

## RESEARCH ARTICLE

# The impact of psychological theory on the treatment of Attention Deficit Hyperactivity Disorder (ADHD) in adults: A scoping review

Rebecca E. Champ<sup>1</sup>\*, Marios Adamou<sup>1‡</sup>, Barry Tolchard<sup>2‡</sup>

**1** Department of Nursing and Midwifery, School of Human and Health Sciences, University of Huddersfield, Huddersfield, United Kingdom, **2** School of Health and Life Sciences, Teeside University, Middlesbrough, United Kingdom

\* These authors contributed equally to this work.

‡ These authors also contributed equally to this work.

\* [Rebecca.Champ@hud.ac.uk](mailto:Rebecca.Champ@hud.ac.uk)



## OPEN ACCESS

**Citation:** Champ RE, Adamou M, Tolchard B (2021) The impact of psychological theory on the treatment of Attention Deficit Hyperactivity Disorder (ADHD) in adults: A scoping review. *PLoS ONE* 16(12): e0261247. <https://doi.org/10.1371/journal.pone.0261247>

**Editor:** Gerard Hutchinson, University of the West Indies at Saint Augustine, TRINIDAD AND TOBAGO

**Received:** May 21, 2021

**Accepted:** November 25, 2021

**Published:** December 21, 2021

**Peer Review History:** PLOS recognizes the benefits of transparency in the peer review process; therefore, we enable the publication of all of the content of peer review and author responses alongside final, published articles. The editorial history of this article is available here: <https://doi.org/10.1371/journal.pone.0261247>

**Copyright:** © 2021 Champ et al. This is an open access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Data Availability Statement:** All relevant data are within the paper and its [Supporting Information](#) files.

## Abstract

Psychological theory and interpretation of research are key elements influencing clinical treatment development and design in Attention Deficit Hyperactivity Disorder (ADHD). Research-based treatment recommendations primarily support Cognitive Behavioural Therapy (CBT), an extension of the cognitive behavioural theory, which promotes a deficit-focused characterisation of ADHD and prioritises symptom reduction and cognitive control of self-regulation as treatment outcomes. A wide variety of approaches have developed to improve ADHD outcomes in adults, and this review aimed to map the theoretical foundations of treatment design to understand their impact. A scoping review and analysis were performed on 221 documents to compare the theoretical influences in research, treatment approach, and theoretical citations. Results showed that despite variation in the application, current treatments characterise ADHD from a single paradigm of cognitive behavioural theory. A single theoretical perspective is limiting research for effective treatments for ADHD to address ongoing issues such as accommodating context variability and heterogeneity. Research into alternative theoretical characterisations of ADHD is recommended to provide treatment design opportunities to better understand and address symptoms.

## Introduction

The combination of psychological theory and interpretation of research have been highlighted as critical influencers guiding decision-making for clinical treatment design and development for Attention Deficit Hyperactivity Disorder (ADHD) [1, 2]. ADHD is a neurodevelopmental disorder of self-regulation with symptoms negatively affecting daily functioning at work and at home, with long-term impacts in academic, occupational, social and emotional areas of functioning [3–8]. Effective, long-term treatment outcomes benefit both the individual with ADHD and society as a whole as undiagnosed and untreated adults with ADHD may become an economic burden due to increased health care costs and decreased productivity at work [9, 10].

**Funding:** The author(s) received no specific funding for this work.

**Competing interests:** The authors have declared that no competing interests exist.

Russell Barkley [11] postulated the first unifying theory of ADHD, which places a core deficit of behavioural inhibition at the source of ADHD behaviours. Several theoretical models attribute additional and alternative cognitive sources for the development of ADHD symptoms [12–14]. While a variety of different interventions are available and the benefit of other forms of support is acknowledged (e.g. psychotherapy or coaching), only Cognitive Behavioural Therapy (CBT), Mindfulness, Dialectical Behavioural Therapy (DBT) and potentially Neuro-feedback have the most empirical support [15]. Results of non-pharmacological intervention studies suggest these interventions have a positive effect on core behavioural symptoms of ADHD (inattention, hyperactivity/impulsivity), particularly when compared to inactive control conditions [15, 16]. However, recent systematic reviews of non-pharmacological treatment highlight that different classes of intervention design take similar approaches; that heterogeneity in sample size, study design, quality and symptom outcome measurement makes meta-analysis difficult, and there is a high risk of bias [15–17]. Additionally, the National Institute for Health and Care Excellence (NICE) [18] only recommends interventions that match a similar protocol to medications: Randomised Controlled Trials (RCTs), primarily based in CBT [15], despite a growing wider evidence base.

It is hypothesised that much of current research for the characterisation of ADHD is based on a cognitive behavioural theoretical paradigm that does not account comprehensively for the broad spectrum of ADHD presentation [1, 19–24]. This paradigm is deficit-focused with primary treatment outcomes of symptom reduction and control of maladaptive behaviours. Recent research in psychology suggests that this may not be the best approach to improving mental health, and it may be necessary to develop positive psychological factors and emotions that cultivate health and wellbeing [25, 26]. This scoping review aims to map the evidence and understand the influence of current psychological theories on design and treatment recommendations in adult ADHD by answering the following questions:

1. Are characterisations of ADHD dominated by a cognitive behavioural paradigm?
2. Does that paradigm influence treatment design and outcomes?
3. Are there any alternative characterisations of ADHD that present a different perspective to the cognitive behavioural paradigm?

A broad approach was considered most effective to identify gaps in the literature, as data regarding supportive psychological theories would likely be identified in publications beyond specific study designs. To our knowledge, this is the first scoping review providing an overview of the theoretical characterisations of ADHD and their impact on available treatments.

## Methods

### Search strategy

The scoping review was carried out over three months: February, March and April 2020. The scoping review protocol was published on the Open Science Framework (<https://osf.io/>). Search design and criteria were formulated based on guidance and recommendations by Arksey & O'Malley [27], Colquhoun et al. [28], O'Brien et al. [29] and the Joanna Briggs Institute [30]. A starting timeframe from the publication of Barkley's [11] theory was selected as the foundation for current theoretical characterisations of ADHD. Papers were reviewed from multiple countries, including the United States, the United Kingdom, The Netherlands, Canada, Argentina, Brazil, Colombia, Iceland, Ireland, Portugal, Spain, Belgium, Germany, Switzerland, Finland, Sweden, Israel, Iran, China, Hong Kong, India and Australia, and multiple languages including English, Dutch, German, French, and Spanish.

**Table 1. Search strategy.**

Search Combinations	Resources
<b>Primary search string:</b>	<b>Specific Databases:</b>
Adult OR Student OR College OR University	CINHAL
AND	PsycInfo
ADHD OR Attention Deficit Hyperactivity Disorder	PubMed
AND	SCOPUS
Treat* OR Counsel* OR Manag*	
Filtered for Age: 19+	
<b>Combinations:</b>	
Treat* OR Counsel* OR Manag* NOT (child* OR Parent OR Drug OR stimulant OR pharma*)	
Therap* NOT child* OR Parent NOT Drug OR stimulant OR pharma*	
Coaching	

<https://doi.org/10.1371/journal.pone.0261247.t001>

Research evidence was identified by conducting searches across web-based databases with pre-determined search terms. Table 1 outlines the search terms and syntax used in primary and secondary searches.

Additional searches were in generic search engines Google and Google Scholar, and checks of references from guidance documents and systematic reviews for additional material. Once identified, these references were collected through additional database searches or a direct search in the specific journal or publication.

### Inclusion criteria

Titles and abstracts of materials were reviewed for eligibility. Materials were considered appropriate if they met the following criteria:

- Studies involving research on a pilot, efficacy, or applicability of a treatment intervention for adults with ADHD (19–65+, male and female)
- Systematic reviews of treatment literature or specific approaches to treatment for adults with ADHD
- Thesis, conference papers, or reports reviewing, presenting, or recommending treatment approaches for adults with ADHD
- Documents, articles, books, or consensus statements presenting guidance or recommendations for treatment for adults with ADHD

### Exclusion criteria

In addition to meeting the inclusion criteria, materials were excluded if they met one of the following exclusion criteria:

- Treatment approaches designed for a specific subset of participants (couples, military, substance abuse)
- Treatment approaches designed to treat specific comorbidities (Autism, Bi-polar, Learning Disabilities, Tourette's, Oppositional Defiant Disorder, Personality Disorder, Traumatic Brain Injury)

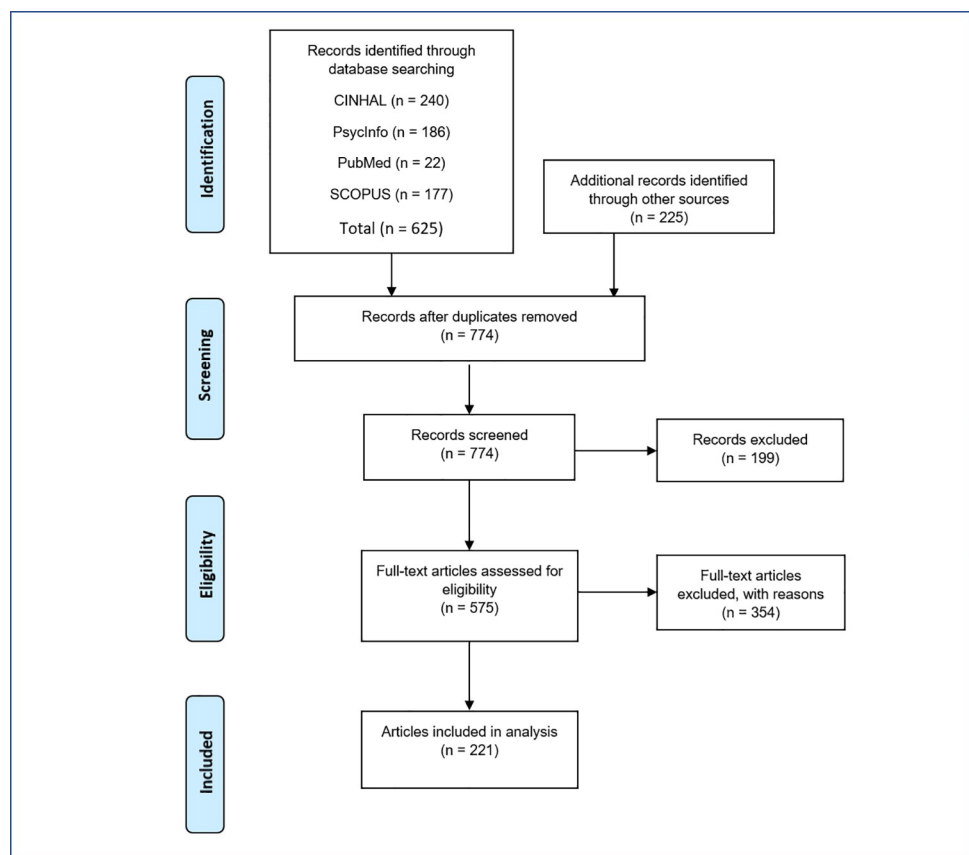
- Treatment approaches designed for the inclusion of younger age groups (children, adolescents) or their parents
- Materials summarising and updating recent developments in the field of treatment for adult ADHD (general practice journals, nursing practice journals, medical student journals)
- Characterisations of adult ADHD that were not empirically researched

A large body of literature has been published over the years which present different characterisations of adult ADHD and subsequent recommendations for treatment. Predominantly based in the US, these biopsychosocial models range from origin theories of genetic strengths [31], diversity [32] and developmental impairment of the prefrontal cortex due to issues with attachment and trauma [33], to identifying multiple presentations of ADHD diagnosed individually with SPECT imaging [34]. While these models do present alternative characterisations of ADHD, they are not empirically researched and therefore will be excluded from this review.

The following PRISMA flowchart (Fig 1) presents the search process details, including the number of articles located, those eliminated and those included in the final analysis.

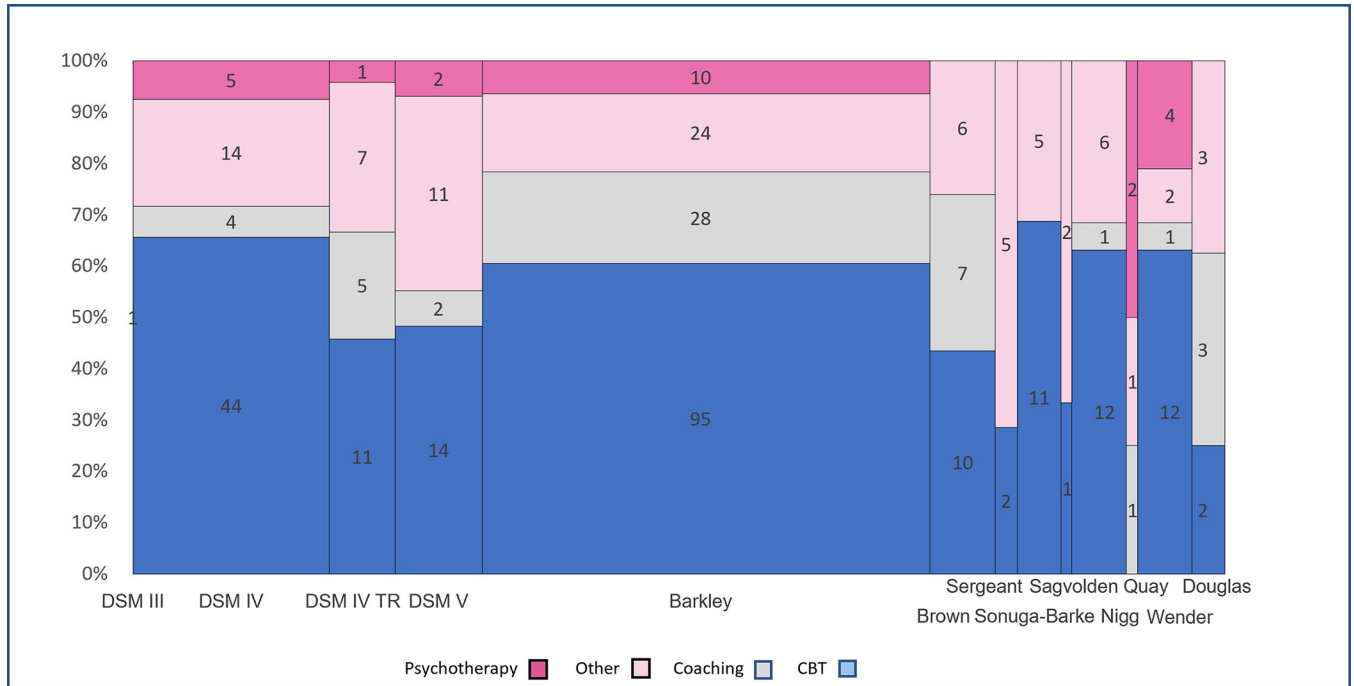
## Results and analysis

The 221 articles were subdivided into the following categories according to their primary content: Cognitive Behavioural Therapy (122), Coaching (36), Psychotherapy (16), and Other



**Fig 1. Flowchart of scoping review: Characterisation of adult ADHD.**

<https://doi.org/10.1371/journal.pone.0261247.g001>



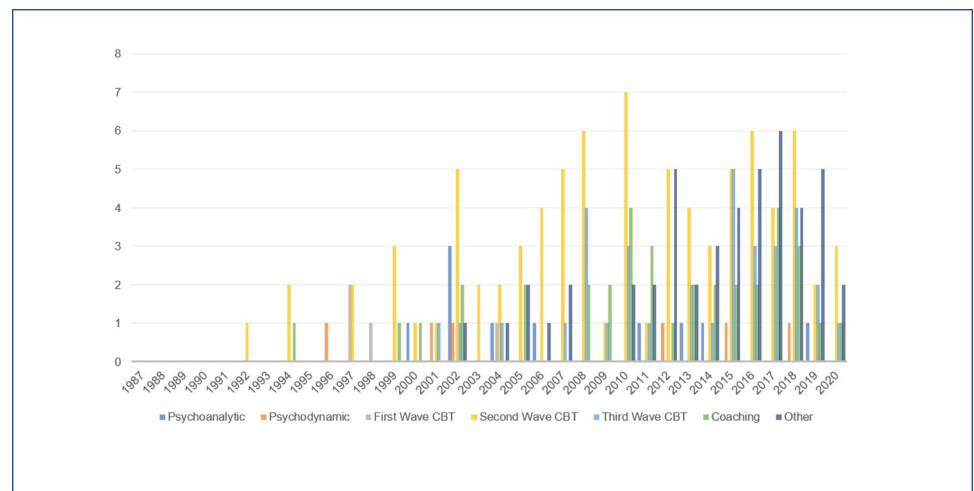
**Fig 2. ADHD characterisations cited in intervention category.**

<https://doi.org/10.1371/journal.pone.0261247.g002>

(47). All articles were assessed for quality against the relevant Critical Appraisals Skills Programme (CASP) checklists. Results summary of the ADHD characterisation cited for each intervention category is displayed in a mosaic plot (Fig 2).

An overview of interventions published by year is displayed in a column chart (Fig 3).

Due to the number and variety of materials, a narrative analysis was performed to review the publications' composition. Systematic reviews were also analysed separately to see if any review of the characterisation of ADHD had been completed previously.



**Fig 3. ADHD interventions published by year.**

<https://doi.org/10.1371/journal.pone.0261247.g003>

## Systematic reviews

Over the years, several systematic reviews of treatments for adult ADHD have been published. Searches were undertaken through Joanna Briggs Institute Evidence Synthesis, The Cochrane Database of Systematic Reviews, and the Campbell Library show some of these reviews are specific to the efficacy of a particular intervention approach, such as psychodynamic therapy [35], homoeopathy [36], Cognitive Behavioural Therapy (CBT) [37–41], Mindfulness [42, 43], and Meditation [44, 45]. Others have been focused on efficacy [2, 15, 16, 46–48], long term outcomes [10, 49], or guidance [50]. Only one systematic review investigated the characterisation of adult ADHD but failed to find evidence of neurocognitive dysfunction as a predictor of persistence [51]. Interestingly, one systematic review investigated how adults with ADHD experience and manage their symptoms [52]. Therefore, it seems that no recent attempt has reviewed the psychological theories for the characterisation of adult ADHD.

## Data extraction

Articles were reviewed, and data extracted into categorised excel spreadsheets for comparison. Each document was examined for the following criteria:

1. Date
2. Authors
3. Research Purpose/Outcome
4. Treatment Approach
5. ADHD Characterisation
6. ADHD Theory

## Intervention analysis

Research studies and guidance documents present treatment approaches in various environments, contexts and skill levels of delivery. The following interventions present a wide range of delivery in clinical and non-clinical environments; therapeutic, academic, and social contexts; and professionals including psychiatrists, clinical psychologists, nurses, occupational therapists, psychotherapists, as well as counsellors, coaches, and mentors.

**Cognitive Behavioural Therapy (CBT).** Due to the involvement of cognitive behavioural theory in establishing the characterisation of ADHD, the bulk of research in the field has used this intervention model. While recommended as the primary treatment modality, treatment goals and methodologies have changed over time. Due to this shift in focus, some early research references non-empirical anecdotal work. This analysis will use the delineation of “waves” as seen in the current theoretical literature to demonstrate these changes [53] ([S1 Appendix](#)).

*First wave: Behaviourism.* Before 1990, ADHD was still considered a disorder of childhood. Although considerable research exists regarding “first wave” treatments in children, the few approaches developed for adults apply pure behavioural theory and techniques. A case study of three subjects focused on improving attentional behaviour in psychiatric patients [54], and the design utilises operant theory and models used for brain injury [55]. Guidance documents for teachers, parents and counsellors [56] and psychotherapists [57] highlight the importance of behavioural skill development. The conceptualisation of ADHD in these treatment models is a disorder of attention [54] and a neurobiological disorder of self-regulation, executive

function deficits and disinhibition [56, 57]. Burgess et al. [54] exemplify the transition of the conceptualisation of attentional deficits in ADHD from mental illness to mental disorder.

The therapist's role in these models is to assist the client in learning and practising practical behavioural strategies for task attention, organisation, listening and scheduling, and planning and organising daily activities. Treatment designs are varied, with only one specifying weekly sessions from 6–10 weeks [54]. Characterisation of ADHD aetiology highlight issues with inability to maintain vigilance (attention deficit) and distractibility [54], self-regulation, impaired inhibition, developmental delay, and deficits in executive function, referencing Barkley [56, 57].

*Rational Emotive Behaviour Therapy (REBT)*. A single case study for ADHD specifically used REBT [58]. REBT approaches ADHD as a combination of neurobiological deficits [59] and developed secondary psychological personality disorders. Failure to develop cognitive structures leads to a lack of connection between thoughts, emotions and feelings, leading to deeply held distorted convictions and beliefs. The therapist's role in this model is to assist the individual to dispute evaluative cognitions (“musts”) to develop a more rational philosophical orientation to the world. The approach incorporates independent “experiments” by clients outside of therapy, problem-solving methodology, and gentle introduction of rational self-statements for clients who lack the cognitive sophistication to engage in disputing of irrational beliefs [58, p. 95]. Treatment design has a developmental and longitudinal focus, in this case eight years. Characterisation of ADHD is described as DSM-IV core symptoms of attentional difficulties, impulsivity and hyperactivity [60] and references both Douglas's [61] cognitive processing deficit model and Barkley's [59] model of response inhibition and executive function deficits contributing to deficient self-regulation, impaired cross-temporal organisation of behaviour, and diminished social effectiveness and adaptation.

*Second wave: Cognitive and cognitive behavioural therapy model*. Cognitive and Cognitive Behavioural approaches are the primary and recommended treatment for working with ADHD and therefore make up the bulk of studies reviewed for this analysis. Considered “second wave” cognitive behavioural therapies, they consist of systematic reviews [2, 37, 38, 41], randomised controlled trials (RCT) [62–80], group interventions [81–87], individual interventions [88–90], quantitative analysis [91], qualitative analysis [92], a cohort study [93], case-control studies [69, 94–98], single case studies [99–102], multiple case studies [103–106], and psychotherapeutic treatment guidance [8, 106–138]. Many of these studies deliver CBT as a standalone intervention, however multimodal treatment is recommended, and several treatment models include individual coaching or mentoring support alongside or in between CBT sessions [57, 72, 77, 86, 103, 112, 127, 131, 137, 139]. One intervention also includes hypnosis and CBT [140].

Second wave interventions for ADHD recognise the neurobiological deficits as specific to the disorder and not brain injury. While they stress there is no “cure” for ADHD and the literature is clear that ADHD does not arise from distorted cognitions, cognitive treatment models focus primarily on improving, strengthening, or retraining cognitive abilities to increase awareness of behaviour and behavioural control. Early research identified cognitive distortions and maladaptive strategies and beliefs as interfering with skills acquisition and therefore needed support [104, 136]. Further research shifted this view slightly to perceive the development of a negative self-concept as the core issue for maladaptive schema or “secondary symptoms” of stress, anxiety, depression, and chronic perceived failure attributed to a history of unachieved potential and negative feedback resulting from a lack of recognition of the disorder. [122, 141, 142]. Aims of treatment reduce deficit-based symptoms, develop environmental restructuring and accommodations, improve self-esteem and negative self-concept through disorder psychoeducation, and increase confidence in capabilities through supported skills



practice and repetition. Approaches vary widely, including cognitive rehabilitation, cognitive and metacognitive remediation, and cognitive restructuring. However, most treatment approaches in this area are defined as Cognitive Behavioural Therapy (CBT) (S1 Appendix).

The therapists' role in these models is more a "partner", "expert teacher-motivator" [122] and collaborator than the traditional medical expert role [117, 121, 129]. Originally defined by Hallowell & Ratey [143] as "coaching", therapists are encouraged to be active and directive in providing structure and redirection to goals or session topics [83, 87, 101, 108, 129, 135, 137, 144]. Failure to initiate behavioural changes or maintain new habits and strategies, or "procrastivity", is attributed to motivational problems due to the nature of the disorder [8, 108, 121, 145]. CBT for ADHD identifies the ADHD client's difficulty with delayed gratification and generation of positive emotions as the reason for lack of engagement or "Coping Drift", where individuals stop implementing the skills taught in treatment [121, 145]. Professionals are cautioned that repetition is key, and strategies must be reinforced, or relapse is likely. Therefore relapse prevention is included in practice as well as model design [8, 70, 71, 74, 83, 86, 93, 94, 108, 121, 126, 136, 145, 146]. Recommendations for resistance or avoidance of aversive emotional states is to provide therapist support to develop tolerance [107, 122, 135], reframe past experiences [112, 128, 147], and build resilience when encountering setbacks [8, 111, 118, 137, 138, 146]. Treatment designs are limited in length, either by the number of sessions (3 to 16) or by relevance (academic year) except for single case studies [99–102, 104]. Intervention delivery methods vary from individual or group therapy and didactic teaching with therapeutic support to a computerised program and self-help manuals (S1 Appendix).

Characterisation of ADHD and aetiology highlight issues with attentional and behavioural control (hyperactivity, impulsivity, disorganisation) initially, but broadens to give a higher priority to executive dysfunction deficits, motivation and sustained attention, issues with emotional control and self-regulation. Guidance documents definitions of ADHD are often cited: of the 84 papers in this Second Wave analysis, 29 reference DSM-IV [60], seven reference DSM-IV-TR [148], and eight reference DSM-V [149]. Several studies reference alternative characterisations of ADHD, such as similarity to brain injury [117] and Brown's Executive Function model [83, 94]. However, Barkley is cited in 70 documents.

*Third Wave: Mindfulness and acceptance.* Third Wave cognitive behavioural interventions take a different treatment approach to traditional CBT. While they are similar in the practical application of behavioural techniques, they differ in their theoretical approach and the focus on cognitive change. Third-wave approaches explore context: the relationship between a person's thoughts and emotions rather than content alone. This relationship includes a more holistic perspective of health beyond the reduction of disorders [53]. Therefore, this analysis will review them separately. These approaches include Metacognitive Therapy (MCT), Dialectical Behavioural Therapy (DBT), and Mindfulness Cognitive Behavioural Therapy (MCBT).

*Metacognitive Therapy (MC).* Four documents used a metacognitive approach (MC), divided into group metacognitive therapy [5, 76, 150] and metacognitive remedial psychotherapeutic guidance [151]. Metacognitive interventions conceptualise ADHD as neurobiological dysfunction in the corticostriatal pathways, displayed as deficits in executive functions [151]. MC highlights the importance of awareness of cognitions or thinking about thinking to strengthen executive functions to enhance functioning and improve self-control. Borrowing from the psychoanalytic frame [152], treatment of this hybrid model aims to develop an "observing ego" or self-awareness, increasing the ability to be conscious of maladaptive thoughts and behaviours and confront them via self-analysis. The therapist's role is to focus on cognitive and behavioural aspects of treatment and only address motivational or unconscious elements if they remain unexplained by neurobehavioural origins. Individual treatment plans are designed on a case-by-case basis to capture the individual's unique problems and strengths.



Analysis of authentic and emotionally charged experiences facilitates self-awareness using metaphoric problem identification, followed by strategy design and modification [151]. In group therapy, the therapist acts as an educator and facilitator, assisting with goal identification, the leading theme focused or problem assessment discussion, and offering support and encouragement [76]. Characterisation of ADHD focuses primarily on executive function deficits, followed by inattention and memory. This focus is reflected practically in treatment design as hyperactivity/impulsivity is considered less prevalent in adults [76]. Barkley is a primary citation in all four documents.

*Dialectical Behavioural Therapy (DBT).* Ten studies identified an adapted model of Dialectical Behavioural Therapy (DBT) for ADHD. These consist of randomised controlled trials [21, 153–155], a pragmatic open study [156], and group interventions [157–161]. This treatment model recognises ADHD neurobiological deficits but is grounded in a phenomenological conceptualisation, perceiving the nature of ADHD as a personality disorder. This conceptualisation is supported by similarities in symptoms and the positive response to the treatment of ADHD with comorbid Borderline Personality Disorder (BPD) [158]. Linehan [162] characterises BPD as a disorder of self-regulation from biological irregularities combined with dysfunctional environments, including their interaction and transaction. Experiences of invalidating environments impair childhood ability to learn to label experiences and emotions, modulate emotional arousal, tolerate distress, or form realistic goals and expectations, resulting in a child who invalidates their own experiences, generating a lack of self-trust. The adapted model is presented in group format of 13 weeks of 2-hour sessions. The design prioritises ADHD symptom-oriented modules, highlights non-empirically researched resources of ADHD [163], and includes DBT “mindfulness” training explicitly. The therapist’s role in the DBT adapted model for ADHD supports treatment aims of learning to “control ADHD—instead of being controlled by ADHD” through psychoeducation and provision of session structure and flexibility for individuals. A key therapist practice adopted from DBT is the dialectical balance between validating symptoms, aiming for a stabilising effect and encouragement of motivation, and skills training for behavioural change [158]. These models characterise ADHD as a deficit of attention and emotional control with hyperactive and impulsive behaviour, but later papers highlight issues with executive function and self-regulation [157]. Four studies cite Wender [164] as diagnostic criteria [153, 158–160], two studies cite DSM-IV [154, 155], and four studies cite Barkley specifically [21, 156, 157, 161].

*Mindfulness.* Twenty-two documents included mindfulness in treatment options for ADHD. These included systematic reviews [42, 165–167], randomised controlled trials [168–174], a pragmatic open study [156], group interventions [98, 175, 176], a case-control study [177], a multiple case study [178], and psychotherapeutic guidance [8, 179–182]. Only two studies presented mindfulness treatment alone [98, 156]. In Edell et al. [156], mindfulness was used as a comparator to DBT.

Mindfulness-based approaches conceptualise ADHD as a neurobiological disorder of self-regulation with deficits in executive function. Issues with sustained and selective attention are addressed by mindfulness meditation, which is presented as a self-regulatory practice recognised as mental training to strengthen and improve regulation of attention, emotions and brain function [167, 175, 177, 181]. The therapist’s role is primarily to introduce and support developing the new skill set of “mindful awareness” or cognitive defusion to facilitate the ability to decrease emotional responses while continuing to act [8]. Interestingly, Zylowska’s [175, 176] Mindfulness-Based Cognitive Therapy treatment model includes within its psychoeducation a characterisation of ADHD as a “neurobiological difference” with both evolutionary non-adaptive and potentially adaptive aspects [183–185]. However, within the treatment approach, the ADHD characterisation remains based on cognitive behavioural theory.

Treatment is in a group format, and length varies from 8 to 12 weeks of 2 to 3-hour sessions. The characterisation is reasonably consistent across this group, focusing primarily on poor sustained attention, inhibition and emotional dysregulation attributed to executive dysfunction, with one study highlighting impairments in performance monitoring [173]. Two papers cite DSM IV [42, 168], two cite DSM V [167, 170], and sixteen cite Barkley specifically [8, 98, 156, 165, 166, 169, 171–173, 175, 176–180, 182].

**Coaching.** Thirty-six documents presented coaching as a beneficial intervention for ADHD. These include a systematic review [186], a randomised controlled trial [187], individual interventions [188–199], qualitative studies [200–204], quantitative studies [205–207], and psychotherapeutic guidance [118, 143, 208–218]. It is important to note that nineteen studies were conducted at university for students, and therefore have academic goal achievement as a focus [187–195, 197–199, 201, 204, 206, 208, 212].

The term “coaching therapy” was coined by Hallowell and Ratey [143] to highlight the need for a therapist to take a more “active, encouraging role” with ADHD patients. The role of the “therapist-coach” was to provide a structuring force, maintaining focus and reminding patients of goals and objectives through directive interaction, as opposed to open-ended psychoanalysis. ADHD Coaching has since developed into an independent modality, which can be delivered alone or as part of a multi-modal approach. The ADHD Coaches Organisation (ACO) defines ADHD Coaching as a blending of three elements: Life Coaching, Skills Coaching, and Education [218]. Life coaching separates ADHD Coaching from therapy by highlighting the therapist-client relationship’s collaborative nature, where the coach supports client self-awareness and achievement of self-identified goals, providing structure and accountability as needed. The client is viewed as a creative and resourceful expert with individual strengths which are leveraged in skills coaching to design systems and strategies to strengthen clients’ ability to manage daily life. Education is provided through relevant ADHD research and tools, as requested by the client or as needed.

Conceptualisations of ADHD within coaching models focus almost exclusively on working with neurobiological deficits in executive function, with the primary treatment aim to set and achieve goals and develop skill sets to support practical day to day management. Some models even define themselves specifically as “Executive Function Coaching” [191, 195, 198, 204, 206, 208]. However, some models highlight ADHD Coaching as based on or similar to CBT [186, 196, 199, 208]. The role of the coach is to support clients to improve self-regulation, defined as the ability to persist in goal-directed behaviour through time [204, 209], by modelling cognitive strategies, practising non-judgement, offering pragmatic support and guidance, and holding clients accountable by reflection in session or monitoring progress via between session check-ins. Negative emotions are addressed as barriers to goal achievement and confidence, but models are specific that ADHD coaching is practical [186], dealing with “what, when and how—never why” [213].

Six documents mention self-determination models as part of a wider ADHD Coaching treatment model [190, 191, 194, 195, 204, 206]. These are functional theory models designed to assist students, particularly those with learning disabilities, to develop internal or dispositional characteristics of self-determined behaviour and goal acquisition [219–221]. Field & Hoffman’s model [221] defines self-determination as the ability to define and achieve goals grounded in knowing and valuing oneself, which can be supported or thwarted by internal variables and environmental factors. The model specifically focuses on internal controllable variables to assist individuals to adapt to environments with unpredictable support. The core theory is that to be self-determined, one must develop internal awareness and the skills and strength to act on this internal foundation. The model has five major components:

- “Know Yourself”: Increase awareness of one’s preferences, strengths, weaknesses and needs by “dreaming” or overcoming barriers in socialised expectations for individuals with disabilities that limit options and perceptions of self-efficacy, building on a foundation for self-determined decision making.
- “Value Yourself”: Develop affective variables of self-esteem, including identifying strengths in areas commonly perceived as weakness, supporting the self-acceptance of disability and motivation for self-advocacy, increasing the ability to be self-determined.
- Plan: Learn planning skills and visual rehearsal of creative and effective actions for short-range steps leading to long term goals.
- Act: Awareness of how to assertively communicate goals, desires and intentions to others and access relevant resources. Understanding persistence, negotiation, and conflict resolution around risk-taking and barriers that may result from taking action.
- Experience Outcomes and Learn: Learn skills in evaluation of progress based on experience of change and comparison to expected outcomes. Recognition and celebration of successes crystallises the self-determination process.

Wehmeyer et al.’s model [219, 222] is a teaching model to help students become causal agents. Based on cognitive behavioural theory [223, 224], social cognitive theory [225] and research in self-management and self-control [226], this model defines self-determination as the abilities necessary to act as one’s primary causal agent and make choices and decisions about the quality of life free from external influence and interference [227]. Developed from a model designed to teach students decision making, independent performance, self-evaluation, and adjustment skills, the updated model includes defining those who are self-determined to persistently regulate problem-solving to meet self-directed personal goals using student-directed learning strategies [219]. This ability is developed through a learned problem-solving sequence of thoughts and actions to reduce the discrepancy between what students want or need and what they have or know. The sequence requires the students to 1) identify the problem; 2) identify potential solutions; 3) identify barriers to solving the problem; and 4) identify consequences to each solution, thereby enabling the student to regulate problem-solving by setting goals to meet needs, constructing plans to meet goals, and adjusting actions to complete plans [219]. A comprehensive combined curriculum of these frameworks was later developed [220]. While they provide support for client autonomy and causal agency within the design of these ADHD Coaching models, these models prioritise goal setting and identification as regulators for human behaviour and recommend student-directed learning strategies based on operant psychology, applied behavioural analysis and positive reinforcement techniques. Thus, treatment approaches for ADHD remain based on cognitive behavioural theory.

Treatment approaches in ADHD Coaching models are primarily cognitive behavioural, including reframing negative self-talk [228], continuous reinforcement [189, 209], implementing rewards and consequences [188, 189, 192, 196, 212], and between-session assignments [192, 196, 209, 217]. These models focus on the characterisation of ADHD as deficits in executive function relating to goal-directed behaviour, disorganisation and planning, motivation, and ultimately self-regulation. Citations for characterisation in ADHD Coaching models include one referencing DSM IV [211], three reference DSM-IV-TR [191, 202, 214], one reference to Brown’s Executive Function Model [195], and twenty-eight reference Barkley specifically [118, 128, 143, 186, 188, 189, 191–194, 196–201, 203–207, 209, 212, 214–218].

**Other interventions.** Fourty-seven documents describe non-pharmacological interventions not based on psychotherapy. These include Neurofeedback, Transcranial Stimulation,

Hypnotherapy, Light Therapy, Computer-Based, Mentoring, Self-Monitoring, Binaural Beat Auditory Stimulation, and Movement-related interventions.

*Neurofeedback.* Twelve documents explored Neurofeedback as an intervention for ADHD. These include randomised controlled trials [229–231], individual interventions [232, 233], case-control studies [234, 235], a single case study [236], and treatment guidance [118, 237–239]. Neurofeedback (NF) treatment models focus heavily on neurocognitive deficits as being the origin of ADHD behaviours. The research uses Electroencephalography (EEG) measures to study the correspondences between intracranial electrical currents and responding voltages on the scalp. These measures indicate aspects of brain electrical function and processing, such as the electrical activity of various brain regions and their response to stimuli during cognitive tasks. EEG activity is quantified by computation of amplitude and power values for specific frequency bands of activity, source localization, and brain electrical activity mapping. Frequency refers to the number of oscillations, or waveforms, within a given time period. Analysis of waveforms, or a mixture of frequency bands, is a relational and complex process of examining frequency bands associated with both regions of the brain and cognitive or behavioural characteristics.

Characterisations of ADHD are presented as disturbances in cortical arousal, executive function, and self-regulation. Theta/beta and theta/alpha waveform ratios (TBR) are considered a measure of differences in excess, slow-wave activity and epileptiform spike and wave activity [240], interpreted as abnormal brain processes indicating cortical under arousal, insufficient inhibitory control, and maturational delay in ADHD [241]; however recent studies have challenged TBR as a marker for ADHD diagnosis [235]. Sensory-motor rhythm (SMR) or low beta waveform ratios are thought to indicate cortical hypo-arousal, interpreted as deficiencies in the early stages of information processing [230]. Decreased contingent negative variation (CNV), a steady, slow, negative-going waveform associated with cognitive energy in anticipation of task performance, is considered indicative of dysfunctional regulation of energetical resources in ADHD [234].

Based on research in children, two treatment approaches reflect changes in the conceptualisation of ADHD and, therefore, treatment aims. Traditionally, the focus of treatment has been based on a “conditioning and repair model” [242]. Treatment aims to address dysfunctions and see behavioural improvement and remediation of symptoms following NF application [243]. Skill acquisition and learning are implicit, automatic, and unconscious. Changes in activity indicate positive results: the ability to decrease slow-wave activity (theta) and/or increase fast wave EEG activity (beta) should correlate with symptom improvement; or modulation of slow cortical potentials (SCP), changes of cortical electrical activity, indicate improved cortical regulatory processes [244]. The role of the therapist is to act as a model for affect regulation [236] as well as use behavioural principles such as operant conditioning (i.e., positive reinforcement) in the training process resulting in normalisation and stable change in resting EEG, or “EEG trait” [245], and behaviour [231, 233, 234].

More recently, the NF treatment focus has developed into a “skills acquisition model” [242]. Rather than simply improving neuropsychological deficits, it is thought that NF may be used as a tool for enhancing or optimising specific cognitive or attentional states [246, 247]. This model recognises the bio-psycho-social model of neurodevelopmental disorders, characterising ADHD as impairments in attention, executive functions and self-regulation [229, 230]. In this model, self-regulation, or neuro-regulation, is defined as explicit learning of controlled cognitive processes of cortical regulation evidenced by normalised shifts in EEG amplitudes [242, 248, 249]. Performance optimisation is evidenced by improved skill in changing the “EEG state” via self-initiated effort during task performance [243, 250]. The therapist’s role is to use cognitive behavioural therapy elements such as positive feedback and coaching and

operant procedures as active support within treatment sessions to enhance self-efficacy and self-confidence to support neuro-regulation [244, 251]. Citations for characterisation of ADHD in NF models include two citations for DSM-IV-TR [231, 238], two for DSM -V [232, 233], one for Sonuga-Barke's Delay Aversion Model [237], three for Sergeant's Cognitive-Energic Model [230, 234, 237], and four citations for Barkley [118, 229, 237, 239].

*Transcranial stimulation.* Four documents present Transcranial Stimulation as a treatment approach for ADHD. These include a systematic review [252], two randomised controlled trials of Transcranial Direct Stimulation (tDCS) [253, 254], and a randomised controlled trial of Transcranial Magnetic Stimulation (rTMS) [255]. Both forms of transcranial stimulation conceptualise ADHD as a neurobiological disorder with deficits in executive functions, including attention, working memory, impulsivity, and inhibitory control. The treatment aims to increase cortical excitability in the area of stimulation, leading to improved neuropsychological and cognitive functions.

Treatment approaches are non-invasive but differ in their application. Transcranial Magnetic Stimulation uses a coil placed on the subjects head to deliver brief, intense pulses of current (up to 50 Hz) to generate a sizeable electromagnetic induction field initiating neurotransmitter release in the cortex and subcortical white matter of the brain [255, 256]. Transcranial Direct Current Stimulation uses conductive sponge electrodes applied to the scalp in specific locations to deliver a weak electrical current (1–2 mA or milliamps) for up to 20 minutes. It is hypothesised that the electrical current changes the polarisation of the neurons, affecting their average level of discharge [253, 254, 256]. Multiple treatments are administered daily for 3–4 weeks. Protocols suggest two applications of stimulation: “online”, or while a patient is completing a task, or “offline” where the treatment is applied before or without specific targeted tasks. Citations for characterisation of ADHD in these models include DSM-IV [252], DSM-IV-TR [254], DSM V [255] and Barkley [253].

*Hypnotherapy.* Two RCTs examined hypnotherapy as a treatment approach for ADHD [74, 257]. These studies conceptualise ADHD as a developmental neurobiological disability with deficits in attention, issues with hyperactivity/impulsivity and problems in executive function, including processing speed, regulating alertness, modulating emotions, and utilizing memory. Treatment aims to improve symptoms, mood, quality of life and cognitive performance. Treatment design is based on symptoms outlined in the DSM-IV and Brown's Executive Dysfunction Model [258]. The therapist's role was to follow a semi-structured manual to review the previous session, present the theme for the current session, perform induction and guided hypnotherapy with a post-hypnotic suggestion, and lead discussion. Treatment length was ten weekly sessions of 40 to 60 minutes. Citations for characterisation of ADHD were the DSM-IV [257] and Brown's Executive Dysfunction Model [74].

*Light therapy.* Five documents present light therapy as a treatment approach for ADHD: a systematic review [259], an individual intervention [260], a quantitative study [261], a literature review [262], and treatment guidance [263]. These documents conceptualise ADHD as a neuropsychiatric disorder with primary symptoms of impulsivity, inattention, and hyperactivity impacted by mood regulation difficulties, maintaining arousal and sleep disturbances that contribute to pathophysiology. This conceptualisation is supported by links between ADHD, seasonal affective disorder (SAD) and circadian rhythms and highlighted by similarities in symptoms between sleep deprivation and ADHD [261, 263]. Research indicates abnormalities in circadian related physiological measures such as heart rate increase relevant to autonomic function, dysregulation in melatonin rhythm leading to delays in melatonin onset, which may affect the modulation of the sleep/wake cycle [263, 264], as well as some evidence of low cortisol impacting wakening times [259]. Also, a later diurnal preference, or evening chronotype, is highly prevalent in the ADHD population. Its association with shorter night sleep periods is



believed to generate sleep debt, delay the sleep phase, and exacerbate symptoms or potentially play a causal role in ADHD symptoms [262, 263].

Light Therapy (LT) treatment aims to assist with phase-shifting abnormal circadian rhythms through light exposure to achieve sleep onset to improve alignment with work, academic, or social norms. Treatment outcomes are improved sleep and improved ability to maintain effort, arousal and attention [260, 262]. The treatment has been trialled as a three-week self-administered daily dose of 10,000 lux at a distance of 24 inches using a full-spectrum fluorescent lightbox [260]. Citations for the characterisation of ADHD in these documents include DSM-IV [260], DSM-V [259], Douglas [262], Brown's Executive Dysfunction Theory [261], and Barkley [261].

*Computer-based interventions.* Eight documents presented computer-based interventions as a treatment approach for ADHD. These include randomised controlled trials [265–268], individual interventions [269, 270], and case-control studies [271, 272]. These approaches characterise ADHD as a neurobiological disorder with executive function deficits, including difficulties in sustained attention, response inhibition, goal persistence, and working memory. Computer-based interventions take two approaches: supportive or training. Supportive interventions aim to target specific symptoms and facilitate functioning via supportive software. Individuals are given access to tools used independently following training for a set timeframe. In Hecker et al. [271], a software tool designed to reduce internal and external distractions aimed to reduce effort and improve engagement, resulting in increased time reading and comprehension. In Irvine [269], a smartphone app for time management aimed to reduce the discrepancy between the perception of time and actual time spent by providing immediate real-time feedback on the current status and time use, leading to adjustments of future tasks according to behavioural therapeutic principles.

Training interventions aim to strengthen cognitive skills and/or remediate deficiencies via cognitive behavioural learning strategies of repetition and positive reinforcement. Working Memory Training [265, 266, 268] aimed to enhance auditory-verbal and visual-space working memory through intensive training with increasing task difficulty leading to improved cognitive and academic performance and attentional self-regulation. Cognitive ability training [272] aimed to improve cognitive skills of decision making, attention, organisation and time management through simulated activities in a gaming environment, providing immediate real-time rewards. Cognitive training for executive function [267, 270] aimed to remediate cognitive processes deficiencies by repeated and graded exposure to neutral and universal stimuli and feedback. Training is self-administered, hierarchical and adjusted to individual performance with outcomes for improvements in daily executive functioning, occupational performance, and quality of life. Treatment length varied in frequency and intensity, from 20-minute sessions 3–5 times a week for 12 weeks to 45-minute sessions five days a week for five weeks and included weekly check-ins or supportive coaching. Citations for characterisation of ADHD in these approaches include DSM-IV [265, 266, 268, 270], DSM V [271], Brown's Executive Dysfunction Model [267, 270], Nigg's Integrative Theory [267], and Barkley [266, 267, 269, 270].

*Mentoring.* One study presented mentoring as an individual intervention for ADHD [273]. Based in a university environment, ADHD is characterised as deficits in basic cognitive skills, such as attention, concentration, and memory and higher-level cognitive skills or “executive functioning”, such as planning, organization, judgment, problem-solving, and cognitive flexibility. These can negatively affect the university experience, as more independent self-management and a complex skill set are required for success, particularly time management and organization, academic skills, and social skills.

The mentoring program pairs second-year master's level occupational therapy (MSOT) students (mentors) with undergraduate college students (mentees) for one-to-one support twice weekly for 2-hour sessions in the fall and spring semesters. This mentoring is a credit-bearing course that addresses skill development in time management and organization, academic skills, and social skills for college success. Mentees are graded on attendance, professional behaviours, compliance on a weekly to-do list, a presentation on academic resources, and a 4-part written paper on an academic skill. Mentors are participating as part of a professional Occupational Therapy training programme with an overall goal to facilitate student success in college, and if factors overwhelmingly interfere with this goal, to identify an alternate, suitable plan. As part of the training, mentors meet in discussion groups to brainstorm ways to overcome the mentoring process's challenges. The citation for the characterisation of ADHD in this intervention is primarily the DSM V [273].

*Self-monitoring.* One study presented individual self-monitoring as an intervention for ADHD [274]. Based in a university environment, ADHD is characterised as a neurobehavioral disorder with symptoms of inattention, hyperactivity, and impulsivity, which increases the risk of academic failure or underachievement.

A checklist tool is co-designed and supported with integrity checks and email reminders every 2–4 days, with face-to-face check-in sessions every two weeks. The self-monitoring intervention aims to teach participants to observe and record behaviours to change the behaviour in the future. Outcomes are to obtain higher grades, endorse fewer ADHD symptoms, engage in more positive study skills, further attain goals, and improve medication adherence. Citations for characterisation of ADHD is DSM IV [274].

*Binaural beat auditory stimulation.* Two documents present binaural beat auditory stimulation as a treatment for ADHD. These include an individual intervention [275] and a literature review [276]. These approaches characterise ADHD as a disorder with core deficits in behavioural inhibition and sustained attention, highlighting a decrease in beta wave states interfering with maintenance of attention as a contributing factor.

Binaural beat auditory stimulation generates tones of two frequencies presented separately in each ear which are synthesised by the medulla into a single low-frequency tone. The pulse frequency from this binaural beat is the difference between the two tones and generates electrical activity that EEG can record. Treatment aims to match the difference between the tones to a particular brain-wave state, such as the beta range, which will correspondingly be maintained by overall brain activity and affect cognition levels [277]. Treatment involves exposure to auditory stimulus via headphones during an active task. Citations for characterisation of ADHD only directly reference Barkley [275].

*Movement-related interventions.* Twelve documents present movement-related interventions as a treatment for ADHD, including a systematic review [278], a pilot study [279], case-control studies [280–285], and treatment guidance [286–289]. In these approaches, ADHD is a disorder with core issues in special working memory, attention control, response inhibition, motor control, delay aversion, emotional self-regulation, and executive dysfunction. Movement-related interventions approach treatment in two ways: passive and active.

One document presented a passive intervention. Whole Body Vibration (WBV) devices deliver sinusoidal or oscillating wave vibrations at low frequencies to enhance mechanical muscular performance [290], improve balance and proprioception [291], and increase vigilance [292], potentially by inducing muscle contractions and increasing tension through the stretch reflex. Treatment is passive, delivered while sitting still, and aims to improve attention, inhibitory control, and cognitive performance in ADHD [280].

Active movement-related interventions aim to improve neurobiological factors such as increased cerebral blood flow, enhance neuroplasticity [288, 289], assist the development of



cortical and subcortical brain regions through activity [287], reduce the impact of comorbid anxiety, depression, stress and negative affect [279, 288], and improve cognitive function and performance [282–286]. There is a specific focus on hypodopaminergic functioning in ADHD and the upregulation of a brain-derived neurotrophic factor (BDNF) protein in several studies. [281, 283, 286, 288, 289]. Research shows that BDNF is linked to differentiation and survival of dopaminergic neurons, and decreased levels of BDNF have been suggested as being involved in ADHD pathology [293]. As well as improved cognition, one of the benefits of acute exercise is elevated levels of BDNF, which these models argue makes exercise an important intervention for ADHD. Treatment varies both in approach and length, from vigorous physical activity for 30 minutes, such as cycling, to fine motor movement stimulation using an anti-stress ball during a task. Citations for the characterisation of ADHD in these approaches include DSM IV [287], DSM V [285], Nigg [281, 286], Sergeant [282], Sonuga-Barke [282, 286], and Barkley [278–280, 283, 284, 286, 288, 289].

**Alternative models.** *Psychoanalysis and Psychodynamic.* There are very few studies in Psychoanalysis and Psychodynamic approaches for adult ADHD. A group intervention [294], single [295, 296] or double case studies [297–299] were reviewed, as well as an evaluation study [300]. Much of the literature consists of literature reviews [35, 301–304] and guidance pieces [152, 305, 306], which demonstrate considerable debate in the characterisation and aetiology of ADHD. Early papers reflect issues in clinical approaches by highlighting the importance of considering ADHD diagnosis as defined by DSM-IV in light of epidemiological evidence [301, 307]. Both Psychoanalysis and Psychodynamic approaches present alternative models to Barkley, with distinct variation in characterisation.

Historically, Psychoanalysis does not recognise neurobiological deficits. Behaviours associated with ADHD are conceptualized as disturbances in the ego, identified as the organising force responsible for synthesis and integration of internal and external stimuli, internalisation of object relations and structure and development of the superego, and integral to facilitating the capacity for self-observation and self-reflection. Early presentations of these disturbances in childhood lead to attachment issues and interfere with sibling relationship development [301]. Behaviours are perceived as defence mechanisms, identified as an internal struggle for control [296, 300]. Psychodynamic perspectives differ in that behaviours are conceptualized as a reaction to neurobiological deficits [152, 302, 306], facilitating engagement with Barkley's model. Executive functioning deficits are presented as synonymous with self-regulation deficits, interfering with the development of personality structure and an internal representation of self about others. Self-regulation deficits disrupt the ability to empathise, which distorts the capacity to mentalise and develop a coherent sense of self [304].

The therapist's role in these models is to act as the organising force for the client, assisting them to develop ego capacities via therapeutic relationship and transference. This enables the client to experience empathy, recognise mental states, and identify self in relation to others [35, 301, 304]. With the exception of the group intervention [294], treatment designs are intensive, up to four times a week [301, 304] and long term, between 2 and 12 years [295, 296, 298, 301, 304]. Despite the alternative model to characterise ADHD, four studies reference international guidance [297, 301, 302, 307], seven studies mention executive function or cognitive control [35, 152, 295, 297, 299, 304, 306], and seven reference Barkley specifically [35, 294, 295, 297–299, 304].

## Conclusion

A review of 221 documents confirmed that treatment approaches for ADHD are based on a dominant cognitive behavioural paradigm for conceptualising ADHD, which attributes

symptoms solely to neurobiological and developmental deficits leading to challenges with cognitive function, behavioural control, and management of self-regulation. This is reflected in descriptions of treatment aims, approaches and outcomes (S1 Appendix).

While this scoping review aimed for as broad a scope as possible, it is important to acknowledge the limitations of this study. First, while translation services were used as much as possible, the material identified in the results were primarily published in English. Further, the majority of the documents presented were published in the US, Canada and European countries. This may be due to documents being presented or published by journals not listed by the major search engines, and therefore not identified in the search strategies. Alternatively, there may not be a large existent body of published research in other countries, as the official diagnosis criteria for adults with ADHD was only recognised in 2013 [149]. Secondly, this scoping review was an enormous undertaking, and results are only up to date as of April 2020. However, searches did not reveal any other recent reviews of the theoretical characterisation of ADHD, therefore it is believed this is the most current comprehensive scoping review on the topic.

This review reflects current research understanding that ADHD is complex and multidimensional in its presentation and impact. Clearly, it shows a broad, cross-disciplinary interest in developing treatment approaches to support individuals with ADHD to reduce symptoms, improve functioning and achieve a better quality of life. Critically, it highlights that a single theoretical perspective limits research into effective treatments for ADHD. Existing aetiological theories of ADHD have been challenged for their refutability [308], and other issues such as accounting for context variability, or inability to fully link or account for the full aspects of the symptomology [19–21], and heterogeneity [1, 22–24] including specific links between domains and outcome [22] and cognition and motivation to select actions for a given context [309]. Recent recommendations for resolving challenges with heterogeneity in ADHD emphasise the importance of theoretical guidance in decision-making and recognise the critical role of beliefs, assumptions, and goals in preventing misapplication of conclusions to clinical circumstances or populations [1]. It is proposed that treatments based on approaches from a singular perspective on processes of self-regulation and a deficit-based origin of impairments in ADHD may be limited in scope and capacity to identify and support positive psychological factors for well-being and growth. Hence, the findings in this scoping review identify a gap in research and practice for alternative theoretical perspectives of ADHD.

This review concludes that further research into additional theoretical models of self-regulation would provide opportunities to develop alternative treatment approaches and benefit research and understanding of the symptomology of ADHD.

## Supporting information

**S1 Appendix. Analysis of treatment approaches.**

(DOCX)

**S1 File. PRISMA scoping review checklist.**

(PDF)

## Author Contributions

**Conceptualization:** Rebecca E. Champ.

**Data curation:** Rebecca E. Champ.

**Formal analysis:** Rebecca E. Champ.

**Supervision:** Marios Adamou, Barry Tolchard.

**Writing – original draft:** Rebecca E. Champ.

## References

1. Nigg JT, Karalunas SL, Feczko E, Fair DA. Toward a revised nosology for attention-deficit/hyperactivity disorder heterogeneity. *Biol Psychiatry Cogn Neurosci Neuroimaging* [Internet]. 2020;1–12. Available from: <https://doi.org/10.1016/j.bpsc.2020.02.005>
2. Toplak ME, Connors L, Shuster J, Knezevic B, Parks S. Review of cognitive, cognitive-behavioral, and neural-based interventions for Attention-Deficit/Hyperactivity Disorder (ADHD). *Clin Psychol Rev*. 2008; 28(5):801–23. <https://doi.org/10.1016/j.cpr.2007.10.008> PMID: 18061324
3. Barkley RA. Major life activity and health outcomes associated with attention-deficit/hyperactivity disorder. *J Clin psychiatry Suppl*. 2002; 63(12):10–5. PMID: 12562056
4. Bokor G, Anderson PD. Attention-Deficit/Hyperactivity Disorder. *J Pharm Pract*. 2014 Aug 4; 27(4):336–49. <https://doi.org/10.1177/0897190014543628> PMID: 25092688
5. Solanto M V, Marks DJ, Mitchell KJ, Wasserstein J, Kofman MD. Development of a new psychosocial treatment for adult ADHD. *J Atten Disord*. 2008; 11(6):728–36. <https://doi.org/10.1177/1087054707305100> PMID: 17712167
6. Barkley RA. *Executive functions: What they are, how they work, and why they evolved*. New York, NY: Guilford Press; 2012.
7. Brown TE. *A new understanding of ADHD in children and adults: Executive function and impairments*. New York, NY: Routledge; 2013.
8. Ramsay JR. *Rethinking adult ADHD*. Washington D.C.: American Psychological Association; 2020.
9. Kooij J, Bijlenga D, Salerno L, Jaeschke R, Bitter I, Balázs J, et al. Updated European consensus statement on diagnosis and treatment of adult ADHD. *Eur Psychiatry* [Internet]. 2019; 56:14–34. Available from: <https://doi.org/10.1016/j.eurpsy.2018.11.001> PMID: 30453134
10. Shaw M, Hodgkins P, Caci H, Young S, Kahle J, Woods AG, et al. A systematic review and analysis of long-term outcomes in attention deficit hyperactivity disorder: effects of treatment and non-treatment. *BMC Med* [Internet]. 2012; 10(1):99. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3520745&tool=pmcentrez&rendertype=abstract> <https://doi.org/10.1186/1741-7015-10-99> PMID: 22947230
11. Barkley RA. *ADHD and the nature of self control*. London: Guilford Press; 1997.
12. Sergeant J. The cognitive-energetic model: an empirical approach to attention-deficit hyperactivity disorder. *Neurosci Biobehav Rev*. 2000; 24:7–12. [https://doi.org/10.1016/s0149-7634\(99\)00060-3](https://doi.org/10.1016/s0149-7634(99)00060-3) PMID: 10654654
13. Sonuga-Barke EJS. Psychological heterogeneity in AD/HD—a dual pathway model of behavior and cognition. *Behav Brain Res*. 2002; 130(1–2):29–36. [https://doi.org/10.1016/s0166-4328\(01\)00432-6](https://doi.org/10.1016/s0166-4328(01)00432-6) PMID: 11864715
14. Sagvolden T, Johansen EB, Aase H, Russell VA. A dynamic developmental theory of attention-deficit/hyperactivity disorder (ADHD) predominantly hyperactive/impulsive and combined subtypes. *Behav Brain Res*. 2005; 28:397–468. <https://doi.org/10.1017/S0140525X05000075> PMID: 16209748
15. Fullen T, Jones SL, Marie L, Adamou M. Psychological treatments in adult ADHD: a systematic review. *J Psychopathol Behav Assess* [Internet]. 2020; Available from: <https://doi.org/10.1007/s10862-020-09794-8>
16. Nimmo-Smith V, Merwood A, Hank D, Brandling J, Greenwood R, Skinner L, et al. Non-pharmacological interventions for adult ADHD: a systematic review. *Psychol Med*. 2020;1–13. <https://doi.org/10.1017/S0033291720000069> PMID: 32036811
17. Bolea-Alamañac B, Nutt DJ, Adamou M, Asherson P, Bazire S, Coghill D, et al. Evidence-based guidelines for the pharmacological management of attention deficit hyperactivity disorder: update on recommendations from the British Association for Psychopharmacology. *J Psychopharmacol* [Internet]. 2014; 28(3):179–203. Available from: <https://doi.org/10.1177/0269881113519509> PMID: 24526134
18. NICE, editor. *Attention deficit hyperactivity disorder: diagnosis and management*. In National Institute for Health Care and Excellence; 2019. Available from: <https://www.nice.org.uk/guidance/cg72>
19. Brown TE. Differential diagnosis of ADD versus ADHD in adults. In: Nadeau KG, editor. *A comprehensive guide to attention deficit disorder in adults*. New York: Brunner/Mazel Inc.; 1995. p. 93–108.
20. Brown TE. *Smart but stuck: Emotions in teens and adults with ADHD*. San Francisco: Jossey-Bass; 2014.

21. Hirvikoski T, Waaler E, Alfredsson J, Pihlgren C, Holmström A, Johnson A, et al. Reduced ADHD symptoms in adults with ADHD after structured skills training group: results from a randomized controlled trial. *Behav Res Ther* [Internet]. 2011; 49(3):175–85. Available from: <https://doi.org/10.1016/j.brat.2011.01.001> PMID: 21295767
22. Cordova M, Shada K, Demeter D V., Doyle O, Miranda-Dominguez O, Perrone A, et al. Heterogeneity of executive function revealed by a functional random forest approach across ADHD and ASD. *Neuro-Image Clin* [Internet]. 2020; 26:102245. Available from: <https://doi.org/10.1016/j.nicl.2020.102245> PMID: 32217469
23. Feczko E, Miranda-Dominguez O, Marr M, Graham AM, Nigg JT, Fair DA. The heterogeneity problem: approaches to identify psychiatric subtypes. *Trends Cogn Sci* [Internet]. 2019; 23(7):584–601. Available from: <https://doi.org/10.1016/j.tics.2019.03.009> PMID: 31153774
24. Berger A, Posner MI. Pathologies of brain attentional networks. *Neurosci Biobehav Rev*. 2000; 24:3–5. [https://doi.org/10.1016/s0149-7634\(99\)00046-9](https://doi.org/10.1016/s0149-7634(99)00046-9) PMID: 10654653
25. Jacob K. Recovery model of mental illness: A complementary approach to psychiatric care. *Indian J Psychol Med*. 2015; 37(2):117. <https://doi.org/10.4103/0253-7176.155605> PMID: 25969592
26. Liberman RP. Recovery from disability: Manual of psychiatric rehabilitation. Arlington, VA: American Psychiatric Publishing, Inc.; 2008.
27. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol Theory Pract*. 2005; 8(1):19–32.
28. Colquhoun HL, Levac D, O'Brien KK, Straus S, Tricco AC, Perrier L, et al. Scoping reviews: time for clarity in definition, methods, and reporting. *J Clin Epidemiol* [Internet]. 2014; 67(12):1291–4. Available from: <https://doi.org/10.1016/j.jclinepi.2014.03.013> PMID: 25034198
29. O'Brien KK, Colquhoun H, Levac D, Baxter L, Tricco AC, Straus S, et al. Advancing scoping study methodology: a web-based survey and consultation of perceptions on terminology, definition and methodological steps. *BMC Health Serv Res* [Internet]. 2016; 16(1):1–12. Available from: <https://doi.org/10.1186/s12913-016-1579-z> PMID: 27461419
30. Aromataris E, Munn Z. Johanna Briggs Institute reviewer's manual. The Joanna Briggs Institute. 2017.
31. Hartmann T, Popkin M. ADHD: a hunter in a farmer's world. Rochester, Vermont: Healing Arts Press; 2019.
32. Weiss L. Embracing ADHD: A healing perspective. Lanham, MD: Taylor Trade Publishing; 2015.
33. Maté G. Scattered minds: The origin and healing of Attention Deficit Disorder. London, UK: Vermilion; 1999.
34. Amen D. Healing ADD: The breakthrough program that allows you to see and heal the 7 types of Attention Deficit Disorder. New York, NY: Berkley Publishing Group; 2013.
35. Conway F. Psychodynamic psychotherapy of ADHD: a review of the literature. *Psychotherapy*. 2012; 49(3):404–17. <https://doi.org/10.1037/a0027344> PMID: 22448924
36. Heirs M, Dean ME. Homeopathy for attention deficit/hyperactivity disorder or hyperkinetic disorder. *Cochrane Database Syst Rev*. 2007;(4).
37. Auclair V, Harvey P-O, Lepage M. Cognitive behavioral therapy and the treatment of ADHD in adults TT—La thérapie cognitive-comportementale dans le traitement du TDAH chez l'adulte. *Sante Ment Que* [Internet]. 2016; 41(1):291–311. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/27570962> PMID: 27570962
38. Chandler ML. Psychotherapy for adult attention deficit/hyperactivity disorder: a comparison with cognitive behaviour therapy. *J Psychiatr Ment Health Nurs*. 2013; 20(9):814–20. <https://doi.org/10.1111/jpm.12023> PMID: 23506050
39. Jensen CM, Amdisen BL, Jørgensen KJ, Arnfred SMH. Cognitive behavioural therapy for ADHD in adults: systematic review and meta-analyses. *ADHD Atten Deficit Hyperact Disord*. 2016; 8(1):3–11. <https://doi.org/10.1007/s12402-016-0188-3> PMID: 26801998
40. Lopez PL, Torrente FM, Ciapponi A, Lischinsky AG, Cetkovich-Bakmas M, Rojas JI, et al. Cognitive-behavioural interventions for attention deficit hyperactivity disorder (ADHD) in adults. *Cochrane Database Syst Rev*. 2018; 2018(3). <https://doi.org/10.1002/14651858.CD010840.pub2> PMID: 29566425
41. Young Z, Moghaddam N, Tickle A. The efficacy of cognitive behavioral therapy for adults with ADHD: a systematic review and meta-analysis of randomized controlled trials. *J Atten Disord* [Internet]. 2016; 24(6):875–88. Available from: <https://doi.org/10.1177/1087054716664413> PMID: 27554190
42. Lee CSC, Ma M ting, Ho H yui, Tsang K kei, Zheng Y yi, Wu Z yi. The effectiveness of mindfulness-based intervention in attention of individuals with ADHD: a systematic review. *Hong Kong J Occup Ther* [Internet]. 2017; 30:33–41. Available from: <https://doi.org/10.1016/j.hkjo.2017.05.001> PMID: 30186078

43. Poissant H, Mendrek A, Talbot N, Khoury B, Nolan J. Behavioral and cognitive impacts of mindfulness-based interventions on adults with attention-deficit hyperactivity disorder: a systematic review. *Behav Neurol*. 2019; 2019. <https://doi.org/10.1155/2019/5682050> PMID: 31093302
44. Zhang J, Díaz-Román A, Cortese S. Meditation-based therapies for attention-deficit/hyperactivity disorder in children, adolescents and adults: a systematic review and meta-analysis. *Evid Based Ment Health*. 2018; 21(3):87–94. <https://doi.org/10.1136/ebmental-2018-300015> PMID: 29991532
45. Krisanaprakornkit T, Ngamjarus C, Witoonchart C, Piyavhatkul N. Meditation therapies for attention-deficit/hyperactivity disorder (ADHD). *Cochrane Database Syst Rev*. 2010;(6). <https://doi.org/10.1002/14651858.CD006507.pub2> PMID: 20556767
46. Sonuga-Barke EJ, Brandeis D, Cortese S, Daley D, Ferrin M, Holtmann M, et al. Nonpharmacological interventions for ADHD: systematic review and meta-analyses of randomized controlled trials of dietary and psychological treatments. *Am J Psychiatry*. 2013; 170(3):275–89. <https://doi.org/10.1176/appi.ajp.2012.12070991> PMID: 23360949
47. Vidal-Estrada R, Bosch-Munso R, Nogueira-Morais M, Casas-Brugue M, Ramos-Quiroga JA. Psychological treatment of attention deficit hyperactivity disorder in adults: a systematic review. *Actas Esp Psiquiatr*. 2012; 40(3):147–54. PMID: 22723133
48. De Crescenzo F, Cortese S, Adamo N, Janiri L. Pharmacological and non-pharmacological treatment of adults with ADHD: a meta-review. *Evid Based Ment Health*. 2017; 20(1):4–11. <https://doi.org/10.1136/eb-2016-102415> PMID: 27993933
49. Arnold LE, Hodgkins P, Caci H, Kahle J, Young S. Effect of treatment modality on long-term outcomes in attention-deficit/hyperactivity disorder: a systematic review. *PLoS One* [Internet]. 2015; 10(2):1–19. Available from: <http://dx.doi.org/10.1371/journal.pone.0116407>
50. Seixas M, Weiss M, Müller U. Systematic review of national and international guidelines on attention-deficit hyperactivity disorder. *J Psychopharmacol*. 2012 Jun; 26(6):753–65. <https://doi.org/10.1177/0269881111412095> PMID: 21948938
51. Van Lieshout M, Luman M, Buitelaar J, Rommelse NNJ, Oosterlaan J. Does neurocognitive functioning predict future or persistence of ADHD? A systematic review. *Clin Psychol Rev* [Internet]. 2013; 33(4):539–60. Available from: <https://doi.org/10.1016/j.cpr.2013.02.003> PMID: 23528892
52. Bjerrum MB, Pedersen PU, Larsen P. Living with symptoms of attention deficit hyperactivity disorder in adulthood: a systematic review of qualitative evidence. *JBISIRIR-2017-003357* Implement Reports. 2017; 15(4):1080–153. <https://doi.org/10.11124/JBISIRIR-2017-003357> PMID: 28398986
53. Hayes SC, Hofmann SG. The third wave of cognitive behavioral therapy and the rise of process-based care. *World Psychiatry*. 2017; 16(3):245–6. <https://doi.org/10.1002/wps.20442> PMID: 28941087
54. Burgess PW, Mitchelmore S, Giles GM. Behavioral treatment of attention deficits in mentally impaired subjects. *Am J Occup Ther*. 1997; 3241(8):505–9.
55. Wood RL. *Head trauma rehabilitation: A neurobehavioural approach*. London: Croom Helm; 1987.
56. Jordan DR. *Attention Deficit Disorder: ADHD and ADD syndromes*. Third. Austin, TX: Pro-Ed; 1998.
57. Carpentier P. ADHD in adults: food for psychotherapists? *J Psychother*. 2004; 30(2):83–9.
58. Yankura J, Dryden W. *Using REBT with common psychological problems: A therapist's casebook*. New York: Springer Publishing Co.; 1997.
59. Barkley RA. *Attention deficit hyperactivity disorder: a handbook for diagnosis and treatment*. New York: Guilford Press; 1990.
60. American Psychiatric Association. *The diagnostic and statistical manual of mental disorders*. 4th ed. Washington D.C.: American Psychiatric Association; 1994.
61. Douglas VI. Higher mental processes in hyperactive children: implications for training. In: Knights RM, Bakker DJ, editors. *Treatment of hyperactive and learning disordered children*. Baltimore: University Park Press; 1980. p. 65–92.
62. Stevenson CS, Whitmont S, Bornholt L, Livesey D, Stevenson RJ. A cognitive remediation programme for adults with Attention Deficit Hyperactivity Disorder. *Aust N Z J Psychiatry*. 2002; 36(5):610–6. <https://doi.org/10.1046/j.1440-1614.2002.01052.x> PMID: 12225443
63. Safren SA, Otto MW, Sprich S, Winett CL, Wilens TE, Biederman J. Cognitive-behavioral therapy for ADHD in medication-treated adults with continued symptoms. *Behav Res Ther*. 2005; 43(7):831–42. <https://doi.org/10.1016/j.brat.2004.07.001> PMID: 15896281
64. Young S, Khondoker M, Emilsson B, Sigurdsson JF, Philipp-Wiegmann F, Baldursson G, et al. Cognitive-behavioural therapy in medication-treated adults with attention-deficit/hyperactivity disorder and co-morbid psychopathology: a randomized controlled trial using multi-level analysis. *Psychol Med*. 2015; 45(13):2793–804. <https://doi.org/10.1017/S0033291715000756> PMID: 26022103



65. In de Braek DMJM, Dijkstra JB, Ponds RW, Jolles J. Goal management training in adults with ADHD: an intervention study. *J Atten Disord*. 2017; 21(13):1130–7. <https://doi.org/10.1177/1087054712468052> PMID: 23264370
66. Pettersson R, Söderström S, Edlund-Söderström K, Nilsson KW. Internet-based cognitive behavioral therapy for adults With ADHD in outpatient psychiatric care: a randomized trial. *J Atten Disord [Internet]*. 2017; 21(6):508–21. Available from: <https://doi.org/10.1177/1087054714539998> PMID: 24970720
67. Young S, Emilsson B, Sigurdsson JF, Khondoker M, Philipp-Wiegmann F, Baldursson G, et al. A randomized controlled trial reporting functional outcomes of cognitive-behavioural therapy in medication-treated adults with ADHD and comorbid psychopathology. *Eur Arch Psychiatry Clin Neurosci*. 2017; 267(3):267–76. <https://doi.org/10.1007/s00406-016-0735-0> PMID: 27752827
68. Dittner AJ, Hodsoll J, Rimes KA, Russell AJ, Chalder T. Cognitive-behavioural therapy for adult attention-deficit hyperactivity disorder: a proof of concept randomised controlled trial. *Acta Psychiatr Scand*. 2018; 137(2):125–37. <https://doi.org/10.1111/acps.12836> PMID: 29282731
69. Solanto M V., Surman CB, Alvir JMJ. The efficacy of cognitive-behavioral therapy for older adults with ADHD: a randomized controlled trial. *ADHD Atten Deficit Hyperact Disord [Internet]*. 2018; 10(3):223–35. Available from: <https://doi.org/10.1007/s12402-018-0253-1> PMID: 29492784
70. Huang F, Tang YL, Zhao M, Wang Y, Pan M, Wang Y, et al. Cognitive-behavioral therapy for adult ADHD: a randomized clinical trial in china. *J Atten Disord*. 2019; 23(9):1035–46. <https://doi.org/10.1177/1087054717725874> PMID: 28866911
71. Van der Oord S, Boyer BE, Van dyck L, Mackay KJ, De Meyer H, Baeyens D. A randomized controlled study of a cognitive behavioral planning intervention for college students with ADHD: an effectiveness study in student counseling services in Flanders. *J Atten Disord*. 2020; 24(6):849–62. <https://doi.org/10.1177/1087054718787033> PMID: 29998770
72. Cherkasova M V., French LR, Syer CA, Cousins L, Galina H, Ahmadi-Kashani Y, et al. Efficacy of cognitive behavioral therapy with and without medication for adults with ADHD: a randomized clinical trial. *J Atten Disord*. 2020; 24(6):889–903. <https://doi.org/10.1177/1087054716671197> PMID: 28413900
73. Weiss M, Hechtman L. A randomized double-blind trial of paroxetine and/or dextroamphetamine and problem-focused therapy for attention-deficit/hyperactivity disorder in adults. *J Clin Psychiatry*. 2006; 67(4):611–9. PMID: 16669726
74. Virta M, Salakari A, Antila M, Chydenius E, Partinen M, Kaski M, et al. Hypnotherapy for adults with attention deficit hyperactivity disorder: a randomized controlled study. *Contemp Hypn*. 2010; 27(1):5–18.
75. Safren SA, Sprich SE, Cooper-Vince C, Knouse LE, Lerner JA. Life impairments in adults with medication-treated ADHD. *J Atten Disord*. 2010; 13(5):524–31. <https://doi.org/10.1177/1087054709332460> PMID: 19395647
76. Solanto M V, Marks DJ, Wasserstein J, Mitchell K, Abikoff H, Alvir JMJ, et al. Efficacy of meta-cognitive therapy for adult ADHD. *Am J Psychiatry*. 2010; 167(August):958–68. <https://doi.org/10.1176/appi.ajp.2009.09081123> PMID: 20231319
77. Emilsson B, Gudjonsson G, Sigurdsson JF, Baldursson G, Einarsson E, Olafsdottir H, et al. Cognitive behaviour therapy in medication-treated adults with ADHD and persistent symptoms: a randomized controlled trial. *BMC Psychiatry*. 2011; 11. <https://doi.org/10.1186/1471-244X-11-11> PMID: 21235749
78. Weiss M, Murray C, Wasdell M, Greenfield B, Giles L, Hechtman L. A randomized controlled trial of CBT therapy for adults with ADHD with and without medication. *BMC Psychiatry*. 2012; 12.
79. Vidal-Estrada R, Bosch R, Nogueira M, Gómez-Barros N, Valero S, Palomar G, et al. Psychoeducation for adults with attention deficit hyperactivity disorder vs. cognitive behavioral group therapy: a randomized controlled pilot study. *J Nerv Ment Dis*. 2013; 201(10):894–900. <https://doi.org/10.1097/NMD.0b013e3182a5c2c5> PMID: 24080677
80. Dittner AJ, Rimes KA, Russell AJ, Chalder T. Protocol for a proof of concept randomized controlled trial of cognitive-behavioural therapy for adult ADHD as a supplement to treatment as usual, compared with treatment as usual alone. *BMC Psychiatry*. 2014; 14(1):1–11. <https://doi.org/10.1186/s12888-014-0248-1> PMID: 25207986
81. Wiggins D, Singh K, Getz HG, Hutchins DE. Effects of brief group intervention for adults with attention deficit/hyperactivity disorder. *J Ment Heal Couns [Internet]*. 1999; 21(1):82–92. Available from: [internal-pdf://253.226.149.212/Wiggins et al 2000 Rathlin.pdf](internal-pdf://253.226.149.212/Wiggins%20et%20al%202000%20Rathlin.pdf)
82. Burt KL, Parks-Charney R, Schwean VL. The AD/HD skills and strategies program: a program for AD/HD adults in postsecondary education. *Can J Sch Psychol*. 1997; 12(2):122–34.
83. Virta M, Vedenpää A, Gronroos N, Chydenius E, Partinen M, Vataja R, et al. Adults with ADHD benefit from cognitive-behaviourally oriented group rehabilitation. *J Atten*. 2008; 12(13):218–26.

84. Bramham J, Young S, Bickerdike A, Spain D, McCartan D, Xenitidis K. Evaluation of group cognitive behavioral therapy for adults with ADHD. *J Atten Disord* [Internet]. 2009 Mar [cited 2014 Nov 13]; 12(5):434–41. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/18310557> <https://doi.org/10.1177/1087054708314596> PMID: 18310557
85. Holmefur M, Lidström-Holmqvist K, Roshanay AH, Arvidsson P, White S, Janeslätt G. Pilot study of let's get organized: a group intervention for improving time management. *Am J Occup Ther*. 2019; 73(5):1–10. <https://doi.org/10.5014/ajot.2019.032631> PMID: 31484026
86. Anastopoulos AD, King KA. A cognitive-behavior therapy and mentoring program for college students with ADHD. *Cogn Behav Pract*. 2015; 22(2):141–51.
87. LaCount PA, Hartung CM, Shelton CR, Clapp JD, Clapp TKW. Preliminary evaluation of a combined group and individual treatment for college students with attention-deficit/hyperactivity disorder. *Cogn Behav Pract* [Internet]. 2015; 22(2):152–60. Available from: <http://dx.doi.org/10.1016/j.cbpra.2014.07.004>
88. Rostain AL, Ramsay JR. A combined treatment approach for adults with ADHD—results of an open study of 43 patients. *J Atten Disord*. 2006; 10(2):150–9. <https://doi.org/10.1177/1087054706288110> PMID: 17085625
89. Lindstedt H, Umb-Carlsson Ö. Cognitive assistive technology and professional support in everyday life for adults with ADHD. *Disabil Rehabil Assist Technol*. 2013; 8(5):402–8. <https://doi.org/10.3109/17483107.2013.769120> PMID: 23992459
90. Luiu AL, Prada P, Perroud N, Lovis C, Ehrler F. ADHD mobile app feasibility test for adults. *Stud Health Technol Inform*. 2018; 255:247–51. PMID: 30306946
91. Strohmeier CW, Rosenfield B, DiTomasso RA, Ramsay JR. Assessment of the relationship between self-reported cognitive distortions and adult ADHD, anxiety, depression, and hopelessness. *Psychiatry Res*. 2016; 238:153–8. <https://doi.org/10.1016/j.psychres.2016.02.034> PMID: 27086226
92. Young S, Bramham J, Gray K, Rose E. A phenomenological analysis of the experience of receiving a diagnosis and treatment of ADHD in adulthood: a partner's perspective. *J Atten Disord*. 2008; 12(4):299–307. <https://doi.org/10.1177/1087054707311659> PMID: 18276840
93. Anastopoulos AD, King KA, Besecker LH, O'Rourke SR, Bray AC, Supple AJ. Cognitive-behavioral therapy for college students with ADHD: temporal stability of improvements in functioning following active treatment. *J Atten Disord*. 2020; 24(6):863–74. <https://doi.org/10.1177/1087054717749932> PMID: 29303401
94. Wang X, Cao Q, Wang J, Wu Z, Wang P, Sun L, et al. The effects of cognitive-behavioral therapy on intrinsic functional brain networks in adults with attention-deficit/hyperactivity disorder. *Behav Res Ther* [Internet]. 2016; 76:32–9. Available from: <https://doi.org/10.1016/j.brat.2015.11.003> PMID: 26629933
95. Salakari A, Virta M, Grönroos N, Chydenius E, Partinen M, Vat, et al. Cognitive-behaviourally-oriented group rehabilitation of adults with ADHD: results of a 6-month follow-up. *J Atten Disord*. 2010; 13(5):516–23. <https://doi.org/10.1177/1087054709332069> PMID: 19346466
96. Torrente F, López P, Alvarez Prado D, Kichic R, Cetkovich-Bakmas M, Lischinsky A, et al. Dysfunctional cognitions and their emotional, behavioral, and functional correlates in adults with attention deficit hyperactivity disorder (ADHD): is the cognitive-behavioral model valid? *J Atten Disord* [Internet]. 2014; 18(5):412–24. Available from: <https://doi.org/10.1177/1087054712443153> PMID: 22628149
97. Young S. Coping strategies used by adults with ADHD. *Pers Individ Dif*. 2005; 38(4):809–16.
98. Mitchell JT, McIntyre EM, English JS, Dennis MF, Beckham JC, Kollins SH. A pilot trial of mindfulness meditation training for ADHD in adulthood: impact on core symptoms, executive functioning, and emotion dysregulation. *J Atten Disord* [Internet]. 2013; 21(13):1105–20. Available from: <https://doi.org/10.1177/1087054713513328>
99. Puente AN, Mitchell JT. Cognitive-behavioral therapy for adult ADHD: a case study of multi-method assessment of executive functioning in clinical practice and manualized treatment adaptation. *Clin Case Stud*. 2016; 15(3):198–211.
100. Ramsay JR. "Turning intentions into actions": CBT for adult ADHD focused on implementation. *Clin Case Stud*. 2016; 15(3):179–97.
101. Goodwin RE, Corgiat MD. Cognitive rehabilitation of adult attention deficit disorder: a case study. *J Cogn Rehabil* [Internet]. 1992; 10(October):28–35. Available from: <http://search.proquest.com.ezp.lib.unimelb.edu.au/docview/618290820?accountid=12372>
102. Ramsay JR. "Without a net": CBT without medications for an adult with ADHD. *Clin Case Stud*. 2012; 11(1):48–65.
103. Weinstein C. Cognitive remediation strategies: an adjunct to the psychotherapy of adults with attention-deficit hyperactivity disorder. *J Psychother Pract Res*. 1994; 3:44–57. PMID: 22700173



104. Wilens TE, McDermott SP, Biederman J, Abrantes A, Haheys A, Spencer TJ. Cognitive therapy in the treatment of adults with ADHD: a systematic chart review of 26 cases. *J Cogn Psychother An Int Q*. 1999; 13(3):215–26.
105. Yovel I, Safren SA. Measuring homework utility in psychotherapy: cognitive-behavioral therapy for adult attention-deficit hyperactivity disorder as an example. *Cognit Ther Res*. 2007; 31(3):385–99.
106. Ramsay JR, Rostain AL. Cognitive therapy: a psychosocial treatment for ADHD in adults. *ADHD Rep*. 2004; 12(1):1–5.
107. Safren SA, Sprich S, Chulvick S, Otto MW. Psychosocial treatments for adults with attention-deficit/hyperactivity disorder. *Psychiatr Clin North Am*. 2004; 27(2):349–60. [https://doi.org/10.1016/S0193-953X\(03\)00089-3](https://doi.org/10.1016/S0193-953X(03)00089-3) PMID: 15064001
108. Safren SA, Perlman C, Sprich S, Otto M. *Mastering your adult ADHD*. New York: Oxford University Press; 2005.
109. Gentile JP, Atiq R, Gillig P. Psychotherapy for the patient with adult ADHD. *Psychiatry (Edgmont)*. 2006; 3(8):31–315. PMID: 20963193
110. Ramsay JR. Current status of cognitive-behavioral therapy as a psychosocial treatment for adult attention-deficit/hyperactivity disorder. *Curr Psychiatry Rep [Internet]*. 2007 Oct 3; 9(5):427–33. Available from: <http://link.springer.com/10.1007/s11920-007-0056-0> PMID: 17915084
111. Young S, Bramham J. *ADHD in adults: a psychological guide to practice*. Chichester, West Sussex: John Wiley & Sons, Inc; 2007.
112. Young SJ, Ross RR. *R&R2 for ADHD youths and adults: a prosocial competence training program*. Ottawa, Canada: Cognitive Centre of Canada; 2007.
113. Knight LA, Rooney M, Chronis-Tuscano A. Psychosocial treatments for attention-deficit/hyperactivity disorder. *Curr Psychiatry Rep*. 2008; 10:412–8. <https://doi.org/10.1007/s11920-008-0066-6> PMID: 18803915
114. Ramsay JR, Rostain AL. Cognitive behaviour therapy for college students with attention deficit/hyperactivity disorder. *J College Stud Psychother*. 2008; 21(1):3–20.
115. Ramsay JR, Rostain AL. Adult ADHD research. *J Atten Disord*. 2008; 11(6):624–7. <https://doi.org/10.1177/1087054708314590> PMID: 18417728
116. Knouse LE, Safren SA. Current status of cognitive behavioral therapy for adult attention-deficit hyperactivity disorder. *Psychiatr Clin North Am [Internet]*. 2010 Sep [cited 2014 Dec 15]; 33(3):497–509. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2909688&tool=pmcentrez&rendertype=abstract> <https://doi.org/10.1016/j.psc.2010.04.001> PMID: 20599129
117. Sohlberg MM, Mateer CA. Improving attention and managing attentional problems. *Ann N Y Acad Sci*. 2001; 931:359–75. PMID: 11462753
118. Ramsay JR. *Nonmedication treatments for adult ADHD*. Washington D.C.: American Psychological Association; 2010.
119. Ramsay JR. CBT for adult ADHD: adaptations and hypothesized mechanisms of change. *J Cogn Psychother*. 2010; 24(1):37–45.
120. Newark PE, Stieglitz RD. Therapy-relevant factors in adult ADHD from a cognitive behavioural perspective. *ADHD Atten Deficit Hyperact Disord*. 2010; 2(2):59–72. <https://doi.org/10.1007/s12402-010-0023-1> PMID: 21432591
121. Young S, Bramham J. *Cognitive-behavioural therapy for ADHD in adolescents and adults: A psychological guide to practice*. 2nd ed. Chichester, West Sussex: Wiley-Blackwell; 2012.
122. Knouse LE. Cognitive behavioural therapies for ADHD. In: Barkley RA, editor. *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment*. 4th ed. New York: Guilford Press; 2014. p. 757–94.
123. Knouse LE. Cognitive-behavioral therapy for ADHD in college: recommendations “hot off the press.” *ADHD Rep*. 2015; 23(5):8–15.
124. Ramsay JR. The relevance of cognitive distortions in the psychosocial treatment of adult ADHD. *Prof Psychol Res Pract*. 2017; 48(1):62–9.
125. Jeavons A, Bishop T, French B, Bastable S, Harpham-Salter A. *The adult ADHD treatment handbook*. Abington, Oxon: Routledge; 2018.
126. Knouse LE, Ramsay JR. Managing side effects in CBT for adult ADHD. *ADHD Rep*. 2018; 26(2):6–10.
127. Kooij JJS, Bijlenga D, Michielsen M. Assessment and treatment of ADHD in people over 60. *ADHD Rep*. 2019; 27(4):1–7,15–16.
128. Nadeau K. The clinician’s role in the treatment of ADHD. In: Goldstein S, Ellison AT, editors. *Clinician’s guide to adult ADHD: assessment and intervention*. San Diego, CA: Academic Press; 2002. p. 107–26.

129. Nadeau KG. Life management skills for the adult with ADHD. In: Nadeau KG, editor. *A comprehensive guide to attention deficit disorder in adults*. New York, NY: Brunner/Mazel Inc.; 1995. p. 191–217.
130. Murphy K. Empowering the adult with ADHD. In: Nadeau KG, editor. *A comprehensive guide to attention deficit disorder in adults*. New York, NY: Brunner/Mazel Inc.; 1995. p. 135–45.
131. Wender PH, Wolf LE, Wasserstein J. Adults with ADHD an overview. *Ann N Y Acad Sci*. 2001; 931(1):1–16. PMID: [11462736](#)
132. Mongia M, Hechtman L. Cognitive behavior therapy for adults with attention-deficit/hyperactivity disorder: a review of recent randomized controlled trials. *Curr Psychiatry Rep*. 2012; 14(5):561–7. <https://doi.org/10.1007/s11920-012-0303-x> PMID: [22878974](#)
133. Wedlake M. Cognitive remediation therapy for undergraduates with ADHD. *ADHD Rep*. 2002; 10(5):11–6.
134. Young S. Psychological therapy for adults with attention deficit hyperactivity disorder. *Couns Psychol Q*. 1999; 12(2):183–90.
135. Young S. A model of psychotherapy for adults with ADHD. In: Goldstein S, Ellison T, editors. *Clinician's guide to adult ADHD: assessment and intervention*. San Diego, CA: Academic Press; 2002. p. 147–63.
136. McDermott S. Cognitive Therapy for adults with attention-deficit/hyperactivity disorder. In: Brown TE, editor. *Attention-deficit disorders and comorbidities in children, adolescents, and adults*. Arlington, VA: American Psychiatric Publishing, Inc.; 2000. p. 569–606.
137. Murphy K. Psychological counselling of adults with ADHD. In: Barkley RA, editor. *Attention deficit hyperactivity disorder: a handbook for diagnosis and treatment*. 3rd ed. New York, NY: Guilford Press; 2006.
138. Brooks RB. Changing the mindset of adults with ADHD: strategies for fostering hope, optimism, and resilience. In: Goldstein S, Ellison AT, editors. *Clinician's guide to adult ADHD: assessment and intervention*. San Diego, CA: Academic Press; 2002. p. 127–46.
139. Stevenson CS, Stevenson RJ, Whitmont S. A self-directed psychosocial intervention with minimal therapist contact for adults with attention deficit hyperactivity disorder. *Clin Psychol Psychother*. 2003; 10(2):93–101.
140. Low CB. Attention deficit hyperactivity disorder: dissociation and adaptation (a theoretical presentation and case study). *Am J Clin Hypn*. 1999; 41(3):253–61. <https://doi.org/10.1080/00029157.1999.10404216> PMID: [10554386](#)
141. Fleming AP, McMahon RJ. Developmental context and treatment principles for ADHD among college students. *Clin Child Fam Psychol Rev*. 2012; 15(4):303–29. <https://doi.org/10.1007/s10567-012-0121-z> PMID: [23053445](#)
142. Jackson B, Farrugia D. Diagnosis and treatment of adults with attention deficit hyperactivity disorder. *J Couns Dev*. 1997; 75(4):312–9.
143. Hallowell E, Ratey J. *Driven to distraction*. New York: Touchstone; 1994. <https://doi.org/10.1080/14640749408401099> PMID: [7809399](#)
144. Ramsay JR, Rostain AL. Psychosocial treatments for attention-deficit/hyperactivity disorder in adults: current evidence and future directions. *Prof Psychol Res Pract*. 2007; 38(4):338–46.
145. Ramsay JR, Rostain AL. *The adult ADHD toolkit*. New York: Routledge; 2015.
146. Ramsay JR, Rostain AL. A cognitive therapy approach for adult attention deficit/hyperactivity disorder. *J Cogn Psychother An Int Q*. 2003; 17(4):319–34.
147. Young S, Bramham J, Gray K, Rose E. The experience of receiving a diagnosis and treatment of ADHD in adulthood: a qualitative study of clinically referred patients using interpretative phenomenological analysis. *J Atten Disord*. 2008; 11(4):493–503. <https://doi.org/10.1177/1087054707305172> PMID: [17712173](#)
148. American Psychiatric Association [APA]. *The diagnostic and statistical manual of mental disorders*. IV-TR. Washington D.C.: American Psychiatric Publishing, Inc.; 2000.
149. American Psychiatric Association [APA]. *The diagnostic and statistical manual of mental disorders*. 5th ed. Washington D.C.: American Psychiatric Association; 2013.
150. Solanto M V. *Cognitive-behavioural therapy for adult ADHD*. New York: Guilford Press; 2010.
151. Wasserstein J, Lynn A. Metacognitive remediation in adult ADHD. Treating executive function deficits via executive functions. *Ann N Y Acad Sci [Internet]*. 2001; 931:376–84. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/11462754> PMID: [11462754](#)
152. Bemporad JR. Aspects of psychotherapy with adults with attention deficit disorder. *Ann N Y Acad Sci*. 2001; 931:302–9. <https://doi.org/10.1111/j.1749-6632.2001.tb05787.x> PMID: [11462749](#)

153. Philipsen A, Graf E, Tebartz van Elst L, Jans T, Warnke A, Hesslinger B, et al. Evaluation of the efficacy and effectiveness of a structured disorder tailored psychotherapy in ADHD in adults: study protocol of a randomized controlled multicentre trial. *Atten Defic Hyperact Disord*. 2010 Dec; 2(4):203–12. <https://doi.org/10.1007/s12402-010-0046-7> PMID: 21432607
154. Philipsen A, Jans T, Graf E, Matthies S, Borel P, Colla M, et al. Effects of group psychotherapy, individual counseling, methylphenidate, and placebo in the treatment of adult attention-deficit/hyperactivity disorder a randomized clinical trial. *JAMA Psychiatry*. 2015; 72(12):1199–210. <https://doi.org/10.1001/jamapsychiatry.2015.2146> PMID: 26536057
155. Lam AP, Matthies S, Graf E, Colla M, Jacob C, Sobanski E, et al. Long-term Effects of multimodal treatment on adult attention-deficit/hyperactivity disorder symptoms: follow-up analysis of the COM-PAS trial. *JAMA Netw open*. 2019; 2(5):e194980. <https://doi.org/10.1001/jamanetworkopen.2019.4980> PMID: 31150084
156. Edel MA, Hölter T, Wassink K, Juckel G. A comparison of mindfulness-based group training and skills group training in adults with ADHD: an open study. *J Atten Disord*. 2017; 21(6):533–9. <https://doi.org/10.1177/1087054714551635> PMID: 25300813
157. Fleming AP, Fleming AP. Randomized controlled trial of group cognitive-behavioral therapy for ADHD among college students. University of Washington; 2013.
158. Hesslinger B, Philipsen A, Richter H, Ebert D. Psychotherapie der ADHS im Erwachsenenalter. In: Diagnostik und Therapie der ADHS im Erwachsenenalter. 2004. p. 63–80. <https://doi.org/10.1111/j.1471-4159.2004.02740.x> PMID: 15447682
159. Hesslinger B, Tebartz van Elst L, Nyberg E, Dykierk P, Richter H, Berner M, et al. Psychotherapy of attention deficit hyperactivity disorder in adults: a pilot study using a structured skills training program. *Eur Arch Psychiatry Clin Neurosci*. 2002 Aug; 252(4):177–84. <https://doi.org/10.1007/s00406-002-0379-0> PMID: 12242579
160. Jacob C, Philipsen A, Ebert D, Deckert J. "Multimodale Therapie der Aufmerksamkeitsdefizit-/Hyperaktivitätsstörung im Erwachsenenalter. *Nervenarzt*. 2008; 79(7):801–8. <https://doi.org/10.1007/s00115-008-2510-6> PMID: 18542905
161. Philipsen A, Richter H, Peters J, Alm B, Sobanski E, Colla M, et al. Structured group psychotherapy in adults with attention deficit hyperactivity disorder: results of an open multicentre study. *J Nerv Ment Dis* [Internet]. 2007 Dec [cited 2014 Dec 5]; 195(12):1013–9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/18091195> <https://doi.org/10.1097/NMD.0b013e31815c088b> PMID: 18091195
162. Linehan MM. Cognitive-behavioural treatment of borderline personality disorder. 14th ed. New York: Guildford Press; 1993.
163. Hartmann T. ADD: a different perception. Grass Valley, California: Underwood Books; 1997.
164. Wender PH. Attention deficit hyperactivity disorder in adults. New York: Oxford University Press; 1995.
165. Aadil M, Cosme RM, Chernaik J. Mindfulness-based cognitive behavioral therapy as an adjunct treatment of attention deficit hyperactivity disorder in young adults: a literature review. *Cureus*. 2017; 9(5). <https://doi.org/10.7759/cureus.1269> PMID: 28775916
166. Cairncross M, Miller CJ. The effectiveness of mindfulness-based therapies for ADHD. *J Atten Disord* [Internet]. 2016;108705471562530. Available from: <https://doi.org/10.1177/1087054715625301> PMID: 26838555
167. Xue J, Zhang Y, Huang Y, Tusconi M. A meta-analytic investigation of the impact of mindfulness-based interventions on ADHD symptoms. *Med (United States)*. 2019; 98(23):1–10. <https://doi.org/10.1097/MD.00000000000015957> PMID: 31169722
168. Janssen L, Kan CC, Carpentier PJ, Sizoo B, Hepark S, Grutters J, et al. Mindfulness based cognitive therapy versus treatment as usual in adults with attention deficit hyperactivity disorder (ADHD). *BMC Psychiatry*. 2015; 15(1). <https://doi.org/10.1186/s12888-015-0591-x> PMID: 26373634
169. Hepark S, Janssen L, de Vries A, Schoenberg PLA, Donders R, Kan CC, et al. The efficacy of adapted MBCT on core symptoms and executive functioning in adults with ADHD: a preliminary randomized controlled trial. *J Atten Disord* [Internet]. 2015; 23(4):351–62. Available from: <https://doi.org/10.1177/1087054715613587> PMID: 26588940
170. Bachmann K, Lam AP, Sörös P, Kanat M, Hoxhaj E, Matthies S, et al. Effects of mindfulness and psychoeducation on working memory in adult ADHD: a randomised, controlled fMRI study. *Behav Res Ther* [Internet]. 2018; 106(April):47–56. Available from: <https://doi.org/10.1016/j.brat.2018.05.002> PMID: 29758392
171. Gu Y, Xu G, Zhu Y. A randomized controlled trial of mindfulness-based cognitive therapy for college students with ADHD. *J Atten Disord* [Internet]. 2018; 22(4):388–99. Available from: <https://doi.org/10.1177/1087054716686183> PMID: 28038496

172. Hoxhaj E, Sadohara C, Borel P, D'Amelio R, Sobanski E, Müller H, et al. Mindfulness vs psychoeducation in adult ADHD: a randomized controlled trial. *Eur Arch Psychiatry Clin Neurosci* [Internet]. 2018; 268(4):321–35. Available from: <https://doi.org/10.1007/s00406-018-0868-4> PMID: 29356899
173. Schoenberg PLA, Hepark S, Kan CC, Barendregt HP, Buitelaar JK, Speckens AEM. Effects of mindfulness-based cognitive therapy on neurophysiological correlates of performance monitoring in adult attention-deficit/hyperactivity disorder. *Clin Neurophysiol* [Internet]. 2014; 125(7):1407–16. Available from: <https://doi.org/10.1016/j.clinph.2013.11.031> PMID: 24374088
174. Janssen L, Kan CC, Carpentier PJ, Sizoo B, Hepark S, Schellekens MPJ, et al. Mindfulness-based cognitive therapy v. treatment as usual in adults with ADHD: a multicentre, single-blind, randomised controlled trial. *Psychol Med*. 2018; 48(11):1920. <https://doi.org/10.1017/S0033291718000776> PMID: 29655378
175. Zylowska L, Ackerman D, Yang M, Futrell J, Horton N, Hale TS, et al. Mindfulness meditation training in adults and adolescents with ADHD: a feasibility study. *J Atten Disord*. 2008; 11(6):737–46. <https://doi.org/10.1177/1087054707308502> PMID: 18025249
176. Zylowska L, Smalley SL, Schwartz JM. Mindful awareness and ADHD. *Clin Handb Mindfulness*. 2009;319–38.
177. Bueno VF, Kozasa EH, Da Silva MA, Alves TM, Louzã MR, Pompeia S. Mindfulness meditation improves mood, quality of life, and attention in adults with attention deficit hyperactivity disorder. *Biomed Res Int*. 2015; 2015.
178. Mitchell JT, Zylowska L, Kollins SH. Mindfulness meditation training for attention-deficit/hyperactivity disorder in adulthood: current empirical support, treatment overview, and future directions. *Cogn Behav Pract*. 2015; 22(2):172–91. <https://doi.org/10.1016/j.cbpra.2014.10.002> PMID: 25908900
179. Baijal S, Gupta R. Meditation-based training: a possible intervention for attention deficit hyperactivity disorder. *Psychiatry (Edgmont)* [Internet]. 2008; 5(4):48–55. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/19727310> <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC2719552> PMID: 19727310
180. Ramsay JR, Rostain AL. Adult attention-deficit/hyperactivity disorder as an implementation problem: Clinical significance, underlying mechanisms, and psychosocial treatment. *Pract Innov*. 2016; 1(1):36–52.
181. Bachmann K, Lam AP, Philipsen A. Mindfulness-based cognitive therapy and the adult ADHD brain: A neuropsychotherapeutic perspective. *Front Psychiatry*. 2016; 7(JUN):1–7. <https://doi.org/10.3389/fpsy.2016.00117> PMID: 27445873
182. Zylowska L. *The mindfulness prescription for adult ADHD*. Boulder, CO: Trumpeter; 2012.
183. Jensen PS, Mrazek D, Knapp PK, Steinberg L, Pfeffer C, Schowalter J, et al. Evolution and revolution in child psychiatry: ADHD as a disorder of adaptation. *J Am Acad Child Adolesc Psychiatry* [Internet]. 1997; 36(12):1672–81. Available from: <https://doi.org/10.1097/00004583-199712000-00015> PMID: 9401328
184. Stein DJ, Fan J, Fossella J, Russell VA. Inattention and hyperactivity-impulsivity: psychobiological and evolutionary underpinnings of ADHD. *CNS Spectr*. 2007; 12(3):190–6. <https://doi.org/10.1017/s1092852900020903> PMID: 17329979
185. Smalley S. Reframing ADHD in the genomic era. *Psychiatr Times* [Internet]. 2008; 15(7):74–8. Available from: <http://www.psychiatristimes.com/display/article/10168/1163208?pageNumber=2>
186. Ahmann E, Tuttle LJ, Saviet M, Wright S. A Descriptive review of ADHD coaching research: implications for college students. *J Postsecond Educ Disabil*. 2018; 31(1):17–39.
187. Field S, Parker DR, Sawilowsky S, Rolands L. Assessing the impact of ADHD coaching services on university students' learning skills, self-regulation, and well-being. *J Postsecond Educ Disabil*. 2013; 26(1):83–101.
188. Swartz SL, Prevatt F, Proctor BE. A coaching intervention for college students with attention deficit/hyperactivity disorder. *Psychol Sch*. 2005; 42(6):647–56.
189. Reaser AL. *ADHD coaching and college students*. Florida State University; 2008. <https://doi.org/10.1111/j.1863-2378.2008.01123.x> PMID: 18399943
190. Farmer JL, Allsopp DH, Ferron JM. Impact of the personal strengths program on self-determination levels of college students with LD and/or ADHD. *Learn Disabil Q* [Internet]. 2015; 38(3):145–59. Available from: <https://doi.org/10.1037/neu0000189> PMID: 25730730
191. Farmer JL. *The development of the Personal Strengths Intervention (PSI) to improve self-determination and social-emotional levels in postsecondary students with learning disabilities and/or ADHD: A multiple baseline study*. [Internet]. Available in ProQuest Dissertations and Theses database. (UMI No. 3466210). 2011. Available from: <http://search.ebscohost.com.proxy-ub.rug.nl/login.aspx?direct=true&db=psyh&AN=2012-99070-067&site=ehost-live&scope=site>

192. Prevatt F, Lampropoulos GK, Bowles V, Garrett L. The use of between session assignments in ADHD coaching with college students. *J Atten Disord* [Internet]. 2011; 15(1):18–27. Available from: <https://doi.org/10.1177/1087054709356181> PMID: 20019381
193. Parker DR, Hoffman SF, Sawilowsky S, Rolands L. An examination of the effects of ADHD coaching on university students' executive functioning. *J Postsecond Educ Disabil*. 2011; 24(2):115–32.
194. Richman EL, Rademacher KN, Maitland TL. Coaching and college success. *J Postsecond Educ Disabil* [Internet]. 2014; 27(1):33–50. Available from: <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1029647&site=ehost-live>
195. Bomar R. The role of online academic coaching on levels of self-determination of college students with learning disabilities. Texas Woman's University; 2017.
196. Prevatt F, Smith SM, Diers S, Marshall D, Coleman J, Valler E, et al. ADHD coaching with college students: exploring the processes involved in motivation and goal completion. *J College Stud Psychother* [Internet]. 2017; 31(2):93–111. Available from: <http://dx.doi.org/10.1080/87568225.2016.1240597>
197. Singley D. Effects of academic coaching on college students with learning disabilities or attention-deficit hyperactivity disorder. Theses Diss 2811 [Internet]. 2017;1–116. Available from: <https://preserve.lehigh.edu/etd/2811>
198. Goudreau SB, Knight M. Executive function coaching: assisting with transitioning from secondary to postsecondary education. *J Atten Disord* [Internet]. 2018; 22(4):379–87. Available from: <https://doi.org/10.1177/1087054715583355> PMID: 25917958
199. Prevatt F, Yelland S. An empirical evaluation of ADHD coaching in college students. *J Atten Disord* [Internet]. 2015; 19(8):666–77. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/23509112> <https://doi.org/10.1177/1087054713480036> PMID: 23509112
200. Huh J, Ackerman MS. Exploring social dimensions of personal information management with adults with AD/HD. *Conf Hum Factors Comput Syst—Proc*. 2010;3715–20.
201. Parker DR, Hoffman SF, Sawilowsky S, Rolands L. Self-control in postsecondary settings: students' perceptions of ADHD college coaching. *J Atten Disord*. 2013; 17(3):215–32. <https://doi.org/10.1177/1087054711427561> PMID: 22173150
202. Schrevel SJC, Dedding C, Broerse JEW. Why do adults with ADHD choose strength-based coaching over public mental health care? A qualitative case study from the Netherlands. *SAGE Open* [Internet]. 2016; 6(3). Available from: <https://doi.org/10.1177/2158244016662498>
203. Saviet M, Ahmann E. Communication modalities in coaching for individuals with attention-deficit/hyperactivity disorder (ADHD): a qualitative examination. *Int J Evid Based Coach Mentor*. 2020; 18(1):103–22.
204. Parker DR, Boutelle K. Executive function coaching for college students with learning disabilities and ADHD: a new approach for fostering self-determination. *Learn Disabil Res Pract* [Internet]. 2009; 24(4):204–15. Available from: <http://doi.wiley.com/10.1111/j.1540-5826.2009.00294.x>
205. Kubik J. Efficacy of ADHD coaching for adults with ADHD. *J Atten Disord*. 2010; 13(5):442–53. <https://doi.org/10.1177/1087054708329960> PMID: 19276311
206. DuPaul GJ, Dahlstrom-Hakki I, Gormley MJ, Fu Q, Pinho TD, Banerjee M. College students with ADHD and LD: effects of support services on academic performance. *Learn Disabil Res Pract*. 2017; 32(4):246–56.
207. Ahmann E, Saviet M. Communication modalities and their perceived effectiveness in coaching for individuals with attention-deficit/hyperactivity disorder (ADHD). *Int J Evid Based Coach Mentor*. 2019; 17(2):93–107.
208. Prevatt F. Coaching for college students with ADHD. *Curr Psychiatry Rep* [Internet]. 2016; 18(12):1–7. Available from: <https://doi.org/10.1007/s11920-016-0751-9> PMID: 27783338
209. Parker DR, Sleeper-Triplett J, Field S, Sawilowsky S. ADHD college coaching: potential adverse events. *ADHD Rep*. 2018; 26(2):10–4.
210. Nadeau KG. Non-medication treatments for women with ADHD: working with coaches and organizers. In: Nadeau KG, Quinn P, editors. *Understanding women with ADHD*. Washington D.C.: Advantage Books; 2002. p. 124–32.
211. Jaksa P, Ratey N. Therapy and ADD coaching: similarities, differences, and collaboration [Internet]. 1999 [cited 2016 Feb 7]. p. <http://www.nancyratey.com/adhdcoaching/therapy-add>. Available from: <http://www.nancyratey.com/adhdcoaching/therapy-addcoaching>
212. Quinn P, Ratey N, Maitland TL. *Coaching college students with ADHD*. Silver Spring, MD: Advantage Books; 2000.
213. Ratey N. Life coaching for adult ADHD. In: Goldstein S, Ellison AT, editors. *Clinician's guide to adult ADHD: assessment and intervention*. San Diego, CA: Academic Press; 2002. p. 261–77.



214. Weyandt LL, DuPaul GJ. ADHD in college students: developmental findings. *Dev Disabil Res Rev*. 2008; 14(4):311–9. <https://doi.org/10.1002/ddrr.38> PMID: 19072759
215. Assheton J. Coaching clients with ADHD. *ADHD Pract*. 2009; 1(2):15–7.
216. Murphy K, Ratey N, Maynard S, Sussman S, Wright SD. Coaching for ADHD. *J Atten Disord*. 2010; 13(5):546–52. <https://doi.org/10.1177/1087054709344186> PMID: 19706875
217. Bowles VM. A survey of the methods and processes involved in interventions with ADHD clients from a psychologist and ADHD coach perspective. Florida State University; 2012.
218. Wright SD. ADHD coaching matters: the definitive guide. College Station, TX: ACO Books; 2014.
219. Wehmeyer ML, Palmer SB, Agran M, Mithaug DE, Martin JE. Promoting causal agency: The self-determined learning model of instruction. *Except Child*. 2000; 66(4):439–53.
220. Wehmeyer ML, Field S. Self-Determination: instructional and assessment strategies. Thousand Oaks, CA: Corwin Press; 2007.
221. Field S, Hoffman A. Development of a model for self-determination. *Career Dev Except Individ*. 1994; 17(2):159–69.
222. Mithaug DE, Wehmeyer ML, Agran M, Martin JE, Palmer S. The self-determined learning model of instruction: Engaging students to solve their learning problems. In: Wehmeyer ML, Sands DJ, editors. Making it happen: student involvement in educational planning, decision-making and instruction. Baltimore: Paul H. Brookes; 1998. p. 299–328.
223. Agran M, Martin JE. Applying a technology of self-control in community environments for individuals who are mentally retarded. In: Hersen M, Eisler RM, Miller PM, editors. Progress in behavior modification. Newbury Park, CA: SAGE; 1987. p. 108–51. PMID: 3588360
224. Kanfer R, Goldstein AP. Helping people change: A textbook of methods. New York: Pergamon Press; 1986.
225. Bandura A. Social foundations of thought and action: a social cognitive theory. Englewood Cliffs: Prentice-Hall; 1986.
226. Martin JE, Burger D, Elias-Burger S, Mithaug DE. Applications of self-control strategies to facilitate independence in vocational and instructional settings. In: Bray NW, editor. International review of research in mental retardation. San Diego: Academic Press; 1988. p. 155–93.
227. Wehmeyer ML. Perceptions of self-determination and psychological empowerment of adolescents with mental retardation. *Educ Train Ment Retard Dev Disabil*. 1994; 29(1):9–21.
228. Ratey N, Jaksa P. The ADDA guiding principles for coaching individuals with attention deficit disorder [Internet]. Attention Deficit Disorder Association. 2002 [cited 2020 Jun 13]. Available from: <http://www.nancyratey.com/adhdcoaching/adda-coachingprinciples>
229. Salomone S, Fleming GR, Shanahan JM, Castorina M, Bramham J, O'connell RG, et al. The effects of a self-alert training (SAT) program in adults with ADHD. *Front Hum Neurosci*. 2015; 9(FEB):1–14. <https://doi.org/10.3389/fnhum.2015.00045> PMID: 25713523
230. Cowley B, Holmström É, Juurmaa K, Kovarskis L, Krause CM. Computer enabled neuroplasticity treatment: a clinical trial of a novel design for neurofeedback therapy in adult ADHD. *Front Hum Neurosci*. 2016; 10(MAY2016):1–13. <https://doi.org/10.3389/fnhum.2016.00001> PMID: 26858619
231. Schönerberg M, Wiedemann E, Schneidt A, Scheeff J, Logemann A, Keune PM, et al. Neurofeedback, sham neurofeedback, and cognitive-behavioural group therapy in adults with attention-deficit hyperactivity disorder: a triple-blind, randomised, controlled trial. *The Lancet Psychiatry*. 2017; 4(9):673–84. [https://doi.org/10.1016/S2215-0366\(17\)30291-2](https://doi.org/10.1016/S2215-0366(17)30291-2) PMID: 28803030
232. Mayer K, Blume F, Wyckoff SN, Brokmeier LL, Strehl U. Neurofeedback of slow cortical potentials as a treatment for adults with attention deficit/hyperactivity disorder. *Clin Neurophysiol*. 2016; 127(2):1374–86. <https://doi.org/10.1016/j.clinph.2015.11.013> PMID: 26684900
233. Barth B, Mayer K, Strehl U, Fallgatter AJ, Ehls AC. EMG biofeedback training in adult attention-deficit/hyperactivity disorder: an active (control) training? *Behav Brain Res*. 2017; 329(January):58–66. <https://doi.org/10.1016/j.bbr.2017.04.021> PMID: 28442359
234. Mayer K, Wyckoff SN, Schulz U, Strehl U. Neurofeedback for adult attention-deficit/hyperactivity disorder: investigation of slow cortical potential neurofeedback-preliminary results. *J Neurother*. 2012; 16(1):37–45.
235. Deiber MP, Hasler R, Colin J, Dayer A, Aubry JM, Baggio S, et al. Linking alpha oscillations, attention and inhibitory control in adult ADHD with EEG neurofeedback. *NeuroImage Clin*. 2020; 25(December 2019). <https://doi.org/10.1016/j.nicl.2019.102145> PMID: 31911342
236. Fisher SF. Neurofeedback, affect regulation and attachment: a case study and analysis of anti-social personality. *Int J Behav Consult Ther*. 2007; 3(1):109–17.

237. Bidwell L, McCleron J, Kollins S. Cognitive enhancers for the treatment of ADHD. *Pharmacol Biochem Behav.* 2012; 99(2):262–74.
238. Fox DJ, Tharp DF, Fox LC. Neurofeedback: an alternative and efficacious treatment for attention deficit hyperactivity disorder. *Appl Psychophysiol Biofeedback.* 2005; 30(4):365–73. <https://doi.org/10.1007/s10484-005-8422-3> PMID: 16385424
239. Loo SK, Barkley RA. Clinical utility of EEG in attention deficit hyperactivity disorder. *Appl Neuropsychol.* 2005; 12(2):64–76. [https://doi.org/10.1207/s15324826an1202\\_2](https://doi.org/10.1207/s15324826an1202_2) PMID: 16083395
240. Satterfield JH, Cantwell DP, Satterfield BT. Pathophysiology of the hyperactive child syndrome. *Arch Gen Psychiatry.* 1974; 31(6):839–44. <https://doi.org/10.1001/archpsyc.1974.01760180079010> PMID: 4441251
241. Monastra VJ, Lubar JF, Linden M. The development of a quantitative electroencephalographic scanning process for attention deficit-hyperactivity disorder: reliability and validity studies. *Neuropsychology.* 2001; 15(1):136–44. <https://doi.org/10.1037//0894-4105.15.1.136> PMID: 11216884
242. Gevensleben H, Moll GH, Rothenberger A, Heinrich H. Neurofeedback in attention-deficit/hyperactivity disorder—different models, different ways of application. *Front Hum Neurosci.* 2014; 8(OCT):1–10.
243. Bakhshayesh AR, Hänsch S, Wyschkon A, Rezai MJ, Esser G. Neurofeedback in ADHD: a single-blind randomized controlled trial. *Eur Child Adolesc Psychiatry.* 2011; 20(9):481–91. <https://doi.org/10.1007/s00787-011-0208-y> PMID: 21842168
244. Arns M, Heinrich H, Strehl U. Evaluation of neurofeedback in ADHD: the long and winding road. *Biol Psychol [Internet].* 2014; 95(1):108–15. Available from: <https://doi.org/10.1016/j.biopsycho.2013.11.013> PMID: 24321363
245. Lubar JF, Shouse MN. EEG and behavioral changes in a hyperkinetic child concurrent with training of the sensorimotor rhythm (SMR)—a preliminary report. *Biofeedback Self Regul.* 1976; 1(3):293–306. <https://doi.org/10.1007/BF01001170> PMID: 990355
246. Gevensleben H, Holl B, Albrecht B, Vogel C, Schlamp D, Kratz O, et al. Is neurofeedback an efficacious treatment for ADHD? A randomised controlled clinical trial. *J Child Psychol Psychiatry Allied Discip.* 2009; 50(7):780–9. <https://doi.org/10.1111/j.1469-7610.2008.02033.x> PMID: 19207632
247. Gruzelier JH. EEG-neurofeedback for optimising performance. II: Creativity, the performing arts and ecological validity. *Neurosci Biobehav Rev [Internet].* 2014; 44:142–58. Available from: <https://doi.org/10.1016/j.neubiorev.2013.11.004> PMID: 24239853
248. Drechsler R, Straub M, Doehner M, Heinrich H, Steinhausen HC, Brandeis D. Controlled evaluation of a neurofeedback training of slow cortical potentials in children with attention deficit/hyperactivity disorder (ADHD). *Behav Brain Funct.* 2007; 3:1–13. <https://doi.org/10.1186/1744-9081-3-1> PMID: 17214890
249. Strehl U, Leins U, Goth G, Klinger C, Hinterberger T, Birbaumer N. Self-regulation of slow cortical potentials: a new treatment for children with attention-deficit/hyperactivity disorder. *Pediatrics.* 2006; 118(5). <https://doi.org/10.1542/peds.2005-2478> PMID: 17060480
250. Heinrich H, Gevensleben H, Freisleder FJ, Moll GH, Rothenberger A. Training of slow cortical potentials in attention-deficit/hyperactivity disorder: evidence for positive behavioral and neurophysiological effects. *Biol Psychiatry.* 2004; 55(7):772–5. <https://doi.org/10.1016/j.biopsycho.2003.11.013> PMID: 15039008
251. Gevensleben H, Rothenberger A, Moll GH, Heinrich H. Neurofeedback in children with ADHD: validation and challenges. *Expert Rev Neurother.* 2012; 12(4):447–60. <https://doi.org/10.1586/ern.12.22> PMID: 22449216
252. Mirzaiyan M, Kunwar PS, Uzayisenga R, Rashidi S. Transcranial direct current stimulation for treatment of ADHD: a review of the mechanisms of action. *Curr Psychiatry Rev.* 2018; 14(4):215–20.
253. Allenby C, Falcone M, Bernardo L, Wileyto EP, Rostain A, Ramsay JR, et al. Transcranial direct current brain stimulation decreases impulsivity in ADHD. *Brain Stimul [Internet].* 2018; 11(5):974–81. Available from: <https://doi.org/10.1016/j.brs.2018.04.016> PMID: 29885858
254. Cosmo C, Ferreira C, Miranda JGV, do Rosário RS do, Baptista AF, Montoya P, et al. Spreading effect of tDCS in individuals with attention-deficit/hyperactivity disorder as shown by functional cortical networks: a randomized, double-blind, sham-controlled trial. *Front Psychiatry.* 2015; 6(AUG):1–9. <https://doi.org/10.3389/fpsy.2015.00111> PMID: 26300790
255. Paz Y, Friedwald K, Levkovitz Y, Zangen A, Alyagon U, Nitzan U, et al. Randomised sham-controlled study of high-frequency bilateral deep transcranial magnetic stimulation (dTMS) to treat adult attention hyperactive disorder (ADHD): negative results. *World J Biol Psychiatry.* 2018; 19(7):561–6. <https://doi.org/10.1080/15622975.2017.1282170> PMID: 28090806



256. Priori A, Hallett M, Rothwell JC. Repetitive transcranial magnetic stimulation or transcranial direct current stimulation? *Brain Stimul* [Internet]. 2009; 2(4):241–5. Available from: <https://doi.org/10.1016/j.brs.2009.02.004> PMID: 20633424
257. Hiltunen S, Virta M, Salakari A, Anttila M, Chydenius E, Kaski M, et al. Better long-term outcome for hypnotherapy than for CBT in adults with ADHD: Results of a six-month follow-up. *Contemp Hypn Integr Ther*. 2014; 30(3):118–34.
258. Brown TE. *Attention deficit disorder: The unfocused mind in children and adults*. New Haven, CT: Yale University Press; 2005.
259. Coogan AN, McGowan NM. A systematic review of circadian function, chronotype and chronotherapy in attention deficit hyperactivity disorder. *ADHD Atten Deficit Hyperact Disord*. 2017; 9(3):129–47.
260. Rybak YE, McNeely HE, Mackenzie BE, Jain UR, Levitan RD. An open trial of light therapy in adult attention-deficit/hyperactivity disorder. *J Clin Psychiatry*. 2006; 67(10):1527–35. <https://doi.org/10.4088/jcp.v67n1006> PMID: 17107243
261. Rybak YE, McNeely HE, Mackenzie BE, Jain UR, Levitan RD. Seasonality and circadian preference in adult attention-deficit/hyperactivity disorder: clinical and neuropsychological correlates. *Compr Psychiatry*. 2007; 48(6):562–71. <https://doi.org/10.1016/j.comppsy.2007.05.008> PMID: 17954143
262. Korman M, Palm D, Uzoni A, Faltraco F, Tucha O, Thome J, et al. ADHD 24/7: Circadian clock genes, chronotherapy and sleep/wake cycle insufficiencies in ADHD. *World J Biol Psychiatry*. 2020; 21(3):156–71. <https://doi.org/10.1080/15622975.2018.1523565> PMID: 30234417
263. Coogan AN, Baird AL, Popa-Wagner A, Thome J. Circadian rhythms and attention deficit hyperactivity disorder: The what, the when and the why. *Prog Neuro-Psychopharmacology Biol Psychiatry* [Internet]. 2016; 67:74–81. Available from: <http://dx.doi.org/10.1016/j.pnpbp.2016.01.006>
264. Chesson AL, Littner M, Davila D, Anderson WMD, Grigg-Damberger M, Hartse K, et al. Practice parameters for the use of light therapy in the treatment of sleep disorders. *Sleep*. 1999; 22(5):641–60. <https://doi.org/10.1093/sleep/22.5.641> PMID: 10450599
265. Gropper RJ, Gotlieb H, Kronitz R, Tannock R. Working Memory Training in College Students With ADHD or LD. *J Atten Disord* [Internet]. 2014; 18(4):331–45. Available from: <https://doi.org/10.1177/1087054713516490> PMID: 24420765
266. Mawjee K, Woltering S, Tannock R. Working memory training in post-secondary students with ADHD: A randomized controlled study. *PLoS One* [Internet]. 2015; 10(9):1–21. Available from: <https://doi.org/10.1371/journal.pone.0137173> PMID: 26397109
267. Stern A, Malik E, Pollak Y, Bonne O, Maeir A. The efficacy of computerized cognitive training in adults with ADHD: a randomized controlled trial. *J Atten Disord* [Internet]. 2016; 20(12):991–1003. Available from: <https://doi.org/10.1177/1087054714529815> PMID: 24756172
268. Mawjee K, Woltering S, Lai N, Gotlieb H, Kronitz R, Tannock R. Working memory training in ADHD: controlling for engagement, motivation, and expectancy of improvement (Pilot study). *J Atten Disord*. 2017; 21(11):956–68. <https://doi.org/10.1177/1087054714557356> PMID: 25501356
269. Irvine MJD. Outcome evaluation of a time management smartphone application: a pilot study [Internet]. George Fox University; 2013. Available from: <http://digitalcommons.georgefox.edu/psyd/118>
270. Stern A, Pollack Y, Yakir A, Maeir A. Pilot study of computerized cognitive training in adults with attention-deficit/hyperactivity disorder: change in executive functions and quality of life following 3 months of training using the AttenGo™ program. *Isr J Occup Ther*. 2012; 21(4).
271. Hecker L, Burns L, Elkind J, Elkind K, Katz L. Benefits of assistive reading software for students with attention disorders. *Ann Dyslexia*. 2002; 52(December):243–72.
272. Mancera L, Baldiris S, Fabregat R, Gomez S, Mejia C. ATenDerAH: A videogame to support e-learning students with ADHD. *Proc—IEEE 17th Int Conf Adv Learn Technol ICALT 2017*. 2017;438–40.
273. Schindler V. An occupational therapy-based supported education program for university students with various DSM-5 diagnoses: program description and academic outcomes. *Open J Occup Ther*. 2019; 7(2).
274. Scheithauer MC, Kelley ML. Self-monitoring by college students with ADHD: the impact on academic performance. *J Atten Disord* [Internet]. 2017; 21(12):1030–9. Available from: <https://doi.org/10.1177/1087054714553050> PMID: 25319163
275. McMurray J. Auditory binaural beats enhance EEG-measured beta wave activity in individuals with ADHD [Internet]. *The Journal - The Monroe Institute*. 2004 [cited 2020 Aug 8]. Available from: <http://www.monroeinstitute.org/journal/auditory-binaural-beats-enhance-ee-g-measured-beta-wave-activity-in-individuals-with-adh>
276. Peterson O. Rhythm as an intervention for health and mental health difficulties: a comprehensive literature review. Doctoral Thesis. Alliant International University; 2012.

277. Lane JD, Kasiamn SJ, Owens JE, Marsh GR. Binaural auditory beats affect vigilance performance and mood. *Physiol Behav.* 1998; 63(2):249–52. [https://doi.org/10.1016/s0031-9384\(97\)00436-8](https://doi.org/10.1016/s0031-9384(97)00436-8) PMID: 9423966
278. Den Heijer AE, Groen Y, Tucha L, Fuermaier ABM, Koerts J, Lange KW, et al. Sweat it out? The effects of physical exercise on cognition and behavior in children and adults with ADHD: a systematic literature review. *J Neural Transm.* 2016; 124:3–26. <https://doi.org/10.1007/s00702-016-1593-7> PMID: 27400928
279. Abramovitch A, Goldzweig G, Schweiger A. Correlates of physical activity with intrusive thoughts, worry and impulsivity in adults with attention deficit/hyperactivity disorder: a cross-sectional pilot study. *Isr J Psychiatry Relat Sci.* 2013; 50(1):47–54. PMID: 24029111
280. Fuermaier ABM, Tucha L, Koerts J, Van Heuvelen MJG, Van Der Zee EA, Lange KW, et al. Good vibrations—effects of whole body vibration on attention in healthy individuals and individuals with ADHD. *PLoS One.* 2014; 9(2). <https://doi.org/10.1371/journal.pone.0090747> PMID: 24587412
281. Gapin JI, Labban JD, Bohall SC, Wooten JS, Chang YK. Acute exercise is associated with specific executive functions in college students with ADHD: a preliminary study. *J Sport Heal Sci [Internet].* 2015; 4(1):89–96. Available from: <http://dx.doi.org/10.1016/j.jsbs.2014.11.003>
282. Kallweit C, Paucke M, Strauß M, Exner C. Adult ADHD: influence of physical activation, stimulation, and reward on cognitive performance and symptoms. *J Atten Disord.* 2019;108705471984505.
283. Mehren A, Özyurt J, Thiel CM, Brandes M, Lam AP, Philipsen A. Effects of acute aerobic exercise on response inhibition in adult patients with ADHD. *Sci Rep.* 2019; 9(1):1–13. <https://doi.org/10.1038/s41598-018-37186-2> PMID: 30626917
284. Mehren A, Özyurt J, Lam AP, Brandes M, Müller HHO, Thiel CM, et al. Acute effects of aerobic exercise on executive function and attention in adult patients with ADHD. *Front Psychiatry.* 2019; 10 (MAR):1–15. <https://doi.org/10.3389/fpsyg.2019.00132> PMID: 30971959
285. Rassovsky Y, Alfassi T. Attention improves during physical exercise in individuals with ADHD. *Front Psychol.* 2019; 9(JAN):1–5. <https://doi.org/10.3389/fpsyg.2018.02747> PMID: 30687193
286. LaCount PA, Hartung CM. Physical exercise interventions for emerging adults with attention-deficit/hyperactivity disorder (ADHD). *ADHD Rep.* 2018; 26(5):1–11.
287. Halperin JM, Healey DM. The influences of environmental enrichment, cognitive enhancement, and physical exercise on brain development: can we alter the developmental trajectory of ADHD? *Neurosci Biobehav Rev.* 2011; 35(3):621–34. <https://doi.org/10.1016/j.neubiorev.2010.07.006> PMID: 20691725
288. Archer T, Kostrzewa RM. Physical exercise alleviates ADHD symptoms: regional deficits and development trajectory. *Neurotox Res.* 2012; 21(2):195–209. <https://doi.org/10.1007/s12640-011-9260-0> PMID: 21850535
289. Gapin JI, Labban JD, Etnier JL. The effects of physical activity on attention deficit hyperactivity disorder symptoms: the evidence. *Prev Med (Baltim).* 2011; 52(SUPPL.). <https://doi.org/10.1016/j.ypped.2011.01.022> PMID: 21281664
290. Cardinale M, Bosco C. Use of vibration as an exercise intervention. *Exerc Sport Sci Rev.* 2003; 31 (1):3–7. <https://doi.org/10.1097/00003677-200301000-00002> PMID: 12562163
291. Cochrane DJ, Sartor F, Winwood K, Stannard SR, Narici M V., Rittweger J. A Comparison of the physiologic effects of acute whole-body vibration exercise in young and older people. *Arch Phys Med Rehabil.* 2008; 89(5):815–21. <https://doi.org/10.1016/j.apmr.2007.09.055> PMID: 18452726
292. Poulton EC. Increased vigilance with vertical vibration at 5 Hz: an alerting mechanism. *Appl Ergon.* 1978; 9(2):73–6. [https://doi.org/10.1016/0003-6870\(78\)90151-5](https://doi.org/10.1016/0003-6870(78)90151-5) PMID: 15677255
293. Tsai SJ. Attention-deficit hyperactivity disorder may be associated with decreased central brain-derived neurotrophic factor activity: clinical and therapeutic implications. *Med Hypotheses.* 2007; 68 (4):896–9. <https://doi.org/10.1016/j.mehy.2006.06.025> PMID: 16919891
294. Shaikh A. Group therapy for improving self-esteem and social functioning of college students with ADHD. *J College Stud Psychother.* 2018; 32(3):220–41.
295. Carney JK. Self- and interactive regulation: treating a patient with AD/HD. *Psychoanal Inq.* 2002; 22 (3):355–71.
296. Waska R. Attention deficit disorder or object detachment disorder: a brief psychoanalytic case study. *Psychoanal Rev.* 2014; 101(3):367–83. <https://doi.org/10.1521/prev.2014.101.3.367> PMID: 24866160
297. Zabarenko LM. AD/HD, psychoanalysis, and neuroscience: a survey of recent findings and their applications. *Psychoanal Inq.* 2002;413–32.
298. Wright JL. Psychoanalysis in conjunction with medication: a clinical research opportunity. *J Am Psychoanal Assoc.* 2006; 54:833–55. <https://doi.org/10.1177/00030651060540031601> PMID: 17009657

299. Lusk SL. A psychoanalytic approach to the complexity of understanding and treating patients with ADHD beyond childhood: the experiences of two psychoanalytic candidates. *Psychoanal Study Child* [Internet]. 2019; 72(1):61–70. Available from: <https://doi.org/10.1080/00797308.2019.1557476>
300. de Almeida Silva V, Louza MR, de Silva MA, Nakano EY. Ego defense mechanisms and types of object relations in adults with ADHD. *J Attentional Disord*. 2012; 20(11):979–87. <https://doi.org/10.1177/1087054712459559> PMID: 23012696
301. Gilmore K. A psychoanalytic perspective on attention-deficit/hyperactivity disorder. *J Am Psychoanal Assoc*. 2000;(48):1259–93. <https://doi.org/10.1177/00030651000480040901> PMID: 11212190
302. Rafalovich A. Psychodynamic and neurological perspectives on ADHD: exploring strategies for defining a phenomenon. *J Theory Soc Behav*. 2002; 31(4):397–418.
303. Zabarenko L. ADHD via psychoanalysis, neuroscience, and cognitive psychology: why haven't we fielded a team? *J Infant, Child, Adolesc Psychother*. 2011; 10(1):5–12.
304. Conway F. Current research and future directions in psychodynamic treatment of ADHD: ss empathy the missing link? *J Infant, Child, Adolesc Psychother*. 2015; 14:280–7.
305. Levin FM. Attention deficit disorder: a neuropsychanalytic sketch. *Psychoanal Inq*. 2002; 22(3):336–54.
306. Bemporad J, Zambenedetti M. Psychotherapy of adults with attention-deficit disorder. *J Psychother Pract Res*. 1996; 5:228–37. PMID: 22700291
307. Rothstein A. Plea for a balanced conception of AD/HD and its diagnosis and treatment. *Psychoanal Inq*. 2002; 22(3):391–412.
308. Johnson KA, Wiersema JR, Kuntsi J. What would Karl Popper say? Are current psychological theories of ADHD falsifiable? *Behav Brain Funct*. 2009; 5(15):1–11.
309. Pennington BF. Toward a new neuropsychological model of attention-deficit/hyperactivity disorder: subtypes and multiple deficits. *Biol Psychiatry*. 2005; 57:1221–3. <https://doi.org/10.1016/j.biopsych.2005.03.010> PMID: 15949991