

**Testing Effective Strategies for Reducing Problem Behavior
Among Children with ADHD:
An Evaluation of the 1-2-3 Magic Parenting Program**

Julie Chesterfield

Dip. Teach, BPsych (Hons), MEd (Special Education)

**Thesis submitted in partial fulfilment of the requirements for the degree of
Doctor of Psychology (Clinical Psychology)**

**Department of Psychology, Faculty of Human Sciences
Macquarie University
April 2018**

Acknowledgements

I would like to express sincere gratitude to my supervisor, Professor Richard (Dick) Stevenson, of the Department of Psychology, Macquarie University, for his guidance during the process of researching and preparing this thesis. I am extremely grateful for his enduring support and his belief in my ability to complete this project, despite numerous interruptions along the way.

Special thanks and deep gratitude are extended to my dear friend and fellow student, Renata Porzig-Drummond, for leading the intervention sessions, her statistical assistance, guidance and encouragement throughout this entire project. I am especially grateful for her friendship and constant support during the various challenges that have arisen throughout the course of this project. I would also like to express appreciation to my clinical supervisor, Dr. Caroline Stevenson, for her clinical expertise and advice in relation to the intervention programs.

Of course, there would be no research without willing participants. I would like to acknowledge and thank all the parents and caregivers for their involvement in this research project. I am grateful to all the school principals and other agencies for circulating promotional material and assisting in the recruitment of participants. I would also like to express gratitude to my dear friends, Janette Fraser, Joany Maddox, and Barbara Rabbitts, for willingly giving their time to assist during the evening intervention sessions.

This project was supported by an Australian Government Research Training Program Scholarship and the Macquarie University Higher Degree Research (HDR) program. The Macquarie University HDR program provided a small research grant which was used to purchase materials for both studies.

Statement of Originality

I certify that the work in this thesis, entitled *Testing Effective Strategies for Reducing Problem Behavior Among Children with ADHD: An Evaluation of the 1-2-3 Magic Parenting Program*, has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

I also certify that this thesis is an original piece of research and that it was written by me. Any help or assistance I have received in my research work and the preparation of the thesis itself have been appropriately acknowledged.

In addition, I certify that all information sources and literature used are indicated in the thesis.

The research presented in this thesis was approved by the Macquarie University Human Research Ethics Committee, reference number: 5201300287, on 9 May 2013, prior to commencement of the research.



.....

Julie Chesterfield (30662737)

April 2018

Preface

Please note American spelling has been used throughout this thesis because of the intention to publish some of this work, especially Study II, in American academic journals.

Table of Contents

Acknowledgements	i
Statement of Originality	ii
Preface	iii
List of Tables and Figures	viii
 General Abstract	 1
 CHAPTER 1: General Introduction	 3
Objectives and outline of thesis	4
References	7
 CHAPTER 2: Literature Review	 9
Attention-Deficit/Hyperactivity Disorder	10
Treatment for childhood ADHD	15
Clinical practice guidelines for the treatment of childhood ADHD.....	17
The pharmacological treatment dilemma.....	19
Behavior therapy for childhood ADHD	20
The challenge integrating research findings.....	23
Parenting programs	24
Evidence-based parenting programs	28
Evidence-based parenting programs for child ADHD	30
Limited RCTs of parent-only group programs for school-aged children with ADHD.....	33
The case for brief parent training programs for children with ADHD.....	34
Final note on improving outcomes for children with ADHD	38
References	40
 CHAPTER 3: Introduction to Empirical Studies	 62
Introduction	63
References	71

CHAPTER 4: Testing Effective Strategies for Reducing Problem Behavior Among Children with ADHD: A Pilot Study Evaluation of the 1-2-3 Magic Parenting Program... 81

Abstract	82
Introduction	83
Aims	83
Method	84
Design	84
Sampling procedure	84
Allocation and attrition	85
Participant characteristics	88
Measures	89
Demographic information	89
Child behavior	89
Parent stress and dysfunctional parenting	90
ADHD behavior	91
Participant satisfaction	91
Procedure	92
Pre-intervention phase	92
Intervention phase	93
Post-intervention	94
Six-month follow-up	94
Intervention – 1-2-3 Magic Parenting Program	94
Data analysis	96
Results	97
Participant characteristics	97
Post-intervention outcomes	104
Six-month follow-up outcomes	106
Intent to treat	107
Participant satisfaction	107
Discussion	107
Strengths and limitations	109

Conclusion	111
References	113
 CHAPTER 5: Testing Effective Strategies for Reducing Problem Behavior Among Children with ADHD: An Evaluation of the 1-2-3 Magic Parenting Program	 117
Abstract	118
Introduction	119
Aims	119
Method	120
Design	120
Sampling procedure	121
Allocation and attrition	123
Participant characteristics	126
Measures	127
ADHD behavior	127
Procedure	128
Intervention – 1-2-3 Magic Parenting Program	130
Data analysis	131
Results	132
Participant characteristics	132
Post-treatment outcomes	140
Six-month follow-up outcomes	143
Clinical and reliable change	144
Intent to treat	145
Participant satisfaction	145
Discussion	146
Strengths and limitations	150
Conclusion	154
References	155

CHAPTER 6: General Discussion	161
Introduction	162
Specific aims	163
Main findings from the 1-2-3 Magic interventions	164
Implications for practice.....	167
Strengths and limitations	172
Future directions.....	174
Conclusion.....	178
References	180
Conflict of interest.....	187
 APPENDIX A: Telephone Screening Form	188
 APPENDIX B: Tables of Means and Standard Deviations	190
 APPENDIX C: Final Ethics Approval	192

List of Tables and Figures

Chapter 4

Tables

- Table 1. Demographic characteristics of the treatment group and the control group 99
- Table 2. Intervention effects: Treatment group and control group at pre- and post-intervention, and treatment group at pre-intervention and six-month follow-up..... 104

Figures

- Figure 1. Flow diagram illustrating progression of participants through the study87
- Figure 2. Pre-, post-scores for the treatment and control group, and six-month follow-up scores for the treatment group.....101

Chapter 5

Tables

- Table 1. Demographic characteristics of the treatment group and the control group 134
- Table 2. Intervention effects: Treatment group and control group at pre- and post-intervention, and child on medication versus child not on medication for the treatment group at post-intervention 140
- Table 3. Intervention effects: Treatment group at pre-intervention and six-month follow-up, and treatment group children whose medication status remained unchanged from pre-intervention to six-month follow-up..... 142
- Table 4. Clinical and reliable change at post-intervention 144

Figures

- Figure 1. Flow diagram illustrating progression of participants through the study 125
- Figure 2. Pre-, post-scores for the treatment and control group, and six-month follow-up scores for the treatment group 136

General Abstract

Research indicates that behavioral parent training is an effective treatment for children with ADHD. A review of the literature revealed limited evidence of brief parenting programs for child behavioral difficulties, and scarce evidence of brief, parent-only programs for parents of children with ADHD. The aim of this research was to address this gap in the literature by examining whether a brief parenting program would improve outcomes for children with ADHD and their parents. This aim was addressed by evaluating the group-based version of the parenting program, *1-2-3 Magic*, among parents of children aged 6-12 years with ADHD. The 1-2-3 Magic program has not previously been evaluated among parents of children with ADHD.

This thesis presents two empirical studies, preceded by a general introduction, a literature review, and an introduction to the empirical studies, followed by a general discussion. The first empirical study evaluated the effectiveness of the 1-2-3 Magic program in reducing problematic child behavior and ADHD symptoms in children with ADHD, and dysfunctional parenting in their caregivers. The study used a randomized experimental design with a waitlist-control (treatment group, $n = 17$; waitlist-control group, $n = 14$). Child problem behavior, ADHD symptoms, and dysfunctional parenting were the primary outcome variables. Results at post-intervention and six-month follow-up were mixed, but suggestive of improvement; several design-related limitations were identified (notably, power, group assignment procedure, and providing adequate implementation time).

The aim of Study II was to use a similar design to Study I while overcoming its limitations (treatment group, $n = 28$; waitlist-control group, $n = 29$). Results from Study II suggest that the 1-2-3 Magic parenting program is effective at reducing disruptive behavior and ADHD symptoms in children with ADHD, as well as dysfunctional parenting in their caregivers.

Overall, the findings provide support for the effectiveness of the 1-2-3 Magic parenting program in treating behavioral problems among school-aged children with ADHD, as evidenced by improvements in child and parental functioning.

CHAPTER 1: General Introduction

Objectives and outline of thesis

The rise in the number of children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) has led to increased interest and need for appropriate behavior management programs for parents who seek such assistance (National Institute of Mental Health, 2016). Although parent training and behavioral intervention programs have attracted broad interest among ADHD researchers there are few, brief, parent-only, group training programs for caregivers of school-aged children diagnosed with ADHD. The clear conclusion is that families struggling to manage a child with clinically diagnosed ADHD are in need of effective, evidence-based, economical programs to promote positive parenting practices and avert the risk of lifelong behavior problems.

Given the lack of evidence for the 1-2-3 Magic program (Phelan, 1984) for parents caring for a child diagnosed with ADHD, the specific aim of this thesis was to assess the effectiveness of the 1-2-3 Magic parenting program among this cohort. The two studies reported in this thesis seek to add to the body of literature in the area of behavioral parent training, specifically in relation to disruptive behavior among children diagnosed with ADHD.

The literature review (Chapter 2) provides an overview of childhood ADHD and treatment options, as well as an outline of current clinical practice guidelines for the treatment of childhood ADHD. In addition, the literature review outlines the dilemma associated with pharmacological treatment and the controversy surrounding behavioral treatments for childhood ADHD, including behavioral parent training. The anomalies and challenges interpreting and integrating the research findings are discussed. An overview of behavioral parenting programs, parenting programs with strong empirical support, evidence-based behavioral parenting programs for children with ADHD, and the limited evidence for parent-only programs for

caregivers of school-aged children with ADHD is presented. Finally, the case for brief parenting programs for caregivers of children with ADHD is explored.

Following the literature review, the Introduction to Empirical Studies (Chapter 3), presents the background and provides the context for the two empirical studies that follow.

The first empirical study included in this thesis, a pilot study, reported in Chapter 4, examined the effectiveness of the 1-2-3 Magic program among caregivers who were struggling to manage the behavior of primary school-aged children (6 to 12 years) diagnosed with ADHD. Several studies have investigated the effectiveness of the 1-2-3 Magic program among community samples of caregivers seeking to learn techniques to improve their child's behavior (Bailey, van der Zwan, Phelan, & Brooks, 2012, 2015; Bradley et al., 2003; Flaherty & Cooper, 2010; Porzig-Drummond, Stevenson, & Stevenson, 2014, 2015). However, there is currently no evidence to support the efficacy of the 1-2-3 Magic parent training program among parents caring for a child diagnosed with ADHD.

The second empirical study, reported in Chapter 5, built upon Study I, with several methodological changes. The aim of Study II was to overcome the design-related limitations of Study I. As a result, several enhanced methodological procedures were adopted. Firstly, an improved participant allocation procedure was utilized to overcome baseline behavioral differences between the groups in the initial study. Secondly, scheduling of the final session of the program (discussion session) was extended to allow participants additional time to implement the behavioral techniques taught during the intervention. Thirdly, power was increased via recruitment of a larger sample. Finally, more stringent questioning, at post-intervention and six-month follow-up, regarding the target child's medication status was utilized which facilitated analyses of the effect of stimulant medication use on the results.

Thus, the main aim of this thesis was to assess the effectiveness of the 1-2-3 Magic program among a clinical sample of families affected by the one of the most common behavioral disorders in children, ADHD. The results from these studies will assist in providing much needed evidence-based information, regarding the effectiveness of the 1-2-3 Magic program, to parents of children diagnosed with ADHD and the allied health professionals who provide behavioral treatment and parent training. Such research is crucial in order to increase the evidence for popular, commonly used parent training programs, with the aim of ensuring that the most efficacious and cost-effective parenting programs are recommended to families in need of assistance.

The final chapter of this thesis, the General Discussion (Chapter 6), integrates the findings of the two empirical studies within the context of the broader literature. The implications of these findings for clinical practice and recommendations for future research are discussed.

References

- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2012). The 1-2-3 Magic program: Implementation outcomes of an Australian pilot evaluation with school-aged children. *Child & Family Behavior Therapy*, 34(1), 53-69.
doi: 10.1080/07317107.2012.654455
- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2015). Keeping it going: Evidence of long-term improvements after implementation of the 1-2-3 Magic parenting program. *Child & Family Behavior Therapy*, 37(4), 303-320.
doi: 10.1080/07317107.2015.1104776
- Bradley, S. J., Jadda, D. A., Brody, M. A., Landy, J., Tallett, S. E., Watson, W.,...Stephens, D. (2003). Brief psychoeducational parenting program: An evaluation and 1-year follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42(10), 1171-1178. doi: 10.1097/00004583-200310000-00007
- Flaherty, R., & Cooper, R. (2010). Piloting a parenting skills program in an Australian rural child protection setting. *Children Australia*, 35(3), 18-24.
doi: 10.1017/S1035077200001139
- National Institute of Mental Health. (2016). *Attention Deficit Hyperactivity Disorder*. Retrieved from <https://www.nimh.nih.gov/health/topics/attention-deficit-hyperactivity-disorder-adhd/index.shtml>
- Phelan, T. W. (1984). *1-2-3 Magic: Effective discipline for children 2-12* (1st ed.). Glen Ellyn, IL: Child Management.

Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2014). The 1-2-3 Magic parenting program and its effect on child problem behaviors and dysfunctional parenting: A randomized controlled trial. *Behaviour Research and Therapy*, 58, 52-64.

doi: 10.1016/j.brat.2014.05.004

Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2015). Preliminary evaluation of a self-directed video-based 1-2-3 Magic parenting program: A randomized controlled trial.

Behaviour Research and Therapy, 66, 32-42. doi: 10.1016/j.brat.2015.01.003

CHAPTER 2: Literature Review

Attention-Deficit/Hyperactivity Disorder

The aim of this review is to present an overview of the child Attention-Deficit/Hyperactivity Disorder (ADHD) literature and the related parent training literature, thus providing the background and context for the two empirical studies that follow. Although child ADHD is a broad area of research the current review focuses on the treatment of child ADHD, specifically behavior therapy via behavioral parent training. Substantive findings, including anomalies, and an identified gap in literature, namely, the lack of brief parenting training programs for school-aged children with ADHD, are highlighted and discussed. A summary of current clinical practice guidelines and various treatment options is presented. Currently, three evidence-based treatment approaches are recommended, namely, pharmacological intervention, behavior therapy, and combined pharmacological and behavior therapy. The review briefly discusses the dilemma associated with pharmacological treatment, as well as the controversy surrounding behavioral treatments for childhood ADHD. In addition, the review discusses the challenges faced by clinicians when interpreting and integrating research findings from diverse outcome studies. An overview of behavioral parenting programs, parenting programs with strong empirical support, evidence-based parenting programs for children with ADHD, and the limited evidence for parent-only programs for parents of school-aged children with ADHD is presented. Finally, the case for brief parent training programs for parents of children with ADHD is explored.

The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association [APA], 2013) defines child ADHD as a neurodevelopmental disorder, characterized by a pattern of behavioral symptoms (excessive inattention and/or hyperactivity/impulsivity) that are age inappropriate and negatively impact the child's

development or social and academic functioning. ADHD is classified into three subtypes based on the differential severity of inattention and hyperactive/impulsive symptoms: (1) Predominately inattentive presentation, (2) Predominately hyperactive/impulsive presentation, and (3) Combined presentation (APA, 2013). Analysis of the subtypes indicates that the Predominately inattentive presentation is the most common (Lawrence et al., 2015; Willcutt, 2012); however, the children most likely to be referred for treatment are those with the combined presentation (Willcutt, 2012). Although commonly known as a childhood disorder, prospective research indicates that approximately one-third of childhood ADHD cases continue to experience impairment in adulthood, supporting the proposition that ADHD is a chronic mental health condition (Barbarese et al., 2013).

Population estimates reported in DSM-5 (APA, 2013) suggest that childhood ADHD occurs across cultures with a worldwide prevalence of approximately 5% (APA, 2013), although the basis for this estimate is unclear. Prevalence estimates vary widely across studies (Willcutt, 2012), making the prevalence literature difficult to interpret (Rowland, Lesesne, & Abramowitz, 2002). However, the most recent systematic review of ADHD prevalence, conducted in 2014, reported that 5.9% to 7.1% of children and adolescents, across geographical regions, are diagnosed with ADHD (Polanczyk, Willcutt, Salum, Kieling, & Rohde, 2014). Health statistics within the United States suggest that the prevalence of ADHD among children and adolescents is between 9.5% (Bloom, Jones, & Freeman, 2013) and 11% (Visser et al., 2014). Recent Australian figures indicated that the prevalence of ADHD is 7.4% of children aged 4 to 17 years (Lawrence et al., 2015). Globally, ADHD is more common in males than females, with a ratio of 2:1 among children reported in DSM-5 (APA, 2013). While gender differences in symptom severity and type (externalizing versus internalizing symptoms) accounts for the higher

proportion of boys diagnosed with ADHD (Arnett, Pennington, Willcutt, Defries, & Olson, 2015), evidence suggests that girls with ADHD are underdiagnosed (Bruchmüller, Margraf, & Schneider, 2012).

The lack of consensus in the prevalence of childhood ADHD is likely due to a number of factors: (1) changes in the diagnostic criteria; (2) increasing awareness; (3) lack of standardization in the assessment process; (4) heterogeneity across studies (Polanczyk et al., 2014; Stein, 2007), and (5) the fact that no underlying measurable, neuropsychological marker has been identified, meaning an ADHD diagnosis is somewhat subjective (Rowland et al., 2002). Furthermore, ADHD symptoms are not always observable in novel or highly structured diagnostic settings and confounding of ADHD symptoms with comorbid conditions that mimic ADHD are problematic for epidemiological studies (Rowland et al., 2002).

ADHD does not typically present as a pure disorder but rather is frequently associated with various mental health conditions and/or functional impairment (Larson, Russ, Kahn, & Halfon, 2011; Patel, Patel, & Patel, 2012). Parent-reported data from the 2007 National Survey of Children's Health (NSCH), conducted in the United States, indicated that 67% of children with ADHD were diagnosed with at least one comorbid condition compared with 11% without ADHD, and 18% of those with ADHD were diagnosed with three or more comorbidities (Larson et al., 2011). The comorbidities frequently exhibited by children with ADHD include: learning difficulties (Pastor, & Reuben, 2008), oppositional defiant disorder (ODD) and conduct disorder (CD; Strine et al., 2006), anxiety (Bowen, Chavira, Bailey, Stein, & Stein, 2008), depression (Ostrander, Crystal, & August, 2006), and communication disorders (Geurts, & Embrechts, 2008). Moreover, data indicates that children with ADHD exhibit higher levels of academic, behavioral, emotional, and social impairment, and family conflict than children without ADHD

(Larson et al., 2011; Strine et al., 2006). For example, the NSCH data indicates that approximately 46% of children with ADHD have a comorbid learning disability and 27% have a comorbid conduct disorder; whereas, the rate for children without ADHD is just over 5% for learning disabilities and fewer than 2% for conduct disorder (Larson et al., 2011). Similar to ADHD prevalence, estimates of the prevalence of comorbid conditions reported in the literature are variable and prone to methodological differences (Larson et al., 2011). Notwithstanding, levels of functioning among children with ADHD declines as the number of comorbidities increase (Larson et al., 2011; Strine et al., 2006), placing children with ADHD at greater risk of long-term negative outcomes than children without ADHD (Harpin, 2005).

While ADHD is likely to impact all aspects of a child's functioning, qualitative research has shown that ADHD also has a negative impact on the entire family, increasing the likelihood of dysfunctional family and marital relationships, parent-child conflict, parental stress and reduced parenting efficacy (Corcoran, Schildt, Hochbrueckner, & Abell, 2017; Peters, & Jackson, 2009). Research has demonstrated that the behavior of children with ADHD presents frequent challenges for their parents. Numerous studies have reported that parents of children with ADHD often exhibit elevated levels of parenting stress compared with normative controls (Johnston & Mash, 2001; van der Oord, Prins, Oosterlaan, & Emmelkamp, 2006). In addition, studies have indicated that parents of children with ADHD experience higher levels of depression (Chronis et al., 2003), have reduced confidence in their parenting role and lower levels of parental satisfaction (Heath, Curtis, Fan, & McPherson, 2015) compared with parents of children without ADHD. Whalen and colleagues (2011) captured the daily distress experienced by mothers of children with ADHD, in real-world settings, using electronic diaries. Findings demonstrated that maternal distress was not simply due to maternal risk factors (e.g.,

predisposition of the mother or the mother's own ADHD), but varied as a function of changes in their child's behavior. While results showed that the association between child behavior and maternal distress was not specific to mothers of children with ADHD, the association was stronger among mother-child dyads when the child had ADHD (Whalen, Ogders, Reed, & Henker, 2011).

Numerous quantitative studies have also shown that elevated parenting stress has an effect on parental well-being and family functioning among parents of children with ADHD (e.g., Heath et al., 2015; Moen, Hedelin, & Hall-Lord, 2016). In fact, family functioning has been described as one of the major problems facing parents caring for a child with ADHD (Schroeder and Kelley, 2009), and family functioning has been identified as one of the main contributing factors associated with referral to mental health services (Reigstad, Jørgensen, Sund, & Wichstrøm, 2006).

Other studies have reported significant reduction in parental stress, higher self-efficacy, and improved family functioning following behavioral parent training. Results from Heath and colleagues (2015) demonstrated that significant improvements in the behavior of children with ADHD resulted in decreased parental stress and improved parenting self-efficacy, following behavioral parent training. The implications of these and other similar results (Danforth, Harvey, Ulaszek, & McKee, 2006) suggest that a reduction in child ADHD symptoms can have a significant impact on parents' well-being and overall family functioning. However, it is important to consider that while parental stress and impaired family functioning are affected by ADHD, parental stress and impaired family functioning, in turn, are likely to contribute to the maintenance of behavioral symptoms (Counts, Nigg, Stawicki, Rappley, & Von Eye, 2005). Hence, treatment is crucial in supporting children with ADHD, and their families, in order to

decrease the adverse short- and long-term effects of this chronic disorder (Mohr-Jensen, & Steinhausen, 2016).

Treatment for childhood ADHD

Recent research has greatly enhanced our understanding of ADHD core symptoms and the pattern of associated comorbidities, as well as informing our approach to treatment (Riccio, Sullivan, & Cohen, 2010). Nevertheless, over the years, a wide variety of interventions including pharmacological (e.g., stimulant, non-stimulant medication), psychosocial (e.g., behavior therapy, cognitive training, school-based intervention), and a diverse range of complementary practices (e.g., dietary management, physical therapy, homeopathy, etc.) have been publicized as suitable treatment for children with ADHD (Catalá-López et al., 2017). Although some parents choose alternative therapies to assist in the management of ADHD symptoms, currently three evidence-based treatment modalities are recommended: (1) pharmacological intervention, (2) behavior therapy, and (3) combined pharmacological and behavioral intervention (Fabiano, Schatz, Aloe, Chacko, & Chronis-Tuscano, 2015).

Pharmacological intervention refers to the use of medication, under supervision of a medical professional, to treat ADHD symptoms; whereas, behavior therapy, otherwise known as behavioral parent training, is a parent-based intervention where parents receive instruction in behavior modification techniques. These techniques are designed to increase child adaptive behavior, decrease problematic behavior, increase parent management skills, and improve family functioning (Centers for Disease Control and Prevention [CDC], 2009). Behavior therapy is based on the tenets of behavior, cognitive-behavior, and social learning theories as outlined by Skinner (1953), Beck (1979), and Bandura (1963, 1977).

A considerable body of evidence from randomized controlled trials (RCTs), reported in meta-analyses, has demonstrated that pharmacological treatment is significantly more effective than placebo in the treatment of childhood ADHD core symptoms, at least in the short-term (Punja et al., 2016; Storebø et al., 2015); whereas, endorsements for behavior therapy are less clear. As a result, the evidence for pharmacological treatment has substantially influenced recent clinical guidelines (Pelham & Fabiano, 2008). Other studies have compared pharmacological treatment, behavior therapy, and a combination of these two treatments. The largest ADHD comparative treatment study, the 14-month Multimodal Treatment Study (MTA) of children with ADHD, compared the effects of four different treatment strategies: (1) intensive medication (methylphenidate) management, (2) intensive multicomponent behavior therapy (parent training, child treatment, and school-based intervention), (3) combined medication and behavior therapy, and (4) routine community care, which included stimulant medication from own physician (control group), for children aged seven to nine years diagnosed with Combined-Type ADHD.

The MTA study was designed to compare medication and behavioral treatments, and to investigate whether there were additional benefits when medication and behavioral treatments were used in combination. In addition, the MTA study investigated how carefully administered systematic treatments compared with routine community care. At the end of the treatment period all four groups showed improvement, however participants in the combined therapy and medication groups showed greater behavioral improvement than participants in the behavior therapy and community care groups. There were no significant differences between the combined therapy group and the medication group for ADHD symptoms; however, the combined therapy group showed a modest improvement in child general functioning compared with the medication group (MTA Cooperative Group, 1999). Interestingly, when child general

impairment and ADHD symptoms were added and reduced to a single dimension, the combined treatment yielded significantly greater benefits on parenting behavior relative to medication management alone (Wells et al., 2006). At the three-year follow-up, although all four groups had maintained baseline improvement, the differential treatment group efficacy was no longer evident. The authors concluded that age related changes in ADHD symptoms, reduced medical management monitoring, and poor medication adherence accounted for much of the decline in treatment effects (Jensen et al., 2007). Findings at the eight-year follow-up indicated that despite initial treatment gains, that continued post-treatment, the data failed to demonstrate long-term benefits of medication. Notably, behavior therapy was discontinued prior to post-treatment evaluation; this was not the case for medication (Barkley, 2000). However, at the eight-year follow-up, records revealed that 62% of participants who received medication during the initial study were no longer taking medication (Molina et al., 2009). The clinical implications of these results indicate that practitioners need to discuss with parents, the potential short- and long-term benefits, harms, and uncertainties associated with available treatment options before a treatment regimen is established (Catalá-López et al., 2017). Like all research, the MTA study answered crucial questions relating to the treatment of child ADHD while simultaneously raising others (Barkley, 2000).

Clinical practice guidelines for the treatment of childhood ADHD

The research informing clinical guidelines has focused on the evaluation of evidence-based pharmacological and behavioral therapy treatments. Clinical guidelines published by the American Academy of Child and Adolescent Psychiatry (2007) recommend pharmacological intervention as the first-line treatment for school-aged children, adolescents, and preschoolers

with ADHD, although a more cautionary approach is recommended with preschoolers. The American Academy of Pediatrics (2011) recommends pharmacological intervention with concomitant behavior therapy for school-aged children and adolescents with ADHD. For preschool children behavior therapy is recommended as the first-line treatment, due to the increase in potential adverse side effects of medication in this age group (Greenhill et al., 2006). Treatment guidelines published by the National Institute for Health and Care Excellence (NICE, 2018) differ from the American guidelines in the order of first-line treatment, reflecting a more conservative attitude towards pharmacological intervention in Europe (Sayal, Prasad, Daley, Ford, & Coghill, 2018). NICE guidelines recommend behavior therapy as first-line treatment for school-aged children and adolescents with moderate impairment, and pharmacological treatment as first-line treatment for school-aged children and adolescents with significant impairment across various aspects of daily life. The NICE recommendation for preschool children is behavior therapy. Zwi and colleagues (2011) critiqued the NICE guidelines that recommend behavior therapy as an intervention for child ADHD, stating that evidence was not based on children diagnosed with ADHD. Instead, evidence for the NICE recommendation was based on data from children diagnosed with ODD and CD (NICE, 2006) with the assumption that the findings will similarly apply to children with ADHD. Research indicates that a considerable proportion of children with ADHD do not develop ODD or CD (Larson et al, 2011). Clearly, clinical practice guidelines for children diagnosed with ADHD ought to be based on evidence gained from studies of children with ADHD, rather than studies of children with ODD and CD.

The pharmacological treatment dilemma

Despite robust support for the use of pharmacological intervention in the treatment of childhood ADHD, the use of medication poses challenging ethical concerns for many parents and professionals in the process of choosing a viable treatment. Considerations in addition to treatment efficacy are important to parents, with some parents preferring to use a nonpharmacological intervention, expressing concerns about the safety and adverse effects of stimulant medication (e.g., loss of appetite, weight loss, insomnia, somatic concerns, irritability, mild reduction in growth rate); whereas, adverse effects from behavior therapy tend to be low (Charach et al., 2013). Misuses of rewards and/or punishments are the most likely adverse effects to be reported. However, program modification usually alleviates such problems (Piffner & Haak, 2014). Opponents, concerned about increasing levels of medication prescribed for children with ADHD (Zuvekas & Vitiello, 2012), argue that medication discourages parents from implementing appropriate discipline strategies, and that behavioral intervention would be more effective (Dryer, Kiernan, & Tyson, 2012). Those who support the use of medication maintain that ADHD symptom improvement creates opportunities for the child to learn adaptive behavior (National Health and Medical Research Council, 2012). In the United States, estimates indicate that approximately 66% of children diagnosed with ADHD receive pharmacological treatment (CDC, 2010). The debate regarding the use of medication is exacerbated by the limited number of studies comparing various treatment options, causing great consternation for many families seeking treatment for a child suffering from ADHD (Catalá-López et al., 2017).

Given the focus of this thesis is behavioral parent training for parents of children with ADHD, a thorough analysis of pharmacological interventions for child ADHD is beyond the scope of the current review.

Behavior therapy for childhood ADHD

Despite the release of evidence-based clinical guidelines supporting the use of pharmacological intervention and behavior therapy in the treatment of child ADHD, questions remain regarding the relevance of behavior therapy as a treatment option for child ADHD. Given many studies, including the widely cited MTA study (MTA Cooperative Group, 1999), have concluded that pharmacological intervention is more effective than behavior therapy (Catalá-López et al., 2017; Hinshaw, Klein, & Abikoff, 2007), it is not surprising that prescriptions for stimulant medication are more likely than referrals for behavioral treatment for ADHD. Moreover, behavior therapy is not as readily accessible as medication in most communities (Leslie & Wolraich, 2007).

Notwithstanding, in the past 20 years six separate reviews of behavioral interventions have established the efficacy of behavior therapy in the treatment of child ADHD (Daley et al., 2014; Evans, Owens, & Bunford, 2014; Fabiano et al., 2009b; Lee, Niew, Yang, Chen, & Lin, 2012; Pelham & Fabiano, 2008; Pelham, Wheeler, & Chronis, 1998). In 1998, Pelham and colleagues conducted a review of the literature to identify evidence-based psychosocial treatments for ADHD. Results indicated that behavioral parent training met Task Force criteria (Task Force on Promotion and Dissemination of Psychological Procedures, 1995) as a probably efficacious treatment for child ADHD (Pelham et al., 1998). In 2008, Pelham and Fabiano conducted an update of their previous review. Due to the inclusion of numerous new studies, behavioral parent training was subsequently shown to have substantial evidence of efficacy and met the Nathan and Gorman (2002) criteria for a well-established treatment for child ADHD. Notably, in this review, behavioral classroom management and behavioral peer intervention in a recreational setting also met criteria as well-established treatments for child ADHD (Pelham & Fabiano, 2008).

Similar evidence for behavioral parent training from later meta-analytic studies has been reported. In a review of 174 studies, Fabiano and colleagues (2009b) reported results that clearly supported the efficacy of behavioral treatment for ADHD. In this review the reported average effect size for child behavior, from 20 between-group studies, was $d = 0.83$, suggesting that behavior therapy is an effective treatment for children with ADHD.¹ An update of the Pelham and Fabiano 2008 review conducted by Evans and colleagues (2014) endorsed the finding that behavioral parent training provides significant benefits to children with ADHD and their parents. Additionally, Daley and colleagues (2014) found that behavioral parent training had beneficial effects on a range of parent and child outcomes (e.g., positive parenting $d = 0.68$, conduct problems $d = 0.31$), although no effect was found for child ADHD symptoms. In their meta-analysis of behavioral parent training for children with ADHD, Lee and colleagues (2012) reported an overall moderate positive effect ($d = 0.72$) for both child and parent behavior that remained positive, but reduced to a small effect ($d = 0.35$), up to three years following training. Of note, when questionnaire and observation measures were compared the strength of the effect was smaller for the observation measures. Additionally, results from the Lee and colleagues meta-analysis showed a smaller effect for children with ADHD and comorbid behavioral difficulties than children with ADHD alone. Despite considerable heterogeneity across studies included in meta-analytic reviews the most consistent finding is that behavior therapy, in particular behavioral parent training, is an effective treatment for child ADHD (Fabiano et al., 2009b).

Nevertheless, controversy regarding the efficacy of behavioral interventions for child ADHD remains. For example, a meta-analysis of various non-pharmacological, dietary and

¹ Effect sizes – When descriptive terms are reported for effect sizes, Cohen’s d classification labels have been used (i.e., small = 0.2, medium = 0.5, large = 0.8).

psychological interventions for ADHD conducted by Sonuga-Barke and colleagues (2013) indicated that there was little evidence to support behavior therapy. However, the only outcome measured in this meta-analysis was change in ADHD symptoms. As a result, the effect of behavior therapy on child functional impairment was not included (Pfiffner & Haak, 2014). Most meta-analyses evaluating behavior therapy among children with ADHD measure both ADHD symptoms and behavioral functioning (e.g., Daley et al., 2014). Other researchers argue that functional impairment is what drives most parents to seek treatment and that ADHD symptoms are not the only target of treatment for a child with ADHD (Chronis-Tuscano, Chacko, & Barkley, 2013). Notably, Sonuga-Barke and colleagues stated that although behavior therapy did not reduce ADHD symptoms it may reduce oppositional behavior. Fifteen behavioral intervention studies, with differing behavioral treatments and heterogeneous samples, from preschoolers to adolescents, were included in the meta-analysis. Eight of the included studies evaluated parent training alone, four evaluated combined parent-child training, two included a teacher component, and one evaluated child-only training (Sonuga-Barke et al., 2013). Critics argue that this form of analysis is similar to a meta-analysis that combines stimulants, non-stimulants, antidepressants, and antipsychotics into a single medication category (Chronis-Tuscano et al., 2013). It has been argued that combining diverse treatments into a single category is likely to underestimate the effects of each particular treatment (Purdie, Hattie, & Carroll, 2002). Moreover, comparing treatments with differing components makes meaningful conclusions difficult (O'Dowd, 2012).

Another review also found little evidence to endorse behavior therapy as an effective treatment for ADHD (Zwi, Jones, Thorgaard, York, & Dennis, 2011). After an extensive review of the behavioral parent training literature, Zwi and colleagues deemed only five studies were

eligible for inclusion in their review; all studies apart from randomized group designs were excluded. Hence, most results were based on single studies. Four studies assessed child behavior, of those, two assessed behavior at home and two assessed behavior at school; the fifth study targeted changes in parenting strategies. Consequently, the opportunity to conduct a meta-analysis was limited due to the small number of disparate studies.

The challenge integrating research findings

As the above discussion suggests integrating findings across studies can be difficult to reconcile. In contrast to pharmacological interventions where treatment is comparatively homogenous, behavior therapy represents a diverse range of approaches. Hence, reconciling inconsistent findings across various studies presents a unique challenge for clinicians and may lead to unreliable or erroneous conclusions (Fabiano et al., 2015).

Fabiano and colleagues (2015) cite four main methodological differences as the likely source of inconsistent findings between studies. Firstly, some meta-analyses evaluating psychosocial interventions for ADHD only include interventions that have strong empirical support, such as behavioral training programs (Evans et al., 2014; Pelham & Fabiano, 2008), while other reviews include a range of nonpharmacological interventions, such as neurofeedback and self-monitoring (Hodgson, Hutchinson, & Denson, 2012), that have limited evidence of efficacy in the treatment of child ADHD. As a result, disparate findings are likely to be reported, making comparisons between psychosocial interventions and, pharmacological and psychosocial interventions difficult. Secondly, differences in the treatment outcomes assessed are common. For example, pharmacological studies typically assess parent and teacher ratings of ADHD symptoms; whereas, psychosocial studies assess a broad range of treatment outcomes (e.g.,

ADHD symptoms, functional impairment, comorbid symptoms, and academic functioning, as well as parent behavior). Further, some meta-analyses report results for each type of outcome measure, some report results for combined outcome categories, and others report a single result for each study, again adding to the variability in results. Thirdly, differences in the inclusion and exclusion criteria (e.g., study design, sample characteristics, informant criteria) across meta-analyses are likely to contribute to inconsistent findings. Finally, every meta-analysis is exposed to various sources of bias via the primary studies that are included (e.g., rigor of the inclusion/exclusion criteria, attrition). Hence, when interpreting effect sizes it is important to keep in mind that all of these methodological issues have an impact on reported findings. Moreover, understanding these methodological differences has important implications for the conclusions reached regarding the efficacy of psychosocial treatments for child ADHD (Fabiano et al., 2015).

Parenting programs

Parenting program, parent training program, parent management training or behavioral parent training program are all interchangeable terms used to describe interventions in which parents or caregivers actively receive direct instruction to enhance parenting skills (Wade, Macvean, Falkiner, Devine, & Mildon, 2012). Research has identified that the most robust risk and protective factors associated with child behavioral outcomes relate to the quality of parenting a child receives (Tully, 2009). The link between child behavior and parenting is based on the premise that parental behavior contributes to the origin and maintenance of disruptive child behavior (Lundahl, Risser, & Lovejoy, 2006). Hence, the central aim of any evidence-based behavioral parenting program is to improve child behavior by changing parental behavior. In

addition, parenting programs may seek to reduce parental stress, enhance parental self-esteem and coping skills, and increase communication skills in order to improve child outcomes (Tully, 2009). However, it has been suggested that although important, improvement in associated parenting outcomes, such as parental self-esteem, may not promote change in parenting behavior, but rather are often the indirect effect of changing parental practices (Patterson, DeGarmo, & Forgatch, 2004).

Several reviews have identified four key components that underpin effective parenting programs (Kaminski, Valle, Filene, & Boyle, 2008; Tully, 2009). Results indicated that the components consistently associated with better outcomes include: (1) consistent parenting; (2) positive parent-child interaction skills; (3) non-aggressive communication and disciplinary strategies, and (4) practicing these skills with their child during training. Program components that focus on parents acquiring skills that improve the parent-child relationship and decrease disruptive child behavior are likely to form the basis of effective parent training programs (CDC, 2009; Kaminski et al., 2008).

Parenting programs are typically 8 to 12 sessions delivered in one of three formats: (1) as a traditional one-on-one program to individual parents, (2) to small or large groups of parents, or (3) more recently, as an independent self-instruction program (Tully, 2009). Moreover, a parenting program may be incorporated into a home visiting program (Watson & Tully, 2008). Parenting programs also differ according to the intended recipient(s). In many programs parents are the only recipient, other programs offer child therapy as an adjunct to the parent intervention, some programs utilise a combined parent/child approach, while others incorporate the child's teacher(s) in a multisystem approach (Lundahl et al., 2006). Additionally, there are three levels of delivery. Parenting programs may be delivered universally to all parents within a population

as a preventative strategy, they may be delivered to parents of children at high risk of developing behavioral problems (secondary level), or to parents of children already identified as having behavioral problems (tertiary level; Tully, 2009). Irrespective of the delivery format or intended recipient(s), the aim of most parenting programs is to improve child behavioral outcomes by improving parenting practices (CDC, 2009; Tully, 2009).

In addition to mode of delivery and target population, parenting programs are generally categorised into one of two main theoretical orientations: behavioral and nonbehavioral approaches (Lundahl et al., 2006; Tully, 2009). Both theoretical orientations propose that deleterious parent-child interactions play a crucial role in the development and maintenance of child behavior problems (Piffner & Haak, 2014). Behavioral programs incorporate principles from operant learning (Skinner, 1953), and social learning (Bandura, 1963) theories, alongside techniques from cognitive-behavior therapy (Beck, 1979); whereas, nonbehavioral programs are grounded in attachment theory (Bowlby, 1969), and family systems theory (Bowen, 1966). Operant learning theory posits that behavior is influenced by reward and punishment. Social learning theory proposes that children learn to behave by observing and imitating the behavior of others in their environment. The cognitive component focuses on the distorted thinking patterns parents may harbor regarding their child's behavior. Thus, behavioral parenting programs aim to strengthen the parent-child relationship by teaching parents to use praise and rewards when their child behaves in a prosocial manner, and to ignore or impose consequences when their child displays problematic behavior. In addition, the importance of modelling appropriate behavior is emphasised and parents learn to reframe misattributions associated with their child's behavior (Furlong et al., 2012; Tully, 2009). Nonbehavioral programs on the other hand, emphasise the development of a secure parent-child attachment and supportive patterns of interaction within the

family, with the aim of increasing child prosocial behavior by strengthening the emotional bond between parent and child (Lundahl et al., 2006; Tully, 2009). Hence, an important feature of most parent training programs is teaching positive parenting skills as an alternative to ineffective and coercive parenting practices (Pfiffner & Haak, 2014).

Established parenting training programs within the behavioral category include: *Parent-Child Interaction Therapy* (PCIT; Eyberg, 1988), *Incredible Years* (IY; Webster-Stratton, 1984), *Parent Management Training—Oregon Model* (PMTO; Forgatch, 1994), *Triple-P Positive Parenting Program* (Triple P; Sanders, 1999), *Helping the Noncompliant child* (Forehand & McMahon, 1981), and *1-2-3 Magic: Effective Discipline for Children 2-12* (Phelan, 1984). Popular programs within the nonbehavioral category include: *Tuning into Kids* (Havighurst & Harley, 2007), and *Circle of Security* (Marvin, Cooper, Hoffman, & Powell, 2002). Although classified as a behavioral program, PCIT draws from both behavioral and nonbehavioral principles to teach effective parenting skills (Eyberg, 1988). A common underlying notion for all of these programs is that high quality parenting is a key part of ensuring the best long-term outcome for the child (Tully, 2009). Currently, the evidence for nonbehavioral programs is limited compared with the broad evidence base supporting the efficacy of behavioral parenting programs (Tully, 2009). As such, behavioral parenting programs are generally recognised as the gold standard in preventing and reducing child behavioral problems (World Health Organisation, 2009). However, it is worth noting that there are a limited number of studies that compare the outcomes of different parenting programs (e.g., Thomas & Zimmer-Gembeck, 2007).

Evidence-based parenting programs

While there is no consensus on what constitutes an evidence-based program (Tully, 2009), a common definition indicates that evidence-based programs require strong empirical support, are safe and effective, and have high treatment fidelity (Chaffin & Friedrich, 2004). The California Evidence-Based Clearinghouse for Child Welfare (CEBC) extends this definition by suggesting that evidence-based programs also require practice-based evidence beyond controlled research settings, and are consistent with local values (CEBC, 2017c).

The CEBC rates parenting programs according to a five-point Likert scale (1 = *well-supported by research evidence* to 5 = *concerning practice*) and an additional category (NR = *unable to be rated*), based on the level of empirical support for each program. A low score indicates a greater level of empirical support (CEBC, 2017c). According to the CEBC rating scale five parenting programs, specifically designed to address behavior problems among children, are in the well-supported category (CEBC, 2017a). Four of these programs may be utilised as preventative or treatment programs (CEBC, 2017a): (1) IY (Webster-Stratton, 1984), (2) PMTO (Forgatch, 1994) and its corresponding group program, *Parenting through Change*, (3) Triple P level 4 (Sanders, 1999), and (4) *Family Check-Up* (Dishion & Kavanagh, 2003). The fifth program in the well-supported category is PCIT (Eyberg, 1988); this program is generally utilised as a treatment program (CEBC, 2017b). A number of other parenting programs are rated, according to the CEBC system, as supported by research evidence or promising research evidence (CEBC, 2017a).

Under the CEBC classification system the *1-2-3 Magic: Effective Discipline for Children 2-12* program (Phelan, 1984) has a rating of three, promising research evidence, indicating at least one peer-reviewed study, with demonstrated intervention effects compared with a control or

a comparative intervention, has been reported in the literature (Bradley et al., 2003; CEBC, 2017d). Notably, three additional 1-2-3 Magic studies, not included on the CEBC website, have been published in the peer-reviewed literature. One study, a RCT of the 1-2-3 Magic group parent training program showed that child behavioral improvements and improved parent functioning were maintained for two years (Porzig-Drummond, Stevenson, & Stevenson, 2014). Another smaller RCT demonstrated that intervention effects were maintained for 12 months post-treatment (Bailey, van der Zwan, Phelan, & Brooks, 2015). The third study, a RCT of the 1-2-3 Magic self-directed program showed that post-treatment improvements were maintained for six months (Porzig-Drummond, Stevenson, & Stevenson, 2015). Results from each of these studies support the long-term efficacy of the 1-2-3 Magic program for families struggling with child behavioral issues. Two additional published RCTs provide support for the short-term efficacy of the 1-2-3 Magic program suggesting it may be a beneficial brief intervention for parents of children with behavioral difficulties (Bailey, van der Zwan, Phelan, & Brooks, 2012; Flaherty & Cooper, 2010). One further study, intervention-group only, conducted in a community services setting provides preliminary evidence of the potential benefits of the 1-2-3 Magic program conducted in a real-world setting (Porzig-Drummond, Stevenson, & Stevenson, 2016). Hence, evidence for the efficacy of the widely used 1-2-3 Magic parenting program (Phelan, 2014) is accumulating.

Currently, the only recognized evidence-based parenting training programs in Australia that address child behavior problems are: Incredible Years, Parent-Child Interaction Therapy, and Triple P (Department of Family & Community Services, 2014).

Evidence-based parenting programs for child ADHD

Numerous empirical studies support the effectiveness of behavioral parenting programs for children with ADHD. In regard to the five well-supported parenting programs cited on the CEBC registry, four widely disseminated programs have been used to treat children diagnosed with ADHD, namely: PCIT, IY, PMTO, and Triple P.

PCIT (Eyberg, 1988), an unlimited, dyadic behavioral intervention for children aged two to seven years and their parents has been shown to significantly reduce ADHD symptoms and disruptive behavior in young children. For example, a study conducted by Leung and colleagues (2017) found that PCIT, used to treat Chinese children diagnosed with ADHD, significantly reduced inattention, disruptive behavior problems and parental stress, and increased positive parenting practices. A review of published PCIT outcome studies that assessed ADHD symptoms and associated behavioral problems in young children concluded that PCIT may be an effective treatment for children with ADHD (Wagner & McNeil, 2008).

The IY program (Webster-Stratton, 1984) for families of young children with ADHD constitutes 20 to 24 concurrent parent and child small group sessions. Multiple RCTs have evaluated the effectiveness of IY as a treatment program for children with disruptive behavior and ADHD. A study evaluating the efficacy of IY among young children with ADHD reported positive treatment effects for ADHD symptoms, oppositional behavior, social competence, and emotional regulation following concurrent parent and child training (Webster-Stratton, Reid, & Beauchaine, 2011); treatment effects remained positive at the one-year follow-up (Webster-Stratton, Reid, & Beauchaine, 2013).

PMTO (Forgatch, 1994) is a long duration, individual family program; typically 20 to 50 sessions are required to reach treatment goals. In an intervention-only group evaluation of

PMTO, children aged 12 and under with behavioral problems, with and without co-occurring ADHD were compared; average number of sessions was 24. Findings suggested that similar benefits were gained for externalizing behavioral difficulties regardless of ADHD; however, results for attention and social problems remained higher for the ADHD group (Bjørnebekk, Kjøbli, & Ogden, 2015).

Triple P (Sanders, 1999) is a multi-tiered behavioral family intervention comprising multiple formats (i.e., standard or enhanced for individual families, group, self-directed and specialist versions). The Standard Triple P (level 4), for children with severe behavioral difficulties, is a 10-session individual parent-only program, whereas, the equivalent Group Triple P program comprises five 2-hour parent-only group sessions and three 15-30 minute follow-up telephone sessions. Results from a study of Enhanced Group Triple P (level 5) with minor modification for parents of children with ADHD reported significant reductions in disruptive behavior and improved parental functioning compared with a waitlist group; there was no significant reduction in ADHD symptoms. Positive treatment effects were maintained at the three-month follow-up (Hoath & Sanders, 2002). Results from a larger study, Enhanced Individual Triple P, 12 sessions (on average 14 hours of intervention), versus Standard Individual Triple P, 10 sessions (on average 10 hours of intervention), among preschool children displaying deviant behavior with co-occurring attentional and hyperactivity difficulties reported similar results for the Enhanced and Standard Triple P programs. The authors found that both groups were associated with a significant reduction in disruptive child behavior, lower levels of aversive parenting, and improved parental functioning. Post-treatment effects were maintained at the one-year follow-up (Bor, Sanders, & Markie-Dadds, 2002).

Collectively, results from evidence-based programs for children with ADHD, such as those reported above, indicate that lengthy, individual parenting programs may not provide additional benefits over and above group programs with fewer sessions. Similarly, results from the Bor and colleagues study (2002) suggest enhanced programs yield no additional benefits for children with ADHD compared with standard programs.

However, inconsistent results have been reported for two enhanced group parenting programs, specifically designed to engage underrepresented parents of children with ADHD (e.g., fathers and single mothers), compared with a traditional group program. An eight-week program designed for fathers of children with ADHD (Coaching Our Acting-Out Children: Heightening Essential Skills [COACHES]; Fabiano et al., 2009a), which included a father-child sports activity, was compared with an eight-week traditional parent-only program and adjunct child group. While both parenting groups resulted in equal post-treatment improvements in ADHD symptoms and child behavior, the COACHES program demonstrated higher attendance, reduced drop-outs, slightly higher homework compliance, and greater paternal satisfaction than the standard parenting group. There was no follow-up data for the COACHES study. A similar study for single mothers of children with ADHD compared the nine-week STEPP program (Strategies to Enhance Positive Parenting; Chacko et al., 2009) and a concurrent child social skills program, with a nine-week traditional parent-only group program, and a control group. The STEPP program incorporated parent-child interaction sessions within the child social skills program, as well as numerous other program enhancements. Results revealed moderate post-intervention effects for child functional impairment and positive parenting for the combined STEPP and traditional programs compared with the waitlist group. However, there was no significant improvement in ADHD symptoms and treatment gains were not maintained at the

three-month follow-up. Similar improvements were reported for the STEPP versus the traditional program comparison. As with the COACHES program, higher levels of engagement and greater parental satisfaction were also reported for the STEPP program (Chacko et al., 2009). However, unlike traditional parent-only group programs both the COACHES and STEPP programs included a parent-child interactive component.

Research findings from a review of the components of parent training programs, for parents of young children displaying early problem behaviors, have shown that including a parent-child practice component during parent training is a strong predictor of better parent and child outcomes (Kaminski et al., 2008). Nevertheless, given the limited number of studies comparing enhanced and traditional programs for parents of school-aged children with ADHD, the benefits of a parent-child practice component for school-aged children with ADHD have yet to be established.

Limited RCTs of parent-only group programs for school-aged children with ADHD

While numerous studies with combined parent-child and/or adjunct components (e.g., child, teacher) support the efficacy of various individual and group parenting programs for children with ADHD; to my knowledge, only two published controlled studies conducted in a parent-only group-format have shown a reduction in ADHD symptoms in school-aged children. The first study (Dubey, O’Leary, & Kaufmann, 1983) compared Becker’s (1971) nine-week parent training model with a nine-week parent communications group and a waitlist group. While both interventions were effective in reducing disruptive behavior and ADHD symptoms compared with the control group, the parent training group reported a significantly greater reduction in disruptive behavior than the communications group. However, there was no significant

difference between the intervention groups in ADHD symptom reduction. All treatment outcomes were maintained at the nine-month follow-up. The second study (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993) compared a parent training group with a waitlist control group. The parent training intervention utilized Barkley's (1987) nine-session behavioral parent training program which included specific ADHD information. Results showed a significant reduction in child ADHD symptoms, as well as reduced parental stress and improved parent self-esteem compared with controls. Positive effects were maintained at the two-month follow-up.

The case for brief parent training programs for children with ADHD

Empirical evidence supporting behavioral parent training for children with behavioral problems, including ADHD, along with the increasing realization that many parents are not be able to meet the demands of a lengthy individual or group parent training program, have prompted researchers to investigate the efficacy of brief parenting programs (less than eight sessions). In particular, a recent systematic review evaluated eight studies of brief parenting programs that targeted young children with behavioral difficulties (Tully & Hunt, 2016). Of note, studies that targeted children with ADHD were not included in this review.

Six of the eight studies examined brief, group programs; the remaining two studies examined brief, individual programs. Five of the group program studies examined the Group Triple P (level 3) discussion program (Dittman, Farrugia, Keown, & Sanders, 2016; Joachim, Sanders, & Turner, 2010; Meija, Calam, & Sanders, 2015; Morawska, Adamson, Hinchliffe, & Adams, 2014; Morawska, Haslam, Milne, & Sanders, 2011). The Triple P (level 3) interventions consisted of a single 2-hour group discussion or a single 2-hour group discussion plus two 20-minute telephone consultations. The 2-hour group discussions targeted a specific behavior

problem (e.g., dealing with disobedience). The sixth study examined the 1-2-3 Magic program (Bradley et al., 2003). The 1-2-3 Magic program, a psychoeducational parenting intervention, consisted of three 2-hour group sessions plus a booster session four weeks after the final session. Results from each of these studies demonstrated reduced child behavior problems and less dysfunctional parenting compared with the control group; treatment effects were maintained at follow-up. However, while results from Morawska and colleagues (2014) showed a reduction in the specific behavior problem addressed in the discussion group (i.e., mealtime difficulties), there were no group differences for other child behavioral problems. In general, results from these brief group interventions suggest that brief, group parenting programs may be an effective, low-cost alternative for parents who experience low to moderate child behavioral difficulties, to longer duration group programs (Sanders, 2008).

Additionally, researchers have highlighted the considerable challenges faced by many parents considering behavioral parent training (Koerting et al., 2013). As well as acknowledging the high parental burden of caring for a child with behavioral difficulties, Koerting and colleagues (2013) identified a number of barriers that impact parents' decision to engage in a parent training program. Prominent among identified barriers were time constraints due to work and family commitments, transport, childcare, and financial difficulties (Koerting et al., 2013). While Koerting and colleagues also identified factors likely to facilitate parents' participation in parent training programs, offering brief programs to alleviate some of the practical barriers associated with this treatment approach was not considered. In relation to parenting program enrolments, other researchers have reported low take-up rates (Bunting, 2004) and high attrition rates (Patterson, Mockford, & Stewart-Brown, 2005) for traditional behavioral parent training

programs, which is not only a considerable drain on limited mental health resources but also challenges the effectiveness of such programs (Koerting et al., 2013).

In view of the large body of behavioral parent training research it is surprising that so few studies have evaluated the efficacy of brief parent training programs (Tully & Hunt, 2016). Increasingly, out of necessity, child mental health services are required to utilize brief treatment approaches in order to cope with service demands and maximize limited resources (Perkins, 2006). Moreover, a short-term treatment approach may be appropriate as first-line treatment for many families experiencing child behavioral difficulties. Unlike a long-term treatment approach that focuses on assessment during the initial sessions, a brief approach to treatment provides early assessment and concentrates on the key presenting problems from the outset (Perkins, 2006). It has long been suggested that brief treatment, or intermittent brief treatment, may be more effective than long-term treatment, as the most rapid improvement typically occurs at the beginning of treatment (Bloom, 2001; Kazdin, 2008).

A study of 216 children aged 5 to 15 years with a range of DSM-IV Axis I disorders (American Psychiatric Association, 1994), including ADHD, demonstrated the value of a single, solution-focused family therapy session on children's psychopathology, relative to a control group. Results showed a reduction in the frequency of, and severity of, a broad range of presenting problems one month after treatment (Perkins, 2006). Although brief, behavioral parenting programs have been shown to be effective for both preschool and school-aged children (Bailey et al., 2012, 2015; Bradley et al., 2003; Dittman et al., 2016; Joachim et al., 2010; Flaherty & Cooper, 2010; Meija et al., 2015; Morawska et al., 2011; Porzig-Drummond et al., 2014), it has been argued that brief treatment studies lack methodological rigor (Bloom, 2001). Nevertheless, outcomes from the Perkins (2006) study challenge the view that a brief treatment

approach may only be suitable for low level problems. While it is likely that parents of children with severe behavioral difficulties may require additional sessions or long-term treatment (Perkins, 2006), a brief treatment approach may well be a suitable first-line treatment for the majority of parents of children with behavioral difficulties, including children with ADHD.

In relation to ADHD, to my knowledge only one previous study (Hoath & Sanders, 2002) has evaluated the efficacy of a brief, group, behavioral parent training program (Enhanced Group Triple P) for parents of school-aged children with ADHD. As noted previously, although there was no significant reduction in ADHD symptoms, there was a moderate reduction in child disruptive behavior and a small improvement in parental functioning compared with the control group. Results from an eight-session group behavioral parent training program, implemented in an outpatient setting, for parents of school-aged children with ADHD reported a reduction in child functional impairments, improved parent-child interactions, and increased parental confidence in dealing with their child's behavior (Loren et al., 2015). Notably, no comparison control group was utilized and no follow-up data was collected in this study. Despite these limitations the authors argued that treatment outcomes were consistent with previous research showing that behavioral parent training programs improve the functioning of children with ADHD and their families (Loren et al., 2015).

Perhaps the most compelling argument for proposing the need for brief, evidence-based behavioral parent training for parents of children with ADHD lies with research findings into the interactive effects of pharmacological and behavioral treatment for children with ADHD. While the MTA study demonstrated the superiority of combined intensive pharmacological and behavioral treatment for children with ADHD (MTA Cooperative Group, 1999), subsequent research has shown that fewer benefits for combined treatment were observed when the

dose/intensity of either treatment was high (Fabiano et al., 2007; Pelham et al., 2014). Studies have shown that behavioral intervention reduces the need for high dose medication, such that the dose-response curve for medication flattened at lower doses when behavioral intervention was introduced in classroom and various social settings (Fabiano et al., 2007; Pelham et al., 2014). The finding that optimal medication doses may be lowered when simple behavior modification techniques are in place suggests there is a pressing need to investigate the efficacy of brief, behavioral parenting programs for parents of children with ADHD.

The evidence presented in this literature review indicates that behavioral parent training is an effective treatment for children with ADHD. In the main, research indicates that behavioral parenting programs are successful, with reported effect sizes in the moderate to large range. However, practical constraints and the burden of caring for a child with ADHD often means participation in a lengthy parent training program is not feasible for many parents. Given the success of behavioral treatment for children with ADHD is contingent on parental participation in training it is essential that some of the practical barriers associated with this treatment approach are minimized to facilitate participation and optimize outcomes for families in need. Hence, the aim of the current research is to build on the foundation of previous behavioral parent training and brief parenting program research to examine the efficacy of the 1-2-3 Magic parenting program, a brief, psychoeducational intervention, among parents of school-aged children with ADHD.

Final note on improving outcomes for children with ADHD

Although the focus of this thesis is behavioral parent training for parents of school-aged children with ADHD, it would be imprudent not to acknowledge the emerging, new wave of

neurocognitive treatments for ADHD. A commonly reported limitation of both behavioral and pharmacological interventions is the finding that while these approaches provide a number of short-term benefits, they fail to normalize functioning for the majority of children with ADHD (Chacko, Kofler, & Jarrett, 2014; Pfiffner & Haak, 2014). Currently, various hypotheses regarding neurocognitive mechanisms and processes related to ADHD symptoms and associated functional impairments (e.g., deficits in executive function; Barkley, 1997) are driving the development of innovative neurocognitive and skills-based treatments for ADHD (Chacko et al., 2014).

Notwithstanding, given ADHD is a complex, heterogeneous, neurodevelopmental disorder, there is little doubt that behavioral parent training will continue, along with other evidence-based interventions, to play a central role in improving outcomes for children with ADHD and their families.

References

- American Academy of Child and Adolescent Psychiatry. (2007). Practice parameter for the assessment and treatment of children and adolescents with attention-deficit/hyperactivity disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46(7), 894-921.
- American Academy of Pediatrics Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management. (2011). ADHD: Clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Pediatrics*, 128(5), 1007-1022. doi: 10.1542/peds.2011-2654
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- American Psychiatric Association (APA). (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.
- Anastopoulos, D. A., Shelton, T. L., DuPaul, G. J., & Guevremont, D. C. (1993). Parent training for attention-deficit hyperactivity disorder: Its impact on parent functioning. *Journal of Abnormal Child Psychology*, 21(5), 581-596. doi: 10.1007/BF00916320
- Arnett, A. B., Pennington, B. F., Willcutt, E. G., Defries, J. C., & Olson, R. K. (2015). Sex differences in ADHD symptom severity. *Journal of Child Psychology and Psychiatry*, 56(6), 632–639. doi: 10.1111/jcpp.12337

- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2012). The 1-2-3 Magic program: Implementation outcomes of an Australian pilot evaluation with school-aged children. *Child & Family Behavior Therapy*, 34(1), 53-69.
doi: 10.1080/07317107.2012.654455
- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2015). Keeping it going: Evidence of long-term improvements after implementation of the 1-2-3 Magic parenting program. *Child & Family Behavior Therapy*, 37(4), 303-320.
doi: 10.1080/07317107.2015.1104776
- Bandura, A. (1963). *Social learning and personality development*. New York, NY: Holt, Rinehart, & Winston.
- Bandura, A. (1977). *Social learning theory*. Oxford, England: Prentice-Hall.
- Barbarese, W. J., Colligan, R. C., Weaver, A. L., Voigt, R. G., Killian, J. M., & Katusic, S. K. (2013). Mortality, ADHD, and psychosocial adversity in adults with childhood ADHD: A prospective study. *Pediatrics*, 113(4), 637-644. doi: 10.1542/peds.2012-235
- Barkley, R. A. (1987). *Defiant children: A clinician's manual for parent treating*. New York, NY: Guilford Press.
- Barkley, R. A. (1997). Behavioral inhibition, sustained attention, and executive functions: Constructing a unifying theory of ADHD. *Psychological Bulletin*, 121(1), 65-94.
doi: 10.1037/0033-2909.121.1.65
- Barkley, R. A. (2000). Commentary on the multimodal treatment study of children with ADHD. *Journal of Abnormal Child Psychology*, 28(6), 595-599.
doi: 10.1023/A:1005139300209

- Beck, A. T. (1979). *Cognitive therapy and the emotional disorders*. New York, NY: Penguin Books.
- Becker, W. C. (1971). *Parents are teachers*. Champaign, Illinois: Research Press.
- Bjørnebekk, G., Kjøbli, J., & Ogden, T. (2015). Children with conduct problems and co-occurring ADHD: Behavioral improvements following parent management training. *Child & Family Behavior Therapy*, 37(1), 1-19.
doi: 10.1080/07317107.2015.1000227
- Bloom, B. L. (2001). Focused single-session psychotherapy: A review of the clinical and research literature. *Brief Treatment and Crisis Intervention*, 1(1), 75–86.
doi: 10.1093/brief-treatment/1.1.75
- Bloom, B., Jones, L., & Freeman, G. (2013). Summary health statistics for US children: National health interview survey, 2012. *Vital and Health Statistics*, 10(258), 1-81.
Retrieved from https://www.cdc.gov/nchs/data/series/sr_10/sr10_258.pdf
- Bor, W., Sanders, M. R., & Markie-Dadds, C. (2002). The effects of the Triple P-positive parenting program on preschool children with co-occurring disruptive behavior and attentional/hyperactive difficulties. *Journal of Abnormal Child Psychology*, 30(6), 571-587. doi: 10.1023/A:1020807613155
- Bowen, M. (1966). The use of family theory in clinical practice. *Comprehensive Psychiatry*, 7(5), 345-374. doi: 10.1016/S0010-440X(66)80065-2
- Bowen, R., Chavira, D. A., Bailey, K., Stein, M. T., & Stein, M. B. (2008). Nature of anxiety comorbid with attention deficit hyperactivity disorder in children from a pediatric primary care setting. *Psychiatry Research*, 157(1), 201-209.
doi: 10.1016/j.psychres.2004.12.015

- Bowlby, J. (1969). *Attachment. Attachment and loss: Vol. 1. Loss*. New York: Basic Books.
- Bradley, S. J., Jadda, D. A., Brody, M. A., Landy, J., Tallett, S. E., Watson, W.,...Stephens, D. (2003). Brief psychoeducational parenting program: An evaluation and 1-year follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42 (10), 1171-1178. doi: 10.1097/00004583-200310000-00007
- Bruchmüller, K., Margraf, J., & Schneider, S. (2012). Is ADHD diagnosed in accord with diagnostic criteria? Overdiagnosis and influence of client gender on diagnosis. *Journal of Consulting and Clinical Psychology*, 80(1), 128-138. doi: 10.1037/a0026582
- Bunting, L. (2004). Parenting programmes: The best available evidence. *Child Care in Practice*, 10(4), 327-343. doi: 10.1080/1357527042000285510
- California Evidence-Based Clearinghouse for Child Welfare (CEBC). (2017a). *List of programs*. Retrieved from <http://www.cebc4cw.org/search/by-program-name/>
- California Evidence-Based Clearinghouse for Child Welfare (CEBC). (2017b). *Parent-Child Interaction Therapy (PCIT)*. Retrieved from <http://www.cebc4cw.org/program/parent-child-interaction-therapy/detailed>
- California Evidence-Based Clearinghouse for Child Welfare (CEBC). (2017c). *Understanding evidence-based practices*. Retrieved from <http://www.cebc4cw.org/files/CEBCUnderstandingEvidence-BasedPractices.pdf>
- California Evidence-Based Clearinghouse for Child Welfare (CEBC). (2017d). *1-2-3 Magic: Effective discipline for children 2-12*. Retrieved from <http://www.cebc4cw.org/program/1-2-3-magic-effective-discipline-for-children-2-12/>

- Catalá-López, F., Hutton, B., Núñez-Beltrán, A., Page, M., Ridao, M., Macías Saint-Gerons, D., & Moher, D. (2017). The pharmacological and non-pharmacological treatment of attention deficit hyperactivity disorder in children and adolescents: A systematic review with network meta-analyses of randomised trials. *PLoS ONE* 12(7), e0180355.
doi: 10.1371/journal.pone.0180355
- Centers for Disease Control and Prevention (CDC). (2009). *Parent training programs: Insight for Practitioners*. Retrieved from
https://www.cdc.gov/violenceprevention/pdf/Parent_Training_Brief-a.pdf
- Centers for Disease Control and Prevention (CDC). (2010). Increasing prevalence of parent-reported attention deficit/hyperactivity disorder among children: United States, 2003 and 2007. *Morbidity and Mortality Weekly Report*, 59(44), 1439-1443. Retrieved from
<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5944a3.htm>
- Chacko, A., Kofler, M., & Jarrett, M. (2014). Improving outcomes for youth with ADHD: A conceptual framework for combined neurocognitive and skill-based treatment approaches. *Clinical Child and Family Psychology Review*, 17(4), 368-384.
doi: 10.1007/s10567-014-0171-5
- Chacko, A., Wymbs, B. T., Wymbs, F. A., Pelham, W. E., Swanger-Gagne, M. S., Girio, E.,... Bayliss, S. (2009). Enhancing traditional behavioral parent training for single mothers of children with ADHD. *Journal of Child & Adolescent Psychology*, 38(2), 206-218.
doi: 10.1080/15374410802698388
- Chaffin, M., & Friedrich, B. (2004). Evidence-based treatments in child abuse and neglect. *Children and Youth Services Review*, 26(11), 1097-1113.
doi: 10.1016/j.childyouth.2004.08.008

- Charach, A., Carson, P., Fox, S., Usman, M., Beckett, J., & Lim, C. (2013). Interventions for preschool children at high risk for ADHD: A comparative effectiveness review. *Pediatrics*, *131*(5), e1584–e1604. doi: 10.1542/peds.2014-3027
- Chronis-Tuscano, A. M., Chacko, A., & Barkley, R. (2013). Key issues relevant to the efficacy of behavioral treatment for ADHD. *American Journal of Psychiatry*, *170*(7), 799-799. doi: 10.1176/appi.ajp.2013.13030293
- Chronis, A. M., Lahey, B. B., Pelham, W. E., Kipp, H. L., Baumann, B. L., & Lee, S. S. (2003). Psychopathology and substance abuse in parents of young children with attention-deficit/hyperactivity disorder. *Journal of the American Academy of Child & Adolescent Psychiatry*, *42*(12), 1424-1432. doi: 10.1097/00004583-200312000-00009
- Corcoran, J., Schildt, B., Hochbrueckner, R., & Abell, J. (2017). Parents of children with attention deficit/hyperactivity disorder: A meta-synthesis, Part I. *Child and Adolescent Social Work Journal*, *34*(4), 281-335. doi: 10.1007/s10560-016-0465-1
- Counts, C. A., Nigg, J. T., Stawicki, J. A., Rappley, M. D., & Von Eye, A (2005). Family adversity in DSM-IV ADHD combined and inattentive subtypes and associated disruptive behavior problems. *Journal of the American Academy of Child and Adolescent Psychiatry*, *44*(7), 690-698. doi: 10.1097/01.chi.0000162582.87710.66
- Daley, D., van der Oord, S., Ferrin, M., Danckaerts, M., Doepfner, M., Cortese, S., & Sonuga-Barke, E. (2014). Behavioral interventions in attention-deficit/hyperactivity disorder: A meta-analysis of randomized controlled trials across multiple outcome domains. *Journal of the American Academy of Child and Adolescent Psychiatry*, *53*(8), 835-847. doi: 10.1016/j.jaac.2014.05.013

- Danforth, J. S., Harvey, E., Ulaszek, W. R., & McKee, T. E. (2006). The outcome of group parent training for families of children with attention-deficit hyperactivity disorder and defiant/aggressive behavior. *Journal of Behavior Therapy and Experimental Psychiatry*, 37(3), 188-205. doi: 10.1016/j.jbtep.2005.05.009
- Department of Family & Community Services. (2014). *Early intervention & placement prevention program: Child, youth and family support service model*. Retrieved from http://www.community.nsw.gov.au/__data/assets/pdf_file/0015/321252/cyfs_service_model.pdf
- Dishion, T. J., & Kavanagh, K. (2003). *Intervening in adolescent problem behavior: A family-centered approach*. New York: Guilford Press.
- Dittman, C. K., Farrugia, S. P., Keown, L. J., & Sanders, M. J. (2016). Dealing with disobedience: An evaluation of a brief parenting intervention for young children showing noncompliant behavior problems. *Child Psychiatry and Human Development*, 47(1), 102-112. doi: 10.1007/s10578-015-0548-9
- Dryer, R., Kiernan, M., & Tyson, G. (2012). Parental and professional beliefs on the treatment and management of ADHD. *Journal of Attention Disorders*, 16(5), 398-405. doi: 10.1177/1087054710392540
- Dubey, D. R., O'Leary, S. G., & Kaufman, K. F. (1983). Training parents of hyperactive children in child management: A comparative outcome study. *Journal of Abnormal Child Psychology*, 11(2), 229-246. doi: 10.1007/BF00912088
- Evans, S. W., Owens, J. S., & Bunford, N. (2014). Evidence-based psychosocial treatments for children and adolescents with attention-deficit/hyperactivity disorder. *Journal of Clinical Child & Adolescent Psychology*, 43(4), 527-551. doi: 10.1080/15374416.2013.850700

- Eyberg, S. M. (1988). Parent-child interaction therapy: Integration of traditional and behavioural concerns. *Child & Family Behaviour Therapy*, 10, 33-46.
doi:10.1300/J019v10n01_04
- Fabiano, G. A., Chacko, A., Pelham, W. E., Robb, J., Walker, K. S., Wymbs, F.,...Pirvics, L. (2009a). A comparison of behavioral parent training programs for fathers of children with attention-deficit/hyperactivity disorder. *Behavior Therapy*, 40(2), 190-204.
doi: 10.1016/j.beth.2008.05.002
- Fabiano, G. A., Pelham, W. E., Coles, E. K., Gnagy, E. M., Chronis-Tuscano, A., & O'Connor, B. C. (2009b). A meta-analysis of behavioral treatments for attention-deficit/hyperactivity disorder. *Clinical Psychology Review*, 29(2), 129-140.
doi: 10.1016/j.cpr.2008.11.001
- Fabiano, G. A., Pelham, W. E., Gnagy, E. M., Burrows-MacLean, L., Coles, E. K., Chacko, A.,...Masseti, G. M. (2007). The single and combined effects of multiple intensities of behavior modification and methylphenidate for children with attention deficit hyperactivity disorder in a classroom setting. *School Psychology Review*, 36(2), 195-216. Retrieved from <http://naspjournals.org>
- Fabiano, G. A., Schatz, N. K., Aloe, A. M., Chacko, A., & Chronis-Tuscano, A. (2015). A systematic review of meta-analyses of psychosocial treatment for attention-deficit/hyperactivity disorder. *Clinical Child and Family Psychology Review*, 18(1), 77-97.
doi: 10.1007/s10567-015-0178-6
- Flaherty, R., & Cooper, R. (2010). Piloting a parenting skills program in an Australian rural child protection setting. *Children Australia*, 35(3), 18-24.
doi: 10.1017/S1035077200001139

- Forehand, R., & McMahon, R. J. (1981). *Helping the noncompliant child: A clinician's guide to parent training*. New York: Guilford.
- Forgatch, M. S. (1994). *Parenting through change: A training manual*. Eugene: Oregon Social Learning Centre.
- Furlong, M., McGilloway, S., Bywater, T., Hutchings, J., Smith, S. M., & Donnelly, M. (2012). Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years. *Cochrane Database of Systematic Reviews*, Issue 2. Art. No.: CD008225.
doi: 10.1002/14651858.CD008225.pub2
- Geurts, H. M., & Embrechts, M. (2008). Language profiles in ASD, SLI, and ADHD. *Journal of Autism and Developmental Disorders*, 38(10), 1931-1943.
doi: 10.1007/s10803-008-0587-1
- Greenhill, L., Kollins, S., Abikoff, H., McCracken, J., Riddle, M., Swanson, J.,...Cooper, T. (2006). Efficacy and safety of immediate-release methylphenidate treatment for preschoolers with ADHD. *Journal of the American Academy of Child & Adolescent Psychiatry*, 45(11), 1284-1293. doi: 10.1097/01.chi0000235077.32661.61
- Harpin, V. A. (2005). The effect of ADHD on the life of an individual, their family, and community from preschool to adult life. *Archives of Disease in Childhood*, 90(Suppl. 1), 2-7. doi: 10.1136/adc.2004.059006
- Havighurst, S. S., & Harley, A. (2007). *Tuning into kids: Emotionally intelligent parenting program manual*. Melbourne, Australia: University of Melbourne.

- Heath, C. L., Curtis, D. F., Fan, W., & McPherson, R. (2015). The association between parenting stress, parenting self-efficacy, and the clinical significance of child ADHD symptom change following behavior therapy. *Child Psychiatry and Human Development, 46*(1), 118-129. doi: 10.1007/s10578-014-0458-2
- Hinshaw, S. P., Klein, R. G., & Abikoff, H. (2007). Childhood attention deficit hyperactivity disorder: Nonpharmacological treatments and their combination with medication. In P. E. Nathan & J. M. Gorman (Eds.), *A guide to treatments that work* (3rd ed., pp. 3-27). New York: Oxford University Press.
- Hoath, F. E., & Sanders, M. R. (2002). A feasibility study of enhanced group Triple P-positive parenting program for parents of children with attention/deficit hyperactivity disorder. *Behaviour Change, 19*(4), 191-206. doi: 10.1375/behc.19.4.191
- Hodgson, K., Hutchinson, A. D., & Denson, L. (2012). Nonpharmacological treatments for ADHD: A meta-analytic review. *Journal of Attention Disorders, 18*(4), 275-282. doi: 10.1177/1087054712444732.
- Jensen, P. S., Arnold, L. E., Swanson, J. M., Vitiello, B., Abikoff, H. B., Greenhill, L. L.,... Hur, K. (2007). 3-year follow-up of the NIMH MTA study. *Journal of the American Academy of Child & Adolescent Psychiatry, 46*(8), 989-1002. doi: 10.1097/CHI.0b013e3180686d48
- Joachim, S., Sanders, M. R., & Turner, K. M. (2010). Reducing preschoolers' disruptive behavior in public with a brief parent discussion group. *Child Psychiatry and Human Development, 41*(1), 47-60. doi: 10.1007/s10578-009-0151-z.

- Johnston, C., & Mash, E. J. (2001). Families of children with attention-deficit/hyperactivity disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review*, 4(3), 183-207. doi: 10.1023/A:1017592030434
- Kaminski, J. W., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training program effectiveness. *Journal of Abnormal Child Psychology*, 36(4), 567-589. doi: 10.1007/s10802-007-9201-9
- Kazdin, A. E. (2008). Evidence-based treatments and delivery of psychological services: Shifting our emphases to increase impact. *Psychological Services*, 5(3), 201-215.
doi: 10.1037/a0012573
- Koerting, J., Smith, E., Knowles, M. M., Latter, S., Elsey, H., McCann, D. C.,...Sonuga-Barke, E. J. (2013). Barriers to, and facilitators of, parenting programmes for childhood behaviour problems: A qualitative synthesis of studies of parents' and professionals' perceptions. *European Child and Adolescent Psychiatry*, 22, 653-670.
doi: 10.1007/s00787-013-0401-2
- Larson, K., Russ, S. A., Kahn, R. S., & Halfon, N. (2011). Patterns of comorbidity, functioning, and service use for US children with ADHD, 2007. *Pediatrics*, 139(3), 462-470. doi: 10.1542/peds.2010-0165
- Lawrence, D., Johnson, S., Hafekost, J., Boterhoven de Haan, K., Sawyer, M., Ainley, J., & Zubrick, S. (2015). *The mental health of children and adolescents. Report on the second Australian child and adolescent survey of mental health and wellbeing*. Department of Health, Canberra, Australia (Publication No. 11097). Retrieved from [https://health.gov.au/internet/main/publishing.nsf/Content/9DA8CA21306FE6EDCA257E2700016945/\\$File/child2.pdf](https://health.gov.au/internet/main/publishing.nsf/Content/9DA8CA21306FE6EDCA257E2700016945/$File/child2.pdf)

- Lee, P., Niew, W., Yang, H., Chen, V. C., & Lin, K. (2012). A meta-analysis of behavioral parent training for children with attention deficit hyperactivity disorder. *Research in Developmental Disabilities, 33*, 2040-2049. doi: 10.1016/j.ridd.2012.05.011
- Leslie, L. K., & Wolraich, M. L. (2007). ADHD service use patterns in youth. *Journal of Pediatric Psychology, 32*(6), 695-710. doi: 10.1093/jpepsy/jsm023
- Leung, C., Tsang, S., Ng, G., & Choi, S. (2017). Efficacy of parent-child interaction therapy with Chinese ADHD children: Randomized controlled trial. *Research on Social Work Practice, 27*(1) 36-47. doi: 10.1177/1049731516643837
- Loren, R. E., Vaughn, A. J., Langberg, J. M., Cyran, J. E., Proano-Raps, T., Smolyansky, B. H.,...Epstein, J. N. (2015). Effects of an 8-session behavioral parent training group for parents of children with ADHD on child impairment and parenting confidence. *Journal of Attention Disorders, 19*(2), 158-166. doi: 10.1177/1087054713484175
- Lundahl, B. W., Risser, H. J., & Lovejoy, M. C. (2006). A meta-analysis of parent training: Moderators and follow-up effects. *Clinical Psychology Review, 26*(1), 86-104. doi: 10.1016/j.cpr.2005.07.004
- Marvin, R. S., Cooper, G., Hoffman, K., & Powell, B. (2002). The Circle of Security project: Attachment-based intervention with caregiver–preschool child dyads. *Attachment & Human Development, 4*, 107-124. doi: 10.1080/14616730252982491
- Meija, A., Calam, R., & Sanders, M. R. (2015). A pilot randomized controlled trial of a brief parenting intervention in low-resource setting in Panama. *Prevention Science, 16*(5), 707-717. doi: 10.1007/s11121-015-0551-1

- Moen, O. L., Hedelin, B., & Hall-Lord, M. L. (2016). Family functioning, psychological distress, and well-being in parents with a child having ADHD. *Sage Open*, 6(1), 1-10. doi: 10.1177/2158244015626767
- Mohr-Jensen, C., & Steinhausen, H. (2016). A meta-analysis and systematic review of the risks associated with childhood attention-deficit/hyperactivity disorder on long-term outcome of arrests, convictions, and incarcerations. *Clinical Psychology Review*, 48, 32-42. doi: 10.1097/01.chi.0000162582.87710.66
- Molina, B. S., Hinshaw, S. P., Swanson, J. M., Arnold, I. E., Vitiello, B., Jensen, P. S.,... Houck, P. R. (2009). The MTA at 8 years: Prospective follow-up of children treated for combined type ADHD in a multisite study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 48(5), 484-500. doi: 10.1097/CHI.0b013e31819c23d0
- Morawska, A., Adamson, M., Hinchliffe, K., & Adams, T. (2014). Hassle free mealtimes Triple P : A randomized controlled trial of a brief parenting program for childhood mealtime difficulties. *Behaviour Research and Therapy*, 53, 1-9. doi: 10.1016/j.brat.2013.11.007
- Morawska, A., Haslam, D., Milne, D., & Sanders, M. R. (2011). Evaluation of a brief parenting discussion group for parents of young children. *Journal of Developmental and Behavioral Pediatrics*, 32(2), 136-145. doi: 10.1097/DBP.0b013e3181f17a28.
- MTA Cooperative Group. (1999). A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder: Multimodal treatment study of children with ADHD. *Archives of General Psychiatry*, 56(12), 1073-1086. doi: 10.1001/archpsyc.56.12.1073
- Nathan, P. E., & Gorman, J. M. (2002). Preface. In P. E. Nathan & J. M. Gorman (Eds.), *A guide to treatments that work* (2nd ed., pp. 3-4). New York: Oxford University Press.

- National Health and Medical Research Council. (2012). *Clinical practice points on the diagnosis, assessment and management of attention deficit hyperactivity disorder in children and adolescents*. Canberra, Australia: Author. Retrieved from https://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/mh26_adhd_cpp_2012_120903.pdf
- National Institute for Health and Clinical Excellence & Social Care Institute for Excellence (NICE). (2006). *Parent-training/education programmes in the management of children with conduct disorders* (NICE Technology Appraisal 102). Retrieved from <https://www.scie.org.uk/publications/misc/parenttraining/parenttraining.pdf?res=true>
- National Institute for Health and Care Excellence (NICE). (2018). *Attention deficit hyperactivity disorder: Diagnosis and management* (NICE guideline NG87). Retrieved from <https://www.nice.org.uk/guidance/ng87/chapter/rationale-and-impact#managing-adhd-planning-treatment>
- O'Dowd, C. (2012). ADHD guidelines: Flaws in the literature and the need to scrutinise the evidence. *Australian Family Physician*, 41(3), 87-88. Retrieved from <https://www.racgp.org.au/afp/2012/march/adhd-guidelines/>
- Ostrander, R., Crystal, D. S., & August, G. (2006). Attention deficit-hyperactivity disorder, depression, and self- and other-assessments of social competence: A developmental study. *Journal of Abnormal Child Psychology*, 34(6), 773-787.
doi: 10.1007/s10802-006-9051-x
- Pastor, P. N., & Reuben, C. A. (2008). Diagnosed attention deficit hyperactivity disorder and learning disability: United States, 2004-2006. *Vital Health Statistics*, 10(237), 1-14.
Retrieved from https://www.cdc.gov/nchs/data/series/sr_10/Sr10_237.pdf

- Patel, N., Patel, M., & Patel, H. (2012). ADHD and comorbid conditions. In J. M. Norvilitis (Ed.), *Current directions in ADHD and its treatment* (pp. 25-46). Rijeka, Croatia: InTech. doi: 10.5772/30279
- Patterson, G. R., DeGarmo, D., & Forgatch, M. S. (2004). Systematic changes in families following prevention trials. *Journal of Abnormal Child Psychology*, 32(6), 621-633. doi: 10.1023/B:JACP.00000047211.11826.54
- Patterson, J., Mockford, C., & Stewart-Brown, S. (2005). Parents' perceptions of the value of the Webster-Stratton parenting programme: A qualitative study of a general practice based initiative. *Child: Care and Health Development*, 31(1), 53-64. doi: 10.1111/j.1365-2214.2005.00479.x
- Pelham, W. E., Burrows-MacLean, L., Gnagy, E. M., Fabiano, G. A., Coles, E. K., Wymbs, B.T.,... Waschbusch, D. A. (2014). A dose-ranging study of behavioral and pharmacological treatment in social settings for children with ADHD. *Journal of Abnormal Child Psychology*, 42(6), 1019-1031. doi: 10.1007/s10802-013-9843-8
- Pelham, W. E., & Fabiano, G. A. (2008). Evidence-based psychosocial treatments for attention-deficit/hyperactivity disorder. *Journal of Clinical Child & Adolescent Psychology*, 37(1), 184-214. doi: 10.1080/15374410701818681
- Pelham, W. E., Wheeler, T., & Chronis, A. (1998). Empirically supported psychosocial treatments for attention deficit hyperactivity disorder. *Journal of Clinical Child Psychology*, 27(2), 190-205. doi: 10.1207/s15374424jccp2702_6

- Perkins, R. (2006). The effectiveness of one session of therapy using a single-session therapy approach for children and adolescents with mental health problems. *Psychology and Psychotherapy: Theory, Research and Practice*, 79, 215-227.
doi: 10.1348/147608305X6052
- Peters, K., & Jackson, D. (2009). Mothers' experiences of parenting a child with attention deficit hyperactivity disorder. *Journal of Advanced Nursing*, 65, 62-71.
doi:10.1111/j.13652648.2008.04853.x
- Pfiffner, L. J., & Haak, L. M. (2014). Behavior management for school-aged children with ADHD. *Child and Adolescent Psychiatric Clinics of North America*, 23(4), 731-746.
doi: 10.1016/j.chc.2014.05.014
- Phelan, T. W. (1984). *1-2-3 Magic: Effective discipline for children 2-12* (1st ed.). Glen Ellyn, IL: Child Management.
- Phelan, T. W. (2014). *1-2-3 Magic: Effective discipline for children 2-12* (5th ed.). Glen Ellyn, IL: ParentMagic.
- Polanczyk, G. V., Willcutt, E. G., Salum, G. A., Kieling, C., & Rohde, L. (2014). ADHD prevalence estimates across three decades: An updated systematic review and meta-regression analysis. *International Journal of Epidemiology*, 43(2), 434-442.
doi: 10.1093/ije/dyt261
- Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2014). The 1-2-3 Magic parenting program and its effect on child problem behaviors and dysfunctional parenting: A randomized controlled trial. *Behaviour Research and Therapy*, 58, 52-64.
doi: 10.1016/j.brat.2014.05.004

- Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2015). Preliminary evaluation of a self-directed video-based 1-2-3 Magic parenting program: A randomized controlled trial. *Behaviour Research and Therapy*, 66, 32-42. doi: 10.1016/j.brat.2015.01.003
- Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2016). A preliminary evaluation of the 1-2-3 Magic parenting program in an Australian community services setting. *Australian Social Work*, 69(4), 388-402. doi: 10.1080/0312407X.2015.1086010
- Punja, S., Shamseer, L., Hartling, L., Urichuk, L., Vandermeer, B., Nikles, J., & Vohra, S. (2016). Amphetamines for attention deficit hyperactivity disorder (ADHD) in children and adolescents. *Cochrane Database Systematic Reviews*, Issue 2. Art. No.: CD009996. doi: 10.1002/14651858.CD009996.pub2
- Purdie, N., Hattie, J., & Carroll, A. (2002). A review of the research on interventions attention deficit hyperactivity disorder: What works best? *Review of Educational Research*, 72, 61-99. doi: 10.3102/00346543072001061
- Reigstad, B., Jørgensen, K., Sund, A. M., & Wichstrøm, L. (2006). Adolescents referred to specialty mental health care from local services and adolescents who remain in local treatment: What differs? *Social Psychiatry & Psychiatric Epidemiology*, 41, 323-331. doi:10.1007/s00127-005-0027-x
- Riccio, C. A., Sullivan, J. R., & Cohen, M. J. (2010). *Neuropsychological assessment and intervention for childhood and adolescent disorders*. Hoboken, NJ: Wiley.
- Rowland, A. S., Lesesne, C. A., & Abramowitz, A. J. (2002). The epidemiology of attention-deficit/hyperactivity disorder (ADHD): A public health view. *Mental Retardation and Developmental Disabilities Research Reviews*, 8, 162-170. doi: 10.1002/mrdd.10036

- Sanders, M. R. (1999). Triple P-positive parenting program: Towards an empirically validated multilevel parenting and family support strategy for the prevention of behavior and emotional problems in children. *Clinical Child and Family Psychology Review*, 2(2), 71-90. doi: 10.1023/A:1021843613840
- Sanders, M. R. (2008). Triple P-positive parenting program as a public health approach to strengthening parenting. *Journal of Family Psychology*, 22(3), 506-517. doi: 0.1037/0893-3200.22.3.506
- Sayal, K., Prasad, V., Daley, D., Ford, T., & Coghill, D. (2018). ADHD in children and young people: Prevalence, care pathways, and service provision. *Lancet Psychiatry*, 5(2), 175-186. doi: 10.1016/S2215-0366(17)30167-0
- Schroeder, V. M., & Kelley, M. L. (2009). Associations between family environment, parenting practices, and executive functioning of children with and without ADHD. *Journal of Child and Family Studies*, 18, 227-235. doi: 10.1007/s10826-008-9223-0
- Skinner, B. F. (1953). *Science and human behaviour*. New York, NY: McMillan.
- Sonuga-Barke, E. J., Brandeis, D., Cortese, S., Daley, D., Ferrin, M., Holtman, M.,...Sergeant, J. (2013). Nonpharmacological interventions for ADHD: Systematic review and meta-analyses of randomized controlled trials of dietary and psychological treatments. *American Journal of Psychiatry*, 170(3), 275-289. doi: 10.1176/appi.ajp.2012.12070991
- Stein, R. E. (2007). Measurement of ADHD outcomes: Implications for the future. *Journal of Pediatric Psychology*, 32(6), 728-731. doi: 10.1093/jpepsy/jsm006

Storebø, O. J., Krogh, H. B., Ramstad, E., Moreira-Maia, C. R., Holmskov, M., Skoog, M.,...

Glud, C. (2015). Methylphenidate for attention-deficit/hyperactivity disorder in children and adolescents: Cochrane systematic review with meta-analyses and trial sequential analyses of randomised clinical trials. *British Medical Journal*, 351, 1-14.

doi: 10.1136/bmj.h5203

Strine, T. W., Lesesne, C. A., Okoro, C. A., McGuire, L. C., Chapman, D. P., Balluz, S. L., & Mokdad, S. H. (2006). Emotional and behavioral difficulties and impairments in everyday functioning among children with a history of attention-deficit/hyperactivity disorder. *Preventing Chronic Disease*, 3(2), 1-10.

Retrieved from https://www.cdc.gov/pcd/issues/2006/apr/pdf/05_0171.pdf

Task Force on Promotion and Dissemination of Psychological Procedures. (1995). Training in and dissemination of empirically-validated psychological treatments: Report and recommendations. *The Clinical Psychologist*, 48(1), 3-24.

Retrieved from <https://www.div12.org/wp-content/uploads/2017/02/Original-EST-list.pdf>

Thomas, R., & Zimmer-Gembeck, M. J. (2007). Behavioral outcomes of parent-child interaction therapy and Triple P-positive parenting program: A review and meta-analysis. *Journal of Abnormal Child Psychology*, 30, 475-495.

doi: 10.1007/s10802-007-9104-9

Tully, L. A. (2009). *What makes parenting programs effective? An overview of recent research*. Centre for Parenting and Research, NSW Department of Community Services, Ashfield, Australia. Retrieved from http://www.community.nsw/___data/assets/pdf_file/321591/researchnotes_parenting_programs2.pdf

- Tully, L. A., & Hunt, C. (2016). Brief parenting interventions for children at risk of externalizing behavior problems: A systematic review. *Journal of Child and Family Studies*, 25(3), 705-719. doi: 10.1007/s10826-015-0284-6
- van der Oord, S., Prins, P. J. M., Oosterlaan, J., & Emmelkamp, P. M. (2006). The association between parenting stress, depressed mood and informant agreement in ADHD and ODD. *Behaviour Research and Therapy*, 44(11), 1585-1595. doi: 10.1016/j.brat.2005.11.011
- Visser, S. N., Danielson, M. L., Bitsko, R. H., Holbrook, J. R., Kogan, M. D., Ghandour, R. M.,... Blumberg, S. J. (2014). Trends in the parent-report of health care provider-diagnosed and medicated attention-deficit/hyperactivity disorder: United States, 2003-2011. *Journal of the American Academy of Child & Adolescent Psychiatry*, 53(1), 34-46. doi: 10.1016/j.jaac.2013.09.001
- Wade, C., Macvean, M., Falkiner, J., Devine, B., & Mildon, R. (2012). *Evidence review: An analysis of the evidence for parenting interventions in Australia*. Retrieved from <http://www.parentingrc.org.au/resources/evidence-review-an-analysis-of-parenting-interventions-in-australia>
- Wagner, S. M., & McNeil, C. B. (2008). Parent-child interaction therapy for ADHD: A conceptual overview and critical literature review, *Child & Family Behavior Therapy*, 30(3), 231-256. doi: 10.1080/07317100802275546
- Watson, J. & Tully, L. (2008). *Prevention and early intervention update – Trends in recent research*. Centre for Parenting and Research NSW Department of Community Services, Ashfield, Australia. Retrieved from http://www.community.nsw.gov.au/___data/assets/pdf_file/0015/321603/research_earlyintervention.pdf

- Webster-Stratton, C. (1984). Randomized trial of two parent-training programs for families with conduct-disordered children. *Journal of Consulting and Clinical Psychology*, 52(4), 666-678. doi: 10.1037/0022-006X.52.4.666
- Webster-Stratton, C., Reid, M. J., & Beauchaine, T. (2011). Combining parent and child training for young children with ADHD. *Journal of Clinical Child & Adolescent Psychology*, 40(2), 191-203. doi: 10.1080/15374416.2011.546044
- Webster-Stratton, C., Reid, M. J., & Beauchaine, T. (2013). One-year follow-up of combined parent and child intervention for young children with ADHD. *Journal of Clinical Child & Adolescent Psychology*, 42(2), 251-261. doi: 10.1080/15374416.2011.546044
- Wells, K., Chi, T., Hinshaw, S., Epstein, J., Pfiffner, L., Nebel-Schwalm, M.,... Wigal, T. (2006). Treatment-related changes in objectively measured parenting behaviors in the multimodal treatment study of children with attention-deficit/hyperactivity disorder. *Journal of Consulting and Clinical Psychology*, 74(4), 649-657. doi: 10.1037/0022-006X.74.4.649
- Whalen, C. K., Ogders, C. L., Reed, P. L., & Henkler, B. (2011). Dissecting daily stress in mothers of children with ADHD: An electronic diary study. *Journal of Family Psychology*, 25, 402-411. doi: 10.1037/a0023473
- Willcutt, E. G. (2012). The prevalence of DSM-IV attention-deficit/hyperactivity disorder: A meta-analytic review. *Neurotherapeutics*, 9(3), 490-499. doi: 10.1007/s13311-012-0135-8

- World Health Organisation. (2009). *Preventing violence through the development of safe, stable and nurturing relationships between children and their parent and their caregivers. Series of briefings on violence prevention: The evidence*. Geneva, Switzerland: World Health Organisation. Retrieved from http://apps.who.int/iris/bitstream/10665/44088/1/9789241597821_eng.pdf
- Zuvekas, S. H., & Vitiello, B. (2012). Stimulant medication use in children: A 12-year perspective. *American Journal of Psychiatry*, 169(2), 160-166.
doi: 0.1176/appi.ajp.2011.11030387
- Zwi, M., Jones, H., Thorgaard, C., York, A., & Dennis, J. (2011). Parent training interventions for attention deficit hyperactivity disorder (ADHD) in children aged 5 to 18 years. *Cochrane Database of Systematic Reviews, Issue 12*. Art. No.: CD003018.
doi: 10.1002/14651858.CD003018.pub3

CHAPTER 3: Introduction to Empirical Studies

Introduction

The aim of this chapter is to introduce the two empirical studies described in this thesis and present the context and the rationale for the current research. Study I, a pilot study, is described in Chapter 4, and Study II, an extension of Study I, is described in Chapter 5. The outcomes from Study I were suggestive of improved child and parental functioning. However, there were several design-related limitations in Study I, namely, power, the group assignment procedure, and the time provided to implement the intervention strategies, which were used to inform the design of Study II. Given so few studies have evaluated the efficacy of brief, behavioral parent training programs for child behavioral problems, particularly ADHD, it is important that research is conducted to examine this mode of treatment with a view to expanding the range of evidence-based treatments currently offered to parents of children with ADHD.

Over recent decades numerous studies have established the efficacy of a range of behavioral parent training programs for the treatment of disruptive child behavior and developmental disorders, including ADHD. A number of major reviews (Daley et al., 2014; Evans, Owens, & Bunford, 2014; Fabiano et al., 2009; Lee, Niew, Yang, Chen, & Lin, 2012; Pelham & Fabiano, 2008) and various professional organizations (American Academy of Pediatrics, 2011; Children and Adults with Attention Deficit Disorder, 2015; National Institute for Health and Care Excellence [NICE], 2018; National Institute of Mental Health, 2016; Royal Australasian College of Physicians, 2009) endorse behavioral parent training as an effective evidence-based treatment for children with ADHD. Notably, parent-only training outcome studies for children with ADHD have typically reported on traditional (8 to 14 sessions), small-group (4 to 12 participants) programs (e.g., behavioral parent training; van den Hoofdakker et al., 2007) to lengthy (20 to 50 sessions) individual programs (e.g., *Parent Management Training*–

Oregon Model [PMTO]; Bjørnebekk, Kjøbli, & Ogden, 2015). The commitment required to attend an extended treatment program may present a significant treatment barrier to time-poor parents (Koerting et al., 2013). To my knowledge, no known study has evaluated the efficacy of the *1-2-3 Magic: Effective Discipline for Children 2-12* program (Phelan, 1984), a brief, behavioral parent training program, for caregivers of school-aged children with ADHD, that can be delivered to large groups. The overarching aim of the studies reported here was to conduct such an evaluation.

ADHD is a common, multifaceted, neurodevelopmental condition characterized by developmentally inappropriate symptoms of inattention and/or hyperactivity and impulsivity (American Psychiatric Association [APA], 2013). Epidemiological research indicates that the prevalence of ADHD is approximately 5% of children across cultures and that approximately 2.5% remain impaired in adulthood (APA, 2013). In Australia, the prevalence of childhood ADHD is 8.2% in children aged 4 to 11 years (Lawrence et al., 2015). Prevalence is considerably higher for boys than for girls (10.9% of boys, 5.4% of girls; Lawrence et al., 2015), which is consistent with gender ratios reported in other countries (Willcutt, 2012).

In addition to ADHD symptoms, children diagnosed with ADHD frequently present with comorbid symptoms, such as disruptive behavior (Pliszka, 2015), emotional dysregulation (Barkley, 2014; van Stralen, 2016), executive function deficits (Barkley, 1997; Brown, 2005), and maladaptive parent-child relations (Cussen, Sciberras, Ukoumunne, & Efron, 2012; Piffner & Haak, 2014). A recent report indicated that approximately half the children diagnosed with ADHD have one to three comorbid conditions at the time of their ADHD diagnosis (Young, Fitzgerald, & Postma, 2013) and have an increased risk of developing oppositional defiant disorder and conduct disorder (Heidbreder, 2015; Klassen, Miller, & Fine, 2004).

Research has shown that children with ADHD, if left untreated, tend to have poorer academic outcomes (DuPaul & Stoner, 2014), fewer friendships, and more conflicted family relationships (Pfiffner, Calzada, & McBurnett, 2000) than their typically developing peers. Prospective follow-up studies have shown that children with ADHD are at increased risk of early school drop-out, juvenile delinquency, unemployment and interpersonal difficulties as they grow older (Sibley et al., 2011). Additionally, studies show that the earlier ADHD emerges in a child's life and the more comorbid difficulties the child has, the more negative long-term consequences that child is likely to experience (Larson, Russ, Kahn, & Halfon, 2011; Spira & Fischel, 2005).

Childhood ADHD also has a significant impact on parents (Heath, Curtis, Fan, & McPherson, 2015), with those parents showing elevated stress levels and lower self-efficacy in relation to their parenting role compared with parents of children without ADHD (Heath et al., 2015; Reader, Stewart, & Johnson, 2009). Children with ADHD may exhibit patterns of behavior that include increased noncompliance, difficulty adapting to change, depressive symptoms, anxiety, and learning difficulties, all of which place high demands on parents (Whalen, Ogders, Reed, & Henker, 2011). Increased parental demands and elevated parental stress have, in turn, been associated with maladaptive parenting behavior (Pfiffner & Haak, 2014) and negative parent-child relationships (Johnston & Mash, 2001). Parenting practices characterized by coercive punishment, less prosocial engagement and inability to manage disruptive behavior have been associated with less favorable outcomes for children with ADHD (Kaiser, McBurnett, & Pfiffner, 2011; Tripp, Schaughency, Langlands, & Mouat, 2007). Thus, providing evidence-based interventions aimed at helping parents improve their ability to manage disruptive behavior is important not only for parental well-being, but it also promotes more

favorable outcomes for children with ADHD (Heath et al., 2015).

During recent decades multiple studies have evaluated the efficacy of behavioral parent training for improving outcomes of families of children with behavioral disorders. The theoretical underpinning of behavioral parent training derives from social learning theory and cognitive and behavioral theories (Tully & Hunt, 2016). These theories propose that deleterious parent-child interactions play a crucial role in the development and maintenance of child behavior problems (Pfiffner & Haak, 2014). Hence, an important feature of most parent training programs is teaching positive parenting skills as an alternative to ineffective and coercive parenting practices (Pfiffner & Haak, 2014). There is substantial evidence to support the effectiveness of parent training programs such as *Parent-Child Interaction Therapy* (Brinkmeyer & Eyberg, 2003; Eyberg, 1988), *Triple P-Positive Parenting Program* (Triple P; Bor, Sanders, & Markie-Dadds, 2002; Sanders, 1999), *Incredible Years* (Webster-Stratton, 1984; Webster-Stratton & Reid, 2012), and PMTO (Patterson, Reid, Jones, & Conger, 1975; Patterson, Chamberlain, & Reid, 2016) in changing dysfunctional parenting styles and improving problem behavior in children. A common underlying notion for all of these programs is that high quality parenting is a key part of ensuring the best long-term outcome for the child (Tully, 2009). Thus, the goal of behavioral parent training is to improve child behavior by improving parent practices (Tully, 2009).

The current understanding of ADHD as a deficit in executive function, resulting in self-regulation and behavior problems, provides a sound theoretically-based rationale for the provision of behavioral parent training for parents of children with mild to moderate impairment, and in cases of severe impairment when a multi-modal approach is required (NICE, 2018; Remschmidt, 2005). Treatments that provide parents with strategies to use external cues that can

prompt and guide a child's behavior are precisely those provided by behavioral parent training interventions (Barkley, 2013; Phelan, 2014). Therefore, it could be hypothesized that behavioral parenting programs would reduce disruptive behavior as well as ADHD symptoms in children diagnosed with ADHD. Surprisingly, only one behavioral parent training program investigated in a published, controlled study has shown a reduction in both disruptive behavior and ADHD symptoms in school-aged children, when the program was conducted in a parent-only, group-format (i.e., Becker's [1971] nine-week parent training model; Dubey, O'Leary, & Kaufman, 1983).

One important point to consider when offering parenting programs in community settings is that time constraints pose a major barrier to participation and, hence, challenge the effectiveness of such programs (Koerting et al., 2013). Difficulties managing child problem behavior has been linked to low take-up of and high drop-out from parent training programs (Koerting et al., 2013). For example, in the U.K. take-up rates as low as 4 to 18% have been reported for families interested in participating in a parent training program (Bunting, 2004), and enrolment drop-out rates as high as 40% have been recorded (Patterson, Mockford, & Stewart-Brown, 2005). Koerting and colleagues (2013) identified time constraints, due to work and family commitments, as one of the major factors that impede parental participation in behavioral training programs.

Given time constraints, and other stressors experienced by busy parents, combined with the fact that the duration of most evidence-based behavioral parent training programs is eight or more sessions, suggests the need for a brief, group parent training program for parents of children with ADHD that is responsive to competing family demands. Of all the evidence-based programs mentioned above, only one, Group Triple P (level 4), which has five 2-hour group

sessions plus three 30-minute individual phone sessions and Group Triple P (level 3), which may be a single session or a single session plus two 20-minute phone sessions, may be considered brief behavioral interventions (less than eight sessions; Tully, 2009; Tully & Hunt, 2016).

The *1-2-3 Magic: Effective Discipline for Children 2-12* parenting program (Phelan, 1984, 2014) fulfills the criteria of a brief (three sessions), behavioral parenting program. 1-2-3 Magic is a commercially available program designed to reduce problematic child behavior by changing parent behavior. The 1-2-3 Magic program operationalizes the behavior management role of parenting into three distinct functions: (1) controlling unwanted behavior; (2) encouraging desirable behavior; and (3) strengthening the parent-child relationship (Phelan, 2014). The program provides simple, unambiguous techniques to reduce dysfunctional patterns of parent-child interaction while emphasizing the difference between two types of child behavior, stop behavior and start behavior. Stop behaviors are negative behaviors parents want their children to cease, such as whining and fighting, and start behaviors are positive behaviors parents want their children to commence, such as getting dressed and doing homework (Phelan, 2014). The program also provides strategies to address child resistance. The 1-2-3 Magic program is based on principles from cognitive theory (reframing erroneous beliefs), social learning theory (modeling appropriate behavior), and learning theory (operant conditioning; positive reinforcement and punishment; Phelan, 2012). Throughout the program parents learn to change their automatic, negative parenting practices to more deliberate, respectful, positive parenting strategies (Phelan, 2014). The program can be self-directed, offered as individual treatment, or conducted in a group-format (Phelan, 2012).

Five studies have evaluated the efficacy of the 1-2-3 Magic group-based intervention (Booth & Phelan, 2004a, 2004b), using a randomized controlled design. Results indicate that the

group-format of the 1-2-3 Magic program is efficacious in improving both child and parent outcomes. Bradley and colleagues (2003) showed that the American version of 1-2-3 Magic was effective for parents of preschoolers (aged 3 to 4 years) in reducing difficult child behavior, and that these effects were maintained for 12 months. When the *1-2-3 Magic and Emotion Coaching Program* (Hawthorn & Martin, 2006), an Australian version of the program, was delivered to caregivers of abused children (aged 2 to 16 years), the results revealed improvements in parental mental health and parenting practices, and a reduction in disruptive child behavior (Flaherty & Cooper, 2010). Two small group studies examined the short- and long-term outcomes of the American version of the 1-2-3 Magic program on child behavior and parenting functioning for parents of school-aged children (6-12 years) who displayed problem behavior (Bailey, van der Zwan, Phelan, & Brooks, 2012, 2015). Reported results demonstrated positive change in child behavior and parental practices post-intervention and at the 12-month follow-up. A large group study comparing the American and Australian versions of the 1-2-3 Magic program with a control group (Porzig-Drummond, Stevenson, & Stevenson, 2014) revealed significant short- and long-term (two-year follow-up) improvements in child and parent behavior, for both versions of the program, compared with the control group.

Whilst such results provide evidence of the short- and long-term effects of the 1-2-3 Magic program among families experiencing nonspecific, child problem behavior, the efficacy of the 1-2-3 Magic program for families of children diagnosed with ADHD has not been conducted. The absence of such investigation, the program's brevity, and demonstrated efficacy in reducing child disruptive behavior provided the impetus for the present investigation. Moreover, given program length is directly related to service delivery costs, program feasibility for caregivers of children with ADHD was an underlying factor in selecting the 1-2-3 Magic

program for investigation.

It should be noted that the Australian version of the 1-2-3 Magic program, *1-2-3 Magic and Emotion Coaching* (Hawthorn & Martin, 2006), is based on the original American *1-2-3 Magic: Effective Discipline for Children 2-12* program (Phelan, 1984) with additional components on brain development and emotion coaching. Recent research among a nonspecific population of parents concerned about their child's problem behavior (Porzig-Drummond et al., 2014) indicated that *1-2-3 Magic and Emotion Coaching* (Hawthorn & Martin, 2006) provided no benefit over the original 1-2-3 Magic program (Phelan, 1984). These findings were in line with evidence suggesting that providing additional components may be less critical to program outcomes than components that focus on core parenting skills (Kaminski, Valle, Filene, & Boyle, 2008; Lundahl, Risser, & Lovejoy, 2006). Accordingly, the focus of the following studies is the original American 1-2-3 Magic program (Phelan, 1984).

Moreover, this chapter serves as the introduction for the two empirical studies described in the following two chapters (Study I - Chapter 4 and Study II - Chapter 5).

References

- American Academy of Pediatrics Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management. (2011). ADHD: Clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Pediatrics*, 128(5), 1007-1022. doi: 10.1542/peds.2011-2654
- American Psychiatric Association (APA). (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.
- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2012). The 1-2-3 Magic program: Implementation outcomes of an Australian pilot evaluation with school-aged children. *Child & Family Behavior Therapy*, 34(1), 53-69. doi: 10.1080/07317107.2012.654455
- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2015). Keeping it going: Evidence of long-term improvements after implementation of the 1-2-3 Magic parenting program. *Child & Family Behavior Therapy*, 37(4), 303-320. doi: 10.1080/07317107.2015.1104776
- Barkley, R. A. (1997). Behavioral inhibition, sustained attention, and executive functions: Constructing a unifying theory of ADHD. *Psychological Bulletin*, 121(1), 65-94. doi: 10.1037/0033-2909.121.1.65
- Barkley, R. A. (2013). *Defiant children: A clinician's manual for assessment and parent training* (3rd ed.). New York, NY: Guilford Press.

- Barkley, R. A. (2014). Emotional dysregulation is a core component of ADHD. In R. A. Barkley (Ed.), *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment* (4th ed., pp. 81-115). New York, NY: Guilford Press.
- Becker, W. C. (1971). *Parents are teachers*. Champaign, Illinois: Research Press.
- Bjørnebekk, G., Kjøbli, J., & Ogden, T. (2015). Children with conduct problems and co-occurring ADHD: Behavioral improvements following parent management training. *Child & Family Behavior Therapy*, 37(1), 1-19.
doi: 10.1080/07317107.2015.1000227
- Booth, E. C. (Producer and Director), & Phelan, T. W. (Writer). (2004a). *1-2-3 Magic: Managing difficult behavior in children 2-12* [DVD]. Glen Ellyn, IL: ParentMagic.
Available from <http://www.123magic.com/>
- Booth, E. C. (Producer and Director), & Phelan, T. W. (Writer). (2004b). *More 1-2-3 Magic: Encouraging good behavior, independence and self-esteem* [DVD]. Glen Ellyn, IL: ParentMagic. Available from <http://www.123magic.com/>
- Bor, W., Sanders, M. R., & Markie-Dadds, C. (2002). The effects of the Triple P-positive parenting program on preschool children with co-occurring disruptive behavior and attentional/hyperactive difficulties. *Journal of Abnormal Child Psychology*, 30(6), 571-587. doi: 10.1023/A:1020807613155
- Bradley, S. J., Jadda, D. A., Brody, M. A., Landy, J., Tallett, S. E., Watson, W.,...Stephens, D. (2003). Brief psychoeducational parenting program: An evaluation and 1-year follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42(10), 1171-1178. doi: 10.1097/00004583-200310000-00007

- Brinkmeyer, M., & Eyberg, S. M. (2003). Parent-child interaction therapy for oppositional children. In J. R. Weisz & A. E. Kazdin (Eds.), *Evidence-based psychotherapies for children and adolescents* (2nd ed., pp. 204-223). New York, NY: Guilford Press.
- Brown, T. E. (2005). *Attention deficit disorder: The unfocused mind in children and adults*. Cambridge, MA: Yale University Press.
- Bunting, L. (2004). Parenting programmes: The best available evidence. *Child Care in Practice*, 10(4), 327-343. doi: 10.1080/1357527042000285510
- Children and Adults with Attention Deficit Disorder: The National Resource on ADHD. (2015). *Parenting a child with ADHD*. Retrieved from <http://www.chadd.org/Portals/0/Content/CHADD/NRC/Factsheets/parenting2015.pdf>
- Cussen, A., Sciberras, E., Ukoumunne, O. C., & Efron D. (2012). Relationship between symptoms of attention-deficit/hyperactivity disorder and family functioning: A community-based study. *European Journal of Pediatrics*, 171(2), 271-280. doi: 10.1007/s00431-011-1524-4
- Daley, D., van der Oord, S., Ferrin, M., Danckaerts, M., Doepfner, M., Cortese, S., & Sonuga-Barke, E. (2014). Behavioral interventions in attention-deficit/hyperactivity disorder: A meta-analysis of randomized controlled trials across multiple outcome domains. *Journal of the American Academy of Child and Adolescent Psychiatry*, 53(8), 835-847. doi: 10.1016/j.jaac.2014.05.013
- Dubey, D. R., O'Leary, S. G., & Kaufman, K. F. (1983). Training parents of hyperactive children in child management: A comparative outcome study. *Journal of Abnormal Child Psychology*, 11(2), 229-246. doi: 10.1007/BF00912088

- DuPaul, G. J., & Stoner, G. D. (2014). *ADHD in the schools: Assessment and intervention strategies* (3rd ed.). New York, NY: Guilford Press.
- Evans, S. W., Owens, J. S., & Bunford, N. (2014). Evidence-based psychosocial treatments for children and adolescents with attention-deficit/hyperactivity disorder. *Journal of Clinical Child & Adolescent Psychology*, 43(4), 527–551.
doi: 10.1080/15374416.2013.850700
- Eyberg, S. M. (1988). Parent-child interaction therapy: Integration of traditional and behavioral concerns. *Child and Family Behavior Therapy*, 10, 33-46.
doi: 10.1300/J019v10n01_04
- Fabiano, G. A., Pelham, W. E., Coles, E. K., Gnagy, E. M., Chronis-Tuscano, A., & O'Connor, B. C. (2009). A meta-analysis of behavioral treatments for attention-deficit/hyperactivity disorder. *Clinical Psychology Review*, 29(2), 129-140.
doi: 10.1016/j.cpr.2008.11.001
- Flaherty, R., & Cooper, R. (2010). Piloting a parenting skills program in an Australian rural child protection setting. *Children Australia*, 35(3), 18-24.
doi: 10.1017/S1035077200001139
- Hawthorn, M., & Martin, K. (2006). *1-2-3 Magic parent program manual*. Byron Bay, Australia: Parentshop.
- Heath, C. L., Curtis, D. F., Fan, W., & McPherson, R. (2015). The association between parenting stress, parenting self-efficacy, and the clinical significance of child ADHD symptom change following behavior therapy. *Child Psychiatry and Human Development*, 46(1), 118-129. doi: 10.1007/s10578-014-0458-2

- Heidbreder, R. (2015). ADHD symptomatology is best conceptualized as a spectrum: A dimensional versus unitary approach to diagnosis. *ADHD Attention Deficit and Hyperactivity Disorders*, 7(4), 249-269. doi: 10.1007/s12402-015-0171-4
- Johnston, C., & Mash, E. J. (2001). Families of children with attention-deficit/hyperactivity disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review*, 4(3), 183-207. doi: 10.1023/A:1017592030434
- Kaiser, N. M., McBurnett, K., & Pfiffner, L. J. (2011). Child ADHD severity and positive and negative parenting as predictors of child social functioning: Evaluation of three theoretical models. *Journal of Attention Disorders*, 15(3), 193-203. doi: 10.1177/1087054709356171
- Kaminski, J. W., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training program effectiveness. *Journal of Abnormal Child Psychology*, 36, 567-589. doi: 10.1007/s10802-007-9201-9
- Klassen, A. F., Miller, A., & Fine, S. (2004). Health-related quality of life in children and adolescents who have a diagnosis of attention-deficit/hyperactivity disorder. *Pediatrics*, 114(5), 541-547. doi: 10.1542/peds.2004-0844
- Koerting, J., Smith, E., Knowles, M. M., Latter, S., Elsey, H., McCann, D. C.,...Sonuga-Barke, E. J. (2013). Barriers to, and facilitators of, parenting programmes for childhood behaviour problems: A qualitative synthesis of studies of parents' and professionals' perceptions. *European Child and Adolescent Psychiatry*, 22, 653-670. doi: 10.1007/s00787-013-0401-2

- Larson, K., Russ, S. A., Kahn, R. S., & Halfon, N. (2011). Patterns of comorbidity, functioning, and service use for US children with ADHD, 2007. *Pediatrics*, 139(3), 462-470. doi: 10.1542/peds.2010-0165
- Lawrence, D., Johnson, S., Hafekost, J., Boterhoven de Haan, K., Sawyer, M., Ainley, J., & Zubrick, S. (2015). *The mental health of children and adolescents. Report on the second Australian child and adolescent survey of mental health and wellbeing*. Department of Health, Canberra, Australia (Publication No. 11097). Retrieved from [https://health.gov.au/internet/main/publishing.nsf/Content/9DA8CA21306FE6EDCA257E2700016945/\\$File/child2.pdf](https://health.gov.au/internet/main/publishing.nsf/Content/9DA8CA21306FE6EDCA257E2700016945/$File/child2.pdf)
- Lee, P., Niew, W., Yang, H., Chen, V. C., & Lin, K. (2012). A meta-analysis of behavioral parent training for children with attention deficit hyperactivity disorder. *Research in Developmental Disabilities*, 33, 2040-2049. doi: 10.1016/j.ridd.2012.05.011
- Lundahl, B. W., Risser, H. J., & Lovejoy, M. C. (2006). A meta-analysis of parent training: Moderators and follow-up effects. *Clinical Psychology Review*, 26(1), 86-104. doi: 10.1016/j.cpr.2005.07.004
- National Institute for Health and Care Excellence (NICE). (2018). *Attention deficit hyperactivity disorder: Diagnosis and management* (NICE guideline NG87). Retrieved from <https://www.nice.org.uk/guidance/ng87/chapter/rationale-and-impact#managing-adhd-planning-treatment>
- National Institute of Mental Health. (2016). *Attention deficit hyperactivity disorder*. Retrieved from <https://www.nimh.nih.gov/health/topics/attention-deficit-hyperactivity-disorder-adhd/index.shtml>

- Patterson, G. R., Chamberlain, B., & Reid, J. B. (2016). A comparative evaluation of a parent-training program - republished article. *Behavior Therapy*, 47, 804-811.
doi: 10.1016/S0005-7894(82)80021-X
- Patterson, G. R., Reid, J. B., Jones, R. R., & Conger, R. E. (1975). *A social learning approach to family intervention: Families with aggressive children*. Eugene, OR: Castalia.
- Patterson, J., Mockford, C., & Stewart-Brown, S. (2005). Parents' perceptions of the value of the Webster-Stratton parenting programme: A qualitative study of a general practice based initiative. *Child: Care and Health Development*, 31(1), 53-64.
doi: 10.1111/j.1365-2214.2005.00479.x
- Pelham, W. E., & Fabiano, G. A. (2008). Evidence-based psychosocial treatments for attention-deficit/hyperactivity disorder. *Journal of Clinical Child & Adolescent Psychology*, 37(1), 184-214. doi: 10.1080/15374410701818681
- Pfiffner, L. J., Calzada, E., & McBurnett, K. (2000). Interventions to enhance social competence. *Child and Adolescent Psychiatric Clinics of North America*, 9(3), 689-709. Retrieved from <http://www.childpsych.theclinics.com/>
- Pfiffner, L. J., & Haak, L. M. (2014). Behavior management for school-aged children with ADHD. *Child and Adolescent Psychiatric Clinics of North America*, 23(4), 731-746.
doi: 10.1016/j.chc.2014.05.014
- Phelan, T. W. (1984). *1-2-3 Magic: Effective discipline for children 2-12* (1st ed.). Glen Ellyn, IL: Child Management.
- Phelan, T. W. (2012). *1-2-3 Magic: Presentation package*. Glen Ellyn, IL: ParentMagic.
- Phelan, T. W. (2014). *1-2-3 Magic: Effective discipline for children 2-12* (5th ed.). Glen Ellyn, IL: ParentMagic.

- Pliszka, S. R. (2014). Comorbid psychiatric disorders in children with ADHD. In R. A. Barkley (Ed.), *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment* (4th ed., pp. 140-168). New York, NY: Guilford Press.
- Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2014). The 1-2-3 Magic parenting program and its effect on child problem behaviors and dysfunctional parenting: A randomized controlled trial. *Behaviour Research and Therapy*, 58, 52-64.
doi: 10.1016/j.brat.2014.05.004
- Reader, S. K., Stewart, L. M., & Johnson, J. H. (2009). Assessing ADHD-related family stressors with the disruptive behavior stress inventory (DBSI): A replication and extension. *Journal of Clinical Psychology in Medical Settings*, 16, 148-160.
doi: 10.1007/s10880-008-9140-9
- Remschmidt, H. (2005). Global consensus on ADHD/HKD. *European Child & Adolescent Psychiatry*, 14(3), 127-137. doi: 10.1007/s00787-005-0439-x
- Royal Australasian College of Physicians. (2009). Australian (draft) guidelines on attention deficit hyperactivity disorder (ADHD). Retrieved from https://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/ch54_draft_guidelines.pdf
- Sanders, M. R. (1999). Triple P-positive parenting program: Towards an empirically validated multilevel parenting and family support strategy for the prevention of behavior and emotional problems in children. *Clinical Child and Family Psychology Review*, 2(2), 71-90. doi: 10.1023/A:1021843613840

- Sibley, M. H., Pelham, W. E., Molina, B. S., Gnagy, E. M., Waschbusch, D. A., Biswas, A.,...Karch, K. M. (2011). The delinquency outcomes of boys with ADHD with and without comorbidity. *Journal of Abnormal Child Psychology*, 39(1), 21-32.
doi: 10.1007/s10802-010-9443-9
- Spira, E. G., & Fischel, J. E. (2005). The impact of preschool inattention, hyperactivity, and impulsivity on social and academic development: A review. *Journal of Child Psychology and Psychiatry*, 46(7), 755–773. doi: 10.1111/j.1469-7610.2005.01466.x
- Tripp, G., Schaughency, E. A., Langlands, R., & Mouat, K. (2007). Family interactions in children with and without ADHD. *Journal of Child and Family Studies*, 16, 385-400.
doi: 10.1007/s10826-006-9093-2
- Tully, L. A. (2009). *What makes parenting programs effective? An overview of recent research*. Retrieved from Centre for Parenting and Research, NSW Department of Community Services, Ashfield, Australia. Retrieved from http://www.community.nsw.gov.au/__data/assets/pdf_file/0003/321591/researchnotes_parenting_programs2.pdf
- Tully, L. A., & Hunt, C. (2016). Brief parenting interventions for children at risk of externalizing behavior problems: A systematic review. *Journal of Child and Family Studies*, 25(3), 705-719. doi: 10.1007/s10826-015-0284-6
- van den Hoofdakker, B., van der Veen-Mulders, L., Sytema, S., Emmelkamp, M., Minderaa, & R., Nauta, M. (2007). Effectiveness of behavioural parent training for children with ADHD in routine clinical practice: A randomized controlled study. *Journal of American Academy of Child and Adolescent Psychiatry*, 46(10), 1263-1271.
doi: 10.1097/chi.0b013e3181354bc2

- van Stralen, J. (2016). Emotional dysregulation in children with attention-deficit/hyperactivity disorder. *ADHD Attention Deficit and Hyperactivity Disorders*, 8(4), 175-187. doi: 10.1007/s12402-016-0199-0
- Webster-Stratton, C. (1984). Randomized trial of two parent-training programs for families with conduct-disordered children. *Journal of Consulting and Clinical Psychology*, 52(4), 666-678. doi: 10.1037/0022-006X.52.4.666
- Webster-Stratton, C., & Reid, M. J. (2012). The Incredible Years parents, teachers and children training series: A multifaceted treatment approach for young children with conduct problems. In A. E. Kazdin & J. R. Weisz (Eds.), *Evidence-based psychotherapies for children and adolescents* (2nd ed., pp. 194-210). New York, NY: Guilford Press.
- Whalen, C. K., Ogders, C. L., Reed, P. L., & Henker, B. (2011). Dissecting daily stress in mothers of children with ADHD: An electronic diary study. *Journal of Family Psychology*, 25, 402-411. doi: 10.1037/a0023473
- Willcutt, E. G. (2012). The prevalence of DSM-IV attention-deficit/hyperactivity disorder: A meta-analytic review. *Neurotherapeutics*, 9(3), 490-499. doi: 10.1007/s13311-012-0135-8
- Young, S., Fitzgerald, M., & Postma, M. J. (2013). *ADHD: Making the invisible visible*. Retrieved from http://www.russellbarkley.org/factsheets/ADHD_MakingTheInvisibleVisible.pdf

**CHAPTER 4: Testing Effective Strategies for Reducing Problem Behavior
Among Children with ADHD: A Pilot Study Evaluation of the 1-2-3 Magic
Parenting Program**

Abstract

The current pilot study evaluated the effectiveness of the 1-2-3 Magic parenting program in reducing problematic child behavior, child ADHD symptoms, and dysfunctional parenting, among a group of caregivers who lived with a child diagnosed with ADHD. Thirty-one caregivers of children aged 6 to 12 years were randomly assigned to a treatment group ($n = 17$) or a waitlist-control group ($n = 14$). The results at post-intervention and six-month follow-up, although mixed, were suggestive of improvement. Post-intervention results indicated that participants in the treatment group reported significantly less frequent problematic behavior and significantly reduced ADHD symptoms among the target children compared with participants in the control group. In addition, participants in the treatment group rated the target child to be less difficult compared with participants in the control group. However, the only results maintained at the six-month follow-up were the difficult child rating and the ADHD inattention score. Three results that were not significant at post-intervention were significant at the six-month follow-up. At the six-month follow-up, participants in the treatment group rated the target child's behavior as less problematic, they reported significantly less parental stress, and significantly less parent-child dysfunctional interaction. Although the mixed nature of these findings suggest improvement, the results have to be viewed in the context on the study's limitations, namely, baseline differences between the treatment and control groups, time allowed to implement the intervention strategies, and power. Based on the current results support for the effectiveness of the 1-2-3 Magic parenting program among parents who care for a child diagnosed with ADHD is limited. Future replication of this study is required before the 1-2-3 Magic group-format can be recommended to caregivers of children diagnosed with ADHD.

Introduction

Considerable attention has been given to the examination of externalizing disorders, such as ADHD, among children over past decades. Externalizing disorders, including ADHD, have been shown to be among the most prevalent childhood disorders and are associated with lifelong, high risk trajectories of delinquent and antisocial behavior (Sibley et al., 2011). High levels of childhood problematic behavior places multiple demands on parents and increases the risk of negative long-term consequences for the child (Larson, Russ, Kahn, & Halfon, 2011).

Aims

The present study evaluated the effectiveness of a group-based parent training program, *1-2-3 Magic: Effective Discipline for Children 2-12* (Phelan, 1984) among caregivers of primary school-aged children (6 to 12 years), who had previously been diagnosed with ADHD, compared with a waitlist-control group. The aims were to examine whether the group-format of the 1-2-3 Magic program would be effective, relative to a control group, in reducing: (1) disruptive behavior among children diagnosed with ADHD; (2) ADHD symptoms in those children; and (3) dysfunctional parenting and parental stress among caregivers who had a child diagnosed with ADHD. An additional aim was to assess (4) the longevity (six months) of these effects on both child and parent behavior. Based on evidence for the 1-2-3 Magic program among groups of caregivers in the general population (Bailey, van der Zwan, Phelan, & Brooks, 2012, 2015; Porzig-Drummond, Stevenson, & Stevenson, 2014), it was predicted that implementation of the 1-2-3 Magic program would reduce child disruptive behavior, reduce child ADHD symptoms, and improve parenting skills among caregivers who live with a child diagnosed with ADHD, when presented in a group-format, compared with a waitlist-control group.

Method

Design

The study used an experimental design with randomized allocation to group. Caregivers were randomly assigned to either: (1) a treatment group receiving three consecutive weeks of 1-2-3 Magic training followed by a discussion session two weeks after the 1-2-3 Magic training had been completed; or (2) a waitlist-control group receiving the 1-2-3 Magic training six weeks after entering the program, after the treatment group post-measures had been completed. Pre- and post-data was collected on site at Macquarie University and six-month follow-up data was collected online. Data was collected between October 2013 and July 2014. This chapter covers all data collected from pre- and post-measurement and six-month follow-up.

Sampling procedure

Participants were recruited from within a 40 km radius of Macquarie University in Sydney, Australia via: (1) notifications in school newsletters; (2) flyers in pediatricians' and allied health professionals' rooms; (3) parenting websites; and (4) through ADHD support groups. The inclusion criteria stipulated that participants must be the caregiver of a child, who had been diagnosed with ADHD, aged 6 to 12 years. Caregivers were required to live with the child on a full-time or majority part-time basis and experience difficulty managing the child's behavior. Following initial contact potential participants were screened via a telephone interview to verify that the child had been diagnosed with ADHD (i.e., Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type, Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type, or Attention-Deficit/Hyperactivity Disorder, Combined Type (American Psychiatric Association [APA], 2000) and whether the caregiver had difficulty

managing the child's behavior. The variety and intensity of the child's challenging behavior was not specified. Potential participants were excluded if: (1) their child had not received an ADHD diagnosis from an authorized health practitioner; (2) the child was not within the specified age range of 6 to 12 years; (3) the caregiver indicated they were adequately managing the child's behavior or the child's behavior was not deemed to be problematic; (4) the family were currently receiving treatment for child behavioral difficulties elsewhere; (5) the caregiver was unable to attend the initial information session and at least two of the three designated intervention sessions; or (6) the caregiver had previously participated in a 1-2-3 Magic program; and (7) the caregiver indicated that reading English was difficult.

Eligible participants were randomly allocated, in order of initial contact, to either the treatment or waitlist-control group, via an Excel-generated randomization schedule.

Recruitment, enrolment, randomization and allocation of participants were all conducted by the researcher/author.

Allocation and attrition

Fifty-four caregivers responded to advertisements; however, four respondents could not be contacted. Fifty caregivers were screened via a telephone interview to assess their eligibility to participate in the current study. The telephone interview included questions about the child's ADHD diagnosis: (1) what ADHD subtype; (2) who conducted the diagnostic assessment (i.e., pediatrician, psychologist or psychiatrist); (3) when the diagnosis was made; (4) was the child receiving ADHD medication; and (5) whether the caregiver was having difficulty managing the child's behavior. The interview also included five salient 'yes/no' questions summarizing the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; DSM-IV-TR; APA, 2000)

diagnostic criteria to verify the child's ADHD symptoms (see Appendix A, questions 3-7). Of the 50 caregivers who were screened 14 were excluded, eight caregivers did not satisfy the inclusion criteria, as their child did not have a formal ADHD diagnosis or their child did not exhibit challenging behavior, one caregiver's English competency was inadequate, and five caregivers were unable to attend the designated sessions due to work or child care commitments. The progression of participants through the study is summarized in Figure 1.

The remaining 36 caregivers were randomly allocated to the treatment group ($n = 18$) or the control group ($n = 18$). All 36 caregivers completed the pre-intervention measures during a joint information session. Of the 36 caregivers who completed the pre-intervention measures, five caregivers withdrew from the study due to work or child care commitments (treatment group $n = 1$; control group $n = 4$). Thirty-one caregivers (86.1%) completed the post-intervention measures six weeks after the pre-intervention measures. The proportion of caregivers who withdrew did not differ significantly between groups ($\chi^2 = 2.09$, $p = .334$), indicating no attrition bias.

Data analysis was conducted on 31 participants (treatment group, $n = 17$; control group, $n = 14$). The overall attrition rate from pre- to post-intervention was 13.9% (treatment group, 5.6%; control group, 22.2%); there was no attrition from post-intervention to six-month follow-up.

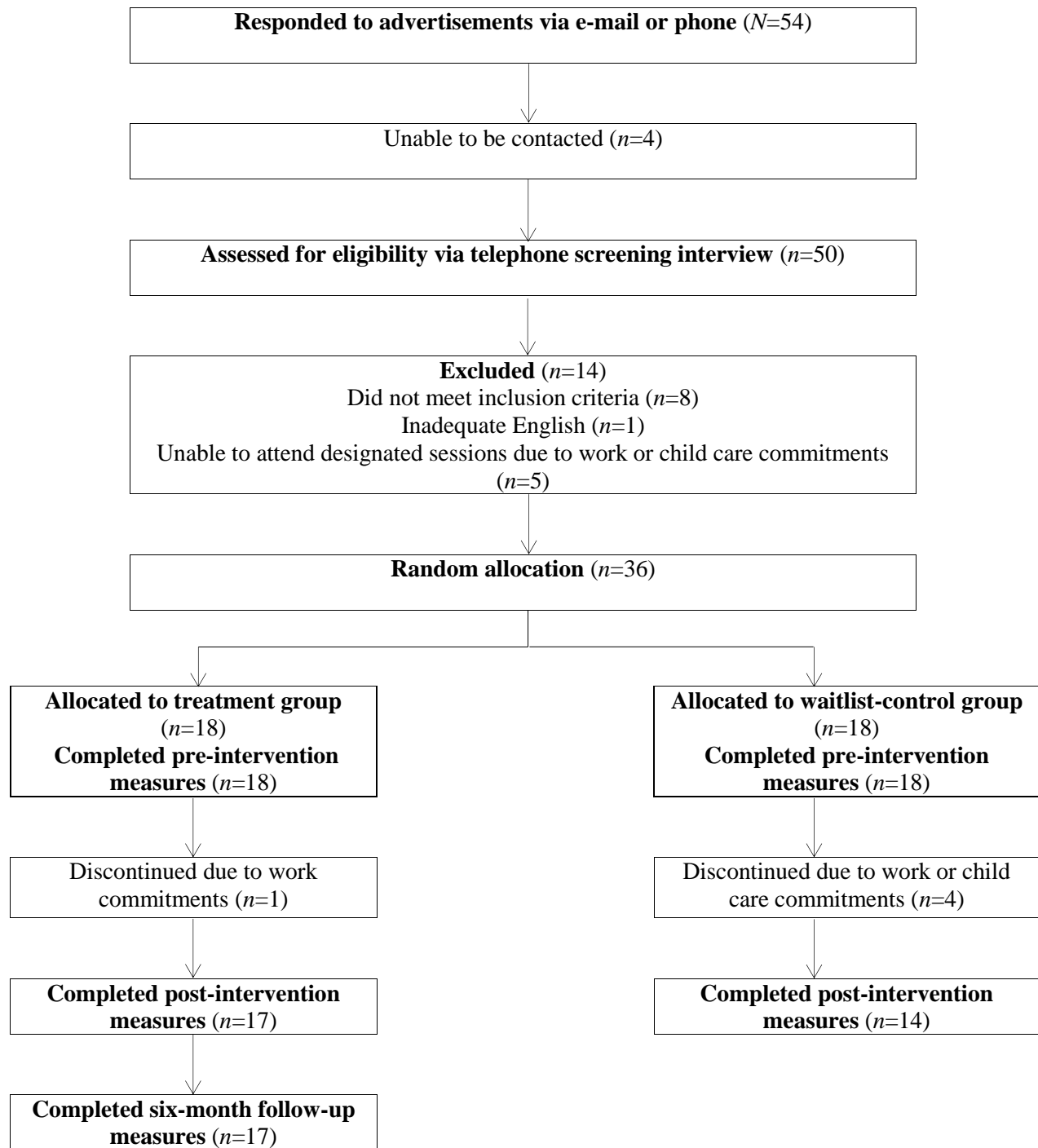


Figure 1. Flow diagram illustrating progression of participants through the study. Adapted from Consolidated Standards of Reporting Trials (CONSORT; Schultz, Altman, & Moher, 2010).

Participant characteristics

Participants for this study were a sample of 31 caregivers, ranging from 31 to 62 years of age ($M = 42.8$ years, $SD = 6.5$ years). Seventy-seven percent of participants were female ($n = 24$) and 23% were male ($n = 7$). Eighty-seven percent identified as tertiary educated. Thirty-nine percent were in full-time employment and 35% were employed part-time, with 87% of households earning an income above the Australian average of US\$50,051 (A\$64,168; Australian Bureau of Statistics, 2011). The majority of participants lived in a household with two caregivers (93.5%) and two children, and cared for the target child full-time (96.8%). The predominant language spoken in the home was English (93.5%). Twenty-nine percent of participants indicated that at least one of the primary caregivers had a diagnosis of ADHD. A clinical level of parenting stress was reported by 71% of participants ($n = 22$) (i.e., above the clinical cut-off, namely the 90th percentile, on the *Parent Stress Index–Short Form* (4th ed.; Abidin, 2012),

The target children ranged in age from 6 to 12 years ($M = 8.4$ years, $SD = 1.4$ years); 24 were male (77.4%) and seven were female (22.6%). All target children were enrolled in mainstream schools. Nineteen participants (61.3%) reported that their child had been diagnosed with a co-morbid condition: Learning Difficulties ($n = 8$, 25.8%), Autism ($n = 3$, 9.7%), Oppositional Defiant Disorder ($n = 2$, 6.5%), medical condition ($n = 3$, 9.7%), or multiple co-morbid conditions ($n = 3$, 9.7%) and seven participants (22.6%) reported that their child was taking stimulant medication to alleviate ADHD symptoms. Results from the *Child Behavior Checklist* (Achenbach & Rescorla, 2001) indicated that four target children (12.9%; $n = 0$, treatment group; $n = 4$, control group) experienced internalizing difficulties and 13 target children (41.9%; $n = 3$, treatment group; $n = 10$, control group) experienced externalizing difficulties in the clinical range (above 98th percentile). In addition, 84% of caregivers ($n = 26$)

reported a frequency of child disruptive behavior in the clinical range (above 131), as measured by the Intensity scale of the *Eyberg Child Behavior Inventory* (Eyberg & Pincus, 1999), and 77% ($n = 24$) indicated the child's disruptive behavior was problematic, and at or above the clinical cut-off score of 15, as measured by the Problem scale of the ECBI.

Measures

Demographic information

A 17-item custom-designed information questionnaire was administered to collect socio-demographic information from participants, pertaining to themselves, the target child, other children in their care, as well as general background information.

Child behavior

The *Eyberg Child Behavior Inventory* (ECBI; Eyberg & Pincus, 1999) assesses caregiver reports of behavior problems in children and adolescents aged 2 to 16 years. The 36-item measure consists of two scales: the Intensity scale, a 7-point scale, measuring the current frequency of child behavior (1 = *never* to 7 = *always*), and the related Problem scale, which asks caregivers to indicate whether the child's behavior is a problem or not (*yes/no*). Higher scores on both scales indicate a greater level of disruptive behavior and a greater impact on the parent. Internal consistency coefficients for both scales are high (Intensity scale $\alpha = .95$, Problem scale $\alpha = .93$; Colvin, Eyberg, & Adams, 1999) and good test-retest reliability has been reported (Intensity scale $r = .80$, Problem scale $\alpha = .86$; Eyberg & Pincus, 1999). The ECBI was used as the primary measure of behavioral change among target children in this study.

The *Child Behavior Checklist for Ages 6–18 (Parent Form)* (CBCL/6-18; Achenbach & Rescorla, 2001) was included as a pre-intervention, descriptive measure to better understand the range of difficulties displayed by the target children. Participants were asked to complete items 1-113, assessing numerous behavioral, emotional, and social childhood problems. Caregivers rate each item on a three-point Likert scale (0 = *not true* to 2 = *very true or often true*). Higher scores indicate greater problems. The CBCL has demonstrated acceptable to excellent internal consistency for all the Problem scales ($\alpha = .78$ to $.97$) and acceptable to high internal consistency for the DSM-oriented Scales ($\alpha = .72$ to $.91$). Excellent test-retest reliability has been reported for all the specific problem items ($r = .95$; Achenbach & Rescorla, 2001).

Parent stress and dysfunctional parenting

The *Parent Stress Index–Short Form* (4th ed.; PSI-4-SF; Abidin, 2012) is an abbreviated version of the full length PSI. It is designed to assess the overall level of parenting stress and dysfunctional parenting among caregivers with children aged one month to 12 years. The 36-items of the PSI-4-SF measure three domains (Parental Distress, Parent-Child Dysfunction, and Difficult Child), which combine to form a Total Stress score. Caregivers indicate whether they agree or disagree with each statement (1 = *strongly disagree* to 5 = *strongly agree*). Parent-child systems that are under stress and are at risk of dysfunctional parenting, or problem behavior in the child, are identified by high scores (Raver, Gershoff, & Aber, 2007). High internal consistency has been reported for the Total score ($\alpha = .95$) and good internal consistency has been reported across the subscales ($\alpha = .88$ to $.90$; Abidin, 2012). Good test-retest reliability has been demonstrated for the PSI-SF Total Stress score ($r = .90$) and adequate to good test-retest reliability has been demonstrated for the subscales (Parental Distress $r = .79$, Parent-Child

Dysfunctional Interaction $r = .80$, Difficult Child $r = .78$; Roggman, Moe, Hart, & Forthun, 1994). Additional test-retest studies were not conducted for the PSI-4-SF (Abidin, 2012).

ADHD behavior

The *ADHD Rating Scale-IV–Home Version* (ADHD-RS-IV; DuPaul, Power, Anastopoulos, & Reid, 1998) consists of 18 items directly adapted from the diagnostic criteria for ADHD as specified in the DSM-IV-TR (APA, 2000). Scores from two 9-item subscales, Inattention and Hyperactivity/Impulsivity, combine to provide a Total score. Caregivers select the response for each item that best describes the frequency of the specific behavior displayed by the target child, age range 4 to 20 years. The frequency of each symptom is delineated on a four-point Likert scale (0 = *never or rarely* to 3 = *very often*) with higher scores indicative of greater ADHD-related behavior. Internal consistency for the Total score is excellent ($\alpha = .92$) and for the two subscales internal consistency is good (Inattention $\alpha = .86$, Hyperactivity/Impulsivity $\alpha = .88$). Reported test-retest coefficients for the Total score and Hyperactivity/Impulsivity subscale are good ($r = .85$ and $r = .86$ respectively) and for the Inattention subscale test-retest reliability is adequate ($r = .78$; DuPaul, Power, McGoe, Ikeda, & Anastopoulos, 1998).

Participant satisfaction

The *Therapy Attitude Inventory* (TAI; Breston, Jacobs, Rayfield, & Eyberg, 1999) is a 10-item, five-point (1 = *nothing* to 5 = *very many useful techniques*) caregiver report designed to assess consumer satisfaction with the process and outcome of caregiver-child treatment. The TAI has good internal consistency ($\alpha = .88$; Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993) and good test-retest reliability ($r = .85$; Breston et al., 1999).

Procedure

The Macquarie University Human Research Ethics Committee granted approval for this study. Recruitment of participants, intervention delivery, and data collection, including follow-up data was conducted over 15 months, between April 2013 and July 2014. Prospective participants who responded to advertisements were screened via a telephone interview to verify that the target child had received a diagnosis of ADHD from a qualified health professional (i.e., psychologist, psychiatrist, pediatrician) and whether the caregiver had difficulty managing the target child's behavior. The duration of the telephone screening interview was at least 25 minutes. Eligible participants were randomly allocated to one of two groups (treatment group or waitlist-control group). All participants attended a joint 1½-hour information session. Each group subsequently attended three weekly 2-hour intervention sessions and an additional 1½-hour discussion session two weeks after the final intervention session. The intervention for the waitlist-control group was delayed by six weeks.

Pre-intervention phase

At the beginning of the information session all participants completed: (1) the Information and Consent Form; (2) a custom-designed demographic questionnaire; (3) the CBCL/6-18; and three pre-intervention outcome measures, (4) the ECBI; (5) the PSI-4-SF; and (6) the ADHD-RS-IV. Participants who lived with more than one child, in the target age range, diagnosed with ADHD were asked to identify the child whose behavior was currently causing the greatest concern (the target child) and complete the questionnaires with the identified child in mind. When completing the questionnaires participants were asked to consider the child's behavior in accordance with the instructions on each questionnaire. Additionally, if the target child was

receiving stimulant medication participants were asked to notify the researcher if the child commenced, increased, or changed their stimulant medication during the study. If the target child was not receiving stimulant medication, parents were asked to notify the researcher if the child commenced stimulant medication during the study. No changes in medication status were reported during the intervention or follow-up period in either the treatment group or the control group.

Intervention phase

Participants in the treatment group commenced the intervention program the week after the information session and attended over three consecutive weeks, followed by a discussion session two weeks after the final session. The discussion session was scheduled to allow participants time following the intervention to implement the strategies presented during the 1-2-3 Magic program. On the evening the treatment group discussion session took place, control group participants completed the three outcome measures prior to commencing their intervention program. Participants who were unable to attend one of the designated intervention sessions were required to arrive earlier the following week to view the material they had missed. Non-attendance to designated sessions was minimal; two participants from each group missed one of the designated intervention sessions. These participants all viewed the missed material the following week. Hence, all participants were deemed to have received the complete intervention.

All sessions were held in Macquarie University lecture rooms. There were no incentives offered to participants nor were there any fees or costs associated with attending the program. Free parking vouchers were provided to cover parking fees.

Post-intervention

The treatment group discussion session, held two weeks after the intervention had finished, coincided with the beginning of the control group's intervention. Participants in both groups completed the three post-intervention outcome measures (ECBI, PSI-4-SF, and ADHD-RS-IV) at the beginning of their session. Five basic demographic questions were added to the post-intervention measures to facilitate data matching for those participants who did not remember the participant code word they had chosen, and to ensure participants were reporting on the same child they had reported on at pre-intervention. An additional participant satisfaction measure (TAI) was administered to treatment group participant at post-intervention.

After the post-intervention outcome measures had been completed a registered psychologist facilitated one hour informal, open discussion session, including questions, answers and general comments about the intervention. The discussion session was not part of the intervention; hence, no data was collected in relation to this session.

Six-month follow-up

Participants in the treatment group completed five demographic questions to facilitate data matching, a question related to the target child's medication status and all outcome measures online at the six-month follow-up.

Intervention – 1-2-3 Magic Parenting Program

The 1-2-3 Magic parenting program consists of two DVDs: *1-2-3 Magic: Managing Difficult Behavior in Children 2-12* (Booth & Phelan, 2004a) and *More 1-2-3 Magic: Encouraging Good Behavior, Independence and Self-Esteem* (Booth & Phelan, 2004b), as well as other supporting

material, such as a book, workbooks, and website. All materials associated with the program are commercially available. Only the two DVDs were used during the intervention sessions as recommended in the guidelines for time-limited, group-model delivery outlined in the *1-2-3 Magic: Presentation Package* (Phelan, 2012). When delivered in a time-limited, group-format the guidelines recommend three 2-hour sessions. Use of the 1-2-3 Magic DVDs ensured treatment fidelity. Corresponding material, in the form of parenting tip sheets, from the 1-2-3 Magic book, *1-2-3 Magic: Effective Discipline for Children 2-12* (Phelan, 2010), and the 1-2-3 Magic website (Phelan, n.d.) was sent to participants following each intervention session.

The first two sessions of the intervention program consisted of viewing all six sections of the DVD *1-2-3 Magic: Managing Difficult Behavior in Children 2-12* (Booth & Phelan, 2004a) and the third session was dedicated to viewing the first three sections of the DVD *More 1-2-3 Magic: Encouraging Good Behavior, Independence and Self-Esteem* (Booth & Phelan, 2004b). Both DVDs include explanation of the parent training techniques and their application in various home and public settings. In addition, both DVDs feature role-play vignettes showing maladaptive parent-child interactions followed by vignettes demonstrating the correct, more adaptive, style of parent-child interaction taught in the program. Notably, the parenting strategies highlighted in both DVDs focus on the reduction of disruptive and non-compliant behavior rather a reduction in ADHD symptoms.

The first DVD, *1-2-3 Magic*, covers stop-behaviors - behaviors a caregiver may want the child to cease (e.g., badgering): Part 1 - Straight Thinking, Part 2 - Controlling Obnoxious Behavior, Part 3 - Real World Applications were shown during the first intervention session. Part 4 - Testing and Manipulation, Part 5 - Counting in Action, and Part 6 - Conclusion were shown during the second intervention session. The second DVD, *More 1-2-3 Magic*, covers

start-behaviors - behaviors a caregiver may want the child to commence (e.g., cleaning room): Introduction, Part 1 - Seven Tactics For Encouraging Good Behavior, and Part 2 - Specific Applications were shown during the third intervention session. Across the three intervention sessions total DVD viewing time was 163 minutes. Two qualified practitioners, a trained 1-2-3 Magic practitioner and a registered psychologist experienced in working with children and families, facilitated all sessions. The practitioners were not blind to the study conditions. During each session the facilitators provided a review of the main ideas covered in the DVDs and answered participants' questions. Responses to questions were not manualised and no fidelity data was collected on participants' questions or facilitators' responses. A short break was taken midway through each session. After each session participants were sent e-mail summaries of the key concepts presented in the DVDs, as well as material sourced from the 1-2-3 Magic book (Phelan, 2010) and the 1-2-3 Magic website. The aim in sending the follow-up material was to encourage and facilitate engagement in the program by the non-participating parent.

Data analysis

Statistical analyses were conducted using IBM SPSS Statistics Standard Grad Pack, version 23. Missing data was minimal. Missing responses were imputed in accordance with the scoring protocol for the CBCL/6-18, ECBI, and PSI-4-SF; there was no missing data on the ADHD-RS-IV, and the online follow-up questionnaires could only be submitted if all items were completed.

Reported results are based on the data gathered from 31 participants who completed the pre- and post-intervention questionnaires, and from 17 participants who completed the six-month follow-up questionnaires. The data was screened and found to be suitable for parametric analyses. A Type I error rate of .05 was utilized for all the main analyses.

Analysis of covariance (ANCOVA) was conducted on each outcome measure, with group as the between-subject factor, the post-intervention score as the dependant variable and the pre-intervention score as the covariate (Rausch, Maxwell, & Kelley, 2003). To examine the effect of Time, within group paired *t* tests were conducted on the pre-intervention and six-month follow-up scores for each outcome measure.

Results

Participant characteristics

Baseline mean scores on demographic characteristics are shown in Table 1. One-way analysis of variance (ANOVA) and chi-square analyses indicated that there were no significant differences between the groups on socio-demographic variables at pre-intervention. However, there was a significant difference at pre-intervention between the groups on the CBCL Externalizing, and the CBCL Internalizing subscales, suggesting that the target children in the control group displayed more behavioral difficulties than the target children in the treatment group at pre-intervention.

Baseline mean scores on the outcome measures are shown in Figure 2. Despite random allocation and no significant differences between the groups on the socio-demographic variables, one-way ANOVA revealed that there were significant differences on three of the main outcome variables at pre-intervention; ECBI Intensity scale, $F(1, 28) = 19.26, p < .000$, ECBI Problem scale, $F(1, 28) = 17.30, p < .000$, and ADHD-RS Total score, $F(1, 28) = 6.36, p = .017$. Target children in the control group displayed more frequent, problematic behavior, and more severe ADHD symptoms than target children in the treatment group. However, there was no significant difference between caregivers in the treatment group and the control group on the PSI-SF Total Stress score, $F(1, 28) = 1.99, p = .169$, PSI-SF Parental Distress subscale, $F(1, 28) = .40$,

$p = .534$, PSI-SF Parent-Child Dysfunctional Interaction subscale, $F(1, 28) = 1.93$, $p = .175$, or the PSI-SF Difficult Child subscale, $F(1, 28) = 3.02$, $p = .093$, at pre-intervention.

Table 1

Demographic characteristics of the treatment group and the control group

Characteristic	Treatment Group (<i>n</i> =17)		Control Group (<i>n</i> =14)		<i>F</i> (<i>df</i>)	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Child's age (years)	8.4	1.7	8.4	1.2	.00 (1)	.975
Caregiver's age (years)	42.8	5.7	42.9	7.5	.01 (1)	.945
No. of children at home	2.3	1.0	2.1	.5	.27 (1)	.611
CBCL externalizing scale	16.9	1.8	23.1	2.0	5.26 (1)	.029
CBCL internalizing scale	9.5	5.0	16.2	7.5	8.97 (1)	.006
	<i>n</i>	%	<i>n</i>	%	<i>X</i> ²	<i>p</i>
Child's gender						
Male	12	70.6	12	85.7	1.04	.412
Female	5	29.4	2	14.3		
Caregiver's gender						
Male	6	35.3	1	7.1	3.84	.094
Female	11	64.7	13	92.9		
Family composition						
Two caregivers	17	100	12	85.7	2.60	.196
Sole caregiver	0	0	2	14.3		
Child living with caregiver						
Full-time	16	94.1	14	100	.85	1.00
Majority part-time	1	5.9	0	0		
Caregiver ADHD						
ADHD diagnosis	3	17.6	6	42.9	2.39	.233
No ADHD diagnosis	14	82.4	8	57.1		
Child ADHD medication						
Medication	5	29.4	2	14.3	1.04	.412
No medication	12	70.6	12	85.7		
Child comorbid condition						
Additional diagnosis	11	64.7	8	57.1	.19	.724
ADHD only	6	35.3	6	42.9		
Main language at home						
English	16	94.1	13	92.9	.02	1.00
Other	1	5.9	1	7.1		
Caregiver's education						
High school qualification	1	5.9	3	21.4	.62	.576
Tertiary qualification	16	94.1	11	78.6		

	<i>n</i>	%	<i>n</i>	%	X^2	<i>p</i>
Caregiver's employment						
Full-time	7	41.2	5	35.7	.14	.935
Part-time	6	35.3	5	35.7		
Not employed	4	23.5	4	28.6		
Annual household income						
Up to A\$64,168	2	11.8	2	14.3	.04	1.00
A\$64,168 and over	15	88.2	12	85.7		

Note. *F* = univariate ANOVA condition effect; X^2 = Pearson's Chi Square
(where expected frequencies are too low for Chi-Square, Fisher's exact test is reported).

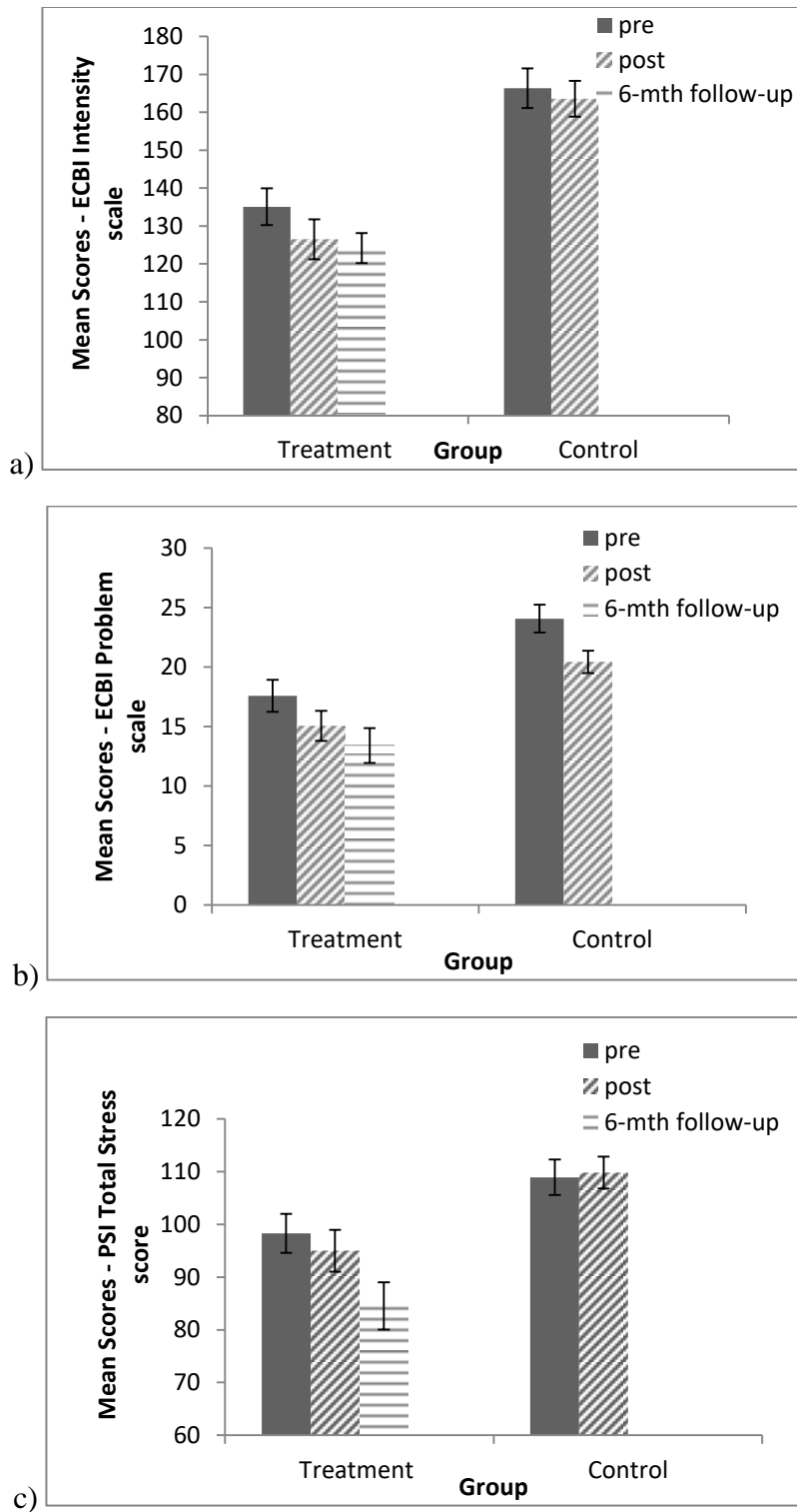


Figure 2. (a) Mean scores for the ECBI Intensity scale, (b) ECBI Problem scale, and (c) PSI Total Stress measure. Higher scores indicate greater caregiver reported frequency of child problem behavior, caregivers rating more child disruptive behavior as problematic and greater parental stress, respectively. All graphs show scores at pre- and post-intervention for the treatment and control groups, and six-month follow-up scores for the treatment group. Error bars on each column represent the SEM.

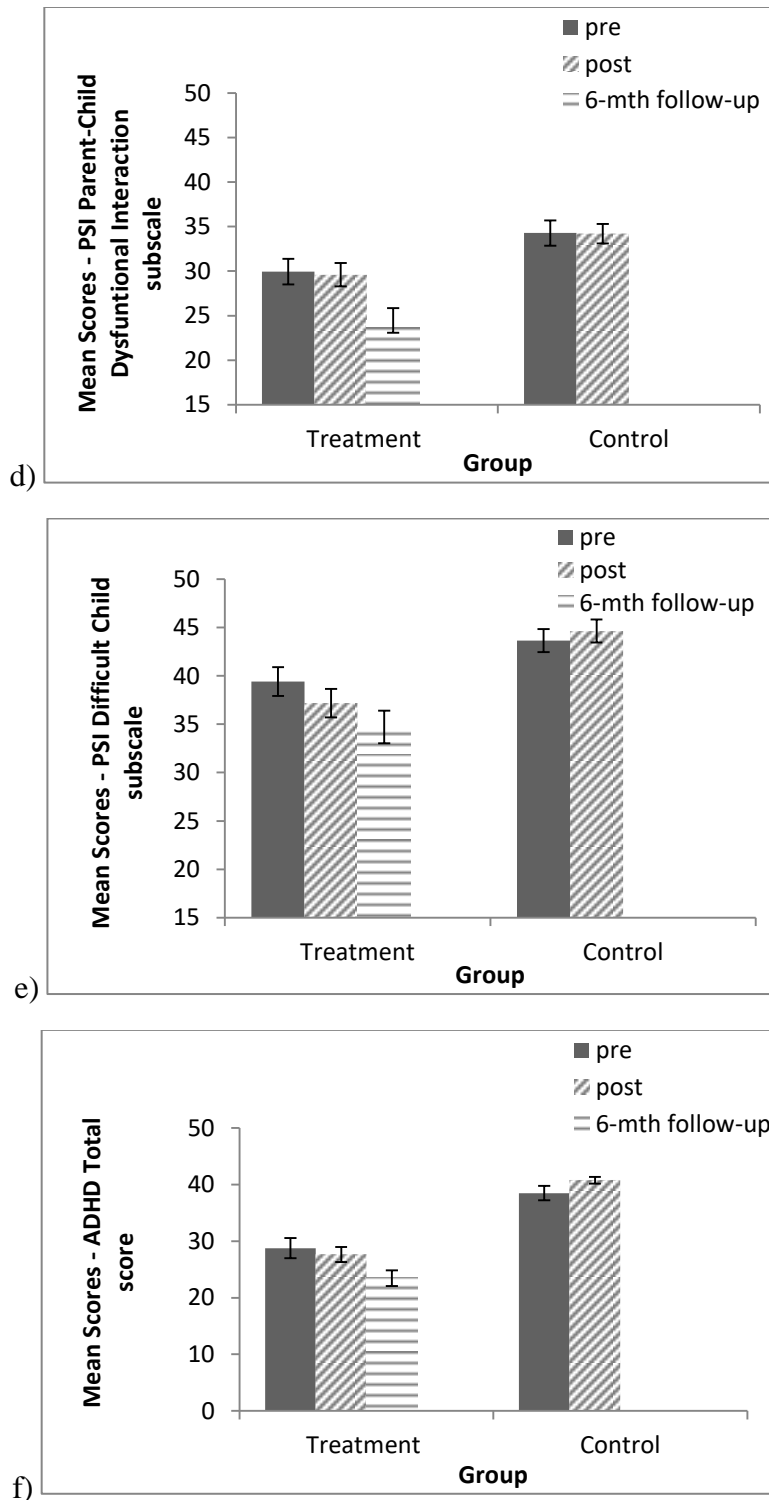


Figure 2. (continued). (d) Mean scores for the PSI Parent-Child Dysfunctional Interaction subscale, (e) PSI Difficult Child subscale, and (f) ADHD Total score. Higher scores indicate more dysfunctional parent-child interaction, the caregiver rating the child as more difficult and greater ADHD type behavior, respectively. All graphs show scores at pre- and post- intervention for the treatment and control groups, and six-month follow-up scores for the treatment group. Error bars on each column represent the *SEM*.

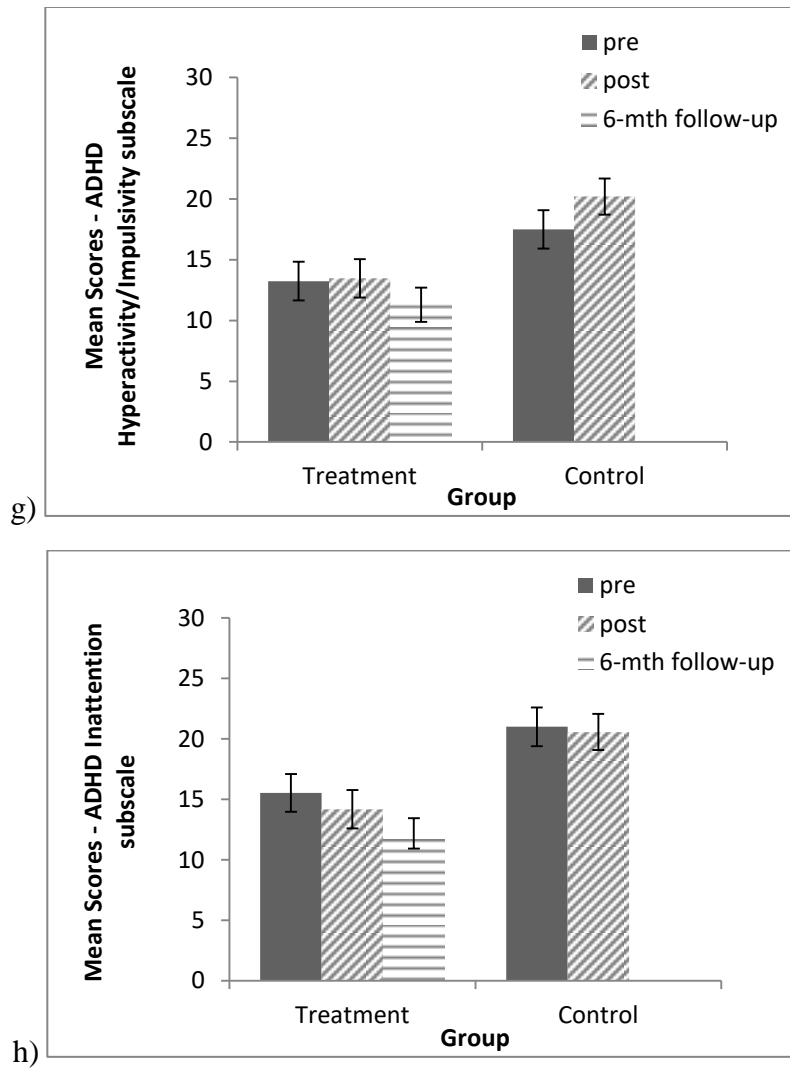


Figure 2. (continued). (g) Mean scores for the ADHD - Hyperactivity/Impulsivity, and (h) ADHD - Inattention subscales. Higher score indicate greater ADHD behavior. Both graphs show scores at pre- and post-intervention for the treatment and control groups, and six-month follow-up scores for the treatment group. Error bars on each column represent the *SEM*.

Table 2

Intervention effects: Treatment group and control group at pre- and post-intervention, and treatment group at pre-intervention and six-month follow-up

Measure	ANCOVA Condition effect for the treatment group and control group at post-intervention			Comparison (<i>t</i> -statistic) Time effect for the treatment group at 6-month follow-up	
	<i>F(df)</i>	<i>p</i>	η_p^2	<i>t(df)</i>	<i>p</i>
ECBI					
Intensity scale	5.39 (1, 28)	.028	.16	1.92 (16)	.073
Problem scale	.91 (1, 28)	.349	.03	2.35 (16)	.032
PSI-4-SF					
Total Stress score	3.26 (1, 28)	.082	.10	3.05 (16)	.008
Parental Distress subscale	.32 (1, 28)	.576	.01	2.12 (16)	.050
Parent-Child Dysfunctional Interaction subscale	.98 (1, 28)	.331	.03	2.89 (16)	.011
Difficult Child subscale	9.14 (1, 28)	.005	.25	3.05 (16)	.008
ADHD-RS-IV					
Total score	8.38 (1, 28)	.007	.23	2.01 (16)	.061
Hyperactivity/Impulsivity	8.62 (1, 28)	.007	.26	1.43 (16)	.171
Inattention	5.65 (1, 28)	.024	.17	2.38 (16)	.030

Note. *F* = univariate ANCOVA effect for condition; η_p^2 (partial eta squared) = effect size.

Post-intervention outcomes

Pre- and post-intervention scores on the three outcome measures were collected six weeks apart, allowing one week for the information session, three weeks for the intervention program and two weeks after completion giving participants time to implement the strategies presented in the program (see Figure 2 and Table 2; a table of means and standard deviations is provided in Appendix B). Analysis of covariance (ANCOVA) revealed significant differences between the groups at post-intervention on the ECBI Intensity scale. Participants reported that the frequency

of child disruptive behaviors had reduced at post-intervention compared with controls. However, there was no significant difference between the groups on the ECBI Problem scale at post-intervention. This result indicates that while caregiver reports of the frequency of child disruptive behavior had reduced, the extent to which caregivers viewed the child's behavior as problematic had not reduced.

On the measure of dysfunctional parenting (PSI-SF), participants in the treatment group reported a significant reduction in their view of the child as being difficult (Difficult Child subscale) at post-intervention compared with participants in the control group. However, there was no significant difference in caregivers' overall parenting stress (Total Stress score) or on either of the other PSI-SF subscales (Parental Distress and Parent-Child Dysfunctional Interaction). These results suggest that although caregivers viewed the child as less difficult their overall level of parenting stress, their level of stress directly related to parenting, and the extent to which the parent-child interaction reinforced the caregivers' parenting role did not improve.

The measure of ADHD behavior (ADHD-RS) revealed that participants in the treatment group reported a significant reduction in ADHD behavior at post-intervention compared with controls (Total score, Hyperactivity/Impulsivity and Inattention subscale scores) suggesting the intervention had had an impact on the level of ADHD-related behavior among the target children.

Additionally, the results that were statistically significant were not clinically significant.

Six-month follow-up outcomes

The means for the pre-intervention and the six-month follow-up results on the three outcomes measures (Figure 2) and the results from t tests (Table 2) indicate that the intervention effect for the treatment group was maintained at six months on the PSI-SF Difficult Child subscale and the ADHD-RS Inattention subscale. However, results show that the reduction in the frequency of disruptive child behavior (ECBI Intensity scores) and the reduction in overall ADHD behavior (ADHD Total score) and ADHD hyperactive/impulsive behavior (ADHD-RS Hyperactivity/Impulsivity subscale) were not maintained at six months.

Significant differences were found for the treatment group when comparing pre-intervention and six-month follow-up scores on the ECBI Problem scale, the PSI Total Stress score, and the PSI Parent-Child Dysfunctional Interaction subscale. Scores on the ECBI Problem scale, which were non-significant at post-intervention compared with controls, revealed a significant difference at the six-month follow-up. At the six-month follow-up, caregivers reported a reduction in the child's problem behavior compared with pre-intervention scores. Conversely, the reported reduction in the frequency of child problem behavior at post-intervention was not evident when treatment group pre-intervention and follow-up scores were compared at the six-month follow-up. Analysis of post-intervention and six-month follow results was also conducted and there was no change in the findings. This result suggests that although caregivers reported a reduction in child problem behavior over time, reduction in the frequency of child disruptive behavior was not maintained. The significant PSI-SF Total Stress result indicates that caregivers' overall level of parenting stress reduced over time compared with pre-intervention results. Similarly, the significant PSI Parent-Child Dysfunctional Interaction

result indicates the extent to which the parent-child interaction reinforced the caregivers' parenting role improved over time, from pre-intervention to the six-month follow-up.

Intent to treat

Intent to treat analyses revealed similar results for the participants who completed the pre-intervention measures only to the results of those participants who completed both the pre- and post-intervention measures. Pre-intervention scores were used for the five participants who did not complete the post-intervention measures. ANCOVA results revealed significant between-group effects on the ECBI Intensity scale, PSI Difficult Child subscale, and ADHD scale (all $F_s \geq 4.81$, $ps \leq .035$); none of the other results were significant.

Participant satisfaction

The mean rating on the TAI was 42.2 ($SD = 3.2$) for the treatment group, range 37 to 50, indicating that caregivers were satisfied with the 1-2-3 Magic program. Moreover, one hundred percent of participants reported that the program was easy to understand.

Discussion

The current pilot study investigated the effectiveness of the 1-2-3 Magic parenting program among a group of caregivers who lived with a child diagnosed with ADHD. The aims of the current study were to examine whether the group-format of the 1-2-3 Magic program would be effective, relative to a control group, in reducing child disruptive behavior, child ADHD symptoms, and dysfunctional parenting and parental stress among parents who cared for a child

with ADHD. The final aim was to assess the longevity (six months) of these effects on both child and parent behavior.

Results from the study were mixed and have to be viewed in the context of the study's major limitation, namely, baseline behavioral differences between target children in the treatment group and the control group. Given randomization of participants was conducted, in order of initial contact, via an Excel-generated randomisation schedule, heterogeneity between the groups was not suspected. Hence, no testing of baseline differences was conducted. Nevertheless, as the baseline behavioral differences identified in the current study were strongly associated with the outcome variables it is highly likely that evidence of baseline differences influenced the study outcomes.

Post-intervention results indicate that the 1-2-3 Magic intervention was effective at reducing the frequency of child problem behavior compared with controls. However, the rating given by caregivers regarding the level of difficulty caused by the child's behavior had not reduced at post-intervention. In terms of parenting dysfunction, results indicate that there was a reduction in parents' perception of their child as being difficult at post-intervention compared with controls. However, overall parenting stress, parental distress, and the extent to which the parent-child interaction reinforced the caregivers' parenting role did not improve. Regarding ADHD behavior, results revealed a significant reduction in all child ADHD symptoms at post-intervention compared with controls.

However, the results at the six-month follow-up presented a different picture. Only two of the five significant post-intervention results remained significant at the six-month follow-up, namely, the difficult child rating and the ADHD Inattention score. Despite changes in other results at the six-month follow-up parents still rated their child as less difficult and the reduction

in ADHD inattentive symptoms observed at post-intervention remained evident six months later. Although a reduction in ADHD inattentive symptoms remained evident at the six-month follow-up, the overall reduction in ADHD symptoms and ADHD hyperactive/impulsive symptoms were no longer observed. Regarding other results at the six-month follow-up, there was an improvement in overall levels of parenting stress and the degree to which the parent-child interaction supported the caregivers' parenting role that was not evident at post-intervention. These results suggest that although reductions in the frequency of difficult child behavior and, overall ADHD and hyperactive/impulsive symptoms were not maintained over the long-term, other outcomes, the degree of problematic behavior, overall parental stress, and parent-child dysfunctional interaction all required the intervention strategies to be applied over a longer period of time before improved behaviors could be observed.

Strengths and limitations

The main strengths of this pilot study were the high retention rate, the high treatment fidelity, and the large group-format. The high treatment fidelity was due to the manualized format of the 1-2-3 Magic program and the length of time devoted to viewing the program DVDs. Qualitative observations and participant feedback indicated that caregivers were engaged with the program content, which is likely to have contributed to the high retention rate. The brevity of the program, three 2-hour sessions, was also a likely contributor to the high retention rate. In addition, the large group-format utilized for this intervention offered a level of anonymity for those caregivers who may feel threatened by small group or one-on-one encounters, further contributing to the high retention rate.

The main limitation of this pilot study was the differences in baseline characteristics between the two groups. Although there were no significant differences between the groups on the socio-demographic variables, inspection of results from the CBCL revealed significant differences between the groups on both the Externalizing and Internalizing subscales of the CBCL. In addition, there were significant differences between the groups at pre-intervention on three of the main outcome variables: the ECBI Intensity scale, the ECBI Problem scale, and the ADHD-RS Total score. These findings suggest that target children in the control group displayed more frequent problem behavior and more severe ADHD symptoms than target children in the treatment group. This crucial baseline difference between the groups meant the groups were not comparable when the intervention commenced. It is possible that the baseline difference between the groups on child symptom scores was influenced by the small sample size. Hence, it is highly likely the baseline differences that existed between the groups had an effect on the internal validity of the study and thus, impacted the study outcomes (Sedgwick, 2013).

An additional limitation relates to power. A significant issue in the design of any study is adequately powering the experiment. An important reason for conducting the pilot study was to obtain a better idea of the effect sizes for the three key variables. The three key variables were the ECBI Intensity scale, the PSI-SF Total Stress score, and the ADHD-RS Total score. These variables had effect sizes (Cohen's d ; Cohen, 1988) of 0.9, 0.7, and 1.1 respectively. Given the sample size of the pilot study, there was insufficient power to detect a PSI-related effect. Consequently, in designing a further study, that study needs to be powered to detect effect sizes greater than 0.7.

Another important limitation of the current study was the time point for the post-intervention data collection. Post-intervention data collection took place two weeks after the

completion of the intervention. It is highly likely that this relatively short interval did not provide some families with sufficient time to fully implement and evaluate the intervention strategies.

Other limitations were reliance on parent report of child ADHD diagnosis, the lack of independent measures of child and parent behavior, all measures were self-report; self-referral may enhance potential effects of treatment (Tiano & McNeil, 2005); and the composition of the sample - all participants were from a large metropolitan area and the majority were tertiary educated, married, with above-average household income, which has an impact on the generalizability of outcomes to other populations with children diagnosed with ADHD.

Conclusion

In summary, Study I provided some evidence that the 1-2-3 Magic parenting program was effective in reducing problem behavior among school-aged children diagnosed with ADHD. Previous studies have shown that the 1-2-3 Magic parenting program is effective in reducing dysfunctional parenting and problem behavior among Australian children in the general population (Bailey, van der Zwan, Phelan, & Brooks, 2012, 2015; Porzig-Drummond et al., 2014). However, findings from the current study, although suggestive of improvement, provided mixed results for children diagnosed with ADHD and their parents. Post-intervention results revealed significant baseline differences between the treatment and control groups. In addition, post-intervention results indicated that there was insufficient power to detect an effect on all key outcome variables. Moreover, results at the six-month follow-up suggested more time between the end of the intervention and post-intervention measurement was required to establish new behavioral routines. As a consequence, there is need to rectify these limitations by running an

additional study to evaluate the efficacy of the 1-2-3 Magic program in reducing dysfunctional parenting and problem behavior among primary school-aged children diagnosed with ADHD in Australia.

References

- Abidin, R. R. (2012). *Parenting stress index: Professional manual* (4th ed.). Odessa, FL: Psychological Assessment Resources.
- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms and profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, and Families.
- American Psychiatric Association (APA). (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author.
- Australian Bureau of Statistics. (2011). *2011 Census QuickStats: All people - usual residents*. Retrieved from:
http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/0
- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2012). The 1-2-3 Magic program: Implementation outcomes of an Australian pilot evaluation with school-aged children. *Child & Family Behavior Therapy*, 34(1), 53-69.
doi: 10.1080/07317107.2012.654455
- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2015). Keeping it going: Evidence of long-term improvements after implementation of the 1-2-3 Magic parenting program. *Child & Family Behavior Therapy*, 37(4), 303-320.
doi: 10.1080/07317107.2015.1104776
- Booth, E. C. (Producer and Director), & Phelan, T. W. (Writer and Presenter). (2004a). *1-2-3 Magic: Managing difficult behavior in children 2-12* [DVD]. Glen Ellyn, IL: ParentMagic. Available from [http:// www.123magic.com](http://www.123magic.com)

- Booth, E. C. (Producer and Director), & Phelan, T. W. (Writer and Presenter). (2004b). *More 1-2-3 Magic: Encouraging good behavior, independence and self-esteem* [DVD]. Glen Ellyn, IL: ParentMagic. Available from <http://www.123magic.com>
- Breston, E., Jacobs, J., Rayfield, A., & Eyberg, S. M. (1999). A consumer satisfaction measure for parent-child treatments and its relationship to measures of child behavior change. *Behavior Therapy*, 30, 17-30. doi:10.1016/S0005-7894(99)80043-4
- Cohen, J. (1988). *Statistical power analysis for behavioral sciences* (2nd ed.). New York, NY: Academic Press.
- Colvin, E., Eyberg, S. M., & Adams, C. D. (1999). *Restandardization of the Eyberg child behavior inventory*. Retrieved from <http://pcit.phhp.ufl.edu/Measures/ECBI%20Restandardization.pdf>.
- DuPaul, G. J., Power, T. J., Anastopoulos, A. D., & Reid, R. (1998). *ADHD rating scale-IV: Checklists, norms, and clinical Interpretation*. New York, NY: Guilford Press.
- DuPaul, G. J., Power, T. J., McGoey, K. E., Ikeda, M. J., & Anastopoulos, A. D. (1998). Reliability and validity of parent and teacher ratings of attention-deficit/hyperactivity disorder symptoms. *Journal of Psychoeducational Assessment*, 16(3), 55-68. doi: 10.1177/073428299801600104
- Eisenstadt, T. H., Eyberg, S. M., McNeil, C. B., Newcomb, K., & Funderburk, B. (1993). Parent-child interaction therapy with behavior problem children: Relative effectiveness of two stages and overall treatment outcome. *Journal of Clinical Child Psychology*, 22, 42-51. doi: 10.1207/s15374424jccp2201_4
- Eyberg, S. M., & Pincus, D. (1999). *Eyberg child behavior inventory and Sutter-Eyberg student behavior inventory - revised: Professional manual*. Odessa, FL: Psychological Assessment Resources.

- Larson, K., Russ, S. A., Kahn, R. S., & Halfon, N. (2011). Patterns of comorbidity, functioning, and service use for US children with ADHD, 2007. *Pediatrics*, 139(3), 462-470. doi: 10.1542/peds.2010-0165
- Phelan, T. W. (1984). *1-2-3 Magic: Effective discipline for children 2-12* (1st ed.). Glen Ellyn, IL: Child Management.
- Phelan, T. W. (2010). *1-2-3 Magic: Effective discipline for children 2-12* (4th ed.). Glen Ellyn, IL: ParentMagic.
- Phelan, T. W. (2012). *1-2-3 Magic: Presentation package*. Glen Ellyn, IL: ParentMagic.
- Phelan, T. W. (n.d.). *Parenting tip sheets*. Retrieved from <https://www.123magic.com/parenting-tips.html>
- Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2014). The 1-2-3 Magic parenting program and its effect on child problem behaviors and dysfunctional parenting: A randomized controlled trial. *Behaviour Research and Therapy*, 58, 52-64. doi: 10.1016/j.brat.2014.05.004
- Rausch, J. R., Maxwell, S. E., & Kelley, K. (2003). Analytic methods for questions pertaining to a randomized pretest, posttest, follow-up design. *Journal of Clinical Child and Adolescent Psychology*, 32(3), 467-486. doi: 10.1207/S15374424JCCP3203_15
- Raver, C. C., Gershoff, E. T., & Aber, J. L. (2007). Testing equivalence of mediating models of income, parenting, and school readiness for white, black, and Hispanic children in a national sample. *Child Development*, 78(1), 96-115.
- Roggman, L. A., Moe, S. T., Hart, A. D., & Forthun, L. F. (1994). Family leisure and social support: Relations with parenting stress and psychological well-being in Head Start parents. *Early Childhood Research Quarterly*, 9, 463-480. doi: 10.1016/0885-2006(94)90020-5

- Schultz, K. F., Altman, D. G., & Moher, D. (2010). CONSORT 2010 statement: Updated guidelines for reporting parallel group randomized trials. *Annals of Internal Medicine*, 152(11), 726-732. doi: 10.7326/0003-4819-152-11-201006010-00232
- Sedgwick, P. (2013). Stratified random allocation. *British Medical Journal*, 346, 1756-1833. doi: 10.1136/bmj.f822
- Sibley, M. H., Pelham, W. E., Molina, B. S., Gnagy, E. M., Waschbusch, D. A., Biswas, A.,...Karch, K. M. (2011). The delinquency outcomes of boys with ADHD with and without comorbidity. *Journal of Abnormal Child Psychology*, 39(1), 21-32. doi: 10.1007/s10802-010-9443-9
- Tiano, J. D., & McNeil, C. B. (2005). The inclusion of fathers in behavioral parent training: A critical evaluation. *Child & Family Behavior Therapy*, 27(4), 1-28. doi: 10.1300/J019v27n04_01

**CHAPTER 5: Testing Effective Strategies for Reducing Problem Behavior
Among Children with ADHD: An Evaluation of the 1-2-3 Magic Parenting
Program**

Abstract

This study investigated whether the 1-2-3 Magic parenting program would be effective in reducing disruptive behavior and ADHD symptoms in children with ADHD, as well as parental stress and dysfunctional parenting among their caregivers, when delivered in a large group-format. Fifty-seven caregivers of children aged 6 to 12 years were randomly allocated to either the treatment group ($n = 28$) or the waitlist-control group ($n = 29$). Treatment group participants reported significantly reduced child ADHD symptoms, significantly less child problematic behavior, and significantly less parental stress and dysfunctional parenting at post-intervention compared with control group participants. All results remained significant at the six-month follow-up. Results for children receiving stimulant medication, compared with those not receiving stimulant medications, revealed no significant differences at post-intervention. To exclude an effect of changes in medication on outcomes, scores for children whose medication remained unchanged throughout the intervention and follow-up period ($n = 13$) were analyzed separately with key outcome results significant at the six-month follow-up. These results suggest that the 1-2-3 Magic parenting program is effective at reducing disruptive behavior and ADHD symptoms in children diagnosed with ADHD, as well as parental stress and dysfunctional parenting in their caregivers, irrespective of whether the child was receiving stimulant medication or not, when delivered to caregivers in a group-format.

Introduction

The overarching aim of the current study was to extend and build upon the previous study evaluating the efficacy of the 1-2-3 Magic program among a clinical sample of school-aged Australian children diagnosed with ADHD, and their parents. Results from the previous study revealed mixed short- and long-term (six months) outcomes for the 1-2-3 Magic parenting program for this population. Three notable limitations were evident in the previous study; namely, baseline differences in the behavior of the children in the treatment and control groups, limited time post-intervention given to parents to implement and utilize the behavioral strategies taught in the intervention, and insufficient power to detect an effect on one of the key outcome variables. The present study replicated the aims of the previous study and rectified the limitations described above. Baseline differences were rectified by utilizing a more rigorous allocation method, the limited time given to parents to implement and utilize the program strategies post-intervention was resolved by extending the post-intervention assessment by two weeks, to four weeks post-intervention, and the issue of insufficient power was rectified by recruiting a larger sample.

Aims

As the current study is an extension of the previous study, the aims for this study, Study II, were identical to the aims for Study I. However, for the sake of clarity and continuity, the aims for the current study are restated as follows. The aims of the present study were to examine whether the group-format of the 1-2-3 Magic parenting program would be effective, relative to a control group, in reducing: (1) child problem behavior among children diagnosed with ADHD; (2) ADHD symptoms in those children; and (3) dysfunctional parenting and parental stress among

their caregivers. An additional aim was to assess (4) the longevity (six months) of these effects on both child and parent behavior.

Method

Given the current study is an extension of the previous study, methodological details will not be repeated in this chapter. Thus, to avoid repetition, when the methodological details are identical to those reported in the previous study, a note referring to Chapter 4 will be made. However, all methodological variations will be discussed in detail in the current chapter.

Design

The current study used the same experimental design as Study I. However, on this occasion a stratified random allocation method was utilized to allocate participants to the treatment and control groups. Stratification was based on scores from screening questions on behavioral symptomology to ensure that child behavior in both groups was of similar severity. Given group allocation for this study utilized a stratified random sampling method, the randomization procedure was not conducted until 60 eligible participants were recruited, which was several weeks prior to the commencement of the treatment group intervention. Specifically, caregivers were randomly assigned to either: (1) a treatment group receiving three consecutive weeks of 1-2-3 Magic training followed by a booster session four weeks after the 1-2-3 Magic training had been completed, or (2) a waitlist-control group receiving their 1-2-3 Magic training after post-measures had been completed (i.e., two months after entering the program). As in the previous study, pre- and post-data was collected on site at Macquarie University and six-month follow-up data was collected online. Data was collected between July 2015 and March 2016. The

present chapter covers all data collected from pre- and post-measurement and six-month follow-up.

Sampling procedure

This study employed the same recruitment procedure and the same inclusion and exclusion criteria as Study I (see Chapter 4). However, several procedural differences were adopted in this study in order to minimize baseline group differences in the behavior of the target children. A detailed account of the procedure utilized in this study is described below.

The target number of participants for this study was 64, 32 in each group. This target was established in order to provide sufficient power to detect effect sizes greater than $d = 0.7$. The target was determined based on estimates of effect sizes derived from two similar Australian studies (Porzig-Drummond, Stevenson, & Stevenson, 2014, 2015), and the power calculation based on the previous pilot study (Study I). Ultimately, a sample of 60 participants was recruited, 30 in each group.

Figure 1 illustrates the progression of participants through the study and the study design. One hundred and sixty-five caregivers responded to advertisements. Sixteen caregivers did not respond to three repeated contact attempts. Initial screening of 149 caregivers was conducted via e-mail, text message, or phone call, explaining the requirements of the study. During initial screening, 75 caregivers did not meet the inclusion criteria.

Seventy-four caregivers who were potentially eligible to participate in the study completed a detailed telephone interview, conducted by a registered psychologist to ensure inclusion criteria were satisfied. Participants were not excluded if the target child was receiving pharmacological intervention for their ADHD or if the target child suffered with comorbid

symptoms.

To verify the validity of each child's ADHD diagnosis, the telephone interview included questions about: (1) the child's ADHD subtype; (2) who conducted the diagnostic assessment (i.e., pediatrician, psychologist, or psychiatrist); (3) when the diagnosis was made; (4) whether the child was taking stimulant medication; and (5) whether the caregiver was having difficulty managing the child's behavior. The interview also included five 'yes/no' questions that summarized the DSM-5 (American Psychiatric Association, 2013) diagnostic criteria to confirm the child's diagnosis (i.e., Predominately hyperactive/impulsive presentation, Predominately inattentive presentation, or Combined presentation). In addition, in order to establish the level of difficulty the caregiver was experiencing in managing the target child's behavior, five questions from the *Eyberg Child Behavior Inventory* (Eyberg & Pincus, 1999) were asked. The selection of the five ECBI questions was based on items that displayed the highest correlations with the total ECBI Intensity scale score for participants in a recent Australian study (Porzig-Drummond et al., 2014).

Of the 74 caregivers who were interviewed, 14 caregivers did not satisfy the inclusion criteria as: (1) their child was either not within the specified age range; (2) their child did not have a formal ADHD diagnosis; (3) their child did not exhibit challenging behavior at home; or (4) the family were currently receiving behavioral treatment elsewhere. In addition, eight caregivers were unable to attend the designated sessions due to work or family commitments. Sixty caregivers were eligible to participate in the study.

Eligible participants were ranked from highest to lowest based on their score from the five ECBI questions. Participants were paired based on their ECBI score, participants from each pair were randomly allocated to one of two groups (treatment group or waitlist-control group).

Allocation and attrition

One hundred and sixty-five caregivers inquired about the study. Sixteen caregivers did not respond to three repeated contact attempts. Initial screening excluded 75 caregivers who did not meet the inclusion criteria. Seventy-four caregivers indicated they might be eligible to participate and wished to undertake the telephone interview. These 74 caregivers completed a detailed telephone interview, conducted by a registered psychologist, to assess if they were eligible to participate in the study.

To verify the validity of each child's ADHD diagnosis, the telephone interview included questions about the child's ADHD: (1) what subtype; (2) who conducted the diagnostic assessment (i.e., pediatrician, psychologist, psychiatrist); (3) when the diagnosis was made; (4) whether the child was taking ADHD medication, and (5) whether the caregiver was having difficulty managing the child's behavior. The interview also included five 'yes/no' questions that summarized the DSM-5 (APA, 2013) diagnostic criteria to confirm the child's symptomology (see Appendix A, questions 3 -7). Of the 74 caregivers who were interviewed, 14 caregivers did not satisfy the inclusion criteria as their child was not within the specified age range ($n = 1$), their child did not have a formal ADHD diagnosis ($n = 2$), their child did not exhibit challenging behavior at home ($n = 1$), the family were currently receiving treatment elsewhere ($n = 2$), and eight caregivers were unable to attend the designated sessions due to work or family commitments. After completing the telephone interviews 60 caregivers were randomly allocated to the treatment group ($n = 30$) or the control group ($n = 30$). One treatment group participant withdrew prior to the initial session due to family illness.

The remaining 59 caregivers completed the pre-intervention measures during a joint information session. Of the 59 caregivers who completed the pre-intervention measures

(treatment group, $n = 29$, control group, $n = 30$), two caregivers (3.4%) withdrew from the study due to work or child care commitments (treatment group, $n = 1$, control group, $n = 1$). Fifty-seven caregivers completed both the pre- and post-intervention measures.

Primary data analysis was conducted on 57 participants (treatment group, $n = 28$; control group, $n = 29$). Overall, the proportion of caregivers who withdrew from pre- to post-intervention did not differ significantly between the groups ($X^2 = .00$, $p = 1.0$), indicating no attrition bias. Of the 28 treatment group participants, 25 (89.3%) completed the six-month follow-up assessment. The attrition rate from post-intervention to six-month follow-up was low at 5.3% ($n = 3$).

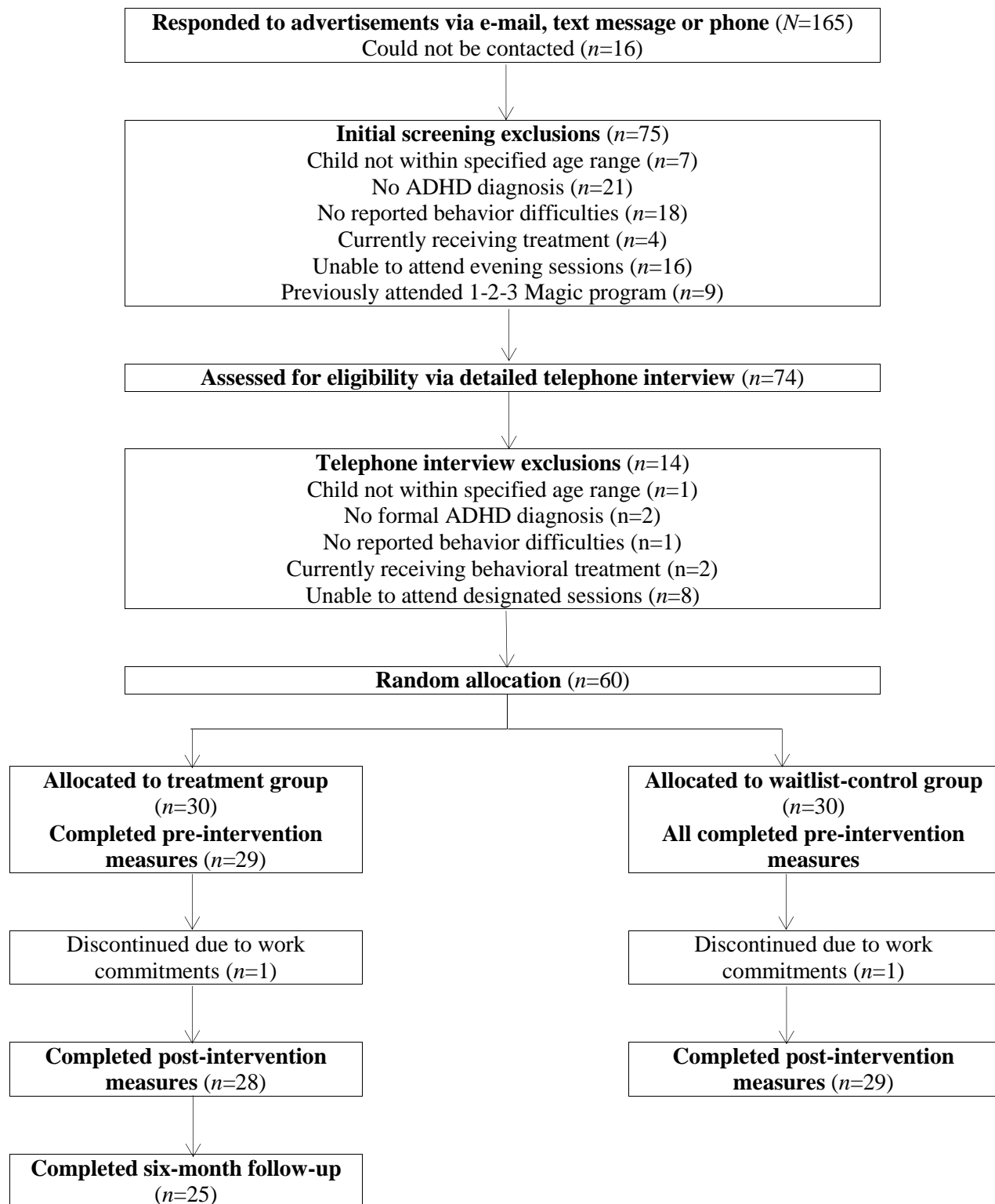


Figure 1. Flow diagram illustrating progression of participants through the study. Adapted from Consolidated Standards of Reporting Trials (CONSORT; Schultz, Altman, & Moher, 2010).

Participant characteristics

The 57 participants in the current study ranged in age from 33 to 58 years ($M = 42.6$, $SD = 4.7$), were predominantly female (47 females, 82.5%, and 10 males, 17.5%; 46 mothers, nine fathers, one foster mother, and one foster father), tertiary educated (77.2%), employed (77.2%; of these, 33.3% full-time and 43.9% part-time), with a household income higher than the Australian average (87.7%) of US\$48,786 (A\$64,168; Australian Bureau of Statistics, 2011). Participants lived with, on average, two children; the majority lived in a household with two caregivers (93.0%) and lived with the target child full-time (98.2%). The main language spoken at home was English (98.2%). Fourteen percent of families had at least one caregiver with a diagnosis of ADHD. Seventy percent of participants ($n = 40$; $n = 20$ treatment group, $n = 20$ control group) reported overall parenting stress levels above the clinical cut-off (above the 90th percentile) on the *Parent Stress Index–Short Form* (4th ed.; Abidin, 2012).

All target children attended mainstream primary schools. The target children ranged in age from 6 to 12 years ($M = 8.1$, $SD = 1.6$); 40 were male (70.2%) and 17 were female (29.8%). Forty participants (70.2%) reported that their child had been diagnosed with a comorbid condition: Learning Difficulties ($n = 6$, 10.5%), Autism ($n = 2$, 3.5%), Oppositional Defiant Disorder ($n = 5$, 8.8%), medical condition ($n = 4$, 7.0%), anxiety ($n = 8$, 14.0%), sensory processing issues ($n = 3$, 5.3%), or multiple comorbid conditions ($n = 12$, 21.1%). Thirty-nine participants (68.4%) reported that their child was taking medication to ameliorate ADHD symptoms. In addition, results from the *Child Behavior Checklist* (Achenbach & Rescorla, 2001) indicated that nine target children (15.8%; $n = 5$, treatment group, $n = 4$, control group) experienced internalizing difficulties and 16 target children (28.1%; $n = 11$, treatment group, $n = 5$, control group) experienced externalizing difficulties in the clinical range (above 98th

percentile). Regarding the child's behavior, 81% of caregivers ($n = 46$; $n = 25$ treatment group, $n = 21$ control group) reported a frequency of disruptive behavior in the clinical range (above 131), which was assessed using the Intensity scale of the ECBI (Eyberg & Pincus, 1999), and 68% ($n = 39$; $n = 21$ treatment group, $n = 18$ control group) reported the child's disruptive behavior was problematic, and at or above the clinical cut-off score of 15, which was assessed using the Problem scale of the ECBI.

Measures

The current study employed the same assessment battery as used in Study I, except for the ADHD behavior outcome measure. The same demographic questionnaire, baseline descriptive measure (CBCL/6-18; Achenbach & Rescorla, 2001), child behavior outcome measure (ECBI; Eyberg & Pincus, 1999), parent stress and parenting dysfunction outcome measure (PSI-4-SF; Abidin, 2012), and participant satisfaction measure (TAI; Breston, Jacobs, Rayfield & Eyberg, 1999) as used in Study I, were used in the current study. In this study the *Conners–Parent Short Form* (3rd ed.; Conners, 2008) was utilized instead of the ADHD-RS-IV. Details for the Conners 3-P(S) are described below (see Chapter 4 for details of all other questionnaires and measures).

ADHD behavior

Although there were no difficulties with the ADHD measure used in Study I, a change in the outcome measure for ADHD behavior from the ADHD-RS-IV to the Conners 3-P(S) was deemed beneficial due to the larger item pool of the Conners and the availability of more up-to-date norms. For this study the *Conners–Parent Short Form* (3rd ed.; Conners 3-P(S); Conners,

2008) was utilized as the outcome measure for child ADHD behavior instead of the ADHD-RS-IV (DuPaul, Power, Anastopoulos, & Reid, 1998).

The Conners 3-P(S) is a 43-item abbreviated version of the Conners full-length scale. The Conners 3-P(S) assesses caregiver observations of ADHD behavior and related comorbid concerns among children and adolescents aged 6 to 18 years. Items included in the short form are selected from those in the full-length form; results from the short form are expected to correspond with results from the full-length form. However, unlike the full-length Conners, the Conners Short Form does not generate a combined or total score, but only scores for six subscales (Inattention, Hyperactivity/Impulsivity, Learning Problems, Executive Functioning, Aggression, and Peer Relations). The frequency of each item is delineated on a four-point Likert scale (0 = *not true at all* to 3 = *very much true*), with higher scores revealing more severe ADHD symptoms. The Conners 3-P(S) exhibits good internal consistency ($\alpha = .89$) and test-retest reliability ($r = .86$; Conners, 2008).

Procedure

The procedure for this study was fundamentally the same as the procedure for Study I (see Chapter 4), with five important changes: (1) several questions regarding the target child's behavior were added to the telephone screening interview; (2) an alternative allocation procedure was adopted; (3) the outcome measure for ADHD behavior was changed; (4) the time point for completion of the post-intervention measures was extended; and (5) an additional question regarding stimulant medication was added at post-intervention and at the six-month follow-up.

During the telephone screening interview five questions from the ECBI were included in order to establish the extent of the target child's difficult behavior. The selection of the five

ECBI questions was based on items that displayed the highest correlations with the total ECBI Intensity scale score for participants in a recent Australian study (Porzig-Drummond et al., 2014). Eligible participants were ranked from highest to lowest and paired based on their score from the five ECBI questions (e.g., the two highest scores were paired and so on to the two lowest scores). Participants from each pair were then randomly allocated to one of two groups (treatment group or waitlist-control group). This ranking allocation method, commonly used in medical studies (Sedgwick, 2013) and animal models (Molewijk, van der Poel, Mos, van der Heyden, & Olivier, 1995), was conducted to minimize baseline differences between the groups on the three outcome measures observed in Study I.

A change in the outcome measure for ADHD behavior from the ADHD-RS-IV to the Conners 3-P(S) was deemed necessary due to the larger item pool of the Conners and the availability of more up-to-date norms.

The time point for completion of the post-intervention measures was changed from two weeks, after the treatment group intervention had been completed, to four weeks. A period of four weeks from the end of the intervention – before post-intervention data collection – was deemed to be a more realistic time frame, allowing caregivers time to fully implement the behavioral strategies taught during the intervention. As a result, the intervention for the control group was delayed by eight weeks rather than six weeks, as in Study I. Hence, participants in both groups completed the three post-intervention outcome measures eight weeks after the pre-intervention measures had been completed.

The final procedural change was the addition of a question regarding the target child's stimulant medication status. An additional question was added to the post-intervention and

six-month follow-up questionnaires to establish whether there had been any changes in the child's medication regimen. There were no reported changes in stimulant medication use during the intervention period. A number of changes in child stimulant medication use were reported during the follow-up period. Of the 25 caregivers who completed the six-month follow-up questionnaires 13 reported no change in their child's medication status, 12 reported that their child's medication status had changed ($n = 5$ dosage increased, $n = 4$ medication changed, $n = 3$ started medication).

Regarding attendance, as per the pilot study, participants who were unable to attend one of the designated intervention sessions were required to arrive earlier the following week to view the material they had missed. Non-attendance to designated sessions was minimal; three participants from the treatment group and four participants from the control group missed one of the designated intervention sessions. These participants all viewed the missed material the following week. Hence, all participants were deemed to have received the complete intervention.

Intervention – 1-2-3 Magic Parenting Program

The 1-2-3 Magic intervention utilized in this study and the structure of the intervention was identical to the intervention employed in Study I. The same sections of the two 1-2-3 Magic DVDs, *1-2-3 Magic* (Booth & Phelan, 2004a) and *More 1-2-3 Magic* (Booth & Phelan, 2004b), were shown to participants. The two practitioners who facilitated the pilot study intervention also facilitated the Study II intervention. The degree of practitioner input and the follow-up material were all identical to Study I (see Chapter 4 for details).

Data analysis

The statistical analyses conducted in the current study were the same as those conducted in Study I, with two additional analyses being conducted. An additional analysis was conducted to examine the effect of stimulant medication use on outcomes and an additional analysis was conducted to investigate clinical and reliable change. A brief account of the main statistical analyses and a detailed account of the additional analyses are described below.

Again, in this study, missing data was minimal and missing responses were imputed in accordance with the scoring protocol for the CBCL/6-18, ECBI, PSI-4-SF, and Conners 3-P(S). Similarly, online follow-up questionnaires could only be submitted if all items were completed.

Reported results are based on the data gathered from 57 participants who completed the pre- and post-intervention questionnaires, and 25 participants who completed the six-month follow-up questionnaires. The data was screened and found to be suitable for parametric analyses and a Type I error rate of .05 was adopted for all primary analyses.

Demographic statistics for continuous variables are described using the mean and standard deviation, and categorical variables are described using the percentage.

To investigate whether the 1-2-3 Magic program was associated with changes in the behavior of children diagnosed with ADHD, parenting stress, and ADHD ratings of children, analysis of covariance (ANCOVA) was performed comparing pre- and post-intervention scores on each outcome measure. Group was the between-subject factor, the post-intervention score was the dependant variable and the pre-intervention score was the covariate (Rausch, Maxwell, & Kelley, 2003).

To explore whether the use of child stimulant medication had an impact on the results, an independent samples *t* test was conducted to examine the effect of stimulant medication use among treatment group target children on each outcome measure at post-intervention.

To examine whether the intervention effects were maintained over time, within group paired *t* tests were performed for all outcome measures on the treatment group pre-intervention and six-month follow-up scores. Additionally, to examine whether the intervention effects were maintained for children whose medication status did not change, within group paired *t* tests on the pre-intervention and six-month follow-up difference scores were used to examine the long-term effects among treatment group target children whose medication status remained stable during the intervention and follow-up period.

Finally, clinical significance of change was conducted using chi-square analyses, to compare the proportion of participants whose scores changed from the clinical range at pre-intervention to the non-clinical range at post-intervention (Kendall, Maars-Garcia, Nath, & Sheldrick, 1999). The Reliable Change Index (Jacobson & Truax, 1991) was calculated for each participant's difference score on the three main outcome measures to compare the proportion of participants whose scores revealed a reliable positive change from pre-intervention to post-intervention.

Results

Participant characteristics

Demographic characteristics for participants and target children are shown in Table 1. One-way ANOVA and chi-square analyses showed no significant differences between the intervention and control group on socio-demographic variables at pre-intervention. Additionally, there was no significant difference between the groups on the baseline measure of child behavior (CBCL

Externalising scale and CBCL Internalising scale) at pre-intervention, suggesting that the externalizing and internalizing behavioral difficulties displayed by the target children in the treatment group and the control group were similar.

Baseline mean scores on the outcome measures are shown in Figure 2. One-way ANOVA revealed no significant differences in child behavior (ECBI Intensity scale and ECBI Problem scale), parenting stress (PSI-SF Total Stress score and subscale scores), or in child ADHD symptoms (Conners P[S] subscales) between the two groups (all F s < 2.24, p s > .091).

Table 1

Demographic characteristics of the treatment group and the control group

Characteristic	Treatment Group (<i>n</i> =28)		Control Group (<i>n</i> =29)		<i>F</i> (<i>df</i>)	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Child's age (years)	8.1	1.6	8.1	1.5	.16 (1)	.695
Caregiver's age (years)	42.6	4.7	43.2	6.0	.03 (1)	.870
No. of children at home	2.3	.7	2.5	.8	1.01 (1)	.319
CBCL externalizing scale	17.7	7.3	15.4	7.7	1.35 (1)	.250
CBCL internalizing scale	12.4	8.5	11.0	6.4	.46 (1)	.499
	<i>n</i>	%	<i>n</i>	%	<i>X</i> ²	<i>p</i>
Child's gender						
Male	17	60.7	23	79.3	2.35	.155
Female	11	39.3	6	20.7		
Caregiver's gender						
Male	5	17.9	5	17.2	.004	1.000
Female	23	82.1	24	82.8		
Family composition						
Two caregivers	26	92.9	27	93.1	.001	1.000
Sole caregiver	2	7.1	2	6.9		
Child living with caregiver						
Full-time	27	96.4	29	100	1.05	.491
Majority part-time	1	3.6	0	0		
Caregiver ADHD						
ADHD diagnosis	6	21.4	2	6.9	2.49	.144
No ADHD diagnosis	22	78.6	27	93.1		
Child stimulant medication						
Medication	22	78.6	17	58.6	2.62	.155
No medication	6	21.4	12	41.4		
Child comorbid condition						
Additional diagnosis	19	67.9	21	72.4	.14	.777
ADHD only	9	32.1	8	27.6		
Main language at home						
English	28	100	28	96.6	.98	1.000
Other	0	0	1	3.4		
Caregiver's education						
High school qualification	5	17.9	8	27.6	2.41	.300
Tertiary qualification	23	82.1	21	72.4		

	<i>n</i>	%	<i>n</i>	%	X^2	<i>p</i>
Caregiver's employment						
Full-time	10	35.7	9	31.0	.77	.681
Part-time	13	46.4	12	41.4		
Not employed	5	17.9	8	27.6		
Annual household income						
Up to A\$64,168	3	10.7	4	13.8	.13	1.000
A\$64,168 and over	25	89.3	25	86.2		

Note. *F* = univariate ANOVA condition effect; X^2 = Pearson's Chi-Square
(where expected frequencies are too low for Chi-Square, Fisher's exact test is reported)

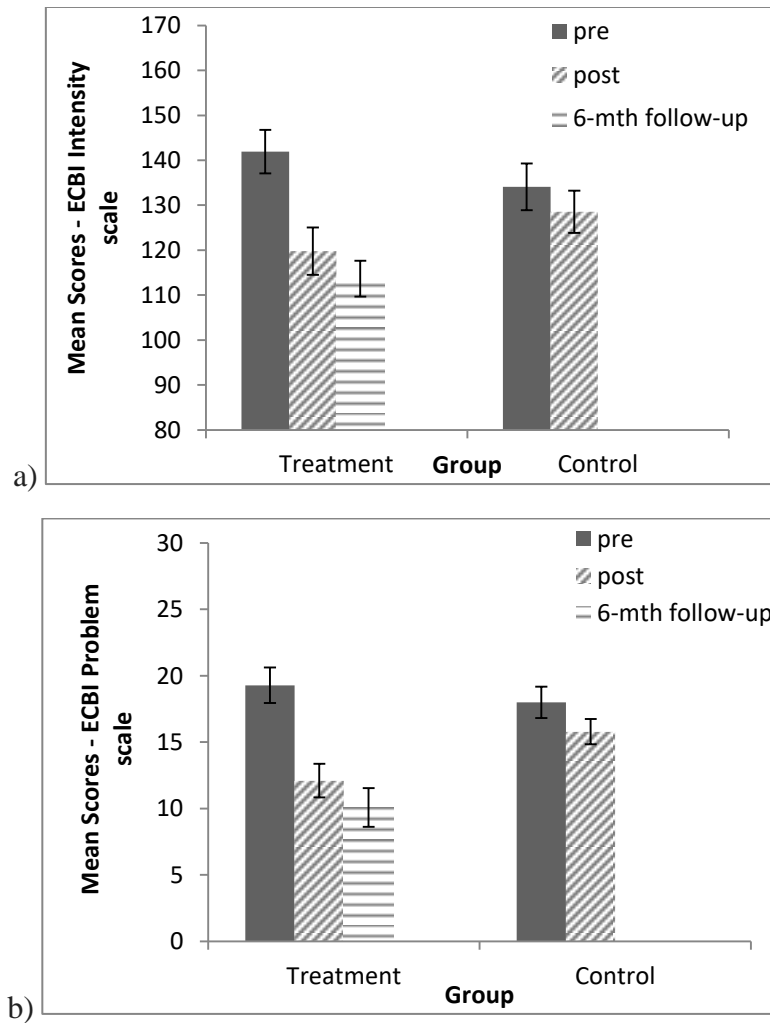


Figure 2. (a) ECBI Intensity scale mean scores. Higher scores indicate more frequent child disruptive behavior as reported by caregivers. (b) ECBI Problem scale mean scores. Higher scores indicate that more child disruptive behavior was rated as problematic by caregivers. All graphs show scores at pre- and post-intervention for the treatment and control groups, and six-month follow-up for the treatment group. Error bars on each column represent the *SEM*.

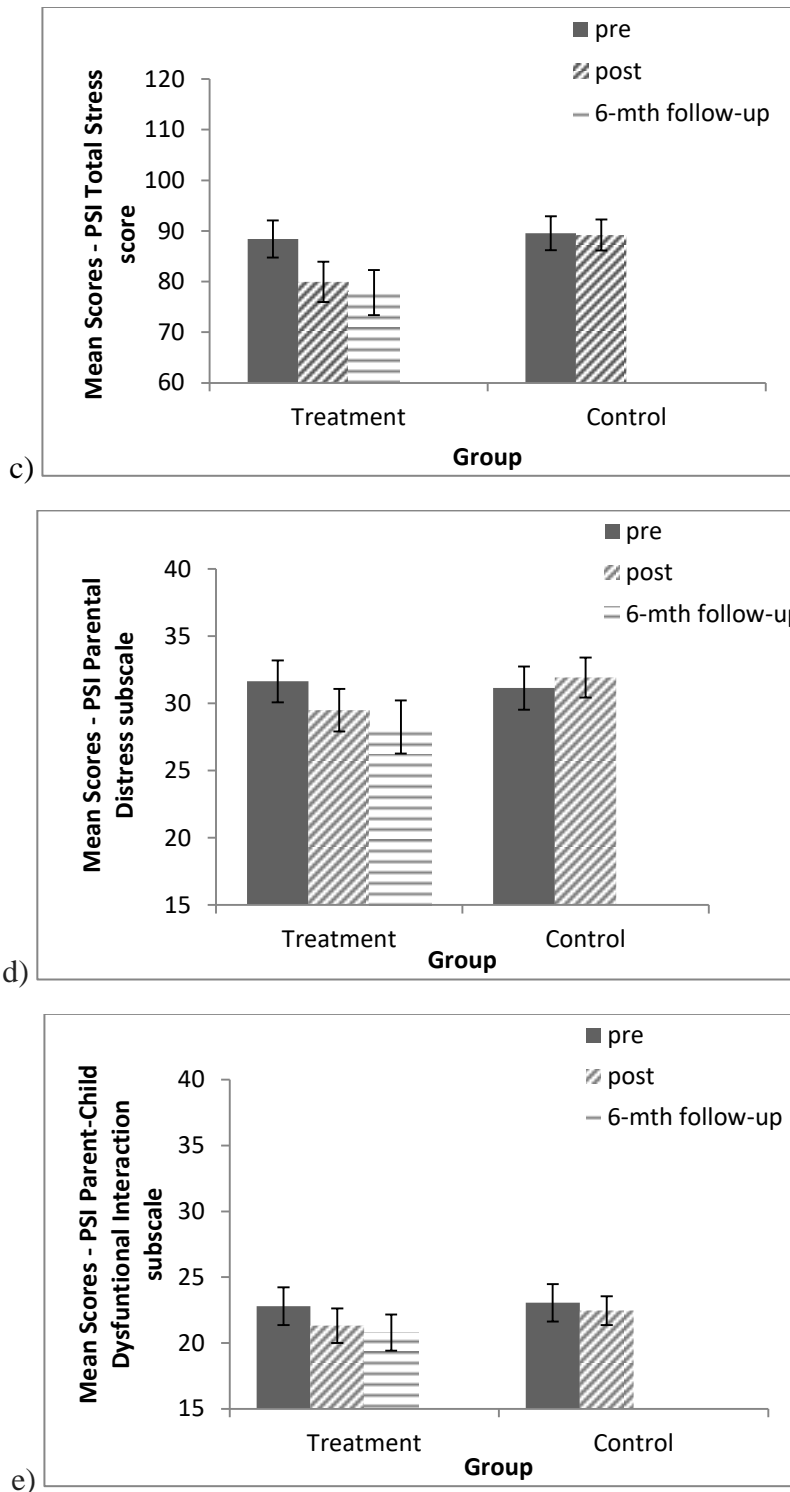


Figure 2. (continued) (c) PSI Total Stress mean scores. Higher scores indicate higher parental stress. (d) PSI Parental Distress subscale mean scores. Higher scores indicate more parental distress. (e) PSI Parent-Child Dysfunctional Interaction subscale mean scores. Higher scores indicate greater dysfunctional parent-child interaction. All graphs show scores at pre- and post-intervention for the treatment and control groups, and six-month follow-up for the treatment group. Error bars on each column represent the *SEM*.

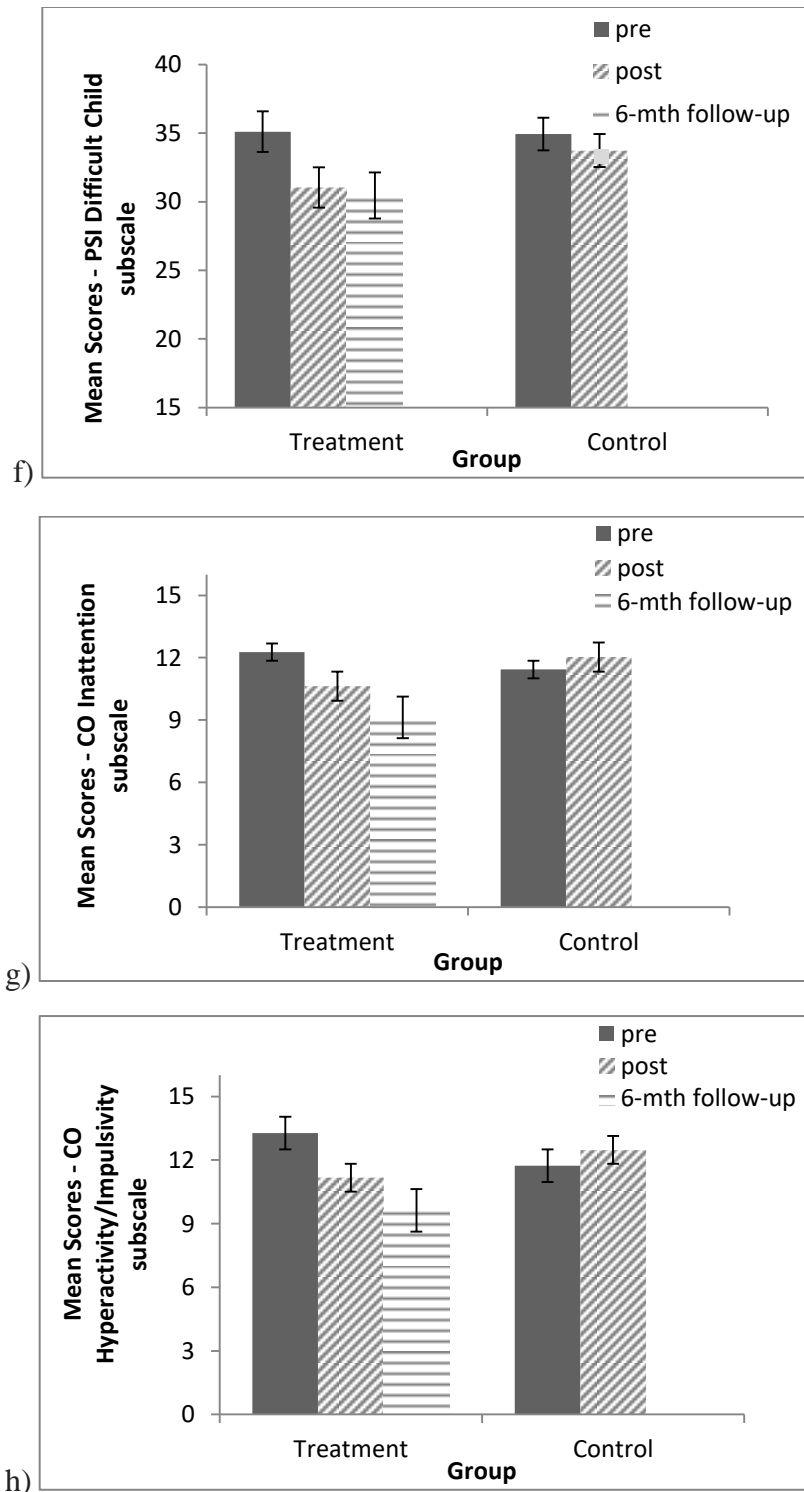


Figure 2. (continued) (f) PSI Difficult Child subscale mean scores. Higher scores indicate the parent rating the child as more difficult. (g) Conners Inattention subscale mean scores. (h) Conners Hyperactivity/Impulsivity subscale mean scores. Higher scores on both Conners subscales indicate more ADHD symptoms. All graphs show scores at pre- and post-intervention for the treatment and control groups, and six-month follow-up for the treatment group. Error bars on each column represent the SEM.

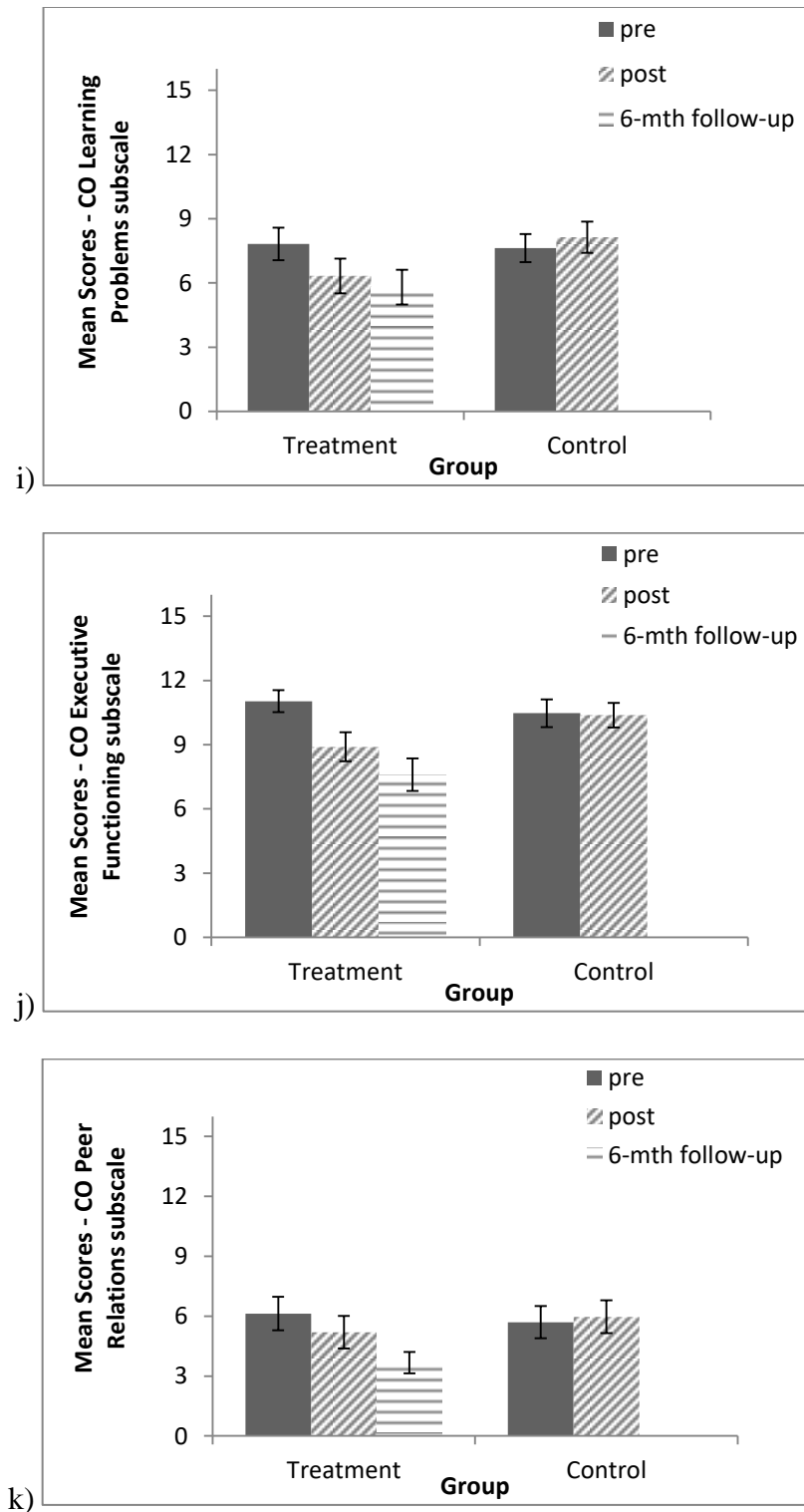


Figure 2. (continued) (i) Conners Learning Problems, (j) Conners Executive Functioning, and (k) Conners Peer Relations mean scores. Higher scores on Conners subscales indicate more symptoms in each area. All graphs show scores at pre- and post-intervention for the treatment and control groups, and six-month follow-up for the treatment group. Error bars on each column represent the *SEM*.

Table 2

Intervention effects: Treatment group and control group at pre- and post-intervention, and children on medication versus children not on medication for the treatment group at post-intervention

Measure	ANCOVA Condition effect for the treatment group and control group at post-intervention			Independent samples <i>t</i> test comparing condition effect for treatment group children on medication versus treatment group children not on medication at post-intervention	
	<i>F(df)</i>	<i>p</i>	η_p^2	<i>t(df)</i>	<i>p</i>
ECBI					
Intensity scale	45.82 (1, 54)	.000	.46	.69 (26)	.495
Problem scale	15.26 (1, 54)	.000	.22	.87 (26)	.393
PSI-4-SF					
Total Stress score	15.64 (1, 54)	.000	.23	.92 (26)	.366
Parental Distress subscale	5.86 (1, 54)	.019	.10	.63 (26)	.534
Parent-Child Dysfunctional Interaction subscale	8.79 (1, 54)	.005	.14	.95 (26)	.349
Difficult Child subscale	17.41 (1, 54)	.000	.24	.65 (26)	.522
Conners 3-P(S) subscales					
Inattention	9.42 (1, 54)	.003	.16	.50 (26)	.621
Hyperactivity/Impulsivity	7.40 (1, 54)	.009	.13	.34 (26)	.736
Learning Problems	11.15 (1, 54)	.002	.18	1.55 (26)	.133
Executive Functioning	8.53 (1, 54)	.005	.14	.20 (26)	.844
Aggression	3.20 (1, 54)	.079	.06	.35 (26)	.732
Peer Relations	5.18 (1, 54)	.027	.09	1.40 (26)	.173

Note. *F* = univariate ANCOVA effect for condition; η_p^2 (partial eta squared) = effect size.

Post-treatment outcomes

Pre- and post-treatment scores on the three outcome measures, collected eight weeks apart (allowing for the information session, three weeks for the intervention program and an additional four weeks to implement the strategies presented in the program), are shown in Table 2 (a table of means and standard deviations is provided in Appendix B). Analysis of covariance

(ANCOVA) revealed significant differences between the groups on all outcome measures at post-intervention. On the child behavior measure (ECBI Intensity and Problem scales), participants in the treatment group reported significantly less frequent child disruptive behavior (ECBI Intensity scale) and assessed fewer child difficult behaviors as problematic (ECBI Problem scale) than participants in the control group.

On the dysfunctional parenting and parent stress measure (PSI-SF), participants in the treatment group reported significantly less overall parental stress (PSI-SF Total score), less parental distress (PSI-SF Parental Distress subscale), reduced parent-child dysfunctional interaction (PSI-SF Parent-Child Dysfunctional Interaction subscale), and reduced levels of perceiving their child as difficult (PSI-SF Difficult Child subscale) at post-intervention than the control group participants.

On the measure of child ADHD symptoms (Conners P[S]), participants in the treatment group reported a significant reduction in inattention (Inattention subscale), less hyperactive and impulsive behavior (Hyperactivity/Impulsivity subscale), fewer learning problems (Learning Problems subscale), fewer organisational difficulties (Executive Functioning subscale), and fewer problems with peers (Peer Relations subscale) four weeks after completing the program, at post-intervention, than participants in the control group. There was no significant difference between the treatment group and the control group in the level of child aggression at post-intervention.

In addition, an independent-samples *t* test was conducted on the pre- and post-intervention difference scores to compare intervention effects for treatment group target children who were receiving stimulant medication and treatment group target children who were not receiving stimulant medication throughout the intervention. There was no significant difference

in the scores between the two groups on any of the outcome measures (see Table 2). This result suggests that the interventions effects were comparable irrespective of whether the target child was concurrently taking stimulant medication or not.

Table 3

Intervention effects: Treatment group at pre-intervention and six-month follow-up, and treatment group children whose medication status remained unchanged from pre-intervention to six-month follow-up

Measure	Comparison (<i>t</i> -statistic) Time effect for the treatment group at 6-month follow-up		Comparison (<i>t</i> -statistic) Time effect for the treatment group medication status unchanged at 6-month follow-up	
	<i>t(df)</i>	<i>p</i>	<i>t(df)</i>	<i>p</i>
ECBI				
Intensity scale	5.52 (24)	.000	4.45 (12)	.001
Problem scale	5.47 (24)	.000	9.58 (12)	.000
PSI-4-SF				
Total Stress score	4.36 (24)	.000	4.33 (12)	.001
Parental Distress subscale	2.07 (24)	.049	2.38 (12)	.034
Parent-Child Dysfunctional Interaction subscale	3.15 (24)	.004	3.15 (12)	.008
Difficult Child subscale	6.03 (24)	.000	4.15 (12)	.001
Conners 3-P(S) subscales				
Inattention	3.91 (24)	.001	2.51 (12)	.000
Hyperactivity/Impulsivity	4.45 (24)	.000	3.53 (12)	.004
Learning Problems	2.30 (24)	.031	1.10 (12)	.294
Executive Functioning	3.55 (24)	.002	2.16 (12)	.052
Aggression	2.12 (24)	.044	1.72 (12)	.111
Peer Relations	3.63 (24)	.001	3.29 (12)	.007

Six-month follow-up outcomes

The means for the pre-intervention and six-month follow-up results on the three outcomes measures (Figure 2) and the results from t tests (Table 3) indicate that the significant intervention effects for the treatment group were maintained at the six-month follow-up. Significant results were obtained on both child behavior measures (ECBI Intensity and Problem scales); the parent stress measure including the three subscales (PSI-SF Total Stress, Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child subscales); and the child ADHD symptom measure (Conners P[S] subscales - Inattention, Hyperactivity/Impulsivity, Learning Problems, Executive Functioning, Aggression, and Peer Relations). Analysis of post-intervention and six-month follow results was also conducted and there was no change in the findings. These results indicate that the positive effects obtained as a result of the intervention were maintained six months after the program was completed. In addition, the Conners Aggression subscale result was significant at the six-month follow-up, suggesting that target children in the treatment group displayed less aggressive behavior from pre-intervention to six-month follow-up. It should be noted that changes in the medication status of a proportion of treatment group children ($n = 12$) from post-intervention to the six-month follow-up may have had an impact on the follow-up results.

Additional analyses were conducted to exclude the effects of changes in stimulant medication during the six-month follow-up period. These analyses were conducted to investigate whether the long-term intervention effects were maintained for the subgroup of treatment group target children whose stimulant medication or medication free status had remained unchanged ($n = 13$) from pre-intervention to the six-month follow-up. Paired t tests for the no change in medication subgroup indicated that the intervention effects were sustained on

all outcome variables, except Learning Problems, Executive Functioning, and Aggression. The long-term effects for the children whose medication or medication free status remained unchanged throughout the intervention and follow-up period, indicates that the 1-2-3 Magic intervention is effective in reducing child disruptive behavior, parental stress and ADHD core symptoms, inattention and hyperactivity/impulsivity, as well as difficulties with peers, among children diagnosed with ADHD, regardless of whether the target child was receiving stimulant medication or not.

Table 4

Clinical and reliable change at post-intervention

Measure and clinical-cut off	Treatment group n/n (%)		Control group n/n (%)		Clinical Change (significance)		Reliable Change (significance)	
	Clinically changed	Reliably changed	Clinically changed	Reliably changed	X^2	p	X^2	p
ECBI Intensity scale ≥ 132	17/21(81.0)	12/21(57.1)	1/18(5.6)	1/18(5.6)	21.62	.000	12.57	.000
ECBI Problem scale ≥ 15	9/25(36.0)	13/25(52.0)	1/21(4.0)	2/21(8.0)	8.11	.005	11.48	.001
PSI-4-SF Total Stress ≥ 91	6/20(30.0)	10/20(50.0)	3/20(15.0)	2/20(10.0)	1.32	.297	7.12	.010

Note. n/n = number of participants whose scores changed from the clinical range at pre-intervention to the non-clinical range at post-intervention / number of participants; % = proportion of participants whose scores changed from the clinical range at pre-intervention to the non-clinical range at post-intervention; Clinically changed = participants whose scores changed from the clinical range at pre-intervention to the non-clinical range at post-intervention; and Reliably changed = Reliable Change Index > 1.96 ; X^2 = Pearson's Chi-Square.

Clinical and reliable change

Clinical significance of change was investigated by comparing the number of participants whose scores changed from the clinical range at pre-intervention to the non-clinical range at post-intervention. Chi-square analyses for the three main outcomes variables (ECBI Intensity scale, ECBI Problem scale, PSI-SF Total Stress) revealed significant differences between the treatment group and the control group on both child behavior scales (ECBI Intensity scale, ECBI Problem scale). No significant differences were found for parental stress (PSI-SF; see Table 4). This

result indicates that a significantly greater number of treatment group target children changed from the clinical range at pre-intervention to the non-clinical range at post-intervention on the ECBI Intensity scale and ECBI Problem scale compared with the control group. Although statistically significant, results for the PSI-SF revealed that group differences in the number of parents showing clinically significant change were non-significant.

The Reliable Change Index was calculated for each participant's difference score on the three main outcome variables. Frequencies and percentages for participants whose scores revealed reliable positive change are displayed in Table 4. Additionally, chi-square analyses indicate that reliable change among participants in the treatment group was significantly greater on all three outcome variables compared with participants in the control group.

Intent to treat

Intent to treat analyses revealed comparable results for the participants who completed the pre-intervention measures only to results for participants who completed both the pre- and post-intervention measures. Pre-intervention scores were imputed for the two participants who did not complete the post-intervention measures. ANCOVA results showed significant between-group effects on all the outcome variables (all $F_s \geq 4.95$, $p_s \leq .030$).

Participant satisfaction

The mean rating on the TAI was 41.0 ($SD = 4.0$) for the treatment group, range 33 to 50, indicating that caregivers were satisfied with the 1-2-3 Magic intervention. One hundred percent of participants reported that the intervention was easy to understand.

No adverse events were observed or reported during the intervention or follow-up period.

Discussion

Findings for the previous pilot study revealed three significant limitations, notably, insufficient power, baseline difference between the groups, and insufficient implementation time, indicating that crucial design-related changes were needed. The design-related limitations revealed in the pilot study were subsequently rectified in the current study. In the current study, the recruitment of a larger sample supplied more power; rescheduling of the post-intervention data collection point provided parents with more time to implement the intervention strategies; and a more rigorous group allocation procedure ensured homogeneity between the groups on baseline behavioral characteristics prior to the intervention. Results from the current study attest to the effectiveness of the changes applied to the study's protocol.

Accordingly, the current study demonstrates that the 1-2-3 Magic parenting program is effective in reducing: (1) disruptive behavior and ADHD symptoms in children aged 6 to 12 years diagnosed with ADHD; (2) dysfunctional parenting; and (3) parental stress. Previous studies have provided evidence of the effectiveness of the 1-2-3 Magic program, when delivered to parents in a group-format, among: (1) a nonspecific group of children aged 2 to 12 years (Porzig-Drummond et al., 2014); (2) school-aged children aged 6 to 12 years (Bailey, van der Zwan, Phelan, & Brooks, 2012, 2015); (3) children aged 2 to 16 years who had experienced child abuse (Flaherty & Cooper, 2010); and (4) preschoolers aged 3 to 4 years (Bradley et al., 2003), all with disruptive behavior. However, apart from the pilot study described in Study I, no studies have previously evaluated the effectiveness of the 1-2-3 Magic program among caregivers with a child diagnosed with ADHD. Crucially, to the best of my knowledge, only one published controlled study investigating a parent-only, group training program has previously shown a reduction in both disruptive behavior and ADHD symptoms in school-aged children diagnosed

with ADHD (Dubey, O’Leary, & Kaufman, 1983). Moreover, only one other published controlled study has demonstrated a reduction in ADHD symptoms in school-aged children and improved parental functioning following a parent-only, group training program (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993).

Consistent with the hypotheses, results indicate that the brief (three 2-hour sessions) *1-2-3 Magic: Effective Discipline for Children 2-12* (Booth & Phelan, 2004a, 2004b) parenting program, delivered in a large group-format (over 25 participants), is effective at reducing: (1) disruptive behavior among children aged 6 to 12 years diagnosed with ADHD; (2) ADHD symptoms in those children; (3) dysfunctional parenting and parental stress among caregivers who have a child diagnosed with ADHD; and (4) maintaining observed changes in child behavior and parent functioning for a period of six months, relative to a waitlist-control group. At post-intervention, caregivers in the treatment group reported fewer child disruptive behaviors (ECBI Intensity scale) and rated the behavior of their children as less problematic (ECBI Problem scale) compared with reports from caregivers in the control group. Treatment group participants also reported less overall parental stress (PSI Total Stress score) and improved ratings on all three subscales relating to dysfunctional parenting (Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child) at post-intervention compared with controls. In addition, treatment group participants reported fewer ADHD symptoms across five of the six Conners subscales, (Inattention, Hyperactivity/Impulsivity, Learning Problems, Executive Functioning, and Peers Relations), compared with controls. All results were maintained at the six-month follow-up. Results from the Conners Aggression subscale were not significant at post-intervention but were significant at six-month follow-up, indicating that child aggressive behavior had also reduced from pre-intervention. It should be noted that a large proportion of

target children were taking stimulant medication when the intervention commenced, which may affect the generalizability of the current outcomes to children diagnosed with ADHD who are not taking stimulant medication. In addition, it is possible that post-intervention to six-month follow-up changes in the medication status of a number of treatment group children may have had some bearing on the follow-up results.

Intervention effects at post-intervention did not differ for children who were receiving stimulant medication and those who were not receiving medication during the intervention. For the subgroup of children whose medication status remained unchanged at the six-month follow-up intervention effects on all outcome measures were maintained, except three of the Conners subscales (Learning Problems, Executive Functioning, and Aggression). This indicates that the 1-2-3 Magic program was equally effective in terms of improving child behavior, parent functioning, and ADHD core symptoms for children diagnosed with ADHD, irrespective of whether the child was taking stimulant medication or not. One reason for the non-significant outcome differences between the children who were taking stimulant medication and those who were not may be due to parental characteristics rather than child characteristics. It is possible that the factor effecting child behavior change and parent functioning was the high compliance and successful application, by parents, of program strategies, resulting in less reliance on child factors for treatment gains. Nevertheless, it is also worth noting that this null effect possibly results from insufficient power, due to the small size of these groups. However, a sample size of 117 participants per group would be needed to demonstrate a significant difference between those children who were medicated and those who were not medicated with power set at 80 percent. A post-hoc power analysis was conducted using the largest effect size from the three main scales (i.e., PSI Total score, $d = 0.37$, Cohen, 1988).

The change in scores from pre- to post-intervention was reliable for treatment group participants on both child behavior scales (ECBI) and on the dysfunctional parenting measure (PSI-SF). In regard to clinical change, results from the three measures with clinical cut-off scores (two ECBI scales and PSI Total score) showed clinical change significance for participants in the treatment group on the ECBI Intensity scale and the ECBI Problem scale, but not on the PSI Total Stress score compared with participants in the control group. Based on parent ratings of child disruptive behavior, the results indicate that significantly more treatment group children whose behavior was in the clinical range at pre-intervention moved to the non-clinical range at post-intervention, compared with the number of control group children whose behavior was in the clinical range at pre-intervention. Although statistically significant, outcome on one variable, the reduction in the overall level of self-reported parental stress, was not clinically significant for participants in the treatment group.

The clinically meaningful change in child behavior (ECBI subscale scores) provides support for the effectiveness of the 1-2-3 Magic program in improving the behavior of children diagnosed with ADHD. The lack of a clinically significant result for parental stress may be due to the lack of spousal support as only one parent from each family was eligible to participate in the intervention. Notably, 82% of participants in the study were mothers. Allowing the participation of only one parent in the intervention and the associated stress involved in implementing the intervention strategies may be a contributing factor that impeded a clinically significant reduction in parental stress levels among treated parents. Despite efforts to engage non-participating parents (mostly fathers) in the intervention, via tips sheets and follow-up e-mails, it is highly likely that the burden of implementing the new parenting techniques would have fallen, in most cases, on treated mothers rather than being managed by both parents.

Programme feedback from mothers indicated that most would have found it beneficial if both parents had been allowed to attend the intervention. Qualitative written and verbal reports from some participating mothers indicated that it was difficult to encourage the non-participating father to engage with the intervention strategies. Evidence indicates that father involvement in parent training can decrease maternal parenting stress through the provision of emotional support (Bagner & Eyberg, 2003; Tiano & McNeil, 2005).

Although it might be expected that an improvement in child behavior would decrease parenting stress the lack of a clinically significant result for parental stress may simply be that the burden of caring for a child with ADHD and managing the child's behavior maintains parenting stress, with child characteristics being one of the strongest predictors of parenting stress (Abidin, 2012). Numerous studies have reported an association between elevated levels of parenting stress and child ADHD symptoms (e.g., van der Oord, Prins, Oosterlaan, & Emmelkamp, 2006). Research has also demonstrated a strong link between parental ADHD and parenting stress (Theule, Wiener, Rogers, & Marton, 2011). In the current study, 27% of target children had at least one caregiver diagnosed with ADHD. Hence, it is likely that the burden of caring for a child with ADHD, lack of spousal support and the additive effect of adult ADHD among a proportion of participants contributed to the lack of a clinically meaningful result for parental stress.

Strengths and limitations

The main strength of the current study was that the intervention achieved a reduction in ADHD symptoms in addition to a reduction in general disruptive behavior among target children and dysfunctional parenting in their caregivers. A reduction in ADHD symptoms was achieved as an

effect of the regular three-week 1-2-3 Magic parenting program, without the addition of ADHD-related information or the use of individualized techniques. Only two published controlled studies investigating the efficacy of a parent-only group parenting training program for caregivers of school-aged children have previously reported a reduction in ADHD symptoms (Anastopoulos et al., 1993; Dubey et al., 1983), and both studies investigated programs that were nine weeks long.

Although results reported in the pilot study, described in Chapter 4, were suggestive of improvement, three design-related changes were implemented following the pilot study. Prior to the current study a power analysis was conducted to calculate the sample size required to detect a medium to large effect size. As a result, 60 participants were recruited, thus increasing the power of the current study. In addition, a more stringent stratified random sampling procedure was utilized to ensure homogeneity between the groups on baseline characteristics. The final design adjustment was the extension of the post-intervention data collection point. Post-intervention data collection was extended by two weeks to give parents additional time to utilize the intervention strategies. However, no fidelity data was collected on parental use of the intervention strategies. Nevertheless, it is likely that the combined effect of these design changes contributed to the positive findings reported in the current study.

Another strength of this study was its high retention rate. It is likely that the brevity of the program helped minimize some of the burdensome treatment barriers associated with lengthy parenting programs, thus contributing to the high retention rate observed in this study. Furthermore, treatment fidelity was high due to the manualized format of the 1-2-3 Magic program and the large amount of time devoted to viewing the program DVDs. Based on

qualitative written and verbal reports from participants, viewing the DVDs is likely to have heightened participant engagement, further contributing to the high retention rate.

The brevity of the program (three 2-hour sessions) and the large group size (over 25) also highlighted the potential for brief, low-cost parent training in the treatment of child ADHD. Given the prevalence of child ADHD and the growing trend towards more cost-effective, evidence-based interventions (Tully & Hunt, 2016), this study suggests that 1-2-3 Magic, a brief, group-based parenting program, may be effective as a first-level treatment for caregivers seeking assistance with the behavioral difficulties associated with child ADHD.

The limitations of the current study were: reliance on parent report of child ADHD diagnosis, exclusive use of self-report measures; constraints imposed by self-referral; and use of a non-treatment control group rather than a comparator active treatment or attention control group. Although all parents reported that their child had received a diagnosis of ADHD from a qualified health professional, inaccurate recall may have introduced a level of subject bias. Similarly, although all outcome measures were validated and widely used, reliance on parent-report may lead to biases in the reporting of child and parental behavior change (Furlong, et al., 2012). The inclusion of independent measures of child and parent behavior would have reduced potential reporter bias and provided more robust assessments of outcomes than parent-report alone (Dretzke et al., 2009; Furlong et al., 2012). Hence, the inclusion of independent measures of child and parent behavior would benefit future research.

Self-referral is likely to strengthen parental commitment to training and thus, enhance potential effects of treatment, compared with parents not actively seeking assistance for child disruptive behavior (Tiano & McNeil, 2005). The sample was also from an urban area, and the majority of participants were tertiary educated, married, with above-average household income;

thus, limiting generalizability of the results to rural, disadvantaged and single-parent families with children diagnosed with ADHD. On the other hand, published results attesting to the effectiveness of a similar group-based 1-2-3 Magic program among socially disadvantaged caregivers in a rural child protection sample appears to diminish this limitation (Flaherty & Cooper, 2010).

The inclusion of a comparator active treatment or attention control group would have allowed for the better assessment of nonspecific treatment factors, enabling behavioral improvements to be attributed to the 1-2-3 Magic intervention alone and, thus, further strengthening the credibility of the results (Jensen, Weersing, Hoagwood, & Goldman, 2005). However, nonspecific treatment factors, such as participant expectations and group support are common to all group parenting interventions. Although nonspecific treatment factors may influence treatment outcomes, Mohr and colleagues (2009) argue that controlling nonspecific factors presents an unnecessary barrier for trials where nonspecific factors are not central to the intervention.

Another possible limitation could be that, given six-month comparison with a control group was not feasible, it cannot be concluded that the long-term improvements observed were attributable to the intervention alone (Furlong et al., 2012). However, others have argued, when no significant improvements are evident among the control group at post-intervention, it is unlikely that the long-term gains evident among the treatment group are the result of the passage of time (Jones, Daley, Hutchings, Bywater, & Eames, 2008), or parental expectations associated with enrolment and retesting in a group treatment program (Patterson, Chamberlain, & Reid,

2016). Moreover, Patterson and colleagues (2010) propose that positive changes in parenting practices are fundamental to changes in child behavior and the stability of long-term gains following parent training can be attributed to behavioral changes within the family system.

Conclusion

For the first time, this study provides evidence that the 1-2-3 Magic parenting program (Booth & Phelan, 2004a, 2004b), a brief (three session) parent training program with no specific ADHD component or individualized strategies, is effective at reducing child disruptive behavior and ADHD symptoms in school-aged children diagnosed with ADHD. The program was also effective in reducing dysfunctional parenting and parental stress among caregivers. All results were maintained after six months. Moreover, this study showed that these effects can be obtained when the program is delivered in a large group setting.

References

- Abidin, R. R. (2012). *Parenting stress index: Professional manual* (4th ed.). Odessa, FL: Psychological Assessment Resources.
- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms and profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, and Families.
- American Psychiatric Association (APA). (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.
- Anastopoulos, A. D., Shelton, T. L., DuPaul, G. J., & Guevremont, D. C. (1993). Parent training for attention-deficit hyperactivity disorder: Its impact on parent functioning. *Journal of Abnormal Child Psychology*, 21(5), 581-596. doi: 10.1007/BF00916320
- Australian Bureau of Statistics. (2011). *2011 Census QuickStats: All people - usual residents*. Retrieved from:
http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/0
- Bagner, D. M., & Eyberg, S. M. (2003). Father involvement in parent training: When does it matter? *Journal of Clinical Child and Adolescent Psychology*, 32(4), 599–605. doi: 10.1207/S15374424JCCP3204_13
- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2012). The 1-2-3 Magic program: Implementation outcomes of an Australian pilot evaluation with school-aged children. *Child & Family Behavior Therapy*, 34(1), 53-69. doi: 10.1080/07317107.2012.654455

- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2015). Keeping it going: Evidence of long-term improvements after implementation of the 1-2-3 Magic parenting program. *Child & Family Behavior Therapy*, 37(4), 303-320.
doi: 10.1080/07317107.2015.1104776
- Booth, E. C. (Producer and Director), & Phelan, T. W. (Writer). (2004a). *1-2-3 Magic: Managing difficult behavior in children 2-12* [DVD]. Glen Ellyn, IL: ParentMagic.
Available from <http://www.123magic.com/>
- Booth, E. C. (Producer and Director), & Phelan, T. W. (Writer). (2004b). *More 1-2-3 Magic: Encouraging good behavior, independence and self-esteem* [DVD]. Glen Ellyn, IL: ParentMagic. Available from <http://www.123magic.com/>
- Bradley, S. J., Jadda, D. A., Brody, M. A., Landy, J., Tallett, S. E., Watson, W.,...Stephens, D. (2003). Brief psychoeducational parenting program: An evaluation and 1-year follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42(10), 1171-1178. doi: 10.1097/00004583-200310000-00007
- Breston, E., Jacobs, J., Rayfield, A., & Eyberg, S. M. (1999). A consumer satisfaction measure for parent-child treatments and its relationship to measures of child behavior change. *Behavior Therapy*, 30, 17-30. doi:10.1016/S0005-7894(99)80043-4
- Conners, C. K. (2008). *Conners—manual* (3rd ed.). Toronto, Canada: Multi-Health Systems.
- Dretzke, J., Davenport, C., Frew, E., Barlow, J., Stewart-Brown, S., Bayliss, S.,...
Hyde, C. (2009). The clinical effectiveness of different parenting programmes for children with conduct problems: A systematic review of randomised controlled trials. *Child and Adolescent Psychiatry and Mental Health*, 3, 7-17.
doi: 10.1186/1753-2000-3-7

- Dubey, D. R., O'Leary, S. G., & Kaufman, K. F. (1983). Training parents of hyperactive children in child management: A comparative outcome study. *Journal of Abnormal Child Psychology*, 11(2), 229-246. doi: 10.1007/BF00912088
- DuPaul, G. J., Power, T. J., Anastopoulos, A. D., & Reid, R. (1998). *ADHD rating scale-IV: Checklists, norms, and clinical Interpretation*. New York, NY: Guilford Press.
- Eyberg, S. M., & Pincus, D. (1999). *Eyberg child behavior inventory and Sutter-Eyberg student behavior inventory - revised: Professional manual*. Odessa, FL: Psychological Assessment Resources.
- Flaherty, R., & Cooper, R. (2010). Piloting a parenting skills program in an Australian rural child protection setting. *Children Australia*, 35(3), 18-24.
doi: 10.1017/S1035077200001139
- Furlong, M., McGilloway, S., Bywater, T., Hutchings, J., Smith, S. M., & Donnelly, M. (2012). Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years. *Cochrane Database of Systematic Reviews*, Issue 2. Art. No.: CD008225.
doi: 10.1002/14651858.CD008225.pub2
- Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, 59(1), 12-19. doi: 10.1037//0022-006X.59.1.12
- Jensen, P. S., Weersing, R., Hoagwood, K. E., & Goldman, E. (2005). What is the evidence for evidence-based treatments? A hard look at our soft underbelly. *Mental Health Services Research*, 7(1), 53-74. doi: 10.1007/s11020-005-1965-3

- Jones, K., Daley, D., Hutchings, T., Bywater, T., & Eames, C. (2008). Efficacy of the Incredible Years programme as an early intervention for children with conduct problems and ADHD: Long-term follow-up. *Child: Care, Health and Development*, 34(3), 380-390. doi: 10.1111/j.1365-2214.2008.00817.x
- Kendall, P. C., Maars-Garcia, A., Nath, S. R., & Sheldrick, R. C. (1999). Normative comparisons for the evaluation of clinical significance. *Journal of Consulting and Clinical Psychology*, 67, 285-299. doi: 10.1037/0022006X.67.3.285
- Mohr, D. C., Spring, B., Freedland, K. E., Beckner, V., Arean, P., Hollon, S. D.,...Kaplan, R. (2009). The selection and design of control conditions for randomised controlled trials of psychological interventions. *Psychotherapy and Psychosomatics*, 78, 275-284. doi: 10.1159/000228248
- Molewijk, H. E., van der Poel, A. M., Mos, J., van der Heyden, J. A., & Olivier, B. (1995). Conditioned ultrasonic distress vocalizations in adult male rats as a behavioural paradigm for screening anti-panic drugs. *Psychopharmacology*, 117(1), 32-40. doi: 10.1007/BF02245095
- Patterson, G. R., Chamberlain, B., & Reid, J. B. (2016). A comparative evaluation of a parent-training program - republished article. *Behavior Therapy*, 47, 804-811. doi: 10.1016/S0005-7894(82)80021-X
- Patterson, G. R., Forgatch, M. S., & DeGarmo, D. S. (2010). Cascading effects following intervention. *Development and Psychopathology*, 22(4), 949-970. doi: 10.1017/S0954579410000568

- Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2014). The 1-2-3 Magic parenting program and its effect on child problem behaviors and dysfunctional parenting: A randomized controlled trial. *Behaviour Research and Therapy*, 58, 52-64.
doi: 10.1016/j.brat.2014.05.004
- Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2015). Preliminary evaluation of a self-directed video-based 1-2-3 Magic parenting program: A randomized controlled trial. *Behaviour Research and Therapy*, 66, 32-42. doi: 10.1016/j.brat.2015.01.003
- Rausch, J. R., Maxwell, S. E., & Kelley, K. (2003). Analytic methods for questions pertaining to a randomized pretest, posttest, follow-up design. *Journal of Clinical Child and Adolescent Psychology*, 32(3), 467-486. doi: 10.1207/S15374424JCCP3203_15
- Schultz, K. F., Altman, D. G., & Moher, D. (2010). CONSORT 2010 statement: Updated guidelines for reporting parallel group randomized trials. *Annals of Internal Medicine*, 152(11), 726-732. doi: 10.7326/0003-4819-152-11-201006010-00232
- Sedgwick, P. (2013). Stratified random allocation. *British Medical Journal*, 346, 1756-1833.
doi: 10.1136/bmj.f822
- Theule, J., Wiener, J., Rogers, M. A., & Marton, I. (2011). Predicting parenting stress in families of children with ADHD: Parent and contextual factors. *Journal of Child and Family Studies*, 20(5), 640-647. doi: 10.1007/s10826-010-9439-7
- Tiano, J. D., & McNeil, C. B. (2005). The inclusion of fathers in behavioral parent training: A critical evaluation. *Child & Family Behavior Therapy*, 27(4), 1-28.
doi: 10.1300/J019v27n04_01
- Tully, L. A., & Hunt, C. (2016). Brief parenting interventions for children at risk of externalizing behavior problems: A systematic review. *Journal of Child and Family Studies*, 25(3), 705-719. doi: 10.1007/s10826-015-0284-6

van der Oord, S., Prins, P. J., Oosterlaan, J., & Emmelkamp, P. M. (2006). The association between parenting stress, depressed mood and informant agreement in ADHD and ODD. *Behaviour Research and Therapy*, 44(11), 1585-1595.
doi: 10.1016/j.brat.2005.11.011

CHAPTER 6: General Discussion

Introduction

Although the efficacy of behavioral parent training for caregivers of children with ADHD has been well-established in the literature, the efficacy of brief (less than eight sessions), parent-only, group behavioral training programs for parents of school-aged children with ADHD has rarely been investigated. The overarching aim of this research project was to build on the foundation of previous behavioral parent training research to address this gap in the literature by investigating whether a brief behavioral parenting program would improve outcomes for children with ADHD. This aim was addressed by examining the efficacy of the group-based version of the parent training program, *1-2-3 Magic: Effective Discipline for Children 2-12* (Phelan, 1984), among parents of school-aged children diagnosed with ADHD. The 1-2-3 Magic program is a brief (three-session) psychoeducational program designed for parents of children with behavioral difficulties, and has not previously been evaluated among parents of school-aged children with ADHD. Parents of children, aged 6 to 12 years, diagnosed with ADHD were recruited to participate in the 1-2-3 Magic intervention. Based on previous research (Bailey, van der Zwan, Phelan, & Brooks, 2012, 2015; Porzig-Drummond, Stevenson, & Stevenson, 2014), it was anticipated that the current research findings would demonstrate that a brief, behavioral parenting program would be effective in reducing child problem behavior in school-aged children with ADHD and improve the parenting practices of their caregivers.

This chapter summarizes the specific aims of the two empirical studies described in this thesis and presents the results in the context of the current literature. Implications for clinical practice and future research are also discussed.

Specific aims

The first study was an exploratory study. The aims of the pilot study (Study I) described in Chapter 4 were to investigate whether the group-format of the 1-2-3 Magic intervention would be effective, relative to a control group, in reducing: (1) disruptive behavior among children diagnosed with ADHD; (2) ADHD symptoms in those children; (3) dysfunctional parenting and parental stress among caregivers who had a child diagnosed with ADHD; and to assess whether (4) the effects on both child and parent behavior could be maintained for six months.

Study II, described in Chapter 5, was an extension of Study I; hence the specific aims for Study II were identical to the aims for Study I. In addition to the stated aims for Study II, a crucial objective of Study II was to rectify three key limitations revealed in Study I. First, significant baseline differences in the behavior of the target children in the treatment and control groups were noted in Study I. These baseline differences were rectified by utilizing a more rigorous allocation method. In Study II there were no significant baseline differences between target children in the treatment group and the control group. Second, parents in Study I were given insufficient time (i.e., two weeks) to implement and utilize the behavioral strategies taught in the intervention. This was resolved by allowing an additional two weeks post-intervention (i.e., four weeks), in Study II, for parents to utilize the strategies taught in the intervention. Third, the issue of insufficient power was rectified by recruiting a larger sample. As well as the changes made to rectify these design-related limitations, an additional question, regarding the target child's stimulant medication status, was added to the post-intervention and six-month follow-up questionnaires. All other procedures were identical in both studies.

Main findings from the 1-2-3 Magic interventions

The pattern of results from Study I was mixed due to several identified design-related limitations. It is likely that these limitations, namely, baseline behavioral differences between the treatment and control groups, the limited time allowed to implement the intervention strategies, and the lack of power, all contributed to the mixed results obtained in Study I. In terms of child behavior, parents in the treatment group reported less frequent disruptive child behavior (ECBI Intensity scale) compared with the control group. However, parental ratings concerning the severity of child disruptive behavior (ECBI Problem scale) had not improved at post-intervention. Regarding parent functioning, only one aspect of dysfunctional parenting among treatment group parents was significant (i.e., parents perceiving their children as difficult, PSI-SF Difficult Child subscale) at post-treatment relative to controls. The other three aspects of dysfunctional parenting (PSI-SF Total Stress score, Parental Distress and Parent-Child Dysfunctional Interaction subscales) had not improved at post-intervention. Regarding child ADHD behavior (ADHD-RS), results revealed a significant reduction in all ADHD scores post-treatment compared with the control group.

At the six-month follow-up a different pattern of results was revealed. Parents now reported less severe child disruptive behavior (ECBI Problem scale). However, when treatment group pre-intervention and follow-up scores were compared the reduction in the frequency of child disruptive behavior (ECBI Intensity scale) reported at post-intervention was no longer evident. Parents continued to rate their children as less difficult (PSI-SF Difficult Child subscale). Moreover, reduced levels of parenting stress (PSI-SF Total Stress score) and improvement in the degree to which the parent-child interaction supported the caregivers' parenting role (PSI-SF Parent-Child Dysfunctional Interaction subscale) were now observed.

Regarding child ADHD behavior, although the reduction in inattentive symptoms remained significant at the six-month follow-up (ADHD-RS Inattention subscale), the post-intervention reduction in overall ADHD symptoms (ADHD-RS Total score) and hyperactive/impulsive symptoms (ADHD-RS Hyperactivity/Impulsivity subscale) was no longer observed. The non-significant post-intervention results that were subsequently shown to be significant at the six-month follow-up suggest that the intervention strategies needed to be applied over a longer period.

In Study II, the pattern of results differed considerably from the results obtained in Study I. The finding that the results obtained in Study II differed from the results obtained in the pilot study (Study I) is likely due to the design changes implemented in Study II. In Study II, a larger sample was recruited to increase power, stratified random sampling was utilized to ensure homogeneity between the groups on baseline characteristics, and extra time was provided to implement intervention strategies. Additionally, the results obtained in Study II were consistent with results from previous 1-2-3 Magic studies among parents of school-aged children with behavioral difficulties (Bailey et al., 2012, 2015; Porzig-Drummond et al., 2014). In study II, parents in the treatment group reported significantly less frequent and less severe disruptive child behavior (ECBI Intensity and Problem scales) at post-intervention compared with the control group. Furthermore, parents in the treatment group reported significantly less dysfunctional parenting (PSI-SF Total score and the three subscales) at post-intervention relative to the control group. In terms of child ADHD behavior (Conners P[S]), parents reported significantly fewer ADHD symptoms on all the subscales, except aggression, at post-intervention compared with controls. All outcomes were maintained at the six-month follow-up and target children in the treatment group displayed less aggression at the six-month follow-up than at post-intervention.

Given the large proportion of target children who were taking stimulant medication when the intervention commenced, outcomes from the current study may not generalize to children diagnosed with ADHD not taking stimulant medication. In addition, post-intervention to six-month follow-up changes in the medication status of a number of treatment group children may have had an impact on the follow-up results.

Interestingly, a comparison of post-intervention outcomes, for those children in the treatment group who were taking stimulant medication during the intervention and those who were not, revealed no significant differences. Furthermore, for the subgroup of children whose medication status remained unchanged throughout the intervention and follow-up period all the main outcomes were maintained.

Crucially, the Study II intervention achieved a reduction in both ADHD symptoms and disruptive behavior among target children, as well as dysfunctional parenting in their caregivers, without the addition of any specific ADHD-related information or individualized techniques. To my knowledge, no known study has reported a reduction in both ADHD symptoms and disruptive behavior among school-aged children following a brief, parent-only training program. While Hoath and Sanders (2002) reported a significant reduction in child disruptive behavior following a brief (five sessions, plus three follow-up telephone sessions), parent-only training program for school-aged children with ADHD, there was no significant reduction in ADHD symptoms. Only two published controlled studies investigating the efficacy of parent-only, group training for school-aged children with ADHD have previously reported a reduction in ADHD symptoms (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993; Dubey, O'Leary, & Kaufman, 1983), and both studies investigated programs that ran for nine weeks.

While recognizing the requirement for replication in future RCTs, results from Study II provide the first empirical evidence that a brief (three 2-hour sessions) behavioral parenting program is effective at reducing disruptive behavior among school-aged children diagnosed with ADHD, ADHD symptoms in those children, and dysfunctional parenting among their caregivers when delivered in a large group-format. Based on the current findings, the 1-2-3 Magic program has potential as an effective alternative treatment, to longer, traditional behavioral parent training programs, to reach caregivers of children with ADHD who might not otherwise consider behavioral parent training.

Implications for practice

Findings from the current research, particularly Study II, hold implications for the selection and delivery of brief, parent-only, group behavioral training programs for parents of children with ADHD in Australia. Moreover, the current research extends our knowledge of group-based, parent-only behavioral interventions for children diagnosed with ADHD.

While research attests to the efficacy of well-established individual (Bjørnebekk, Kjøbli, & Ogden, 2015; Bor, Sanders, & Markie-Dadds, 2002) and group (Leung, Tsang, Ng, & Choi, 2017; Webster-Stratton, Reid, & Beauchaine, 2011, 2013) behavioral parenting programs for children with ADHD, results from these studies suggest that longer parenting programs may not provide additional benefits over and above programs with fewer sessions. In addition, results from other studies comparing outcomes for children with ADHD indicate that enhanced programs demonstrate no additional behavioral benefits compared with standard programs (Bor et al., 2002; Chacko et al., 2009; Fabiano et al., 2009). For example, a study comparing behavioral parent training for fathers with a separate child sports skills component and an

enhanced parent training program, including sporting activities for fathers and children with ADHD, reported negligible effects for ADHD and ODD symptoms ($d = 0.02$ and 0.09 respectively) for the COACHES program and a very small effect for functional impairment ($d = -0.15$) in favor of the standard program. Interestingly, similar effect sizes were reported for non-attending mother ratings (Fabiano et al., 2009). Evidence from programs focused on providing parents with core parenting skills training consistently report greater improvement in parental functioning and child behavior, compared with programs that include supplementary child skills components (Kaminski, Valle, Filene, & Boyle, 2008; Lundahl, Risser, & Lovejoy, 2006). A meta-analysis of program components showed that core parenting skills, such as parental responsiveness were associated with a larger effect (Hedges' $g = 0.58$; Hedges, 1983), in relation to child behavior, than programs without a responsive parent component ($g = 0.22$). Conversely, programs that included supplementary components, such as child social skills were associated with a smaller effect ($g = 0.02$) compared with programs without a social skills component ($g = 0.38$; Kaminski et al., 2008). However, results from the meta-analysis do not necessarily suggest that programs components with small effect sizes (e.g., social skills) should be discarded, only that utilizing program components consistently associated with larger effects (e.g., parental responsiveness) is likely to minimize costs and lead to more effective parent training programs. Typically, brief parenting programs condense the core parenting skills, components consistently associated with larger effects, of well-established parenting programs into an intervention that is less than eight sessions (Tully & Hunt, 2016), with the underlying rationale that similar outcomes will be achieved within a shorter timeframe (Bloom, 2001).

An important related criterion to the effect sizes for a given treatment is the issue of clinical significance, as opposed to statistical significance. Typically clinicians are interested in

the level of clinically significant change, for individuals, produced by a particular treatment (Evans, Margison, & Barkham, 1998). Findings from Study II indicate that a greater proportion of target children in the treatment group achieved clinically meaningful behavioral change (i.e., moved from the clinical range at pre-intervention to the non-clinical range at post-intervention; Jacobson & Truax, 1991), compared with target children in the control. Moreover, all post-intervention effect sizes for the 1-2-3 Magic program were in the moderate to large range and were maintained at the six-month follow-up, thus demonstrating the success of the 1-2-3 Magic intervention. Evidence of comparable long-term effects (nine-month follow-up), for child ADHD symptoms and problem behavior, reported in a study (Dubey et al., 1983) that utilized a nine-week parent training program is a significant issue and has substantial implications for both parents and clinicians in terms of time and cost savings. Clearly, a further study is required to examine the relative efficacy of brief versus longer behavioral parent training programs (see future directions). Together, findings from the current and previous parent training research, program length, program components, effect size, and clinical significance all have important implications for clinical practice, in terms of service delivery, accessibility, and cost and time efficiencies.

To my knowledge, only one previous study (Hoath & Sanders, 2002) has evaluated the efficacy of a brief (less than eight sessions), parent-only, group training program for parents of school-aged children with ADHD, with mixed results. Although results revealed a significant reduction in child disruptive behavior and increased parental functioning, there was no significant reduction in ADHD symptoms (Hoath & Sanders, 2002). Conversely, findings from two published controlled studies revealed a significant reduction in ADHD symptoms following different nine-week, parent-only, group training programs among parents of school-aged children

with ADHD (Anastopoulos et al., 1993; Dubey et al., 1983). In the Dubey and colleagues study (1983) parents also reported a significant reduction in child disruptive behavior compared with the control group; whereas, findings from the Anastopoulos and colleagues study (1993) revealed additional parent outcomes, namely, reduced parental stress and improved parental self-esteem, relative to parents in the control group. Findings from the Anastopoulos and colleagues and the Dubey and colleagues studies indicate that a nine-week, parent-only, group training program for parents of school-aged children with ADHD is an effective intervention. Results from these two studies suggest that a behavioral parent training program with no individual instruction and no child component can be effective in improving parents' competence to manage the behavioral difficulties associated with child ADHD.

However, researchers have highlighted the considerable challenges faced by many parents considering lengthy behavioral parent training (Koerting et al., 2013). Apart from the high burden of caring for a child with ADHD, practical barriers such as, time constraints, transport, childcare, and financial difficulties may preclude many parents, particularly vulnerable and disadvantaged parents, from engaging in a lengthy traditional parent training program (Koerting et al., 2013). Findings that participation in traditional parenting training programs present significant challenges for many parents also limits the reach and impact of those programs (Koerting et al., 2013).

A rarely discussed question relating to the applicability of traditional, evidence-based parent training programs for child behavior problems, within community settings is – how can we provide treatment to the many families in need who may not be able to commit to a lengthy training program (Forgatch, Patterson, & Gewirtz, 2013; Kazdin, 2008; Koerting et al., 2013)? In such cases, no treatment is the likely alternative (Kazdin, 2008; Perkins, 2006). Given it is

unlikely that traditional parenting programs are able to reach all families affected by ADHD, accumulating evidence supporting brief, group, behavioral programs presents an opportunity for parent training to be delivered on a broader scale throughout the community, including underserved rural areas (Flaherty & Cooper, 2010). In addition, findings that simple behavior modification techniques may reduce the need for high dose stimulant medication (Fabiano et al., 2007; Pelham et al., 2014), coupled with the long held belief that the most rapid improvement generally occurs during the initial stages of treatment (Bloom, 2001, Perkins, 2006) adds strong support to the case for brief, behavioral parenting programs for parents of children with ADHD. Moreover, high service demands, service parity, and concerns about escalating costs, particularly within publicly funded organizations, adds further support to the growing recognition of the need for effective, brief, low-cost parenting interventions for child behavior problems (Tully & Hunt, 2016).

The current research indicates that the 1-2-3 Magic program is an effective treatment for school-aged children with ADHD. By providing a brief (three 2-hour sessions), parent-only, group intervention there is the potential to meet the needs of numerous unserved families affected by child ADHD. However, it must be acknowledged that a single, brief, parent training intervention is not a panacea for all families affected by child ADHD. While some parents may require intermittent booster sessions, severe child ADHD cases are likely to require long-term multimodal therapy. Severity levels and the diversity among families requiring treatment for child ADHD indicates that different and multiple modes of treatment, including brief, evidence-based programs, need to be incorporated into a stepped-model of care if we are to reduce the burden of childhood ADHD (Bower & Gilbody, 2005; Kazdin, 2008).

Strengths and limitations

The empirical studies described in this thesis have various strengths and limitations. The main strengths inherent in both studies were high treatment fidelity, the high retention rate, and the large group-format. The high treatment fidelity was due to the manualized format of the 1-2-3 Magic program (program DVDs). Participant feedback revealed that parents were engaged with the program, which likely contributed to the high retention and low drop-out rate. It is also likely that the brevity of the program (three 2-hour sessions) contributed to the high retention rate by helping to minimize some of the treatment barriers associated with longer, traditional parenting programs. The brevity of the program and the large group size in both studies (17 in Study I and 25 in Study II), highlighted the potential for brief, low-cost parent training programs for parents of children with ADHD. Given group size and program length has a direct impact on cost-effectiveness; a brief treatment approach may well be a suitable first-line treatment for many parents of children with ADHD.

A key strength of Study II relates to reliable and clinical change and the change in behavioral scores (ECBI Intensity and Problem scales) among target children in the treatment group. Results indicated that the behavior of a significant number of target children in the treatment group reliably changed (i.e., beyond measurement error; Jacobson & Truax, 1991) as a result of the intervention compared with target children in the control group. In addition, results showed that the frequency of disruptive behavior of 81% of treatment group target children moved from the clinical range at pre-intervention to the non-clinical range at post-intervention (i.e., achieved clinically significant change; Jacobson & Truax, 1991) compared with 5.6% of control group target children. This finding provides strong support for the effectiveness of the

1-2-3 Magic program and has significant implications for its use in clinical practice settings for parents of school-aged children with ADHD.

Including the three design-related limitations revealed in the pilot study, mentioned earlier in this chapter, other limitations that applied to both studies, namely, lack of independent measures, observed outcomes based solely on home behavior, self-referral, generalizability of results, and the use of a non-treatment control group provide guidance for future research. The inclusion of independent measures of child and parent behavior (i.e., teachers and/or third party observers) would reduce potential reporter bias and provide a robust assessment of cross-situational functional impairment than parent-report alone (Dretzke et al., 2009; Furlong et al., 2012). Moreover, the use of a self-referred sample may have increased the risk of selection bias. It is possible that self-referred participants may hold pre-existing optimistic attitudes towards an intervention which may enhance the effects of treatment (Tiano & McNeil, 2005). Similarly, the use of a sample of tertiary educated, married, above-average household income participants from a large metropolitan area potentially limits the generalizability of the results to regional, disadvantaged and single-parent populations. However, published results attesting to the effectiveness of a similar group-based 1-2-3 Magic program among disadvantaged caregivers in a rural setting mitigates this limitation (Flaherty & Cooper, 2010). Nevertheless, self-referral and the issue of generalizability can be addressed by recruiting a larger sample from a broader cross-section of the community. Finally, the inclusion of an active treatment or attention control group would diminish nonspecific treatment factors, such as participant expectations and group support, enabling treatment outcomes to be attributed to the intervention alone, thus, strengthening the credibility of the results (Jensen, Weersing, Hoagwood, & Goldman, 2005).

Future directions

With a view to improving the accessibility and feasibility of behavioral parent training for all parents of children with ADHD in Australia, the current research identified five key issues that warrant further research. First, is the sustainability of the positive treatment outcomes on child behavior and parental functioning documented in this thesis. While the 1-2-3 Magic program utilized in the current research produced a significant reduction in child disruptive behavior and ADHD symptoms, and a significant reduction in dysfunctional parenting, it was not possible to establish, whether these improvements were maintained beyond six months. However, two studies evaluating the effectiveness of the 1-2-3 Magic program among parents with nonspecific behavioral concerns reported maintenance of treatment effects at the 12-month follow-up (Bailey et al., 2015) and the 2-year follow-up (Porzig-Drummond et al., 2014). Nevertheless, given childhood ADHD is a chronic condition (American Psychiatric Association, 2013), it is inappropriate to assume that behavioral changes following a brief parent training program will endure long-term for children with ADHD. While Lundahl and colleagues (2006) showed that the post-intervention effects of behavioral parent training diminished, albeit remained meaningful, at the 12-month follow-up, future research is essential to determine the on-going effects of treatment and whether intermittent treatment, in the form of booster sessions, may be required to maintain the durability of behavioral changes for children with ADHD over the long-term (Lee, Niew, Yang, Chen, & Lin, 2012; Loren et al., 2015).

Second, based on the literature review, not only have few studies evaluated the efficacy of brief behavioral parenting programs, no study has examined the equivalence of a brief, parent-only, group program with a longer, traditional, parent-only, group program (Tully & Hunt, 2016). Although the efficacy of numerous traditional behavioral parenting programs is well-

established, the high demand for family mental health services, and the current emphasis on cost-effective service delivery, has seen clinicians increasingly compelled to utilize brief interventions (Perkins, 2006). Clearly, rigorous evaluation comparing the relative efficacy, efficiency, and acceptability of brief, group-based, behavioral parenting programs with well-established group-based, traditional programs is warranted (Bower & Gilbody, 2005). Rather than using common between-group designs (i.e., superiority trials) to assess if group outcomes are statistically and clinically different, noninferiority designs are able to assess the possibility that there is no meaningful difference between an innovative or previously unrecognized treatment and a well-established treatment (i.e., the active control; Greene, Morland, Durkalski, & Frueh, 2008). Such studies are needed to determine whether the effects of brief, behavioral parenting programs for ADHD are comparable to the outcomes reported for well-established parenting programs used to treat child ADHD. In the current climate of health service economic rationalization it is surprising that such a study has not been conducted.

A third important direction for future research relates to the understanding that not all parents with a child diagnosed with ADHD are able to access or participate in a group parent training program, particularly those who are socially disadvantaged or living in rural areas. Hence, it would be beneficial to advance the current line of research, with a view to increasing treatment accessibility for parents of children with ADHD, by evaluating online parent training programs, in particular the self-instruction version of the 1-2-3 Magic parenting program (Phelan, 2012). Given the current research utilized the 1-2-3 Magic DVDs it would be feasible to assess the effectiveness of the self-instruction 1-2-3 Magic program for children with ADHD, via the commercially available DVDs or online platforms. A previous study of the 1-2-3 Magic self-instruction (without therapist contact), video-based, program demonstrated a post-

intervention medium to large effect for child disruptive behavior and a small to medium effect for dysfunctional parenting, among children and parents in the general population; outcomes were maintained at the six-month follow-up (Porzig-Drummond, Stevenson, & Stevenson, 2015). Although these effect sizes are smaller than the post-intervention effects sizes obtained in Study II, a therapist-led group intervention, additional evidence from a seven-session, Internet-based parent training program, with therapist assistance, obtained a medium effect for child disruptive behavior at the six-month follow-up (Enebrink, Högström, Forster, & Ghaderi, 2012). Relatively few studies have evaluated the effectiveness of online parent training for children with behavioral problems, and to my knowledge, no known study has evaluated an online parent training program specifically for parents of children with ADHD. However, results from the Porzig-Drummond and colleagues and the Enebrink and colleagues studies indicate that online parenting training is worthy of further research given the significant cost savings and its potential to increase the accessibility of behavioral training for parents of children with ADHD.

Fourth, a related line of investigation to evaluating the self-instruction version of the 1-2-3 Magic would be an evaluation of a mixed mode presentation of the 1-2-3 Magic program, where both parents were able to access to the program material (i.e., therapist-assisted group program and concurrent self-instruction online program). In the current research, the inclusion criteria stipulated that only one parent from each family was eligible to participate in the group intervention. Given the practical barriers associated with both parents being able to attend a therapist-assisted, group training program together it would be feasible to investigate a mixed mode presentation of the 1-2-3 Magic program. Despite best attempts, in the current research, to encourage the non-attending parent (mostly fathers) to engage with the program via follow-up e-mails and tip sheets, some mothers reported it was difficult to encourage the non-attending father

to engage with the intervention strategies. If the non-attending parent had access to an online version of the program or the program DVDs in addition to one parent attending a therapist-assisted, group program, it is likely there would be a higher level of engagement and motivation from both parents to implement the program strategies. Moreover, if both parents were able to gain access to the program, with group-format therapist assistance for one parent, it is likely that effect sizes would be larger than the moderate to large effect sizes reported in the current research. In addition, given the results reported in Study II, it is likely that clinically significant change would be achieved for child and parenting outcomes if both parents were able to access to the 1-2-3 Magic program. A search of the literature revealed no behavioral parent training studies that have evaluated a group and online mixed mode presentation.

A fifth direction for future research relates to the homogeneity of samples recruited for the current research and the specific needs of culturally and linguistically diverse (CALD) families of children with ADHD. According to Forehand and Kotchick (2002) most parenting programs have been developed with Caucasian families. As a result, some behavioral parenting practices may not generalise easily to families with different cultural traditions (Forehand & Kotchick, 2002). However, results from a modified Triple P program for indigenous Australian families demonstrated the potential of modifying existing programs for CALD groups (Turner, Richards, & Sanders, 2007). Given culture informs parental beliefs and attitudes about parenting practices (Sanders, 2008), an important direction for future research is to assess the efficacy and cultural acceptability of existing and adapted behavioral parenting programs, including brief programs, for CALD families of children with ADHD (Tully, 2009).

Finally, given many community-based organisations in Australia currently use the

1-2-3 Magic parenting program (Horin, 2009), undertaking replication studies among families of children with ADHD, in various real-world settings, would provide strong support for 1-2-3 Magic as an evidence-based intervention for school-aged children with ADHD. Moreover, further support for the 1-2-3 Magic program would expand the number of evidence-based parenting training programs offered in Australia.

Conclusion

In summary, this thesis has contributed to the behavioral parent training literature in the following ways. First, a review of the literature revealed there is: (1) scarce evidence for parent-only, group behavioral parenting programs for parents of school-aged children with ADHD, and (2) limited evidence for brief, parent-only, group behavioral parenting programs for parents of children with behavioral difficulties. Second, findings from the current research produced results that have not been previously studied. Findings from a RCT demonstrated for the first time that school-aged children with ADHD and their parents were able to obtain behavioral and functional benefits from a brief, group-based, parent-only behavioral parenting program.

Although there is clear need for these results to be replicated, findings from the current research suggest that the 1-2-3 Magic program presents an opportunity for behavioral parent training to be accessible and feasible for more caregivers of children with ADHD, who due to practical constraints might not otherwise consider behavioral parent training. Clearly, examining the efficacy of brief behavioral parent training interventions for children with ADHD is a worthy priority, as much for allied health professionals, facing high service demands and increasing calls for greater efficiency, as for parents seeking to optimize outcomes for their children. To this end, the hope is that more parents of children with ADHD are able to participate in behavioral

parent training, so greater numbers of children diagnosed with ADHD can reap the benefits of behavior therapy.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.
- Anastopoulos, A. D., Shelton, T. L., DuPaul, G. J., & Guevremont, D. C. (1993). Parent training for attention-deficit hyperactivity disorder: Its impact on parent functioning. *Journal of Abnormal Child Psychology*, 21(5), 581-596. doi: 10.1007/BF00916320
- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2012). The 1-2-3 Magic program: Implementation outcomes of an Australian pilot evaluation with school-aged children. *Child & Family Behavior Therapy*, 34(1), 53-69.
doi: 10.1080/07317107.2012.654455
- Bailey, E. L., van der Zwan, R., Phelan, T. W., & Brooks, A. (2015). Keeping it going: Evidence of long-term improvements after implementation of the 1-2-3 Magic parenting program. *Child & Family Behavior Therapy*, 37(4), 303-320.
doi: 10.1080/07317107.2015.1104776
- Bjørnebekk, G., Kjøbli, J., & Ogden, T. (2015). Children with conduct problems and co-occurring ADHD: Behavioral improvements following parent management training. *Child & Family Behavior Therapy*, 37(1), 1-19.
doi: 10.1080/07317107.2015.1000227
- Bloom, B. L. (2001). Focused single-session psychotherapy: A review of the clinical and research literature. *Brief Treatment and Crisis Intervention*, 1(1), 75-86.
doi: 10.1093/brief-treatment/1.1.75

- Bor, W., Sanders, M. R., & Markie-Dadds, C. (2002). The effects of the Triple P-positive parenting program on preschool children with co-occurring disruptive behavior and attentional/hyperactive difficulties. *Journal of Abnormal Child Psychology*, 30(6), 571-587. doi: 10.1023/A:1020807613155
- Bower, P., & Gilbody, S. (2005). Stepped care in psychological therapies: Access, effectiveness and efficiency. *British Journal of Psychiatry*, 186, 11-17. doi: 10.1192/bjp.186.1.11
- Chacko, A., Wymbs, B. T., Wymbs, F. A., Pelham, W. E., Swanger-Gagne, M. S., Girio, E.,... Bayliss, S. (2009). Enhancing traditional behavioral parent training for single mothers of children with ADHD. *Journal of Child & Adolescent Psychology*, 38(2), 206-218. doi: 10.1080/15374410802698388
- Dretzke, J., Davenport, C., Frew, E., Barlow, J., Stewart-Brown, S., Bayliss, S.,... Hyde, C. (2009). The clinical effectiveness of different parenting programmes for children with conduct problems: A systematic review of randomised controlled trials. *Child and Adolescent Psychiatry and Mental Health*, 3, 7-17. doi: 10.1186/1753-2000-3-7
- Dubey, D. R., O'Leary, S. G., & Kaufman, K. F. (1983). Training parents of hyperactive children in child management: A comparative outcome study. *Journal of Abnormal Child Psychology*, 11(2), 229-246. doi: 10.1007/BF00912088
- Enebrink, P., Högstöm, J., Forster, M., & Ghaderi, A. (2012). Internet-based parent management training: A randomized controlled study. *Behaviour Research and Therapy*, 50(4), 240-249. doi: 10.1016/j.brat.2012.01.006
- Evans, C., Margison, F., & Barkham, M. (1998). The contribution of reliable and clinically significant change methods to evidence-based mental health. *Evidence-Based Mental Health*, 1(3), 70-72. doi: 10.1136/ebmh.1.3.70

- Fabiano, G. A., Chacko, A., Pelham, W. E., Robb, J., Walker, K. S., Wymbs, F.,...Pirvics, L. (2009). A comparison of behavioral parent training programs for fathers of children with attention-deficit/hyperactivity disorder. *Behavior Therapy*, 40(2), 190-204.
doi: 10.1016/j.beth.2008.05.002
- Fabiano, G. A., Pelham, W. E., Gnagy, E. M., Burrows-MacLean, L., Coles, E. K., Chacko, A.,...Masseti, G. M. (2007). The single and combined effects of multiple intensities of behavior modification and methylphenidate for children with attention deficit hyperactivity disorder in a classroom setting. *School Psychology Review*, 36(2), 195-216. Retrieved from <http://naspjournals.org>
- Flaherty, R., & Cooper, R. (2010). Piloting a parenting skills program in an Australian rural child protection setting. *Children Australia*, 35(3), 18-24.
doi: 10.1017/S1035077200001139
- Forehand, R., & Kotchick, B. A. (2002). Behavioural parent training: Current challenges and potential solutions. *Journal of Child and Family Studies*, 11(4), 377-384.
doi: 1062-1024/02/1200-0377/0
- Forgatch, M. S., Patterson, G. R., & Gewirtz, A. H. (2013). Looking forward: The promise of widespread implementation of parent training programs. *Perspectives on Psychological Science*, 8(6), 682-694. doi: 10.1177/1745691613503478
- Furlong, M., McGilloway, S., Bywater, T., Hutchings, J., Smith, S. M., & Donnelly, M. (2012). Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years. *Cochrane Database of Systematic Reviews*, Issue 2. Art. No.: CD008225.
doi: 10.1002/14651858.CD008225.pub2

- Greene, C. J., Morland, L. A., Durkalski, V. L., & Frueh, B. C. (2008). Noninferiority and equivalence designs: Issues and implications for mental health research. *Journal of Traumatic Stress, 21*(5), 433-439. doi: 10.1002/jts.20367
- Hedges, L. V. (1983). A random effects model for effect sizes. *Psychological Bulletin, 93*(2), 388-395. doi: 10.1037/0033-2909.93.2.388
- Hoath, F. E., & Sanders, M. R. (2002). A feasibility study of enhanced group Triple P-positive parenting program for parents of children with attention/deficit hyperactivity disorder. *Behaviour Change, 19*(4), 191-206. doi: 10.1375/bech.19.4.191
- Horin, A. (2009, March 5). Parent agencies see few positives in \$5.2m outlay. *The Sydney Morning Herald*. Retrieved from <http://www.smh.com.au/national/parent-agencies-see-few-positives-in-52m-outlay-20090304-8ol4.html>
- Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology, 59*(1), 12-19. doi: 10.1037//0022-006X.59.1.12
- Jensen, P. S., Weersing, R., Hoagwood, K. E., & Goldman, E. (2005). What is the evidence for evidence-based treatments? A hard look at our soft underbelly. *Mental Health Services Research, 7*(1), 53-74. doi: 10.1007/s11020-005-1965-3
- Kaminski, J. W., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training program effectiveness. *Journal of Abnormal Child Psychology, 36*(4), 567-589. doi: 10.1007/s10802-007-9201-9
- Kazdin, A. E. (2008). Evidence-based treatments and delivery of psychological services: Shifting our emphases to increase impact. *Psychological Services, 5*(3), 201-215. doi: 10.1037/a0012573

- Koerting, J., Smith, E., Knowles, M. M., Latter, S., Elsey, H., McCann, D. C.,...Sonuga-Barke, E. J. (2013). Barriers to, and facilitators of, parenting programmes for childhood behaviour problems: A qualitative synthesis of studies of parents' and professionals' perceptions. *European Child and Adolescent Psychiatry*, 22, 653-670. doi: 10.1007/s00787-013-0401-2
- Lee, P., Niew, W., Yang, H., Chen, V. C., & Lin, K. (2012). A meta-analysis of behavioral parent training for children with attention deficit hyperactivity disorder. *Research in Developmental Disabilities*, 33, 2040-2049. doi: 10.1016/j.ridd.2012.05.011
- Leung, C., Tsang, S., Ng, G., & Choi, S. (2017). Efficacy of parent-child interaction therapy with Chinese ADHD children: Randomized controlled trial. *Research on Social Work Practice*, 27(1) 36-47. doi: 10.1177/1049731516643837
- Loren, R. E., Vaughn, A. J., Langberg, J. M., Cyran, J. E., Proano-Raps, T., Smolyansky, B. H.,...Epstein, J. N. (2015). Effects of an 8-session behavioral parent training group for parents of children with ADHD on child impairment and parenting confidence. *Journal of Attention Disorders*, 19(2), 158-166. doi: 10.1177/1087054713484175
- Lundahl, B. W., Risser, H. J., & Lovejoy, M. C. (2006). A meta-analysis of parent training: Moderators and follow-up effects. *Clinical Psychology Review*, 26(1), 86-104. doi: 10.1016/j.cpr.2005.07.004
- Pelham, W. E., Burrows-MacLean, L., Gnagy, E. M., Fabiano, G. A., Coles, E. K., Wymbs, B.T.,...Waschbusch, D. A. (2014). A dose-ranging study of behavioral and pharmacological treatment in social settings for children with ADHD. *Journal of Abnormal Child Psychology*, 42(6), 1019-1031. doi: 10.1007/s10802-013-9843-8

- Perkins, R. (2006). The effectiveness of one session of therapy using a single-session therapy approach for children and adolescents with mental health problems. *Psychology and Psychotherapy: Theory, Research and Practice*, 79, 215-227.
doi: 10.1348/147608305X6052
- Phelan, T. W. (1984). *1-2-3 Magic: Effective discipline for children 2-12* (1st ed.). Glen Ellyn, IL: Child Management.
- Phelan, T. W. (2012). *1-2-3 Magic: Presentation package*. Glen Ellyn, IL: ParentMagic.
- Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2014). The 1-2-3 Magic parenting program and its effect on child problem behaviors and dysfunctional parenting: A randomized controlled trial. *Behaviour Research and Therapy*, 58, 52-64.
doi: 10.1016/j.brat.2014.05.004
- Porzig-Drummond, R., Stevenson, R. J., & Stevenson, C. (2015). Preliminary evaluation of a self-directed video-based 1-2-3 Magic parenting program: A randomized controlled trial. *Behaviour Research and Therapy*, 66, 32-42. doi: 10.1016/j.brat.2015.01.003
- Sanders, M. R. (2008). Triple P-positive parenting program as a public health approach to strengthening parenting. *Journal of Family Psychology*, 22(3), 506-517.
doi: 10.1037/0893-3200.22.3.506
- Tiano, J. D., & McNeil, C. B. (2005). The inclusion of fathers in behavioral parent training: A critical evaluation. *Child & Family Behavior Therapy*, 27(4), 1-28.
doi: 10.1300/J019v27n04_01
- Tully, L. A. (2009). *What makes parenting programs effective? An overview of recent research*. Centre for Parenting and Research, NSW Department of Community Services, Ashfield, Australia. Retrieved from http://www.community.nsw.gov.au/__data/assets/pdf_file/0003/321591/researchnotes_parenting_programs2.pdf

- Tully, L. A., & Hunt, C. (2016). Brief parenting interventions for children at risk of externalizing behavior problems: A systematic review. *Journal of Child and Family Studies*, 25(3), 705-719. doi: 10.1007/s10826-015-0284-6
- Turner, K., Richards, M., & Sanders, M. (2007). A randomised clinical trial of a group parent education program for Australian indigenous families. *Journal of Paediatrics and Child Health*, 43(6), 429-437. doi: 10.1111/j.1440-1754.2007.01053.x
- Webster-Stratton, C., Reid, M. J., & Beauchaine, T. (2011). Combining parent and child training for young children with ADHD. *Journal of Clinical Child & Adolescent Psychology*, 40(2), 191-203. doi: 10.1080/15374416.2011.546044
- Webster-Stratton, C., Reid, M. J., & Beauchaine, T. (2013). One-year follow-up of combined parent and child intervention for young children with ADHD. *Journal of Clinical Child & Adolescent Psychology*, 42(2), 251-261. doi: 10.1080/15374416.2011.546044

Conflict of interest

The authors declare no conflict of interest with respect to either study. The authors have no financial interest, nor any affiliation with ParentMagic developers or distributors of the 1-2-3 Magic program.

APPENDIX A: Telephone Screening Form

Telephone Screening Form

Date: _____ No: _____

Name: _____

Phone no: _____

E-mail address: _____

Would you prefer to be contacted by e-mail or text message?

1. How old is your child? _____ Male _____ Female _____

Child's age must be in the range 6 to 12 inclusive, if not in this range don't proceed.

2. Has your child been diagnosed with AD/HD? Yes _____ No _____ If no, don't proceed.

If yes, what type – Hyperactive _____ Inattentive _____ Combined _____

3. Does your child often have difficulty sustaining attention to tasks or play, or are they easily distracted?

Yes _____ No _____

4. Does your child often have difficulty listening, following instructions, or finishing tasks?

Yes _____ No _____

5. Does your child often have difficulty organising tasks or do they often lose things?

Yes _____ No _____

6. Does your child often run about, climb on things, cannot sit still, or fidgets with things?

Yes _____ No _____

7. Does your child often act impulsively, fails to think before acting, or can't wait?

Yes _____ No _____

8. Does your child, who has been diagnosed with AD/HD, live with you full-time or part-time?

Full-time _____ Part-time _____

9. When was your child diagnosed with AD/HD? _____

10. Who diagnosed your child? Paediatrician _____ Psychiatrist _____
Psychologist _____ G.P. _____
Other, please specify _____
11. Is your child taking medication for AD/HD? Yes _____ No _____
12. When did they start taking medication for AD/HD? _____
13. Have there been any major disruptions in your child's life in the past 3 months (e.g., parents separated, death in the family)? Yes _____ No _____
If so, please specify _____
14. Are you attending any other parenting program at present or seeing a professional for AD/HD management for your child? Yes _____ No _____
15. If yes, would you be prepared to stop therapy (not medication) for the duration of the 1-2-3 Magic Study (i.e., 2 months)? Yes _____ No _____
16. Given the nature of the study (explain), only one parent is eligible to participate in the study. Who would be attending?
Mother _____
Father _____
Other, please specify _____
17. Would attending on a Wednesday evening from 7pm suit? Yes _____ No _____
If no, what evening _____ time _____ would suit?
18. Would you be willing to complete online and/or paper questionnaires throughout the study?
Yes _____ No _____

Do you have any questions?

Thank you for your time.

APPENDIX B: Tables of Means and Standard Deviations

Table B1

Study I: Means and standard deviations for all dependent variables at pre- and post-intervention, and six-month follow-up

Measure	Treatment group						Control group			
	Pre (n = 18)		Post (n = 17)		Follow-up (n = 17)		Pre (n = 18)		Post (n = 14)	
	M	SD	M	SD	M	SD	M	SD	M	SD
ECBI Intensity	135.10	19.50	126.53	21.82	124.18	18.66	166.36	20.08	163.57	25.47
ECBI Problem	17.59	4.65	15.06	6.25	13.41	6.61	24.07	3.87	20.43	5.35
PSI Total score	98.29	15.07	95.00	11.43	84.53	14.23	108.92	26.37	109.79	24.14
ADHD Total score	28.76	11.19	27.65	7.99	23.47	9.55	38.50	10.06	40.79	10.27
ADHD Hyperactivity /Impulsivity	13.24	5.56	13.47	4.61	11.30	4.69	17.50	5.91	20.21	5.50
ADHD Inattention	15.53	6.57	14.18	4.11	12.18	5.15	21.00	4.68	20.57	5.46

Note. Pre = pre-intervention; Post = post-intervention; Follow-up = six-month follow-up; ECBI = Eyberg Child Behavior Inventory; PSI = Parenting Stress Index-Short Form (4th ed.); ADHD = ADHD Rating Scale-IV-Home Version.

Table B2

Study II: Means and standard deviations for all dependent variables at pre- and post-intervention, and six-month follow-up

Measure	Treatment group						Control group			
	Pre (n = 29)		Post (n = 28)		Follow-up (n = 25)		Pre (n = 30)		Post (n = 29)	
	M	SD	M	SD	M	SD	M	SD	M	SD
ECBI Intensity	141.93	21.11	119.79	21.48	113.63	23.57	134.09	21.85	128.55	21.16
ECBI Problem	19.28	6.14	12.10	7.23	10.08	7.11	18.00	6.24	15.79	7.41
PSI Total score	88.41	18.15	79.93	17.73	77.83	22.34	89.58	16.98	89.19	20.42
Conners Inattention	12.27	1.95	10.63	3.71	9.13	4.57	11.43	2.91	12.03	2.53
Conners Hyperactivity /Impulsivity	13.27	2.69	11.17	4.48	9.63	4.94	11.73	4.46	12.48	4.22
Conners Learning Problems	7.83	4.00	6.33	4.28	5.80	4.60	7.63	3.51	8.14	3.93
Conners Executive Functioning	11.03	2.72	8.90	3.60	7.60	4.05	10.47	3.49	10.38	3.09
Conners Peer Relations	6.13	4.44	5.20	4.32	3.67	2.72	5.70	4.33	5.97	4.40
Conners Aggression	2.90	2.83	2.27	2.13	1.60	2.09	2.80	2.41	3.55	3.27

Note. Pre = pre-intervention; Post = post-intervention; Follow-up = six-month follow-up; ECBI = Eyberg Child Behavior Inventory; PSI = Parenting Stress Index-Short Form (4th ed.); Conners = Conners-Parent Short Form (3rd ed.).

APPENDIX C: Final Ethics Approval

Ethics Secretariat <ethics.secretariat@mq.edu.au> 5/9/13

to Prof, Dr, me

Dear Prof Stevenson

Re: "1-2-3 Magic Evaluation for Children diagnosed with ADHD" (Ethics Ref: 5201300287)

Thank you for your recent correspondence. Your response has addressed the issues raised by the Human Research Ethics Committee and you may now commence your research.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

<http://wnrw.nhmrc.gov.au/files-nhmrc/publications/attachments/e72.pdf>.

The following personnel are authorised to conduct this research:

Dr Caroline Stevenson
Ms Julie Anne Chesterfield
Prof Dick Stevenson

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 09 May 2014
Progress Report 2 Due: 09 May 2015
Progress Report 3 Due: 09 May 2016
Progress Report 4 Due: 09 May 2017
Final Report Due: 09 May 2018

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5. Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy/>

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have final approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

Please retain a copy of this email as this is your official notification of final ethics approval.

Yours sincerely
Dr Karolyn White Director of Research Ethics
Chair, Human Research Ethics Committee