



## Evaluation of the Family Intervention Service for children presenting with characteristics associated with Attention Deficit Hyperactivity Disorder

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### Abstract

The Victorian Parenting Centre Family Intervention Service (FIS) conducts brief group and individual parent training programs (Triple P) intended as preventative interventions for families of children at risk of developing emotional and behavioural problems. This paper reports on an evaluation of a Triple P intervention specifically with children exhibiting ADHD characteristics. Pre and post-intervention parental self-report data were analysed for 83 children aged 2 to 15 years. Following the FIS intervention there was a reduction in problem behaviour scores of children perceived to have a high frequency of behaviours typical of ADHD. Mothers also reported reduced depression, anxiety and stress, increased feelings of satisfaction and competency in parenting, less negative parenting behaviour, and reduction in parental conflict. Furthermore, they expressed a high level of satisfaction with the program. These evaluation findings are consistent with those of controlled investigations of the impact of behavioural family intervention on problematic behaviours of children with ADHD.

### Keywords

*parent training, program evaluation, Triple P, attention deficit hyperactivity disorder, family intervention*

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### Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most commonly diagnosed childhood mental health disorders (Pelham & Gnagy, 1999). Children and adolescents diagnosed with ADHD present with a range of symptoms that fall into two main clusters: inattention-disorganisation and hyperactivity-impulsivity (American Psychiatric Association: APA, 1994; Barkley, 1996). According to the currently used diagnostic criteria for ADHD, there are three subtypes of the disorder:

predominantly inattentive, predominantly hyperactive-impulsive, or combined (APA, 1994). In clinical samples, most children are found to fall into the combined type (Australian Psychological Society: APS, 1997), whereas the inattentive type is more prevalent in community samples (Sawyer, Arney, Baghurst et al., 2000).

Prevalence estimates of ADHD have ranged from 1 to 20 % of the general population (Ross & Ross, 1982; Szatmari, Offord & Boyle 1989). However, professional consensus is that

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approximately 3 to 5 % of the general child population will meet criteria for some type of ADHD diagnosis (APA, 1994). In Australia, the Western Australia Child Health Survey (Zubrick, Silburn, Garton et al., 1995) found that attention problems were evident in 5.5 % of 4 to 11 year-olds and 7.6 % of 12 to 16 year-olds.

In addition to their primary problems of inattention, impulsivity, and hyperactivity, outcome studies indicate that children diagnosed with ADHD have an increased likelihood of developing chronic social, emotional, and behavioural difficulties, and will manifest more academic problems than non-ADHD children (Goldstein & Goldstein, 1992). While levels of hyperactivity decline, and attention span and impulse control can improve with age, approximately 70 to 80% of children with ADHD are likely to continue to display these symptoms into adolescence at a level inappropriate for their age group (Barkley, 1990). A minority will also demonstrate marked problems in young adulthood (Barkley, 1996; Klein & Mannuzza, 1991).

Raising a child with ADHD can have a significant impact on the functioning of families (Anastopoulos, 1998). Parents of children with ADHD report high levels of stress in their role as parents (Anastopoulos, Guevremont, Shelton & DuPaul, 1992) and are found to have a diminished sense of parenting competence (Mash & Johnston, 1990). They may also demonstrate overly directive and negative parenting styles (Cunningham & Barkley, 1979). The significant impairment experienced by children with ADHD, combined with their negative prognosis and impact on families, highlights the need for effective intervention and treatment. There is scant scientific evidence supporting the use of many treatment methods that have been popularised and promoted at various times in the community, for example, dietary management, megavitamin therapy, art therapy and exercise (Hazell, 2000). Empirical support, however, does exist for pharmacological interventions, psychosocial interventions, and combined psychosocial-pharmacological interventions (National Health & Medical Research Council, 1997).

The most commonly used intervention for children with ADHD is pharmacological, involving the prescription of stimulant medication (APS, 1997). Psychostimulants have been shown to be effective in reducing the core symptoms of ADHD: inattentiveness, impulsivity and hyperactivity (Greenhill, 1998). A recent large scale, multisite, randomised controlled trial involving over 500 children with ADHD reported that a well managed medical intervention alone is more effective than behavioural treatment alone, and in most cases, as effective as a combined medication-behavioural treatment (Multimodal Treatment Study of Children with ADHD Cooperative Group, 1999). However, there has been controversy in Australia and other parts of the world over this form of medical intervention, and alarm over the high levels of stimulants being prescribed, particularly to preschool aged children (Jarman, 1996; Rey, Walter & Hazell, 2000).

Concerns about medical intervention include a lack of validity and reliability of psychiatric diagnosis in this age group, lack of controlled data on the efficacy of drug treatments in young children, and apprehension about the impact of psychotropic medication on brain development (Rey et al., 2000). Dose related unpleasant side effects have also been noted (Hazell, 2000) and some children (as many as 20 to 30%) who take such medication simply do not respond to this form of intervention (Barkley, 1990). In general, little is known about the long term efficacy or possible dangers of psychostimulants. One study reported a relapse rate of 80% when children with ADHD were switched from psychostimulant medication (methylphenidate) to a placebo after eight months of treatment (Abikoff, 1994, as cited in Greenhill, 1998). Findings of this type suggest that medication may simply dampen or mask the symptoms of ADHD rather than alleviate them.

Concerns have also been expressed about the diagnosis and labelling processes associated with ADHD. There are dangers in inappropriate diagnosis, especially in young children where the assessment often relies totally on parent report and where it can be difficult to discriminate ADHD symptoms from normal variation in the

behaviour and development of young children. In light of high levels of community awareness of the problem of ADHD, practitioners can be placed under pressure from parents or children's services to make a diagnosis of ADHD and commence medical intervention. In the absence of sufficient support services, drug treatments may appear to be the only practical or convenient option available. There is also a risk that the diagnosis of ADHD may stigmatise children, and reinforce parental attribution of the causes of problem behaviour to a medical issue that requires treatment, rather than to family factors that require attention. These concerns, together with a lack of knowledge of the long-term effects of pharmacological treatments, continue to fuel the search for effective non-drug based interventions.

The most effective non-pharmacological interventions for ADHD comprise behavioural approaches to treatment (Hinshaw, Klein & Abikoff, 1998). Research shows that clinical behaviour intervention procedures such as parent training demonstrate statistically significant benefits with regard to ADHD-related problem behaviours (see Barkley, Guevremont, Anastopoulos & Fletcher, 1992; Pisterman, Firestone, McGrath et al., 1992; Anastopoulos, Shelton, DuPaul & Guevremont, 1993). Parent training programs appear to be particularly effective in reducing oppositional-defiant type behaviours in children with ADHD, but few studies to date have found that parent training is effective in reducing the core symptoms of ADHD such as inattentiveness and impulsivity (Hazell, 2000). There is also evidence that clinical behaviour therapy procedures can increase the effects of medication for children with ADHD, such that low-dosage medication combined with behavioural programs yields effects similar to those obtained from higher dosages of medication (Hinshaw et al., 1998). Interventions involving clinical behaviour therapy, and school-based contingency management, combined with low dose stimulant therapy are now widely recommended as the treatment of choice (Nolan & Carr, 2000).

Whilst some well controlled scientific studies have demonstrated that parent training approaches can be useful in the treatment and

management of ADHD, there remains a question as to whether such programs operating in the community, under much less rigorously controlled conditions, are effective. Studies by Sonuga-Barke, Daley, Thompson et al., (2001), Bor, Sanders and Markie-Dadds (2002), and Hoath and Sanders (2002) demonstrated positive outcomes for children with ADHD and their parents when behavioural family intervention programs were implemented in community settings.

This paper briefly describes the evaluation of a field based behavioural family intervention program to reduce behaviour problems in pre-adolescent children who presented with characteristics typical of ADHD. The data reported are a subset of data from an ongoing evaluation of the Family Intervention Service: Metropolitan Project (FIS). Funded by the Victorian Government Department of Human Services, the aim of FIS is to reduce the prevalence of behavioural and emotional problems in young children by enhancing the skills and confidence of parents. The program targets lower socio-economic areas in Melbourne's northern suburbs and attempts to engage high-risk families by working closely with local primary care and educational services (e.g. schools and community health services).

The Metropolitan FIS team delivers Triple P (Positive Parenting Program), a parenting program that aims to: (a) enhance the knowledge, skills, confidence, self sufficiency, and resourcefulness of parents of pre-adolescent children; (b) promote the development of nurturing, safe, engaging, non-violent, and low conflict environments for children; and (c) enhance children's social, emotional, language, intellectual and behavioural competencies through positive parenting practices (Sanders, 1999 p.72). Triple P is based on a social learning model of parent-child interaction, together with research that has focussed on the development of social competencies in children and risk factors for the development of behavioural problems. Strong empirical evidence exists for the effectiveness of parent training programs based on a social learning approach in the treatment of children with disruptive behavioural disorders (see Kazdin,

1998), as well as substantial empirical support for the efficacy of the Triple P program in particular (see Sanders, 1999 for a review).

The FIS provides Triple P programs in group and individual modalities. Group Triple P is designed as a brief, preventative intervention appropriate for all families, but is specifically helpful to families experiencing early difficulties with their child's behaviour or development, or families seeking assistance with a broad range of parenting skills. Group Triple P is an eight session training program involving four, two-hour group sessions and four, 15-30 minute follow-up telephone sessions for each participant. The program typically caters for groups of 10 to 12 parents of children aged between 2 and 12 years.

The program covers content areas such as the causes of childhood behaviour problems and strategies for building strong relationships with children, encouraging desirable behaviour, teaching children new skills and managing misbehaviour. The program is built on a self-regulatory model that places emphasis on parents selecting personal goals for themselves, choosing strategies appropriate to their family and circumstances, developing independent problem solving skills, and monitoring their own progress. The program utilises active teaching strategies including instruction, video-taped and live modelling, small group problem solving exercises, and rehearsal of parenting skills in sessions, as well as in individually tailored home assignments. The telephone consultations are designed to address the individual needs of participants and promote generalisation and maintenance of learning.

Alternatively, families may be offered a Standard or Enhanced individual Triple P program. These 10-16 week programs are delivered to parents of children with more severe behaviour problems or parents needing more intensive individualised training. Standard Triple P focuses on child management skills and includes a home visiting component providing in vivo parenting support and coaching. Enhanced Triple P is intended for parents who are experiencing concurrent problems in personal

adjustment (e.g. depression or stress) or family dysfunction (e.g. marital conflict).

The aim of the current study was to examine the impact of the program on children with a high level of behaviours typically associated with ADHD. This question was addressed by analysing existing parent reported pre and post-intervention data for a subset of children whose parents rated them as having high levels of ADHD symptomatology according to a measure of child problem behaviour, the Eyberg Child Behavior Inventory (Eyberg & Pincus, 1999), that is routinely used in Triple P programs.

## **Method**

### ***Participants***

Pre and post intervention data were available for a total of 83 children whose parents had participated in the program and who were identified with high ADHD symptomatology. This classification was on the basis of an ADHD factor on the Eyberg Child Behaviour Inventory (ECBI: Robinson, Eyberg & Ross, 1980) that was identified through a re-analysis of the measure by Burns and Patterson (1991) (see Measures below).

The group of 83 was part of a larger sample of 131 families who were the initial clients of the Metropolitan FIS. Despite the fact that the FIS was set up as a universal parenting program, there was a requirement to meet certain targets related to family risk factors. These were low income, acute early parenting difficulties, parent mental illness, young parents or having a child with a disability. In the early establishment period for FIS, from which this sample was drawn, these targets were easily met. This, in conjunction with the large proportion of children who met the criterion for ADHD characteristics, suggests that the participants were experiencing more difficulties with their children than would be expected for a universal program.

Children ranged in age from 2 to 15 years and had a mean age of 5 years. Sixty seven percent of the total sample were male. The children with high ADHD symptomatology were identified using a 'clinical cut-off' score on the ADHD

factor of the ECBI (see Measures for method of calculation). Data are presented for children for whom all pre-post measures were available, therefore this sample consisted of children whose parents completed the program.

### **Measures**

#### *The Eyberg Child Behavior Inventory (ECBI)*

The Eyberg Child Behavior Inventory (ECBI) (Robinson, Eyberg & Ross, 1980; Eyberg & Pincus, 1999) was designed for use in the paediatric setting for screening and tracking disruptive child behaviour. The ECBI lists 36 disruptive behaviours for which parents are asked to indicate on a 7-point Likert scale how often each behaviour is currently occurring, from 1 (never) to 7 (always), and whether the behaviour is currently a problem for them. These ratings result in scores for Intensity and Problem scales that are used for general screening for disruptive child behaviour. The initial inventory was administered to 512 parents of children aged between 2 and 12 years in a paediatric setting (Robinson, Eyberg, & Ross, 1980). Internal consistency was .95 for the Intensity scale and .93 for the Problem scale. Test-retest reliability was .80 for the Intensity scale and .85 for the Problem scale over a 12-week interval (Robinson, Eyberg & Ross 1980). Father-mother inter-rater reliability of .86 for the Intensity scale and .79 for the Problem scale was also reported (Eyberg & Robinson, 1983).

In the current evaluation, the ECBI was used to assess child disruptive behaviour and identify children displaying high ADHD characteristics. Although the ECBI is typically used as a general measure of number and intensity of child behaviour problems, Burns and Patterson (1991) reported that the inventory items could be divided on theoretical grounds into three factors corresponding to three disorders: ADHD, Oppositional Defiant Disorder (ODD), and Conduct Disorder (CD). They tested their hypothesis in two large samples of children and teenagers, the first from paediatric clinics (1526 children) and the second from a normal school population (1003 children). The results of their studies supported the hypothesised structure. The items loading on the ADHD factor referred to short attention span, distractibility, poor

concentration, failure to finish tasks, overactivity, difficulty playing independently, attention seeking and interrupting. Scores on this ADHD factor were used in this study to identify children from the whole FIS sample who were presenting with high levels of behaviour associated with ADHD as reported by their parents.

Since Burns and Patterson provided no indication of clinical criteria for the factors, the clinical cut-off score for the ADHD factor for the study reported here was calculated on the basis of the clinical cut-off score for the total Intensity scale. To compute the criterion score, the mean score required on each item in the scale (36 items) for the total scale score to reach clinical significance (131) was calculated (3.64). This mean score was multiplied by the number of items in the ADHD factor (8) to give a clinical cut-off for the ADHD factor (29.1).

#### *Depression Anxiety Stress Scale (DASS)*

Depression, anxiety, and stress in adults were evaluated by the 42 item Depression Anxiety Stress Scale (DASS) (Lovibond & Lovibond, 1995). Each item is rated on a 4-point Likert scale from 0 to 3. Factor scores are calculated by summing the ratings of the 14 items in each scale. Higher scores indicate more severe depression, anxiety or stress. Reported alpha coefficients for internal consistency were .91 for depression, .84 for anxiety and .90 for stress. Reasonable concurrent validity with other depression, anxiety and stress inventories has also been shown (Lovibond & Lovibond, 1995; Antony, Bieling, Cox et al., 1998).

#### *The Parenting Scale*

The Parenting Scale (Arnold, O'Leary, Wolff & Acker, 1993) was used to assess dysfunctional parenting styles. It is a 30 item questionnaire that evaluates three dysfunctional discipline practices of parents: Laxness (permissiveness), Over-reactivity (authoritarian parenting, anger, meanness, irritability), and Verbosity (use of long reprimands and over reliance on talking). Higher scores on each scale represent elevated levels of dysfunctional parenting. Arnold et al., (1993) reported internal consistency alpha coefficients of .83, .82 and .63 for the Laxness, Over-reactivity and Verbosity subscales. Test-

retest reliability was .83, .82 and .79 respectively. The authors also presented evidence that scores on the three factors were positively correlated with objective measures of dysfunctional discipline and poor child behaviour.

#### *Parent Sense of Competence Scale (PSOC)*

Parents' self-efficacy was measured using the Parent Sense of Competence Scale (PSOC) (Johnston & Mash, 1989). The PSOC is a 17 item questionnaire assessing parents' views of their competence as parents in terms of satisfaction (extent of frustration, anxiety, motivation) and efficacy (competence, problem solving ability and capability). Items are rated on a 6-point Likert scale. The nine items in the Satisfaction scale are forward scored and the seven items in the Efficacy scale are scored in the reverse direction. High scores represent high degrees of Satisfaction and Efficacy. Following the recommendation of Johnston and Mash (1989), who found item 17 did not load onto either factor, the item was omitted from the scale in the present study. They reported internal consistency alpha coefficients of .75 for the Satisfaction factor and .76 for the Efficacy factor.

#### *The Parenting Problem Checklist (PPC)*

The Parenting Problem Checklist (PPC) (Dadds & Powell, 1991) was used to assess inter-parent conflict over child rearing. It is a 16 item measure containing two sub-scales, measuring whether the issues have been a problem and the extent to which they have been problem. Dadds and Powell (1991) reported that the problem scale is unidimensional with an internal consistency of .70 and a test-retest reliability of .90.

#### *Procedure*

Following explanation of the program and its evaluation component by a practitioner, parents were posted questionnaires to complete at home before the intervention commenced. A second set of questionnaires was posted to parents following completion of the program. The measures in the pre questionnaire package that were included in the present analysis were the ECBI, DASS, PS, PSOC, and the PPC. The post

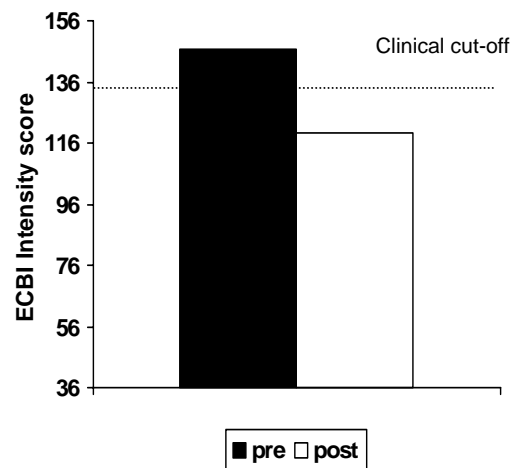
intervention package included a parent program satisfaction questionnaire in addition to these measures.

On each occasion, two sets of questionnaires were posted to the family, one for the mother to complete and one for the father. Although both parents were encouraged to attend the programs, participation rates for mothers were much higher than for fathers. Pre and post questionnaire completion rates were also substantially higher for mothers (n=83) than for fathers (n=44). Therefore, it was decided to analyse only the mothers' data for the current report.

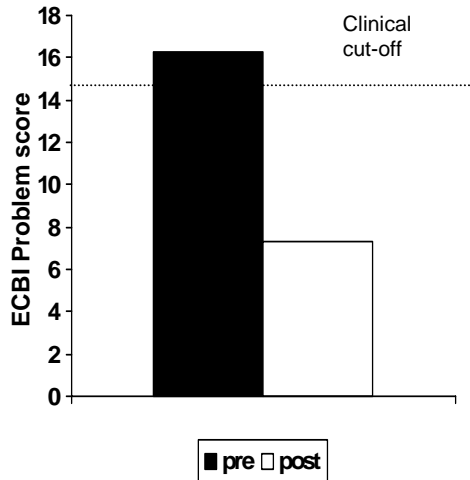
## **Results**

### *Intervention effects on child problem behaviour*

The effects of the FIS intervention on the number and intensity (or frequency) of child problem behaviours in general were assessed. The ECBI Intensity and Problem scale scores were analysed using a repeated measures MANOVA with the Intensity and Problem scores as the dependent measures. The mean values for each of these scales before and after intervention are presented in Figures 1 and 2. There was a significant decrease in ECBI scores from pre to post-intervention  $F(2,81) = 71.67 p < .001$ . Univariate tests showed that there was a significant decrease in scores on both the Intensity,  $F(1,82) = 104.73 p < .001$  and Problem scores,  $F(1,82) = 127.01 p < .001$ .



**Figure 1. Pre and post-intervention scores on the ECBI ADHD Intensity sub-scale**



**Figure 2. Pre and post-intervention scores on the ECBI ADHD Problem sub-scale**

The impact of the FIS intervention on specific ADHD characteristics was assessed by a paired samples t-test comparing pre and post intervention scores on the ADHD factor of the ECBI. The mean ADHD subscale score following intervention (30.84) was significantly less than the mean subscale score prior to intervention (37.85),  $t(85) = 7.92$   $p < .001$ . Furthermore, forty three per cent of children who were in the clinical range (i.e. more than one standard deviation above the mean score) on the ADHD factor prior to intervention were no longer in the clinical range following intervention. For the ECBI Intensity scale, sixty

percent of the children who were in the clinical range on the prior to intervention were no longer in the clinical range on this scale following intervention.

### *Intervention effects for mothers*

To investigate the effectiveness of the FIS intervention in improving parental coping, parenting skills, and feelings of competence, pre and post-intervention scores were compared for each sub-scale of the DASS, PSOC, and PPC. Repeated measures MANOVAs were performed with time as the independent variable and the subscale scores as the dependent measures. The total scores on the PS at pre and post-intervention were compared using a paired sample t-test. All pre to post-intervention changes were statistically significant (Table 1). Following participation in the FIS program, mothers reported lower, depression, anxiety and stress, and less use of dysfunctional parenting practices, greater confidence and self-efficacy and less conflict with their partner over parenting issues.

### *Satisfaction with the program*

Consumer satisfaction with the program was assessed using a 15 item questionnaire, with scores ranging from 15 (low satisfaction) to 75 (high satisfaction). The mean satisfaction score rated by mothers was 64.74 (SD = 9.25).

**Table 1. Mean scores for mothers of children with high ADHD symptomatology pre and post intervention**

Measure	Pre intervention		Post intervention		F <sup>#</sup>	p
	Mean	SD	Mean	SD		
<b>DASS</b>					55.61	**
Depression	6.61	8.12	4.75	6.36	11.04	**
Anxiety	4.55	5.05	3.46	4.82	6.00	*
Stress	10.48	7.91	7.59	7.27	11.99	**
<b>PS</b>	3.63	0.64	2.85	0.79	8.82	***
<b>PSOC</b>					29.51	***
Satisfaction	33.00	6.77	37.23	7.02	44.00	***
Efficacy	27.00	5.50	30.22	4.47	41.45	***
<b>PPC</b>					19.96	***
Intensity	35.73	15.03	29.07	12.72	23.31	***
Problem	5.61	3.07	3.63	3.13	29.56	***

# t value for PS; \*\*\* $p < .001$  \*\* $p < .01$  \* $p < .05$

## Discussion

The results of the current program evaluation show that parents who indicated high level of child behaviours associated with ADHD reported reductions in child problem behaviour, positive changes in parenting style, improved confidence in parenting, reduced inter-parental conflict, and less depression, anxiety and stress following involvement in the FIS program. These findings, for children with behaviours commonly seen in ADHD, are consistent with previous research findings that parent training approaches based on social learning principles are effective with children with ADHD diagnoses (Barkley et al., 1992; Pisterman et al., 1992; Anastopoulos et al., 1993; Bor et al., 2002; Hoath & Sanders, 2002). In particular, parents of children high in ADHD symptomatology reported marked reductions in the frequency and intensity of child problem behaviour in general, as well as improvements in the specific behaviours typically associated with ADHD (e.g. impulsivity, inattentiveness, distractibility, hyperactivity etc).

In addition to the reported improvements in child disruptive behaviour, the study found statistically significant improvement in mothers' self-reported levels of depression, anxiety and stress, use of dysfunctional parenting practices, confidence and self-efficacy in parenting and conflict with their partner over parenting issues. Additionally, these parents expressed high levels of consumer satisfaction indicating that the program was relevant, helpful, and met their needs.

One way to examine the clinical significance of the findings was to calculate the proportion of children who moved out of the 'clinical' range of the child measure used. Forty three per cent of children in the clinical range on the ECBI ADHD factor, and sixty percent of the children in the clinical range on the ECBI Intensity scale before intervention were no longer in the clinical range following intervention. Whilst these results suggest meaningful improvement in the behaviour of many of the children, they also suggest that for some families additional intervention and support may be required to bring their children's behaviour into the normal range. This intervention could be in the form of

a more intensive individual program, implemented directly with the children as well as the parents, and provided in a range of settings (e.g. school as well as home).

There are some important limitations to this evaluation that should be noted. The first is the degree to which the findings can be generalised to children with ADHD. The program did not use a specific ADHD measure, nor were the children in the high ADHD group clinically diagnosed as having ADHD (although some of them had been diagnosed as such by other agencies). The measure used was a parent reported measure of ADHD representative behaviours that has been found to correlate with ADHD diagnosis. Therefore, the conclusions are limited to children considered by their parents to be displaying some of the symptoms and behaviours found in ADHD, rather than to children with a clinical diagnosis of ADHD.

Because of the lack of direct observational measures of child behaviour, the possibility that an expectancy effect has influenced parental ratings cannot be ruled out. The lack of a control or comparison group is another limitation of this evaluation, affecting the confidence with which we can attribute the changes that occurred to the intervention provided. Further research with a control group could help to determine by how much child problem behaviour might improve over time with and without intervention. Despite these limitations, the consistent trends evident in the results, and the concurrence with previous findings, particularly those incorporating a Triple P intervention, provide an incentive for future controlled investigations with this group of children.

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