of the interventions offered significant improvements relative to the standard of care.

Conclusion

This rapid systematic review highlights the positive impact of parent-involved interventions on functional outcomes for children with ADHD. Strong evidence supports the effectiveness of behavioral, mindfulness, dyadic, and cognitive approaches in improving various domains such as executive functioning, emotional regulation, social participation, and daily routines. These findings show the importance of family centered care in occupational therapy and the benefits of implementing parent- involved approaches. Parent training not only supports improved child behavior and functioning but also enhances parental efficacy and reduces stress. Occupational therapists are uniquely positioned to incorporate these evidence-based strategies into practice by collaborating with families and delivering tailored interventions. Despite some limitations, including inconsistent definitions of parent involvement and limited comparison to standard care, the overall evidence underscores the benefit of incorporating parents into intervention strategies. Occupational therapists can use these approaches to deliver more effective, holistic care that addresses the real-life challenges faced by children with ADHD and their families.

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Supplemental Table 1:					
Author/Year	**Level of Evidence/Study Design**	**Participant & Inclusion Criteria**	**Intervention and Control Group**	**Outcome Measures**	**Results**
Intervention 1: Behavior Intervention					
Chesterfield et al., 2021 https://doi.org/10.1080/15295192.2020.1777783	**Level of evidence:** Level 1B **Study design:** RCT with a stratified random allocation	**Participants:** 57 **Inclusion criteria:** ADHD diagnosis Between 6-12 years old Not currently receiving behavior treatment Reported behavioral difficulties	**Intervention:** 1-2-3 Magic Parenting Program which is a brief behavioral parenting program designed for school-aged children with ADHD which focuses on teaching simple techniques to manage "difficult" behaviors, encourage positive behaviors and strengthen parent-child relationships. **Wait-list control group:** Received the parenting program after they completed their post-intervention questionnaires	**Outcome measures:** Eyberg Child Behavior Inventory Parent Stress Index-Short Form (4th ed) Conners 3rd Edition- Parent Short Form	**Results:** Reduced ADHD symptoms Parents reported fewer child difficult behaviors as problematic Less frequent child disruptive behaviors
Mehri et. al. 2020 https://doi.org/10.1016/j.apnu.2020.04.001	**Level of evidence:** Level 1B **Study design:** Parallel randomized control trial	**Participants:** 58 school aged children **Inclusion criteria:** Formal diagnosis of ADHD 6-12 years old Taking only methylphenidate	**Intervention:** Participants' parents underwent a 5-week parent training program **Control group:** Parents did not receive parent training, children continued taking medication and usual management	**Outcome measures:** Children's Sleep Habits Questionnaire (CSHQ) to look at bedtime resistance, sleep onset delay, sleep duration, sleep anxiety, night waking, parasomnias, sleep-disordered breathing, and daytime sleepiness	**Results:** Children in the intervention group experienced significant improvement in total sleep problems two months after the intervention Children in the intervention group

		medication for at least 6 months Fixed dose for last 30 days Having at least one sleep problem Intelligence quotient over 80 Living with at least one parent			showed significant decline in total sleep problems
Amiri et al., 2023 https://doi.org/10.30491/IJBS.2023.397040.1958	**Level of evidence:** Level 2B **Study design:** Quasi-experimental with pre and posttest measures and a control group	**Participants:** 30 **Inclusion criteria:** Participants had not previously participated in any behavioral training interventions Mother of the child had to be within 31-40 years old ADHD diagnosis had to categorized as combined type All children had to be from two-parent families	**Intervention:** Participants underwent a pre-test to assess the children's aggressive behavior and behavioral performance; parents received training consistently for 9 sessions **Control Group:** Participants underwent a pre-test to assess the children's aggressive behavior and behavioral performance; continued with daily routines	**Outcome measures:** Child Behavior Checklist Children Adaptive Behavior in Home Questionnaire	**Results:** The Barkley's parental training was effective in reducing behavior problems in children with ADHD, specifically their behavior at home and decreased aggression
Pachiti et al., 2023 https://doi.org/10.3390/bs13080691	**Level of evidence:** Level 1B	**Participants:** 16 families **Inclusion criteria:**	**Intervention:** **Group 1**: 9 families received parent training for 8 sessions each lasting 1.5-2 hours	**Outcome measures:** Parenting Stress Index Short Form	**Results:** Reduced parenting stress

	Study design: Randomized control trial with cross-over design	Child had a formal diagnosis of ADHD Child had a Full-Scale IQ equal to or above 80 Parents of child could understand and speak fluently the Greek language Child had not been diagnosed with a comorbid disorder or other concurrent difficulties that may interfere with task performance Child or parents had not previously participated in an intervention program based on a behavioral or cognitive – behavioral approach Child was not under any medication treatment for ADHD	**Group 2**: 7 families received child training for 16 sessions each lasting 1 hour the child training Following completion of initial group sessions, groups switched to complete the opposite training	Parenting Sense of Competence Scale ADHD Rating Scale-IV Parenting Styles and Dimensions Questionnaire-Short Version	Enhanced parental self-efficacy Increased employ of democratic parenting practices Decreased levels of inattention and impulsivity/ hyperactivity in children
Morgan & O'Keefe, 2021 https://doi.org/10.1080/24694193.2021.1933263	**Level of evidence:** Level 3B **Study design:** Quasi-experimental design with a	**Participants:** 8 **Inclusion criteria:** Participants had to be parents or guardians who have legal custody of a child	**Intervention:** The Behavioral parent training (BPT) program focused on parental education about ADHD, the importance of consistency in discipline versus punishment, the	**Outcome measures:** The parenting scale (PS) Vanderbilt ADHD diagnostic rating scale (VADRS) (Both parent and teacher versions)	**Results:** The BPT program led to a significant improvement in the parenting scale overall score, indicating better parenting strategies

	pre- and post-test	Child had to be ages 4-8 years old Child had to be presenting for an initial ADHD evaluation at the local private behavioral health (BH) practice.	origins of behaviors, and the use of role-playing to teach and demonstrate effective parenting strategies. **Control Group:** No mention of a control group; the study utilized a pre-posttest design with a convenience sample of parents who participated in the BPT program.		Significant decrease in the over reactivity factor scores on the parenting scale post-BPT Parent Vanderbilt symptom scores did not show a significant decrease post-BPT All participants had a decrease in Vanderbilt performance scores post-BPT, although this decrease did not reach statistical significance, qualitive data provided insights into barriers to participation, efficacy, and efficiency of the BPT program.
Intervention 2: Mindfulness Intervention					
Mah et al., 2021 https://doi.org/10.1177/1087054720925882	**Level of evidence:** Level 1B **Study design:** Randomized control trial	**Participants:** 63 **Inclusion criteria:** Ages 6-11 years old ADHD diagnosis per DSM-5 criteria	**Intervention**: Parents of children with ADHD attended group sessions (12 weekly sessions that were 2 hours in length). Parents learned formal and informal mindfulness techniques in addition to the behavior management techniques taught to the Standard Behavior Parent Training (SBPT) group. Parents participated in and	**Outcome measures:** ADHD Rating Scale IV (ADHD IV) measures child's inattentive and hyperactive symptoms Behavior Assessment System for Children-Second Edition (BASC-2) Parent Rating Scales to assess comorbid conditions such as anxiety, depression, and aggression	**Results:** Both groups showed significant differences in ADHD symptoms between pre- and post-intervention there was not a significant difference between groups regarding this outcome

			discussed a mindfulness exercise such as meditation **Control group:** The SBPT group also had 12 weekly group sessions lasting 2 hours. They learned behavior management techniques such as collaborative problem solving and limit setting Both group sessions involved a check-in and trouble shooting period at the start, a presentation on a new topic, and concluded with questions and home assignments		
Amiri et al., 2022 https://doi.org/10.26355/eurrev_202201_27759	**Level of evidence:** Level 2B **Design type:** Quasi-experimental	**Participants:** 24 **Inclusion criteria:** Score above 60 on Conner's Questionnaire Met diagnostic criteria for ADHD Single-parent and two-parent families In households with more than one child with ADHD	**Intervention:** Parents received 8 sessions of mindfulness training each lasting 90 minutes. The program introduced parents to concepts relating to mindfulness in parenting such as recognizing and modifying negative reactions to, self-appreciation and appreciation for the child, and using body awareness to communicate	**Outcome measures:** Conner's Rating Scale to assess ADHD in children between ages 3-17	**Results:** Mindful parent training was shown to have a significant effect on hyperactive/impulsive and inattentive symptom reduction when compared to the control group

		Children age 8-12 years old In elementary school			
Behbahani et al., 2018	**Level of evidence:** Level 1B **Study design:** Randomized control trial with 2 month follow up	**Participants:** 26 **Inclusion criteria:** ADHD diagnosis Children between 7-12 years old Child was receiving risperidone or Ritalin Mother had minimum education level of high school diploma Mother and child provided consent	**Intervention:** Child received pharmacotherapy with either risperidone or Ritalin. Mothers completed pretest, posttest, and follow-up questionnaires and participated in 8 weekly sessions of mindful parenting, with each session lasting 90 minutes **Control group:** Child received pharmacotherapy with either risperidone or Ritalin. Mothers completed the pretest, posttest, and follow-up questionnaires, but did not participate in the mindful parenting training	**Outcome measures:** Parenting Stress Index-Short Form	**Results:** Reduction in parenting stress, negative parent-child interactions, and children's problematic characteristics in the mindful parenting training group Significant improvement in ADHD symptoms in the experimental group
Elzohairy et al., 2024 https://doi.org/10.1016/j.apnu.2024.10.001	**Level of evidence** Level 1B **Study design:** Randomized control trial (RCT)	**Participants:** 50 **Inclusion criteria:** ADHD diagnosis Persistent pattern of inattention and hyperactivity-impulsivity that	**Intervention:** The intervention was a Mindfulness-Based Training (MBT) program consisting of five weekly 60-minute sessions for children with ADHD, designed to improve attention, impulsivity, and	**Outcome measures:** Vanderbilt ADHD diagnostic parent rating scale (VADPRS) The Emotion Regulation Checklist (ERC)	**Results:** MBT significantly improved attention in children with ADHD at the three-month follow-up. Impulsivity was reduced in the intervention group

		impedes social, academic, or occupational functioning in two or more settings (such as home or school) Children 6-12 years old.	emotional regulation through various mindfulness exercises and techniques. **Control group:** Participants in the control group received standard care for children with ADHD at the medical national institute. They were instructed not to engage in any additional interventions during the study period.		across all assessment points. The intervention led to significant improvement in emotional lability/negativity, emotional regulation and total emotion regulation immediately after the training.
Intervention 3: Dyadic Intervention					
Hosseinnia et al., 2024 https://doi.org/10.4103/jehp.jehp_1816_22	**Level of evidence**: Level 2B **Study design:** Quasi-experimental study with randomized control group before and after intervention	**Participants:** 72 **Inclusion criteria:** Children aged 6–12 years Confirmed diagnosis of ADHD Parents willing to participate and able to read and write Teachers with at least two years of teaching experience	**Interventions:** Parents and teachers of children with ADHD attended educational sessions (10 sessions for parents, 6 for teachers) focused on ADHD knowledge, behavior management, and strategies to improve children's attention and reduce and reduce hyperactivity **Control group:** consisted of similar participants, did not receive this intervention during the study but completed the same assessments and were offered the training afterward	**Outcome measures:** CSI-4 questionnaire (parent and teacher versions) Researcher made questionnaires	**Results:** Significant improvement in ADHD symptoms (inattention and hyperactivity) in the intervention group based on both parent and teacher reports. Significant increase in parent and teacher knowledge, attitude, and practicing regarding ADHD after intervention.

Cordier et al., 2016 https://doi.org/10.1111/1440-1630.12299	**Level of evidence:** Level 3B **Study design:** Pilot study with a pre-post design	**Participants:** 18 participants (9 pairs) **Inclusion criteria**: Formal diagnosis of ADHD Presence of current ADHD symptoms for children with ADHD Absence of ADHD symptoms for typically developing playmates	**Interventions:** Seven-week parent-delivered play-based program that involved weekly home-based modules, supported play-dates between children with ADHD and their typically developing peers, and 3 supplemental clinic visits, aimed at improving the pragmatic language skills of both groups **No control group**	**Outcome measures:** Pragmatic Observational Measure	**Results:** Improved pragmatic language skills in children with ADHD
Dong et al., 2022 https://doi.org/10.1037/dev0001466	**Level of evidence:** Level 1B **Study design:** Randomized control trial	**Participants:** 850 Chinese kindergarteners diagnosed with ADHD **Inclusion criteria:** Children aged around 5 ADHD diagnosis per diagnostic criteria Families with at least one older sibling in Grades 7 or 8 with no special educational needs	**Intervention:** PR-DR parent reading with Dialogic reading Parent read 12 narrative storybooks with their children using the Dialogic reading (DR) methods. Parents used prompts and interactive questioning based on the PEER and CROWD models. SR-DR (sibling reading with Dialogic reading) Older siblings read 12 narrative storybooks with the children using the Dialogic reading (DR) method, following the same PEER and CROWD method.	**Outcome measures:** Receptive vocabulary Expressive vocabulary Character reading Morphological awareness Phonological awareness Listening comprehension Reading interest	**Results:** Both Dialogic reading with parents and siblings enhanced the language skills and reading interest of ADHD children Dialogic reading with siblings showed greater improvements in expressive vocabulary, character reading, morphological awareness, and reading interest compared to dialogic reading with parents Dialogic reading with parents led to greater

			Control group: The control groups (PR-C and SR-C) read the same books but did not use the Dialogic Reading (DR) technique.		improvements in listening comprehension
Wilkes-Gillan et al., 2016 https://doi.org/10.3109/17518423.2014.948639	**Level of evidence:** Level 3B **Study design:** Small-scale uncontrolled pilot study	**Participants:** 7 pairs of children with ADHD and their typically developing playmates (14 total) **Inclusion criteria:** ADHD diagnosis Consistent with medication status throughout **For peer participants:** Parents and teachers reported no developmental concerns Had to be a peer or sibling who regularly interacted with children with ADHD	**Interventions:** Parents led interventions in the home. They read an assigned module each week for 6 weeks and watched a DVD with their child with ADHD. The parent would then facilitate a play session between the pair. Therapists led the pairs in 3 play sessions within the clinic setting, modeling desired social interactions for 20 minutes and spending 20 minutes discussing with the parent. Therapist also provided weekly consultations to parents over the phone **No Control Group**	**Outcome measures:** Test of Playfulness (ToP) measured playfulness and included empathy items that were specifically looked at in relation to outcomes Conner's Comprehensive Behavior Rating Scale tested for the presence and absence of ADHD symptoms during the screening process	**Results:** Children with ADHD showed significant improvement in empathy and social skills from pre-post intervention and from post-intervention to the follow-up
Smit et al., 2022 https://doi.org/10.1007/s10802-021-00818-9	**Level of evidence:** Level 1B **Study design:**	**Participants:** 172 families with children with ADHD **Inclusion criteria:**	**Interventions:** The experimental group received the Parent Friendship Coaching (PFC) Intervention. The intervention was group	**Outcome measures:** Child Affect: independent observers coded the ADHD child's affect when interacting with a peer for positive or negative affect	**Results:** Children in treatment group were shown to have reduced withdrawn/depressed behavior following the

	Randomized control trial	Met DSM-5 criteria for ADHD 6 or more inattention and/or hyperactivity/impulsivity symptoms Score of 3 or more on Strengths and Differences Questionnaire Peer Problems Subscale	coaching in the behavioral parent training model wit ha focus on helping the child learn to regulate their emotions in social situations. Parents were taught the desired emotion regulation skills, practiced the skills through role play, and strategized effective use of the skills **Control:** group parent education on ADHD, especially related socialization difficulties	Child Behavior Checklist (CBCL) and Teacher Report form were filled out at post treatment and followup to measure emotional difficulties such as depression/withdrawal and aggression in the child	study compared to control group. Treatment not found to have an effect on positive affect or aggressive behavior. Findings relating to bidirectional relationships between parent and child variables did not survive corrections
Intervention 4: Cognitive Intervention					
Frisch et al, 2020 https://doi.org/10.1080/01942638.2019.1640336	**Level of evidence:** Level 2B **Study design:** Wait-list Control Trial	**Participants:** 72 **Inclusion criteria:** Children who met the DSM-IV criteria for ADHD T-scores of at least 65 or more on the Conner Parent or Teacher Rating Scales	**Intervention:** 8 weekly face-to-face parent training sessions **Wait-list control group:** received intervention after 8-12 weeks	**Outcome Measures:** COPM BRIEF Two-item questionnaire designed by researchers	**Results:** Significant improvement in executive functioning in children with ADHD post POET intervention
Hahn-Markowitz et al., 2017 https://doi.org/10.5014/ajot.2017.022053	**Level of evidence:** Level 1B **Study design**: Randomized control trial/randomiz	**Participants:** 107 **Inclusion criteria:** Children age 7-10 In Grades 2nd -4th grade	**Intervention:** OTs conducted 12 weekly 1 hr sessions with the child and parent, that focused on learning executive functioning strategies through playful activities and applied	**Outcome Measures**: BRIEF COPM	**Results:** Significant improvements in executive functioning both immediately after intervention and after 3-month follow-up

	ed crossover trial	Enrolled in a typical school Stability in medication Executive dysfunction in daily life	them to functional goals deemed important by the parents. **Wait-list control group:** Received same intervention after 3 months.		Significant improvements in participation of ADLs, social participation, academic performance, and leisure activities