

**ART THERAPY IN THE TREATMENT OF ATTENTION DEFICIT HYPERACTIVITY
DISORDER: A SCOPING REVIEW OF CURRENT APPLICATIONS**



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FOR SUBMISSION TO JOURNAL OF DEVELOPMENTAL AND BEHAVIORAL PEDIATRICS

Master of Psychology (Clinical)

School of Psychology
University of Adelaide

South Australia

Declaration

This dissertation contains no material which has been accepted for the award of any other degree of diploma in any University, and, to the best of my knowledge, contains no materials previously published except where due reference is made.

I give permission for the digital version of my dissertation to be made available on the web, via the University's digital research repository, the Library Search, and also through web search engines, unless permission has been granted by the School to restrict access for a period of time





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ABSTRACT

Objective: To examine the current evidence for the use of art therapy in Attention-Deficit Hyperactivity Disorder (ADHD) interventions among school-aged children.

Background: Symptoms of ADHD often result in functional impairments among school-aged children, as well as associated socioemotional difficulties such as emotion dysregulation. Art therapy may be a promising age-appropriate alternative to common non-pharmacological clinical interventions for ADHD such as cognitive behavioural therapy (CBT).

Methods: We used a scoping review to investigate the current uses of art therapy in ADHD interventions. We conducted a systematic review of the literature and synthesized the current evidence through a descriptive analysis.

Results: 13 studies met the inclusion criteria for analysis, which included art therapy as a primary intervention for school-aged children who met diagnostic criteria for ADHD. The review reflected limited research, with case studies comprising of the bulk of current research. This was sufficient for a thematic analysis, which identified key themes in the current uses of art therapy such as facilitating self-expression and behavioural management.

Conclusion: While further evidence may be required before art therapy is incorporated into practice, current literature lends an understanding to how it can be used, either as a complement or promising alternative for treatment-resistant ADHD.

INTRODUCTION

Art therapy is a recent development in the discourse of traditional treatment approaches for emotional, developmental, and behavioural problems among children. This therapeutic process that primarily involves the use of art materials has been shown in preliminary research to be efficacious in the reduction and management of symptoms of various psychological problems in children, such as depression (Kao, 2006; Stuckey & Nobel, 2010), post-traumatic stress (Ugurlu, Akca & Acarturk, 2016; Pifalo, 2007; Chapman et al., 2001), Autism Spectrum Disorder (ASD; Schweizer, Knorth & Spreen, 2014; Martin, 2009; Gabriels & Gaffey, 2012) among others. The fundamental principles of art therapy highlight the importance of visual learning and the provision of a visceral medium for communication (Bartoe; 2014; Radcliff, 2000; Tapper & Michelsson, 1996). The strengths of art therapy in the treatment of various developmental disorders also suggests potential applications to Attention Deficit Hyperactivity Disorder (ADHD).

ADHD is a neurodevelopmental disorder characterized by a pattern of inattention and/or hyperactivity, that can be accompanied by impulsivity. Prevalence studies have found that around five per cent of children meet diagnostic criteria for ADHD, making it a common disorder (Willcutt et al., 2010). The presentation of ADHD is heterogenous, and symptoms are commonly organized into three subtypes: the inattentive presentation, an issue of attention regulation, the hyperactive/impulsive presentation, an issue of impulse inhibition, and the combined subtype. The inattentive subtype of ADHD manifests in behavioural symptoms of being distracted from tasks, inability to sustain focus and disorganization. These behaviours cannot be attributed to deliberate defiance or a failure to comprehend instructions, but are instead due to issues in underlying cognitive processes that may be reflected on cognitive tests of attention and executive functioning

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(American Psychiatric Association, 2013). The impulsive subtype of ADHD is characterized by poorly considered, hurried action inclined to produce negative consequences. Impulsive behaviours typically reflect a difficulty in delaying instant gratification. Behavioural manifestations include decision-making with poor consideration of long-term consequences and poor social skills, such as the tendency to interrupt others. There is a paucity of definitive theories on the causes of ADHD. The most probable etiological explanation is likely to be a confluence of factors, whereby neurobiological predispositions interact with environmental conditions to produce dysfunctional behavioural patterns (Willcutt et al., 2010).

The current literature supports the validity of two primary treatments for school-aged children with ADHD: stimulant medication and psychosocial treatments. Clinical practice guidelines identify current evidence-based psychosocial interventions to include structured parenting programs and cognitive behavioural therapy (CBT) for comorbidities (*Australian guidelines on Attention Deficit Hyperactivity Disorder (ADHD)*, 2009). Pharmacological management involves the use of stimulant medication, of which only two are registered in Australia for use in the treatment of ADHD: methylphenidate and dexamphetamine sulfate. While pharmacological treatment has the most evidence for short to medium term management of ADHD symptoms, the combination of psychosocial and pharmacological treatment has shown to have better long-term efficacy in treating ADHD (*Australian guidelines on Attention Deficit Hyperactivity Disorder (ADHD)*, 2009).

Relevance of Art Therapy for the Treatment of ADHD

Art therapy engages an individual on multiple levels, including kinesthetic, affective and cognitive functions (Lusebrink, 1978). The relevance of art therapy for ADHD can be understood through the engagement of each of these functions. Children with ADHD are often found to have abnormalities in sensory functioning that manifest as hypersensitivity to stimuli or increased urge for sensory stimulation (Lusebrink, 1978; Leonard, 2015). This reflects in dysfunctional behaviours such as intolerance of normal sensations (e.g. responding aggressively to being touched) or sensation-seeking behaviours (e.g. frequently touching others or overexerting force) (Emmons, 2005). The kinesthetic effects of art therapy include the provision of a platform for positive material interactions. This relates to the behavioural approach of systematic desensitization, alluding to how art therapy draws on principles of current treatments and may serve to complement or elevate their effects.

The relevance of art therapy in the cognitive engagement of children with ADHD includes its efficacy in countering bottom-up processing and increasing attentional abilities (Baumeister & Vohs, 2004; Hass-Cohen, 2008). Impulsivity and hyperactivity can be characterized by a tendency to respond to stimuli instinctively, reflecting poorly regulated responses with minimal reliance on pre-planning. This tendency is also known as bottom-up processing and can be observed in children with ADHD whose behaviours are emotionally driven and reflect little forethought (Sobanski et al., 2010; D'ambriogio & Speranza, 2012; Vacher et al., 2020). Art therapy is proposed to provide an experience that balances bottom-up and top-down processing – the sensory experience of art-making involves bottom-up processes, while the reflection on the experience and the completion of the artwork can encourage top-down processing (Boeree, 2009).

Finally, the affective engagement of art therapy facilitates emotional regulation, self-expression, social skill development, and stress management, all of which are issues particularly relevant for children with ADHD (Lusebrink 2010; Emmons, 2005).

Current Uses of Art Therapy for ADHD

Reported uses of art in the ADHD literature include its aid in the processes of assessment and treatment. Current assessment of ADHD symptoms among children primarily focuses on parent or teacher reports of disorder-based symptoms that impede on a child's social or academic performance, as observed and recorded through checklists or rating scales and clinical interviews (*Australian guidelines on Attention Deficit Hyperactivity Disorder (ADHD)*, 2009). In some contexts, children with ADHD are not given the opportunity to contribute to the assessment process as their experiences have been dismissed as positively biased and uninformed, as compared to the more "objective" adult ratings (Hoza, Vaughn, Waschbusch, Murray-Close, & McCabe, 2012; Linnea, Hoza, Tomb, & Kaiser, 2012). In line with the ethos of client-centred care, art therapy as assessment advocates for a shift in the current approach of assessment from an adult-proxy evaluation of problematic symptoms to a child-centred account of their own wellbeing. The benefits of doing so include engaging children in a developmentally appropriate way and adapting self-report assessments to a child's attention span and cognitive abilities. Art-based assessments are proposed to present a more intuitive medium for children with ADHD as they afford the child an opportunity to consider internal cues and organize them accordingly before presenting a response (Freeman & Mathison, 2009; Malchiodi, 1998).

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Preliminary research on current uses of art therapy in the treatment of children with ADHD suggests that different domains of ADHD benefit from different mediums and art techniques. For instance, Henley (1999) found that aggression among children with ADHD was tapered when it was channeled into making clay models of knights. Tapper and Michelsson (1996) also found that watercolor painting promoted emotional balance, while drawing increased concentration and attention. The specific art therapy techniques currently used with the population of children with ADHD are disparate, but a survey of art therapists suggest that painting, drawing, collage and sculpting were most commonly used (Bartoe, 2014).

There are several areas of difficulties commonly found among children with ADHD that may be directly addressed with art therapy. The intrinsically enjoyable nature of art-making provides a self-motivating platform for training attention and focus; self-expression is taught and encouraged, which has been found to be an area of delayed growth among children with ADHD; self-esteem can be built where students are not measured by fixed standards of excellence.

While there have been several studies on the use of art therapy as a treatment for symptoms of ADHD (Hass-Cohen, Clyde, Carr, & Vanderlan, 2008; Henley 1999; Malchiodi, 2011; Stuckey & Nobel, 2010), current evidence has not yet been consolidated to present a coherent understanding of the literature. A systematic review of current findings may inform directions for further research and provide support for clinicians in understanding the current evidence base.

METHODS

The literature on art therapy as an approach to ADHD intervention is scant. A preliminary search revealed that there were no existing reviews or meta-analyses on the topic. Given the limited scope of previous research done in the area, a scoping review was chosen as the most suitable research design. A scoping review aims to synthesize emergent research by mapping out the current literature and identifying key areas of interest, research gaps, as well as the nature of current sources of information that can be used to inform evidence-based practice (Daudt et al., 2013).

This scoping review follows the methodology outlined by Arksey and O'Malley (2005) and includes five phases:

1. Identifying the research question
2. Identifying relevant studies
3. Study selection
4. Charting the data
5. Collating, summarizing, and reporting the results

Step 1: Identifying the research question.

1. How has art therapy been used in approaches to ADHD intervention?
2. What does the evidence base indicate about the efficacy of art therapy in the treatment of symptoms of ADHD?
3. How can this inform the practice of clinicians working with children with ADHD?

Step 2: Identifying relevant studies

Data sources and search strategy.

The search was conducted on six databases (PubMed, PsychINFO, Scopus, Embase, CINAHL, and Informat) to ensure comprehensive coverage of existing literature. Grey literature databases including Scopus and OpenGrey were also searched to include unpublished theses and conference papers in the coverage. A research algorithm was developed with the assistance of a research librarian for each database. This algorithm consisted of search terms derived from the indexing language of each database, as well as the relevant synonyms of each key term. The search algorithm for one of the databases, PubMed, can be found in Appendix A. The database searches did not impose limits on date, language, subject, or type. This search was completed in July 2020. Databases were monitored over the course of writing this paper through alerts, and no new studies meeting the inclusion criteria emerged by July 2021.

Citation management.

A total of 902 potentially eligible citations were found in an initial search across the databases. Seven additional articles were manually sourced in the grey literature. In order to remove duplicate citations, all citations across databases were put through a citation management program, Covidence.

Eligibility criteria.

All studies in this scoping review met the following criteria: **1.** They recruited school-aged children who met diagnostic criteria for ADHD; **2.** Art therapy, or the creation or appreciation of visual art, was the primary intervention; **3.** The study was published in English.

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Furthermore, studies were excluded if: 1. They targeted ADHD symptoms in adult populations; 2. Only symptoms of ADHD (such as hyperactivity or impulsivity) were targeted, without reference to the disorder; 3. Art therapy was used in tandem with another intervention, such that it is difficult to isolate the treatment effects of art therapy.

There were no limits placed on year of publication, type of publication, and study type as we wanted to capture as much of the scant literature as possible. Both qualitative and quantitative studies were included.

Title and abstract relevance screening.

A full text review of the articles yielded a total of 13 reviews for the final analysis.

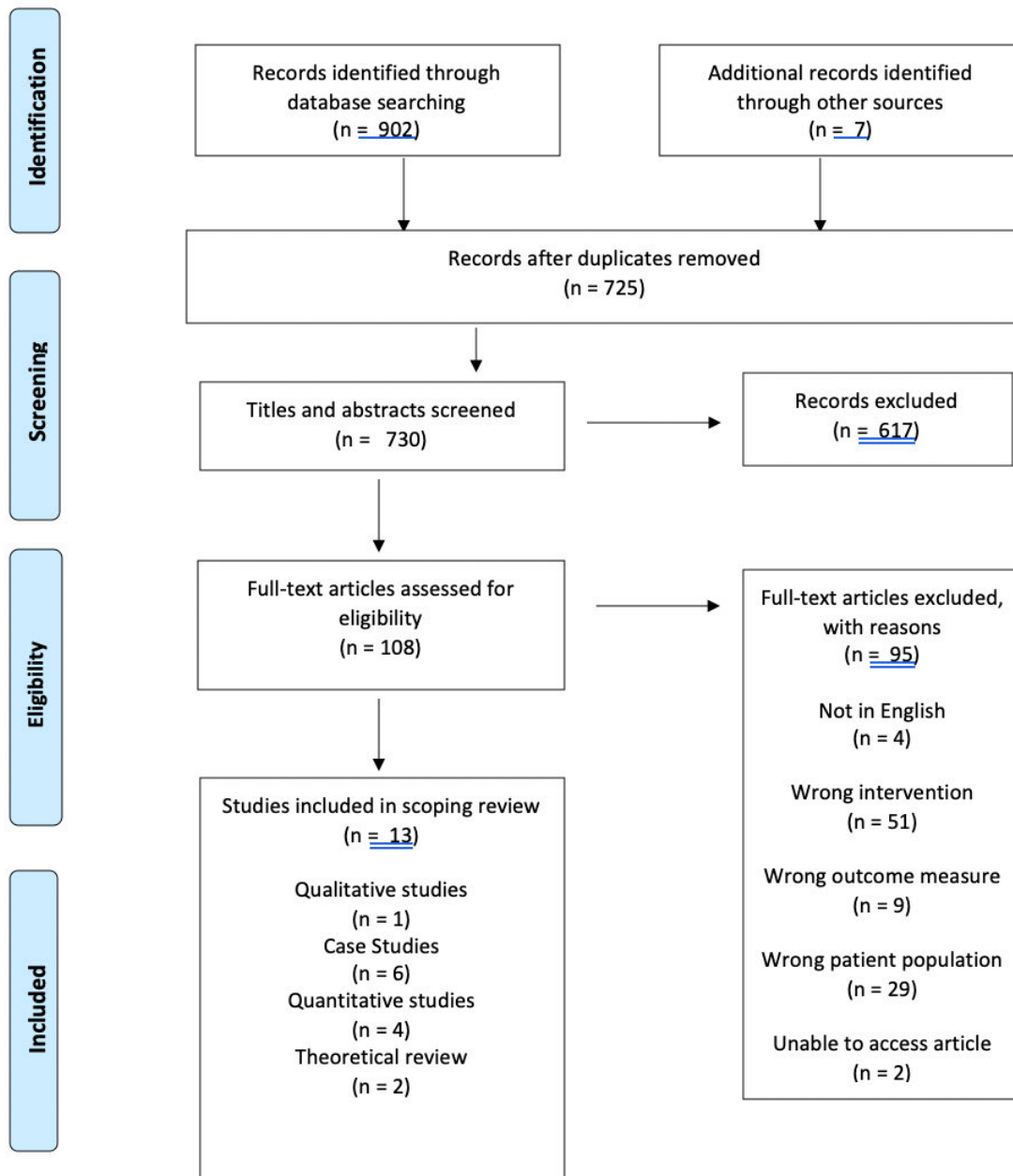


Figure 1. PRISMA (Moher et al., 2009) flowchart of study selection

Step 3: Study appraisal

The Critical Appraisal Skills Program (2018) quality appraisal checklists were used to assess risk of bias and study quality for case studies, qualitative studies, and cohort studies where appropriate. Following recommendations by Boeije, van Wesel & Alisic (2011), a categorical scale was applied to the assessment (Y = criterion fully met; N = criterion not met; M = criterion partially met).

Step 4: Charting the data

In line with the methodology of scoping reviews, relevant studies gleaned from a comprehensive search of the literature will be analysed based on their type of art therapy intervention, method, outcome measures, and results. A truncated version of this data charting table is seen in Table 1. This table was updated regularly throughout the data collection phase in order to accurately represent key elements of the data. For instance, if ‘creative growth’ was found to be a key outcome measure in a study, the phrase ‘creative growth’ would be added to the table as a benefit of art therapy interventions. The fluidity between the processes of collecting and analysing data is a key benefit of scoping reviews, as new information is constantly made available in studying the data.

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| Study | Art Therapy intervention (Type, duration) | Population (Measure of ADHD) | Methodology and analysis | Outcome measures (Scales used; Constructs measured) | Results |
|---|---|---|----------------------------------|--|--|
| Augustine (1997) | One hour Once a week 16 sessions Practiced the use of social skills through various art tasks | Children with ADHD and/or learning disabilities aged 9 - 12 (n = 5) ADHD Rating Scale (Schroeder & Gordon, 1991) | Quasi-experimental study | Parent, teacher- and self-rated ADHD Rating Scale: • Following directions • Decision making • Making friends • Waiting turns | Parent ratings indicated increased ability to make decisions and form friendship Teacher ratings indicated increased ability on all areas Self-rated scores indicated increased ability to follow directions, make decisions, and wait turns |
| Little Jesi, Y. Benitta (2019) | One hour Once a day 30 sessions Drawing and finger painting | Children with ADHD (n = 30) 18 item ADHD rating scale | Pre-test post-test design | 18 item ADHD scale indicating severity of behavioural problems: • Inattention • Hyperactivity • Impulsivity | <u>Post test</u> mean score of behaviour problems was 44.9(6.2), as compared to 37.1(6.0), $p < 0.001$ |
| Smitheman-Brown, V., Church, Robin P., (1996) | Mandala as an active centering device | Children with ADHD recruited from special needs school | Single-subject multiple-baseline | Attentional abilities and impulsive behaviours Formal Elements Art Therapy Scale (FEATS) • Creative growth | 35% increase in integration 38% increase in problem-solving attempts 37% increase in awareness of details 22% increase in ratings of developmental level |
| Liao Y., Liu S. (2012) | 6 sessions Drawing angry self and anger-provoking events Emotional diaries and visual imagination | Children with ADHD aged 6 – 9 (n = 8) | | CBCL (Achenbach & Rescorla, 2001): • Internalizing and externalizing problems BYI-II • Anger | Significant difference |

Table 1. Descriptive analysis of quantitative data

A thematic analysis was applied to qualitative data based on the systematic approach described by Braun and Clarke (2013). The first stage was familiarization with the data in the case studies, which involved reading the data several times for a comprehensive understanding of each case study. The second step involved coding segments of data that were relevant to the research question. Codes were identified on a semantic level and the coding framework was inductive in nature as the codes were generated based on significant issues discussed in the data. In the next step of the thematic analysis, codes were categorized into broader themes. These themes defined patterns found in the data that answered the research question. In the fourth stage of the analysis,

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identified themes were reviewed to ensure that coded data was adequately captured. These themes were then defined in a way that captured the essence of the coded data within each theme. Overlaps and relationships between themes were identified in this stage. The final themes that emerged were determined based on (i) relevance to the research question and (ii) whether the information represented by the theme adds significantly different information from other identified themes. The findings were reviewed with peers to reduce the potential of bias in interpreting the data.

RESULTS

Description of studies

| | Quantitative | Qualitative | Theoretical Review | Total |
|--------------------------------|--------------|-------------|-----------------------|-------|
| Year of publication | | | | |
| 1990 – 1999 | 2 | 3 | | 5 |
| 2000 – 2010 | | 3 | | 3 |
| 2011 - 2019 | 2 | 2 | 1 | 5 |
| Region of study | | | | |
| United States | 2 | 6 | 1 | 9 |
| Europe | 1 | | | 1 |
| Asia | 1 | 2 | | 3 |
| Total study sample size | | | | |
| 1 | | 6 | | 6 |
| 2 – 5 | 1 | | | 1 |
| 6 – 10 | 2 | | | 2 |
| 21 - 30 | 1 | | | 1 |

Table 2. Overview of included studies

Table 2 summarizes the details of each study included in the review. Most of the studies (69%) were published in the United States. The sample size of included studies were also generally low, particularly as they primarily consisted of case studies.

Quality of included studies

Quality of studies were assessed using the CASP Randomised Controlled Trial checklist for quantitative studies (n = 4) and the CASP Case Control Study checklist for qualitative case studies (n = 6).

The quality of quantitative studies varied but the overall standard was poor. All studies reported the use of convenience or purposive sampling as their recruitment strategy. Only one of

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the quantitative studies used a control group (Smitheren and Brown, 2010). In this study, eight students were chosen as participants and four were chosen as control subjects. To assess the treatment effects over time, participants and control subjects were added at different time points based on a multiple baseline model designed by Kazin (1982). Based on this research design, groups were not treated equally. There were also no reported attempts at keeping conditions similar across groups. Moon, Kang & Suh (2017) compared the efficacy of a psychomotor program to an art therapy program without the use of a control group. Due to the nature of art therapy interventions, blinding to treatment was not possible. There were also no external assessors, and treatment effects were assessed across studies by therapists who conducted the art therapy intervention. The sample size of the quantitative studies ranged from 5 to 30. Two studies did not report statistical analyses of the results: Augustine (1997) only reported changes in pre-post intervention scores, without correlational or regression analyses while Smitheman-Brown et al. (1996) reported percentages, bar graphs and line graphs that demonstrate a general reduction of symptoms associated with treatment. Generalizability of the results to the local population may be limited due to the quality of the studies (i.e. small sample size, lack of control group) as well as the use of unstandardized diagnostic criteria across the available studies.

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| Criteria | Augustine (1997) | Little Jesi, Y.Benitta (2019) | Smitheman-Brown, V., Church, Robin P., (1996) | Liao Y., Liu S. (2012) |
|---|--|--|--|---------------------------|
| Address a clearly focused issue? | Y | Y | Y | Y |
| Randomized assignment to treatment conditions? | N/A (No control group) Students were referred by their teachers | N/A (No control group) Students were recruited through purposive sampling | Not Reported | N/A (No control group) |
| Were participants anacblind to treatment? | Both were not blinded | Both were not blinded | Both were not blinded | Both were not blinded |
| Were the groups similar at the start of the trial? | N/A (No control group) | N/A (No control group) | Yes | N/A (No control group) |
| Were the groups treated equally? | N/A (No control group) | N/A (No control group) | No | N/A (No control group) |
| How large was the treatment effect? | Small effect size | Effect size not Reported | Effect size not Reported | Small effect size |
| Was the treatment effect statistically significant? | Significance not calculated | Statistically significant | Significance not calculated | Statistically significant |
| Can the results be applied to the local population? | Maybe. Childhood ADHD Rating Scale (Schroeder & Gordonm, 1995) used to assess. | No. Population recruited from "special school for mentally challenged" (p. 99) 18-item scale used to measure ADHD, unclear if this is a validated scale | Maybe. DSM-IV diagnostic criteria used to assess ADHD. | Not possible to determine |

Table 3. Quality assessment of quantitative studies

Case studies were also of a generally poor quality. Justifications for the case study research methodology include better depth of understanding for future practice (May, 2000) and paucity of previous research. Information on recruitment of participants was not provided in all but two studies, both in which participants were referred by the school (Workman, 2001; Strazisar, 1994).

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Progress was measured through validated constructs such as the House-Tree-Person (H-T-P) (Hammer, 1967) assessment and the Kinetic Family Drawing Test (K-F-D) (Burns & Kaufman, 1970) in all but two of the case studies, where only case notes were used to document treatment effect (Sheldon & Mendenhall, 1995; May, 2000). Confounding variables such as medication effects or extraneous variables were not accounted for through statistical analyses in all case studies. Treatment effects were also not calculated, with all studies reporting a reduction in symptoms either through raw scores or observations. Generalizability of results from the case studies may be limited as none of the participants across case studies were diagnosed based on DSM-V criteria. Participants were also referred by their school or were recruited from special programs (such as special needs schools or partial hospitalisation programs), making it difficult to preclude confounding variables such as deferential attention.

Thematic analysis

A thematic analysis was conducted on the six case studies to identify how art therapy was used as a therapeutic intervention for children with ADHD. Five themes were generated, as follows.

Behaviour management (n = 5)

Most of the case studies incorporated some form of behavioural techniques into the art therapy process, although only one case study (Habib & Ali, 2015) clearly referenced behavioural art therapy theory, specifically Roth's (1987) behavioural approach, in their methods. Regardless, the techniques of behaviour management used in art therapy were consistent across the case studies, typically involving the use of positive reinforcement to encourage appropriate behaviours (n = 5), particularly behaviours that children with ADHD tend to struggle with such as staying on task and

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task completion. As art activities are less cognitively taxing, they present an ideal platform through which effective behaviours can be established or developed. For instance, children in the case studies were reported to be motivated and committed to art making ($n = 3$), and hence were able to complete their art works. This completion of task is theorized to be inherently reinforcing.

Art creation was found to be a useful tool for behavioural management by helping children to reflect on past ineffective behaviours ($n = 2$). One study suggested that defences are lowered when past conflicts drawn rather than verbally discussed (Henley, 1999). These defences are theorized to reduce as the child's focus is on depicting the situation rather than defending the self. Allowing conflict situations to be concretized through art creations allow for more objectivity in examining the antecedents and consequences of the behaviour, hence facilitating problem solving and planning for replacing problem behaviours. For instance, narrative cartoon panels have been used to depict an event in sequence, and drawing the more effective behaviour sequence reinforces a sense of familiarity and self-efficacy within problem situations. Furthermore, repetitive rehearsal of effective behaviours in future events increase the likelihood of the child enacting these behaviours. Repetition can be achieved through crystallizing the situation in art form.

Increasing self-awareness ($n = 2$)

A precedent to changing ineffective behaviours is often an understanding of the role of the self, including factors such as vulnerabilities and consequences in problem situations. Two case studies have suggested an important outcome observed in art therapy sessions was an increase in self-awareness of destructive behaviours. For instance, May (2000) found that the child with ADHD showed progress from making messes to having an awareness of the messes.

Expression (n = 4)

Four case studies highlighted the use of art therapy to facilitate emotional expression. Among these, two case studies (Workman 2001; Strazisar, 1994) reported that the children who underwent art therapy sessions expressed negative emotions that they had not expressed verbally, such as anxiety and anger. In both studies, a common theme of aggression was inferred by the art therapists in the children's works. These children were understood to be guarded and defensive, and when they learnt that they could freely express aggression in acceptable ways through their art works, the therapeutic relationship appeared to improve in both studies. The authors also observed that there was a discrepancy between the children's works and their verbal reports of their experiences. Through their art works, the children expressed emotional distress that they were otherwise unequipped to express.

Some case studies (n = 2) suggest that children with ADHD are frequently told to quell negative emotions or redirect impulsive behaviours as promptly as possible, which may not be the most effective way of coping with their internal experiences. The authors in these case studies ventured to use art therapy to meet the children where they need. Instead of a complete restriction of impulsive behaviours such as mess-making, they learn that there are certain environments where this can be appropriate. This also reduces the sense of shame that may arise as a result of their behaviours. For instance, Workman (2001) encouraged the use of spray paint in an art therapy session, introducing flexibility into the child's rigid understanding of the use of spray paint as just an instrument for antisocial behaviours such as illegal graffiti. Furthermore, May (2000) observed when the child was given more freedom to make messes, the child not only appeared to exert more

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self-control, he also appeared to express himself more freely. A heightened sense of autonomy, often not granted in the school and home contexts, appeared to encourage self-expression.

Social skills (n = 3)

Three of the case studies attempted to use art therapy to foster social skills, mainly through facilitating healthy peer group interactions. Children with ADHD often struggle with social rejection as symptoms such as impulsivity often interfere with their ability to follow appropriate social cues. Social skill development was the primary outcome variable in one of the case studies, where enhancing creativity in children was posited to improve their ability to socialize (Henley, 1997). This was the only case study that structured group art therapy to facilitate social interaction, such as guising the art therapy group as a club and setting social codes for interactions within the group. Two studies had the group work towards a shared goal, such as a group art project (Henley 1999; Strazisar, 1994). This allowed the children to learn important social skills such as cooperation and compromise in a non-threatening social environment. The third case study targeted social skills through a behavioural approach, reinforcing appropriate social behaviour that occurred naturally in the group art therapy sessions through praise.

The rest of the case studies focused on the individual art therapy process. Positive behaviours that were likely to be transferrable to social settings were reinforced in most studies (n = 4).

Art psychodynamic psychotherapy (n = 2)

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While some case studies referred to psychodynamic implications of the children's art works (n = 2), such as the use of brown colour to be consistent with the child's psychodynamic phase, none of the case studies used art therapy as a psychodynamic intervention. Henley (1997) set out an approach likely to also be taken by the rest of the studies, stating that psychodynamic theory informed the art therapy process only to the extent that it is helpful with addressing the child's current emotional and cognitive problems. One study (Sheldon, 1995) concluded that children may have the cognitive or emotional capacity to be receptive to psychodynamic art therapy, and hence chose to use the inherently therapeutic nature of art activities as the intervention approach.

DISCUSSION

The purpose of this scoping review was to consolidate current findings on the relevance of art therapy in the treatment of symptoms of ADHD. A comprehensive and systematic search of the literature identified all available research related to this topic, which consisted of case studies (n = 6), quantitative studies (n = 4), and qualitative reviews (n = 2). This overview reflects limited research in this area, with case studies making up the bulk of current research. Nonetheless, the number of case studies provided sufficient data for a thematic analysis, which allowed us to draw useful conclusions despite the limited data.

The thematic analysis identified several themes emerged in researchers' use of art therapy in ADHD interventions. First, behavioural art therapy was used in most of the case studies to manage ineffective behaviours (Strazisar, 1994; Habib, 2015; Sheldon, 1995; May, 2000; Henley, 1999). While only one study referenced Roth's (1987) behavioural approach to art therapy, similar principles of reinforcement were applied across the case studies. A primary neurocognitive deficit associated with ADHD is a highly sensitive reward system, which may account for the relevance of behavioural theory in managing symptoms of ADHD with art therapy (Fosco et al., 2015; van Hulst et al., 2015).

Individual or group art therapy present conducive opportunities to shape behaviours that come up within the sessions as the art-making process involves deliberate decision-making. Furthermore, as art activities are often more engaging than academic work, behaviours such as delaying gratification and task completion within art therapy sessions are less cognitively taxing for children with ADHD (Henley, 1997). In experiencing success in enacting these effective

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behaviours within the art therapy setting, these children may be able to build the self-efficacy to carry out these behaviours beyond the setting.

A practical strategy relevant to behavioural management is facilitating rehearsal of appropriate behaviours through drawing them in cartoon panels (Henley, 1998). This aligns with current behavioural interventions that help children with ADHD cope ahead with common problem situations. The use of cartoon panels may make the rehearsal of effective behaviours less confronting. Allowing the child to draw the sequence of events also may allow for a heightened sense of autonomy and self-efficacy.

Facilitating self-expression was the next most common use of art therapy among the case studies. This may be particularly relevant to clinicians working with common psychiatric comorbidities of ADHD, including oppositional defiant disorder (Matza, Paramore, & Prasa, 2005; Kessler, Gruber & Sampson, 2006), mood disorders such as depression and mania (Goodman et al., 2003), and childhood anxiety disorders (Bowen et al., 2008). Emotion dysregulation, which is a transdiagnostic risk factor of these comorbidities, is an issue prevalent among children with ADHD (Shaw, Stringaris, Nigg & Leibenluft, 2014). Learning to express themselves with the appropriate tools and within safe settings is integral to emotion regulation. One of the case studies posited that art serves as an accessible alternative to verbal expression (Strazisar, 1994). In this case study, the child was encouraged to express negative emotions through their artworks in cathartic art activities such as throwing paint and shredding paper. These artworks are then used as a pathway into verbal discussions. This overlaps with behavioural management as children are then taught adaptive behaviours to replace problem behaviours that arise from unpleasant emotions

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or impulsivity. This also has implications for their ability to cope with their emotions. The concept of changing one's relationship with emotions commonly judged as negative is consistent with an Acceptance and Commitment Therapy (ACT) approach of making space for these emotions (Hayes, Strosahl & Wilson, 2011). In an ACT Art Therapy protocol by Louis Hayes (Hayes & Rowes, 2008), students are encouraged to draw their "monster", or a visual representation of their inner struggles as an introduction to the concept of dropping the struggle against unpleasant emotional experiences.

Another theme that emerged in the case studies was an increase in self-awareness and its role in behavioural change through art therapy. Although this was not discussed in the case studies, the treatment target of increasing self-awareness alludes to the concept of mindfulness, which promotes the importance of intentional awareness of the present moment (Segal et al., 2013). Awareness of the self is defined in third-wave cognitive behavioural therapies as intentional and flexible contact with the present moment (Hayes et al., 2012). This awareness is theorized to enhance behavioural regulation, particularly for impulsive behaviours (Hayes, Strosahl et al., 2012; Segal et al., 2013).

While the case studies targeted ADHD symptoms such as reducing impulsivity and increasing attentional abilities, there was also a predominant focus on the use of art as an appropriate and effective modality to cope with social and emotional difficulties associated with ADHD symptoms. In contrast, quantitative studies focussed primarily on behavioural outcomes and symptom benefit, aside from one study that targeted expressions of anger (Liao & Liu, 2012). In this study, children with ADHD were encouraged to express and understand their anger through

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drawings. This echoes the use of art therapy in the case studies to help children manage unpleasant emotions through changing their relationship with them and through gaining mindful awareness of them, and similarly may be relevant as part of ACT-based interventions. Liao and Liu (2012) also used visual emotional diaries to help children manage their anger. This is similar to the concept of self-monitoring in cognitive behavioural therapy, which serves the functions of helping the individual identify links between their unhelpful thoughts, emotions, and problem behaviours (Jarrett & Nelson, 1987).

Outcome measures were more targeted in quantitative studies, with the use of validated scales such as the Child Behaviour Checklist (CBCL) (Achenbach, Dumenci & Rescorla, 2001). While the case studies employed a variety of art materials and activities as part of the therapy process, quantitative studies included in this review were slightly more restrictive in the art activities used. For instance, the use of only drawing and finger painting (Little Jesi, 2019) or the mandala (Smithemen-Brown, Church, & Robin, 1996). This increases the internal validity of the studies as outcomes can be better attributed to specific art interventions.

Gaps and implications for future research

The paucity of research in the use of art therapy in ADHD intervention points to several significant gaps in the area. First, there was limited reference to current validated psychological interventions. Integration of art therapy with evidence-based therapeutic modalities or psychological theory would lend credibility to the studies, particularly since treatment targets were primarily social and emotional difficulties. This would build and expand on current understanding. For instance, as art creation can be a highly sensorial activity, integrating mindfulness of the senses into the art therapy process is likely to be easily achieved and may be beneficial. Hence, future

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studies may consider integrating art therapy interventions with interventions currently considered best practice in treatment guidelines. Future research may also elucidate mediating factors between the creative process and symptom benefit. For instance, the mechanisms behind the relationship between enhancing creativity and improved social functioning. The current literature on the specific neurological relevance of art therapy in the treatment of ADHD symptoms is predominantly theoretical, future studies could investigate how children with ADHD respond to visual versus verbal stimuli. This is particularly relevant as previous studies have reported higher prevalence of language disturbances among children with ADHD (Camarata & Gibson, 1999; Bishop & Baird, 2001). A review of studies exploring language disturbances in ADHD found that this may be due to impairments in general executive functions that affect pragmatic language abilities (Bellani, Moretti, Perlini & Brambilla, 2011) This could provide a stronger evidence-based rationale for integrating art therapy in current treatment protocols, which are predominantly verbal-based. As there is evidence of higher prevalence of language delay and impairment among children with ADHD, this could corroborate the usefulness of art therapy.

Future studies may also benefit from discriminating between the subtypes of ADHD to tailor art therapy interventions to each subtype. For instance, studies have found that children with the inattentive sub-type prefer cooperative work, and hence will benefit less from social skills training (Antshel & Remer, 2003; Carlson, Booth, Shin & Canu, 2002; Pfiffner, Calzada & McBurnett, 2000).

The review of the literature also revealed significant methodological gaps. Specifically, quality of both quantitative and qualitative studies was poor. This made integration of findings

from the studies difficult. For instance, case studies were unclear about treatment targets in the art therapy programs. Future case studies may target specific problem behaviours that occur beyond the art therapy context that can then be monitored over the course of treatment. They may also employ single case study design methodologies that are more rigorous than the existing narrative case studies in this review. For quantitative studies, randomized controlled trials, where comparisons between different treatment groups such as behavioural art therapy versus behavioural therapy or control conditions may provide more robust evidence for the efficacy of art therapy.

Limitations

There were several limitations to this study. First, as the focus was on the relevance of art therapy in ADHD interventions for clinical practice, there was limited investigation into the theoretical underpinnings of these interventions. Further, only studies in English were included due to limitations on resources of the review. Due to limitations of resources, there were no additional independent raters who checked the screening of articles.

CONCLUSION

Due to the discrepancy between outcome measures in the quantitative studies and qualitative case studies, integration of findings can only be limited to a generic conclusion that art therapy has promising benefits in the alleviation of ADHD symptoms, as well as comorbid social and emotional difficulties, but require further evidence before it can be incorporated into practice. If future evidence continues to support the efficacy of art therapy, it could be included in treatment guidelines. Manuals can be developed to lay out treatment protocols such that interventions can be replicated, and necessary components of evidence-based art therapy interventions can be included. Based on the current level of evidence available, clinicians could consider employing art therapy as a supplementary intervention for children with ADHD who are not seeing treatment benefit from current evidence-based interventions. While current research about the use of art therapy in ADHD interventions may be inconclusive, they provide a potentially viable alternative for children who may not be responding to standard treatment protocols, and highlights how interventions may potentially be tailored to the needs of these children.

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CONTRIBUTION STATEMENT

CN performed the data analysis and interpretation, and drafted the manuscript under the supervision of Dr R.R.. All authors approved the final draft of the manuscript for submission.

APPENDICES

Appendix A – Search Algorithm for PubMed Database

| ADHD | Art Therapy | Children |
|---|---|---|
| “Attention Deficit Disorder with Hyperactivity”[mh] OR Attention Deficit*[tiab] OR Hyperkin*[tiab] OR Distract*[tiab] OR impulsiv*[tiab] OR ADHD[tiab] OR ADDH[tiab] OR disruptive*[tiab] | "art therapy"[mh] OR art therap*[tiab] OR recreation therap*[tiab] OR self-express*[tiab] OR art treatment*[tiab] OR Art psycho*[tiab] OR sensory art therap*[tiab] OR “play therapy”[mh] OR play therap*[tiab] OR sandplay*[tiab] OR "color therapy"[mh] OR colour therap*[tiab] OR color therap*[tiab] OR chromatotherap*[tiab] OR chromotherap*[tiab] OR colour psycho*[tiab] OR color psycho*[tiab] | “child”[mh] OR child*[tiab] OR kid[tiab] OR kids[tiab] |

Appendix B – Instructions to Authors/Contributors

Journal of Developmental and Behavioral Pediatrics

Author Resources

Online Submission and Review System

SCOPE

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Journal Article

1. Smith BL, Jones MA, Shaw LB, et al. Understanding the child from birth to adolescence: a review. *J Dev Behav Pediatr.* 2003;307:851-856.

Book Chapter

2. Smith BL. Understanding the Child. In: Jones MA, ed. *The Problem Child.* Vol 2, ch 7. 3rd ed. Baltimore, MD: Williams & Wilkins; 2005: 50-55.

Entire Book

3. Abel LB. *Understanding the Child.* Baltimore, MD: Williams & Wilkins; 2006.

Presentation

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Software

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5. *Epi Info* [computer program]. Version 6. Atlanta, GA: Centers for Disease Control and Prevention; 2004.

Online Journals

6. Friedman SA. Preeclampsia: A review of the role of prostaglandins. *Obstet Gynecol* [serial online]. January 1988;71:22-37. Available from: BRS Information Technologies, McLean,VA. Accessed December 15, 2006.

Database

7. CANCERNET-PDQ [database online]. Bethesda, MD: National Cancer Institute; 2006. Updated March 29, 2006.

World Wide Web

8. Gostin LO. Drug use and HIV/AIDS [JAMA HIV/AIDS Web site]. June 1, 1996. Available at: <http://www.amaassn.org/special/hiv/ethics>. Accessed June 26, 2007.

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Art Therapy in ADHD Intervention

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Book Reviews. Reviews are generally solicited by the Book Review Editor. Authors interested in preparing a review should contact:

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Providence, RI 02905

News of the Society. Items concerning the Society for Developmental and Behavioral Pediatrics can be sent to either the President or the Secretary/Treasurer of the Society.

Art Therapy in ADHD Intervention

Announcements. The journal will publish, on a space available basis, brief announcements of relevant conferences and programs sponsored by non-profit organizations. Such announcements must be received in the editorial office at least **four months prior to the program date**.

The Society for Developmental and Behavioral Pediatrics. The Society for Developmental and Behavioral Pediatrics is an interdisciplinary organization whose goal is to improve the health care of infants, children, and adolescents by promoting research and teaching in developmental and behavioral pediatrics. SDBP sponsors the *Journal of Developmental and Behavioral Pediatrics* and conducts annual scientific meetings. Annual dues are \$150 for regular members and \$95 for trainees and non-doctorates; membership includes a subscription to the *Journal*. For information, please contact Ms. Laura Degnon, SDBP, 6728 Old McLean Village Drive, McLean, VA 22101; phone: (703) 556-9222, fax: (703) 556-8729.