

Investigating the Effect of a Parenting Training Intervention on Parental Stress among  
Parents of Children with ADHD in Cape Town, South Africa

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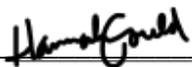
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**COMPULSORY DECLARATION**

This work has not been previously submitted in whole or in part, for the award of any degree. It is our own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, cited, and referenced.



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Date:

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## Abstract

**Background and Aims:** Studies indicate that parents of children with Attention-Deficit/Hyperactivity Disorder (ADHD) experience higher stress levels compared to parents of children with no, or other, psychological conditions. Parental stress not only negatively affects parents, but can also exacerbate child ADHD symptomology. Literature suggests that Positive Parent-Training (PT) programmes, such as Barkley's (1990) PT, is a cost-effective and efficacious ADHD intervention. Given the unique environmental stressors that face the majority of South Africans, this study evaluated whether Barkley's PT, can reduce parental stress levels of parents who have children with ADHD in this context.

**Method:** Our study included parents of children with ADHD. We implemented Barkley's PT over eight-weeks with a PT intervention group ( $n=21$ ). Our control group, an unstructured support group ( $n=9$ ), met for three sessions over an eight-week period. Participants were matched on SES, age, race as well as stress and child ADHD symptomatology. We assessed participants using the PSI and CBCL before and after the intervention using between- and within-group comparisons and RCI analyses.

**Results:** Child Distractibility and Parent Competence stress decreased for both the PT intervention and support group, however, a significant decrease was only reported for the PT intervention group. Parents in the PT intervention group reported greater improvement in some externalizing and internalizing domains post-intervention. For RCI analyses a greater proportion of individuals in the support group showed significant decreases in stress. However, this warrants further research with larger sample sizes. Findings indicate the efficacy of PT in equipping parents with skills to manage children's ADHD symptoms and decrease parental stress. The value of social support is similarly highlighted through the results.

**Implications:** The evaluation of ADHD interventions on parental stress provides opportunities to develop and refine programs for South African use, through the experience gained by researchers and feedback received from parents.

*Keywords:* Attention-Deficit/Hyperactivity Disorder; parenting stress; parenting intervention; parent training; support group; South Africa

## Investigating the Effect of a Parenting Training Intervention on Parental Stress among Parents of Children with ADHD in Cape Town, South Africa

Attention-deficit/hyperactivity disorder (ADHD) is a highly prevalent and extensively researched neurodevelopmental disorder that not only results in detrimental academic and vocational outcomes for individuals diagnosed, but also contributes to family stress (Bakare, 2012; Biederman, Petty, Evans, Small, & Faraone, 2010; Foley, 2011; Kieling & Rohde, 2012). ADHD is also the most prevalent child psychiatric disorder in SA (Meyer, 2005). Parents of children with ADHD reportedly experience significant parental stress in response to their child's ADHD symptomatology (Podolski & Nigg, 2001). However, the relationship between parental stress and ADHD symptomatology is bidirectional (Foley, 2011). Highly stressed parents often implement negative parenting techniques which can exacerbate their children's ADHD symptoms (Kaiser, McBurnett, & Pfiffner 2010). Hence, researchers have developed interventions directed at helping parents to manage children's symptoms. Group-based behavioural interventions and Positive Parent Training (PT) programmes are the most widely accepted and effective interventions for parents of children with ADHD (Deault, 2010; Gerdes, Haak, & Schneider, 2012). One well known example of such an intervention is Barkley's PT Program (Barkley, 1990). The focus of PT programmes, such as this, is to adapt parenting styles to have a more positive impact on children's behavior (Weinberg, 1999). For example, addressing negative parenting techniques, which reportedly influence the severity of behavioural symptoms in children with ADHD (Gardner, Hutchings, Bywater, & Whitaker, 2010).

### **ADHD**

#### **Prevalence rates.**

ADHD is more commonly diagnosed in boys than girls (Harpin, 2005). Furthermore, 60% of individuals with symptoms of ADHD in childhood continue to experience difficulties later on in life (Harpin, 2005). While there are disparities in the number of children diagnosed globally with ADHD each year, an earlier comprehensive meta-analysis reviewing literature over the past 27 years found that, at that time, there was an average estimate of 5.29% of children, across the world, diagnosed with ADHD (Polanczyk, de Lima, Horta, Biederman, Rohde, 2007). A follow-up meta-analysis found that ADHD prevalence rates have remained consistent, at 5.29%, from 1985-2012 (Polanczyk, Willcutt, Salum, Kieling, & Rohde, 2014). Interestingly, a systematic review of ADHD-related studies conducted in Africa, found a similar, although slightly elevated, prevalence rate of ADHD with 5.4-8.7% of children meeting clinical criteria (Bakare, 2012).

In South Africa (SA) 5% of children (approximately 810 000<sup>1</sup>) are diagnosed with ADHD, yet there are no studies that implement and evaluate parent-focused interventions that target related parental stress (Bakare, 2012). Since 23 million South Africans live below the poverty line (Statistics SA, 2014), there is a need to assess whether cost effective interventions for ADHD, such as Barkley's PT, can also reduce symptom severity and parental distress in this context.

### **Definition.**

ADHD is defined in the Diagnostic Statistical Manual of Psychiatry (DSM, 5<sup>th</sup> edition) as a disorder characterized by developmentally inappropriate levels of inattention and/or hyperactivity or impulsivity (American Psychiatric Association [APA], 2013). Inattention is characterized by an inability to focus, listen or track belongings. Hyperactivity-impulsivity is characterized by fidgeting, an inability to sit still, and constant interruption of others (APA, 2013)<sup>2</sup>. These characteristic symptoms of ADHD often create significant impairment in social, academic and occupational settings (Biederman et al., 2010; Daley & Birchwood, 2010; McConaughy, Volpe, Antshel, Gordon, & Eiraldi, 2011). For example, research shows that individuals living with ADHD are at a higher risk for substance abuse, learning disorders and lower graduation rates (Biederman et al., 2010; Van de Glind et al., 2013).

### **Comorbid disorders.**

Over and above the symptoms of hyperactivity and inattention, children who meet criteria for ADHD often struggle with comorbid disorders. A diagnosis of ADHD often occurs comorbidly with externalizing behavioural problems, such as oppositional defiant disorder (ODD), defiant and disobedient behaviour, and conduct disorder (CD), behaviour where the rights of others or societal norms are violated (APA, 2013; Biederman et al., 2010; Hurtig et al., 2007; Theule, Wiener, Tannock, & Jenkins, 2013; Wilens et al., 2009). Studies have reported that comorbidity exacerbates core ADHD symptoms as well as overall functional impairment (Connor & Ford, 2012; Hurtig et al., 2007).

### **ADHD and parental stress.**

Extensive literature demonstrates that the intrusive and demanding nature of children's ADHD symptoms is one of the strongest predictors of parental stress among

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<sup>1</sup> This figure is based on the Statistics SA (Stats SA, 2014) midyear report. In that report Stats SA estimated the population at 54 million, with 30% aged younger than 15 years.

<sup>2</sup> A complete description of the DSM-5 diagnostic criteria for ADHD is presented in Appendix A.

families of children with ADHD (Deault, 2010; Kaiser et al., 2010; Sethi, Gandhi, & Anand, 2012; Van der Oord, Prins, Oosterlaan, & Emmelkamp, 2006). Other factors that influence parental stress include socioeconomic status (SES), marital issues, social support and conflicted family environments (Sethi et al., 2012). Parenting stress arises when parents' perceived demands of parenting outweigh their resources for dealing with these demands (Deater-Deckard, 2004).

Multiple studies, including a meta-analysis, that explore the relationship between ADHD and parenting stress confirm that parents of children with ADHD have higher stress levels than parents of children with other disorders, or parents of normal functioning children (Loprieno & Gagliano, 2015; Miranda, Tarrage, Fernandez, Colomer, & Pastor, 2015; Theule et al., 2013). Parenting stress specifically associated with ADHD occurs as a result of various factors including, that children with ADHD typically fail to respond to ordinary parental requests and behavioural advice (DuPaul, McGoey, Eckert, & VanBrakle, 2001; Wells et al., 2000). Other factors potentially eliciting stress for parents of children with ADHD are financial strain due to expensive medications and required specialized schooling, as well as managing externalizing symptoms of ADHD, such as impulsivity, hyperactivity and aggression, which often taxes the parent-child relationship (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993; Austin & Carpenter, 2008; Theule et al., 2013). As a result, parents of children with ADHD report greater role dissatisfaction compared to parents of children without ADHD (Baldwin, Brown & Milan, 1995; Podolski & Nigg, 2001). However, parents of children with ADHD also utilise parenting techniques that encompass fewer rewards, are more directive in demanding behaviour and express more disapproval which elicits stress in both parent and child (DuPaul et al., 2001; Wells et al., 2000). Hence the relationship is often bidirectional.

### **Bidirectionality of Parental Stress and Children with ADHD**

While parents of children with ADHD are more stressed than parents of healthy children, researchers often highlight the bidirectionality of the relationship between parent and child (Foley, 2011; Joyner, Silver, & Stavinoha, 2009; Kaiser et al., 2010). Parents who are emotionally depleted and highly stressed are more likely to perceive their children's inattentiveness and hyperactivity as more severe than it actually is, and often make use of punitive and negative parenting techniques as a result (Joyner et al., 2009; Kaiser et al., 2010). Negative parenting styles exacerbate children's ADHD symptoms and create a cyclical relationship whereby child and parent continually influence each other negatively (Kaiser et al., 2010; Podolski & Nigg, 2001; Van der Oord et al., 2006). Hence, there is a need for

interventions to equip parents with skills to better manage child symptomatology and parental stress.

On the other hand, children's ADHD symptoms often put strain on parental relationships and overall family functioning (Edwards, Barkley, Laneri, Fletcher, & Metevia, 2001). Comorbid conditions that frequently accompany ADHD, such as ODD, also contribute to tense familial environments and increased parental stress (Larson, Russ, Kahn, & Halfon, 2011; Podolski & Nigg, 2001). Furthermore, children with ADHD often struggle to fall asleep, or have very disrupted sleeping patterns (Harpin, 2005). Sleep deprivation can lead to grumpiness from the child during the day, which places added pressure on the parent-child relationship (Harpin, 2005). This strain can lead to increased levels of parental stress and added social difficulties for the child. This illustrated bidirectionality of parental stress and ADHD symptomatology highlights the need for both child- and parent-focused interventions.

### **Parent Training**

In light of the above findings, Russell Barkley (1990) created an eight-step behaviour management plan, PT, where parents are encouraged to use cues, consequences, reward systems and other positive parenting techniques to facilitate social learning and strategies to alleviate children's ADHD symptoms. The intervention also attempts to alter variables in the child's environment that will promote socially acceptable behaviour and limit factors that exacerbate symptoms (Barkley, 1990). For example, previous research demonstrates that positive parenting styles help children to develop self-awareness and control over inattentive and hyperactive behaviours (Anatopoulos et al., 1993). Furthermore, the modeling of positive parent behaviour teaches children valuable social skills. PT also equips parents with child management skills, such as communicating clearly and adhering to routine, which provides structure and order to children's home life and aid in symptom management (Barkley, 1990).

Barkley's PT has been shown to be efficacious in studies evaluating participant groups consisting of high income individuals/households (Anatopoulos et al, 1993; Danforth, Harvey, Ulaszek & McKee, 2006; Gardner, et al., 2010; Gerdes et al., 2012; Loren et al., 2013; Pisterman et al. 1992; Weinberg, 1999). The earliest, and most commonly cited studies investigating the efficacy of Barkley's PT, were conducted by Anastopoulos et al. (1993) ( $N=34$ ) and Weinberg (1999) ( $N=34$ ). These researchers found that Barkley's PT is effective in helping parents understand and manage their children's aggressive and hyperactive behaviours, while also adding to their children's social skills development. This in turn increased self-efficacy in parents, causing them to feel more in control of their life. In both

studies, parents reported decreased parental stress. Anastopoulos et al. (1993) found significant decreases in stress for all the main domains of the Parenting Stress Index (PSI) (Child Domain, Parent Domain and Total Stress) as well as reported improvements in the overall severity of ADHD symptoms. Weinberg (1999) also found that parents reported increased knowledge and understanding of ADHD as well better honed skills to manage children's behaviour. Similarly, in a more recent study, evaluating Barkley's PT, conducted Loren et al. (2013), ( $N=241$ ), parents reported a decrease in their stress levels, as well as increased feelings of parental competence, and enhanced parenting skills following a PT, intervention. These reported changes appeared to reduce the overall negative impact of ADHD on family functioning, and led to a perceived reduction in ADHD symptom severity.

Despite PT's demonstrated effectiveness in decreasing parental stress, contrary results have been reported. Wells et al. (2000) found that decreases in parental stress were not unique to PT groups, but were similarly observed in parents of children in a medication management group, a group receiving a combination of the PT and whose children received medication, and in a community support group. Furthermore, when comparing Routine Clinical Care (RCC) and PT on parental stress and child symptomatology, Van Den Hoofdakker et al. (2007) found that a combination of RCC and PT led to a reduction in internalizing and behavioural problems in children. However, they found that RCC paired with PT made no difference to parental stress levels or ADHD symptomatology. Also, while Gerdes et al. (2012) found PT to reduce ADHD symptom severity and increase parent competence levels, only mothers attending PT reported significant decreases in parenting stress for all the main domains of the PSI, while the fathers, attending the PT, did not. Therefore, the effect of PT on reducing behaviours associated with parental stress warrants further research.

### **ADHD Research in SA**

ADHD is the most prevalent child psychiatric disorder in SA and has similar prevalence rates in comparison to Western countries (Bakare, 2012; Meyer, 2005). Despite this, there is a paucity of research aimed at evaluating ADHD treatment within this context. Research examining ADHD in SA focuses on the expression of ADHD symptoms, the child's functioning (Meyer, 2005; Meyer & Sagvolden, 2006; Snyman & Truter, 2012), treatment options (Regnart, McCartney, & Truter, 2014), ADHD risk factors (Van Dyk et al., 2014) and on evaluating diagnostic tools within this context (Meyer, Eilertsen, Sundet, Tshifularo, & Sagvolden, 2004). While PT programs have been implemented in SA, they have been aimed at parents of aggressive children and have been used to help educate parents

about child maltreatment (Mlotshwa, 2013). To date, there has been no evaluation of PT programs, and their effect on parental stress, for parents of children with ADHD in this context.

Research in different SES environments introduces concomitant psychosocial issues for those contexts. For example, given the high levels of crime in SA and the fact that 73.8% of our population have experienced trauma in their lifetime, South Africans are arguably more stressed than the norm (Atwoli et al., 2013). Furthermore, 23 million South African's live below the poverty line and traditional treatment of ADHD is expensive (Austin & Carpenter, 2008; Statistics SA, 2014). Given the complex set of stressors that affect the majority of SA and the contribution of ADHD to parenting stress, and issues around affordability in this context, the evaluation of cost-effective, targeted assessment and implementation protocols to reduce parental stress is imperative.

### **Research Aims**

Our aim was to evaluate the effectiveness of Barkley's PT intervention on parental stress for parents of children with ADHD. In doing so we compared parental stress among parents of children with ADHD who attended a PT intervention to those attending unstructured support groups.

Given this aim, our research hypothesis was that parents attending the PT intervention would report decreased parental stress as compared to the control group who would report less or no positive gains from attendance of the support group.

### **Methods**

#### **Design and Setting**

Our study formed part of a larger study, which is focused on investigating the functional impairment of children with ADHD and the utility of PT interventions in managing such impairment in South Africa.

We conducted a quasi-experimental study, using a pretest-posttest design, with two independent groups. Participants formed part of either an intervention group (who received Barkley's PT), or part of an unstructured support group, who were waitlisted controls. The independent variable was the type of group that parents attended (intervention vs. support group) and the dependent variable was parental stress levels. Participants opted to attend groups that were organized within, or close to their residential areas, thus we could not randomly assign participants to either the PT intervention or support groups.

The research setting was the University of Cape Town, schools and community centres in and around Cape Town.

## Participants

Our sample consisted of  $N = 30$  parents ranging in age from 30 to 60 years (2 males and 28 females). All participants were able to converse in either English or Afrikaans. Participants in both the groups were matched on demographic variables, including age, sex, language, socioeconomic status (SES) and race.

**Inclusion criteria.** We included parents/guardians of children aged 5 to 17 years, with a diagnosis of ADHD fulfilling the DSM-5 criteria or diagnosed by the principal investigator (PI) (clinical psychologist) of the larger study, using the Child Behaviour Checklist (CBCL).

**Exclusion criteria.** We excluded parents of children who have ADHD as well as comorbid disorders that are psychotic in nature.

**Recruitment.** We recruited participants in two ways. First, participants who participated in a previous component of the larger study were given an opportunity to participate in the PT intervention. We contacted a total of 40 participants from the larger study of whom nine chose to participate. Second, we used convenience sampling for additional participants based on their geographic location and available time to participate in either the control or intervention group. In recruiting participants through this latter means, we put up posters (see Appendix B) in private psychologists' and doctors' rooms. We also contacted pastors, school principals and counsellors about recruiting parents of children attending their establishments or organizations. Additionally, we advertised the study in a local magazine, *Child Magazine*, which publishes material on practical parenting tips and resources regarding child education and health.

Although we contacted 70 participants overall, only 29 initially agreed to participate in the PT intervention group and 17 in the unstructured support group. However, the final sample sizes for the two groups were  $n = 21$  and  $n = 9$ , respectively. *Figure 1* outlines the reasons for attrition among participants.

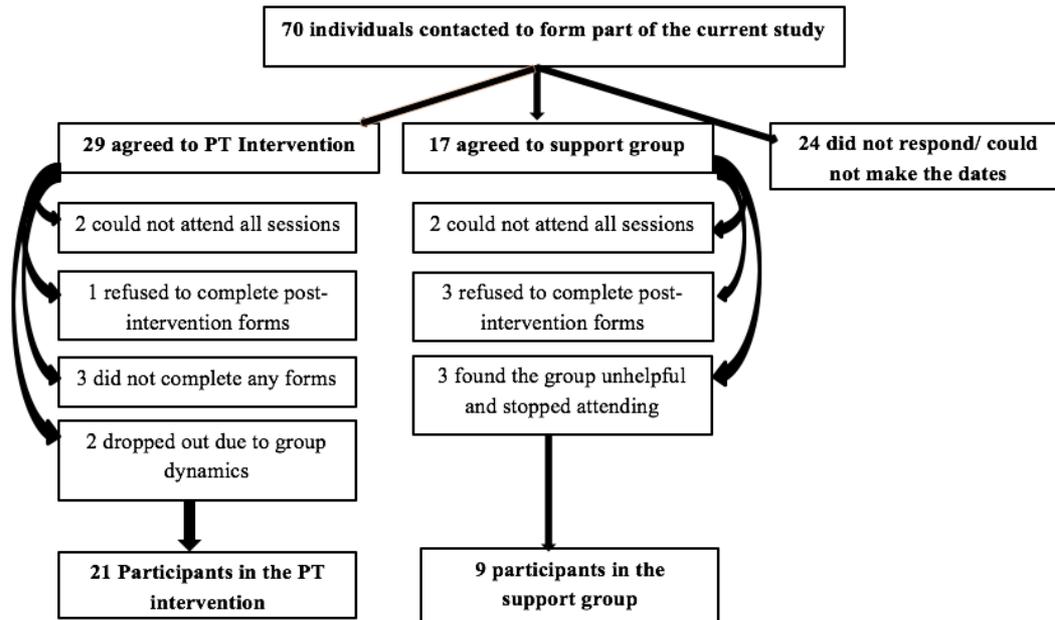


Figure 1. Flow chart outlining participant recruitment process.

## Measures

**Parent Measures. Demographic questionnaire.** We used a demographic questionnaire to capture data related to specific domains of parent's lives. These domains included participants' race, SES, religion and education (see Appendix C).

**Parenting Stress Index.** We used the *Parenting Stress Index* (PSI, Abidin, 2012) to assess stress experienced by the parents before and after the PT intervention and support groups. The PSI is the most common stress measure used in literature exploring the effect of PT interventions on parental stress (see e.g. Anastopolous et al., 1993; Danforth et al., 2006; Gerdes et al., 2012; Joyner et al., 2009; Pisterman et al., 1992; Wells et al., 2000). In SA, the PSI has been used in an unpublished study of parental stress and ADHD conducted at the University of Cape Town (Cheeseman, 2011).

The PSI is a 120-item instrument that uses a five-point Likert scale that ranges from “strongly agree” to “strongly disagree”. It evaluates stress in relation to three factors: child characteristics, parent characteristics and situational life events (Abidin, 2012; Doll, 1989; Gerdes et al., 2012; Theule, Wiener, Rogers, & Marton, 2011). The measure identifies dysfunctional parenting and predicts 1) potential for parental behaviour problems; and 2) child adjustment difficulties within the family system (Abidin, 1990).

The instrument consists of six subscales relating to the child: Adaptability, Demandingness, Mood, Distractibility/Hyperactivity, Acceptability, and Reinforces Parent. A Child Domain score is calculated by adding the scores of these six sub-scales. The instrument

also includes seven subscales relating to the parent: Depression, Competence, Parental Attachment, Spouse, Isolation, Health and Role Restriction. Similarly, a Parent Domain score is derived from adding the scores obtained for these seven sub-scales. A Life Stress score can also be calculated to measure familial stressors occurring over the last year. Totalling the Child Domain, Parent Domain and Life Stress scores yields a Total Stress score.

The psychometric properties reported in the test manual indicate alpha coefficients for internal consistency reliability as ranging between .70 and .83 for the subscales of the Child Domain, and between .70 and .84 for the subscales of the Parent Domain (Abidin, 1995). Internal consistency reliability coefficients for the Child Domain and the Parent Domain, and for the Total Stress scale, are all reportedly above .90 (Abidin, 1997). The PSI has been empirically validated as predicting parent and child behaviour, as well as the child's emotional adjustment, and thus yields strong validity (Doll, 1989).

**Child Focused Measure. *Child Behaviour Checklist.*** We used the CBCL (Achenbach, 1991) to assess parent/guardian reports of their children's capabilities and behavioural/emotional problems pre- and post-intervention. We administered this measure so that decreases in stress related to the Child or Parent domain of the PSI, might be further explored through concomitant changes in the child's symptomatology on the CBCL. The CBCL measures child competence in various functional domains, using different scales or profiles for example, internalizing and externalizing syndromes. Internalizing scales determine the presence of depressive/withdrawn, anxiety and other somatic behaviours (Achenbach, 1991). Externalizing scales include information on aggressive, unkind, or delinquent behaviours. The CBCL consists of 140 items, 20 of which, parents are required to provide information pertaining to their child's activities, social relations, and school performance. Of the 120 remaining items, 118 describe specific behavioural and emotional problems, and these are rated by parents according to how true each item is currently, using the scale: *0 = not true; 1 = somewhat or sometimes true; 2 = very true or often true.* The remaining two items are open-ended to report additional problems.

The CBCL has been widely used in studies exploring ADHD (e.g. see, e.g., Connor et al., 2003; Loe et al., 2008; McConaughy et al., 2011) and more specifically it has been used in an unpublished, South African masters study looking at functional impairment in children with ADHD (Fischer, 2010). The CBCL is one of the strongest predictors of child internalizing and externalizing behaviour deficits which thus make it a relevant measure for the present study (Spratt, Saylor, & Marcias, 2007).

**Intervention.** We used Barkley's original PT intervention as described by Loren et al. (2013). The PT intervention utilized the fundamentals of cognitive-behaviour therapy within a support group structure.

Barkley's PT includes eight intervention sessions in total. Session 1 was largely informational as parents were given information regarding trends and literature in ADHD research. In session 2, parents were taught basic behaviour modification techniques, followed by effective communication strategies in session 3. In session 4 parents were taught how to reward children's positive behaviour using positive and negative reinforcement, and how to rely less on punishment. In session 5 strategies to reduce problematic behaviour were explored, followed by techniques for controlling children's behaviour in public in session 6. Session 7 explored strategies for managing school-related difficulties (such as homework completion), and session 8 focused on implementing the positive parenting techniques and behaviour modification, taught through the intervention, on a long term basis.

**Support group.** The support group (waitlisted control group) did not receive Barkley's PT but rather participated in an unstructured group process.

### **Procedure**

The participants in the intervention group participated in an eight-week PT programme, while those in the support group attended three unstructured support group meetings over a period of eight weeks. We ran three intervention groups in various suburbs in and around Cape Town on a consecutive basis. The different intervention groups had 5, 7, and 9 participants. Simultaneously, we ran two unstructured support groups split between two geographical locations. There were 4 and 5 participants in those support groups.

**Intervention groups.** Participants in the intervention group met for one hour, once a week, for eight weeks. At the start of session 1 written informed consent was obtained from participants. Additionally, we gave the PSI, CBCL and demographic questionnaires to participants as homework, which was to be returned in session 2. We explained the purpose of the different questionnaires and provided an opportunity for participants to raise queries or concerns about the questionnaires. At the end of the final session the questionnaires administered in session 1 were re-administered for parents to complete as homework. After session 8 each participant was given the option of dropping the forms off at the intervention venue, or we collected the forms from their home the following week. A registered clinical psychologist, who is also the PI of the larger study, facilitated with intervention while we observed the process (by attending each session) and played a supportive role.

**Support groups.** Participants in the support group met for one hour, three times in total, over a period of eight weeks. Support groups met in week one, week four and week eight over an eight-week period. We arranged and co-facilitated group meetings alongside the PI of the larger study. Similar to the intervention groups, at the start of the first meeting, we obtained written informed consent from participants. Additionally, we gave the PSI, CBCL and demographic questionnaire to participants as homework, which was to be returned at meeting 2. We re-administered the questionnaires at the final meeting. Again, participants in the control group were given the option of handing in the forms at the venue or to have them collected from their homes upon completion.

### **Statistical Analysis**

We used the statistical software package SPSS version 22 (IBM Corporation, 2013) to analyse our data. For all inferential tests, the threshold for statistical significance was set at an alpha level of .05.

**Between- and within-group comparisons.** We conducted pre- and post-intervention between-group comparisons for the PT intervention and the control group for both the PSI and CBCL measures. We used one-way ANOVAs to calculate these comparisons where assumptions of normality and homogeneity were upheld, and the Mann-Whitney *U* test when assumptions were violated. We also conducted within-group comparisons for each study group. We used paired samples *t*-tests to calculate these comparisons where assumptions of normality and homogeneity were upheld, and the Wilcoxon signed rank test when assumptions were violated. In addition, we used Chi-square or Fisher's exact test to determine the differences between categorical variables. We used Fisher's exact test in instances where the sample was small and where the cells of the variables in the analyses had expected counts of less than 5.

**Missing data.** We handled missing data from the PSI and CBCL according to the instructions in their respective manuals (Abidin, 1995; Achenbach & Rescorla, 2001).

**Effect size.** We used *r*-statistic as the estimate of effect size. For the *r* statistic, values of .10, .30, and .50, represent small, medium and large effect sizes, respectively (Field, 2009). The use of this statistic is also allowed for the calculation of effect sizes for nonparametric statistical analyses.

**Reliable Change Index.** To determine whether any of the changes in individual participants' scores from pre- to post-testing sessions were clinically meaningful, we used the Reliable Change Index (RCI; Jacobson & Truax, 1991). We calculated the individual RCI scores on the major domains of the PSI (Child Domain, Parent Domain and Total Stress)

using a reliable change generator, developed by Devilly (2004). We compared these scores among the participants within the PT intervention group and support group. This clinical tool is based on the original Jacobson and Truax (1991) RCI model and generates the degree of change at three different confidence intervals: 68.26%, 95%, and 99%. An RCI of above 1.96 (corresponding to a 95% confidence interval) is considered a significant difference between pre- and post-test scores.

**Anecdotal qualitative information.** We collected unstructured, anecdotal data of participants' feedback throughout the intervention period.

### **Ethical Considerations**

Ethical approval was granted by the Research Ethics Committee of the Department of Psychology at the University of Cape Town, for this study and the larger study.

We obtained written, informed consent from all participants (Appendix D and E). There were no identified risks associated with participating in the study. The benefit of participating in the intervention group includes learning positive parenting techniques and techniques for managing the child's behaviour. Furthermore, the sessions (both PT and social support) might increase the parent's belief that they can cope as a result of the support that they might have received.

Participants in the waitlisted control group were given the opportunity of participating in future PT interventions after data collection was complete.

## **Results**

### **Sample Demographic Characteristics**

Table 1 presents the sample demographics and CBCL (parent reported child symptoms) scores for all our participants. There were no significant differences between the groups on any of these variables, with small effect sizes. The majority of participants were white, middle class and able to converse fluently in English. There were also no significant between-group differences in socio-economic status. Hence, the two groups were statistically equivalent prior to the intervention. See Table 2 in Appendix F for SES-related variables for our participants.

Table 1  
*Sample Demographic Characteristics and CBCL (N=30): PT Intervention vs. Support Group*

Variable	Group		$F/x^2/U$	$p$	$r$
	Intervention ( $n=21$ )	Support ( $n=9$ )			
Age (years)			.047	.831	0.002
Range	30-60	33-51			
Mean (SD)	42.8 (7.34)	42.55 (5.36)			
Sex					
Females: Males	18:3	9:0		1 <sup>b</sup>	
Race					
Coloured: White	3:18	3:6		.352 <sup>b</sup>	
Religion					
Christian: none: other	20:0:1	7:1:1		.513 <sup>b</sup>	
CBCL					
Total competence	39.71 (7.59)	41.22 (9.28)	61.00 <sup>a</sup>	.417	-.15
Externalising Problems	58.89 (12.22)	55.55 (8.69)	55.5 <sup>a</sup>	.197	-.24
Internalising Problems	63.89 (8.48)	61.67 (8.93)	60.00 <sup>a</sup>	.45	-.14
Total problems	65.89 (7.29)	61.78 (9.13)	54.00 <sup>a</sup>	.17	-.25

*Note.* Means are presented with standard deviations in parentheses. CBCL: Child-Behaviour Checklist. <sup>a</sup>Mann-Whitney  $U$ ; <sup>b</sup>Chi square; For each ANOVA, the degrees of freedom were (1, 27). \* $p < .05$ . The  $r$  value presented is an estimate of effect size

### Parental Stress

**Between-groups comparisons: pre- versus post-intervention PSI scores.** Table 3 presents the descriptive statistics of between-group comparisons on PSI scores pre- and post-intervention. There were no significant differences, pre-intervention, between the groups,  $F(1,29)=.002- 3.077$ ,  $p=.09- .966$ ,  $r= <.01-.1$ . The effect sizes for these were small. There were also no significant differences between the groups post-intervention,  $F(1, 29)= .001- 3.284$ ,  $p= .81- 1.00$ ,  $r= <.01-.1$ . Once again, effect sizes were small suggesting that the results could not reach significance even if a larger sample size were employed.

Table 3  
*Pre- and Post-Intervention Descriptive Statistics for PSI Subtests (N = 30)*

PSI outcome variable	Groups			
	Intervention		Support Group	
	Pre-test <i>M (SD)</i>	Post-test <i>M (SD)</i>	Pre-test <i>M (SD)</i>	Post-test <i>M (SD)</i>
Child Domain	136.43(27.78)	131.57(24.36)	132.56 (33.08)	128.67 (35.89)
Distractibility/ Hyperactivity	30.86 (6.41)	29.05 (6.55)	31.33 (6.63)	30.44 (7.93)
Adaptability	33.67 (7.25)	32.43 (7.37)	31.89 (8.37)	30.44 (9.02)
Reinforces parents	13.81 (4.87)	13.62 (4.96)	13.11 (5.35)	12.67 (5.70)
Demandingness	25.90 (6.64)	24.67 (6.32)	24.56 (6.89)	24.67 (7.28)
Mood	13.86 (4.19)	14.1 (3.77)	14.78 (5.63)	13.22 (4.76)
Acceptability	18.90 (5.09)	17.71 (4.81)	19.11 (7.08)	17.22 (6.20)
Parent Domain	141.86(34.46)	138.91(29.9)	144.22(36.87)	136.11 (39.29)
Competence	33.14 (7.19)	30.76 (7.60)	31.00 (11.17)	30.67 (11.34)
Isolation	16.43 (4.96)	16.43 (3.98)	15.00 (4.69)	13.57 (3.97)
Attachment	14.14 (3.93)	14.52 (3.63)	14.22 (4.21)	14.00 (4.95)
Health	13.67 (3.79)	12.95 (3.07)	14.11 (3.82)	13.56 (3.43)
Role Restriction	22. 57 (7.90)	21.00 (6.73)	22.44 (6.21)	20.89 (5.71)
Depression	23.86 (8)	23.38 (6.41)	24.89 (7.54)	23.44 (7.65)
Spouse	18.05 (6.7)	19.86 (5.81)	22.56 (5.79)	20.00 (5.05)
Total Stress	273.48(58.95)	270.33(49.24)	276.77(66.24)	264.78 (73.87)
Life Stress	9.29 (7.78)	8.90 (7.32)	6.56 (5.46)	7.22 (10.44)

*Note.* Means are presented with standard deviations in parentheses. PSI: Parenting Stress Index–3<sup>rd</sup> edition.

**Within-group PSI comparisons.** Table 4 presents the results of the within-group comparisons for the PSI results from pre- to post-intervention for both groups. Results for the PT intervention group show that there were no significant changes in parental stress in the four main scales of the PSI (Child Domain, Parent Domain, Total Stress and Life Stress) pre- and post-intervention. There were, however, statistically significant within-group differences within the Child Domain and the Parent Domain subscales. In the Child Domain, stress related to Child Distractibility significantly decreased from pre- to post-intervention,  $t(20)=2.20$ ,  $p=.039$ ,  $r=.44$ . In the Parent Domain, stress related to Parent Competence significantly decreased from pre- to post-intervention  $t(20)=3.19$ ,  $p=.01$ ,  $r=.58$ . The effect sizes for these domains are moderate to large.

For the support group (see Table 4), there were no significant decreases in parental stress in the four main scales of the PSI (Child Domain, Parent Domain, Total Stress and Life Stress) post-intervention. There was however, a decrease in stress related to the Spouse, in the Parent Domain, post-intervention group, which was almost statistically significant  $t(8)=2.28, p=.05, r=.45$ . This effect size is moderate suggesting that with a larger sample size the results could reach statistical significance.

Table 4  
*Within-Group Changes for Parental Stress for PT Intervention and Support Group (N=30)*

PSI Scale/Subscale		Groups					
		PT Intervention Mean (SD)	<i>t</i>	<i>p</i>	Support Group Mean (SD)	<i>t</i>	<i>p</i>
Child Domain	Pre-intervention	136.43 (27.78)	1.66	.11	132.56 (33.08)	1.37	.21
	Post-intervention	131.57 (24.36)			128.67 (35.89)		
Distractibility /Hyperactivity	Pre-intervention	30.86 (6.41)	2.20	.04*	31.33 (6.63)	1.15	.28
	Post-intervention	20.05 (6.55)			30.44 (7.63)		
Adaptability	Pre-intervention	33.67 (7.25)	1.29	.21	31.89 (8.37)	.75	.47
	Post-intervention	32.43 (7.37)			30.44 (9.01)		
Reinforces Parents	Pre-intervention	13.81 (4.87)	.28	.78	13.11 (5.35)	.56	.59
	Post-intervention	13.62 (4.96)			12.67 (5.70)		
Demandingness	Pre-intervention	25.90 (6.64)	1.73	.1	24.56 (6.89)	-.2	.85
	Post-intervention	24.67 (6.32)			24.67 (7.28)		
Mood	Pre-intervention	13.86 (4.19)	-.34	.71	14.78 (5.63)	1.18	.27
	Post-intervention	14.09 (3.77)			13.22 (4.76)		
Acceptability	Pre-intervention	18.90 (5.09)	1.74	.1	19.11 (7.08)	1.06	.32
	Post-intervention	17.71 (4.81)			17.22 (6.20)		
Parent Domain	Pre-intervention	142.52 (35.12)	1.11	.28	144.44 (37)	1.31	.23
	Post-intervention	138.90 (29.90)			136.11 (39.29)		
Competence	Pre-intervention	33.33 (7.51)	3.19	.01*	31.22 (11.08)	.47	.65
	Post-intervention	30.76 (7.60)			30.67 (11.33)		
Isolation	Pre-intervention	16.43 (5)	.00	1.00	15.00 (4.69)	1.12	.3
	Post-intervention	16.43 (3.98)			13.56 (3.97)		
Attachment	Pre-intervention	14.14 (3.93)	-.64	.53	14.22 (4.21)	.22	.83
	Post-intervention	14.52 (3.63)			14.00 (4.95)		
Health	Pre-intervention	13.95 (3.90)	1.94	.06	14.11 (3.82)	.53	.61
	Post-intervention	12.95 (3.07)			13.56 (3.43)		
Role Restriction	Pre-intervention	22.57 (7.90)	1.77	.09	22.44 (6.21)	1.46	.18
	Post-intervention	21 (6.73)			20.89 (5.71)		
Depression	Pre-intervention	23.05 (8)	.52	.61	24.89 (7.54)	1.64	.14
	Post-intervention	23.38 (6.41)			23.44 (7.65)		
Spouse	Pre-intervention	18.24 (6.96)	1.91	.07	22.56 (5.79)	2.28	.05
	Post-intervention	19.86 (5.81)			20.00 (5.05)		
Total Stress	Pre-intervention	270.19 (59.60)	.62	.54	277 (66.23)	1.51	.17
	Post-intervention	270.33 (49.24)			264.78 (73.87)		
Life Stress	Pre-intervention	9.29 (7.78)	.26	.8	6.56 (5.46)	-.32	.76
	Post-intervention	8.90 (7.32)			7.22 (10.44)		

*Note.* Means are presented with standard deviations in parentheses. \* $p < .05$

**Parents displaying clinically significant stress levels.**

The frequency of clinical stress scores for participants in the intervention and support groups pre- and post- intervention are presented in Table 5. Percentile scores above 85 on any of the measure's major scales or subscales are considered to lie within the clinical range (Abidin, 1995).

Results show high stress levels pre- and post-intervention, across numerous domains, for participants in both the PT intervention and support groups. For the PT intervention group, the majority of the stress experienced by participants appeared to stem from the Child domain (stress associated with the child's disorder; Abidin, 1995) with 90.48% of participants experiencing stress in the clinical range for this domain. Furthermore, although the frequency of clinical scores in the Child Domain for the PT intervention group decreased post-intervention, the percentage was still high with 76.19% of participants reporting stress in the clinical range for this domain at this time.

The proportion of participants in the PT intervention group scoring within the clinical range for the Parent Domain (related to the parent's functioning as well as feelings of inadequacy regarding parenting; Abidin, 1995) was 38.09%. Scores falling in the clinical range for the Parent Domain appeared to increase slightly post-intervention, with 42.86% of participants reporting clinical stress scores at this time. Despite this, the percentage of participants reporting Total Stress in the clinical range appeared to decrease post-intervention from 71.42% to 57.14%. Similarly, Life Stress scores falling within the clinical range decreased for participants in the intervention group post-intervention from 19.05% to 14.29%.

In the support group, parents reported clinically high stress across all major domains of the PSI both pre- and post-intervention. Once again a large amount of the stress experienced by participants in this group appeared to stem from the Child Domain with 66.67% of participants experiencing stress in the clinical range. There was no change regarding these results post-intervention. The number of participants in the support group scoring within the clinical range for the Parent Domain was also high (66.67%). However, the proportion of participants scoring high in this domain decreased post-intervention. Additionally, the percentage of support group participants reporting Total Stress in the clinical range appeared to decrease post-intervention from 66.67% to 55.56%. Life Stress scores of participants in the support group also decreased post-support group.

Table 5

*Comparison of the Frequency of Clinical Range Scores of Parental Stress for the PT Intervention and Control groups Pre- and Post-Intervention (N = 30)*

PSI Scale/Subscale	Frequency of critical scores (%)				Frequency Change (%)	
	Pre-intervention		Post-intervention		PT Intervention	Support
	PT Intervention (n=21)	Support (n=9)	PT Intervention (n=21)	Support (n=9)		
Child Domain	19 (90.48)	6 (66.67)	16 (76.19)	6 (66.67)	3 (14.29)	0
Distractibility /Hyperactivity	12 (57.14)	6 (66.67)	10 (47.62)	5 (55.56)	2 (9.52)	1 (11.11)
Adaptability	15 (71.43)	5 (55.56)	15 (71.43)	4 (44.44)	0	1 (11.11)
Reinforces Parents	13 (61.9)	5 (55.56)	12 (57.14)	6 (66.67)	1 (4.76)	1 (11.11) <sup>a</sup>
Demandingness	17 (80.95)	7 (77.78)	17 (80.95)	5 (55.56)	0	2 (22.22)
Mood	16 (76.19)	6 (66.67)	15 (71.43)	6 (66.67)	1 (4.76)	0
Acceptability	16 (76.19)	6 (66.67)	15 (71.43)	5 (55.56)	1 (4.76)	1 (11.11)
Parent Domain	8 (38.09)	6 (66.67)	9 (42.86)	2 (22.22)	1 (4.77) <sup>a</sup>	4 (44.44)
Competence	8 (38.09)	4 (44.44)	8 (38.09)	2 (22.22)	0	2 (22.22)
Isolation	10 (47.62)	4 (44.44)	8 (38.09)	2 (22.22)	2 (9.53)	2 (22.22)
Attachment	9 (42.86)	5 (55.56)	9 (42.86)	2 (22.22)	0	3 (33.33)
Health	6 (28.57)	4 (44.44)	4 (19.05)	3 (33.33)	2 (9.52)	1 (11.11)
Role Restriction	12 (57.14)	3 (33.33)	8 (38.09)	2 (22.22)	4 (19.05)	1 (11.11)
Depression	8 (38.1)	4 (44.44)	6 (28.57)	2 (22.22)	2 (9.53)	2 (22.22)
Spouse	7 (33.33)	7 (77.78)	9 (42.86)	3 (33.33)	2 (9.53) <sup>a</sup>	4 (44.44)
Total Stress	15 (71.42)	6 (66.67)	12 (57.14)	5 (55.56)	3 (14.28)	1 (11.11)
Life Stress	4 (19.05)	2 (22.23)	3 (14.29)	1 (11.11)	1 (4.76)	1 (11.11)

*Note.* Frequencies are presented with percentages in parentheses. Percentages in the clinical range for each PSI scale were determined using normative guidelines provided in the scale's manual, all scores  $\geq 85^{\text{th}}$  percentile (Abidin, 1995). PSI: Parenting Stress Index. <sup>a</sup>Increase in participants scoring in the clinical range

## CBCL

As a result of finding a significant within-group difference in the stress related to Child Distractibility and Parent Competence (given the bidirectional relationship between parenting stress and the children's behavior), for the PT intervention group, we decided to conduct both between- and within-group analyses on the CBCL scores in order to assess whether changes in the children's behaviour was responsible, even in part, for the changes in levels of stress.

**Pre- and post-intervention between-groups CBCL analysis.** Table 6 (in Appendix G) presents the pre- and post-intervention between-group differences for the CBCL scores of the PT intervention and support group. Result show that there were no significant pre-intervention differences between the PT intervention and support group on all CBCL syndrome groupings (Internalizing, Externalizing and Total Problems) and subscales, with small effect sizes:  $U= 76.5-51.5$ ,  $p= .185-1.00$ ,  $z=.00- -1.35$ ,  $r=0-.26$ . From the post-

intervention between-groups analysis, significant differences were found for Total Problems,  $U=40.5$ ,  $p=.04$ ,  $z=-2.09$ ,  $r=-.28$ , Affective Problems,  $U=42.00$ ,  $p=.44$ ,  $z=-2.01$ ,  $r=-.39$  and Somatic Problems,  $U=38.00$ ,  $p=.02$ ,  $z=-2.27$ ,  $r=-.44$ , with moderate effect sizes. The reported means post-intervention for the PT intervention group are significantly lower than those reported by the support group, compared to pre-intervention where there were no significant differences. This indicates that parents in the PT intervention group reported improvements in their child's Total Problems, Affective Problems and Somatic Problems in comparison to the support group, who did not, post-intervention.

**Within-group CBCL comparisons.** Table 7 (see Appendix H) presents the within-group analysis of CBCL scores for the PT intervention and support group. Based on this table, there were unique changes for the PT intervention group on Anxious/Depressed problems,  $z=-2.564$ ,  $p=.008$ ,  $r=-.62$ , Aggressive Behaviour,  $z=-2.016$ ,  $p=.045$ ,  $r=-.49$  and Anxiety Problems,  $z=-3.186$ ,  $p<.001$ ,  $r=-.77$  from pre- to post-intervention, with large effect sizes. The means of these subscales all significantly decreased meaning that parents reported fewer problems related to the above CBCL subscales post-intervention for the PT intervention group. In both the PT intervention and support group, Post-Traumatic Stress Problems significantly decreased (PT intervention,  $z=-2.482$ ,  $p=.01$ ,  $r=-.59$  and support group,  $z=-2.2$ ,  $p=.03$ ,  $r=-.73$ ). These effect sizes are large. There were no other significant changes in the support group.

## RCI

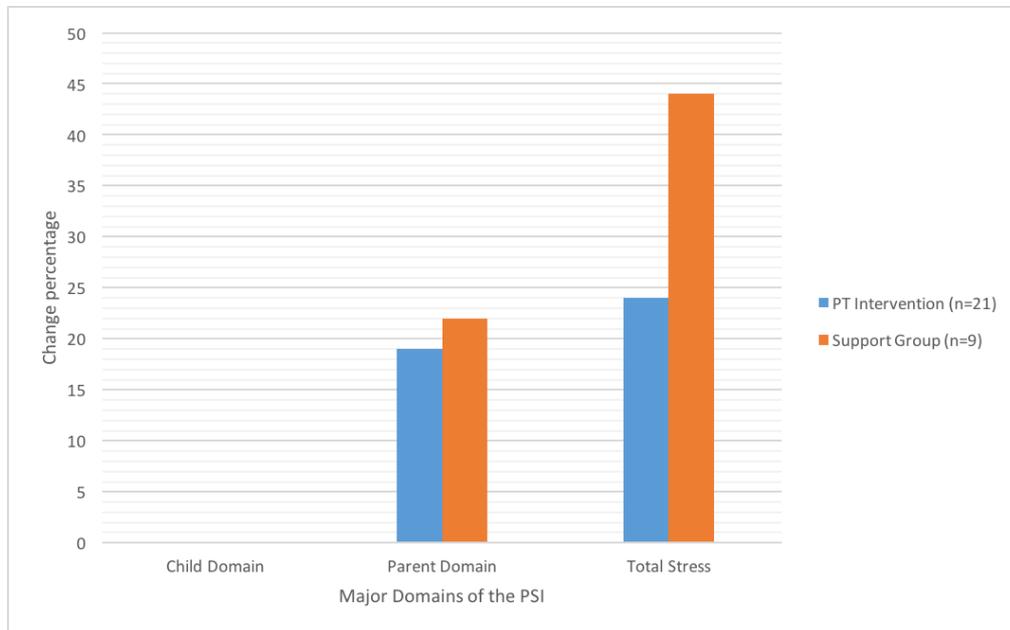
Non-significant changes at the group level can mask individual change among participants. We therefore used the Reliable Change Index (Jacobson & Truax, 1991) to assess individual change on the three main scales of the PSI (Child Domain, Parent Domain and Total Stress). All reported change is at a confidence level of 95-99%. In the Child Domain, no participants from the PT intervention or support group showed significant changes in stress levels from pre- to post-intervention.

In the Parent Domain, 19% (4/21) of parents in the PT intervention group reported significant decreases in stress. However, 4% (1/21) of parents' stress significantly increased and 76% (16/21) of parents' stress did not change significantly. In the support group, 22% (2/9) of parents' stress significantly decreased and 11%(1/9) reported significant increases in stress.

In the Total Stress Domain, for the PT intervention group, 24% (5/21) of parents' stress significantly decreased. 14% (3/21) of parents' stress significantly increased and 57%

(12/21) of parents' stress levels did not change. In the support group, 44% (4/9) reported decreases in Total Stress scores and 11% (1/9) increased in stress, pre- to post-intervention.

Figure 2 is the graphical representation of the proportion of individual change in both the PT intervention and support group.



*Figure 2.* Proportion of significant decreases in stress in the major domains of the PSI. The data is expressed as percentages due to differing sample sizes in the PT intervention and support group.

### **Anecdotal Qualitative Results**

Statistical evidence, as reported above, is important in evaluating the efficacy of the PT intervention, and allows for generalizing of findings across populations. However, the practical implications of the intervention, as reported anecdotally by the participants, are also valuable in providing a more holistic report on the perceived value of the intervention.

**PT intervention.** Participants in the PT intervention group reported that the support they experienced through the group was hugely valuable. They expressed feelings of comfort in knowing that they were not alone in their struggles but that other parents mirrored similar difficulties. They expressed appreciation that the group was a non-judgmental space to try, practice and fail at implementing suggested techniques. Furthermore, they valued information presented about ADHD and treatment options. Specifically, parents appreciated the information presented on medication as it allowed them to address and debunk existing fears and myths.

Participants in the intervention group all appeared to make the most of this opportunity as they were seldom prompted to share their experiences, but rather offered this

information voluntarily. The majority of the groups appeared to get along well with each other and expressed desires to continue meeting post-intervention.

However, some participants expressed concerns about the composition of one of the groups. One parent frequently dominated this group and thus some participants felt they were unable to receive the skills and techniques they desired from the clinical psychologist.

Keeping the above in mind, the majority of parents still felt that the group was helpful in connecting them to others in similar situations, reminding them to be more purposeful in praising their child. Furthermore, participants suggested that for future interventions, receiving information on the differing roles of various personnel, such as Occupational therapists, Physiotherapists and Psychiatrists, would be valuable.

**Social support group.** Most participants actively engaged in conversation and readily provided advice to one another. However, the group composition affected how comfortable the parents felt about sharing. In one group where a specific parent dominated the conversation, we sensed other parents began to feel uncomfortable and no longer wanted to share. However, the dominating parent did not return to the group after the first meeting and thereafter participants began to be share vulnerably and openly. One mother mentioned how valuable it had been to hear other people's stories and to realize that she was not alone in her struggles. For the most part, the support groups became a safe space for parents to be open about their frustrations with their child, spouses and other life stressors.

However, there were a handful of participants who reported feelings of frustration at not being given concrete advice and guidance from a professional (which participants in the intervention group received). Thus, they reported not feeling better equipped after the three meetings.

## Discussion

Extensive literature indicates that parents of children with ADHD are more stressed than parents of healthy children (Loprieno & Gagliano, 2015; Miranda et al., 2015; Theule et al., 2013). There is a bidirectional relationship between parenting stress and ADHD symptomatology that results in negative repercussions on parenting techniques, ADHD symptom severity, and the parent-child relationship. Thus, the management of parental stress is important for both parent and child. A useful way for parents to develop positive parenting skills and manage their levels of parental stress is through Barkley's PT, an example of a cost-effective and efficacious ADHD intervention. Previous studies, in high-income countries, largely present positive evidence of the relationship between PT and reduction in parental stress. However, those reviews include a range of methodological flaws such as

heterogeneity of participants, small sample sizes, and lack of control groups (Antastopoulos et al., 1993; Gerdes et al 2012; Pisterman et al., 1992; Weinberg, 1999).

This study evaluated the effect of Barkley's PT on parental stress, amongst South African parents who have children with ADHD. Given the additional environmental stressors such as crime, violence and poverty that reportedly result in higher base stress levels for South Africans compared to the Western population, it is important to evaluate a cost-effective alternative, such as Barkley's PT, to treating ADHD and reducing parental stress in this context. Furthermore, to date, no study of this nature has been conducted or evaluated in this context. We hypothesized that parents attending the PT intervention would report a greater decrease in parental stress compared to those in the control group who attended an unstructured support group. Based on our results, the hypothesis was rejected. We discuss these results in terms of the different analyses employed: within- and between- group comparisons for the PSI, descriptive findings of PSI ratings in the clinical range, RCI analyses and CBCL results.

#### **Within- and between-group results: PSI**

From our within-groups analyses of the PSI scores there were no significant changes in any of the major PSI domains (Child Domain, Parent Domain, Total Stress and Life Stress) for both the PT intervention and support group. However, for the PT intervention group, reported stress related to Parent Competence and Child Distractibility (subscales of the Parent and Child Domain respectively) significantly decreased when measured after the PT intervention, with moderate and large effect sizes, while participants in the support reported a non-significant decrease in stress in these domains. Parents scoring high in the Parent Competence subscale often lack knowledge about their child, are unable to manage their child's symptoms and do not find their parenting role satisfactory (Abidin, 1995). The reported significant decrease in Parent Competence post-intervention was unique to the PT intervention group. This finding is consistent with Pisterman et al. (1992) who conducted a randomized control trial evaluating parental stress and parent competence of parents attending a PT intervention and those in a waitlisted control group. Pisterman et al. (1992) also found that stress related to parents' experience of their own competence significantly declined from pre- to post-intervention. Additionally, a number of studies have investigated the effect of PT on parents' competence levels and have found PT to increase parent confidence in managing their child's symptoms (Gerdes et al., 2012; Loren et al., 2013; Pisterman et al., 1992). While our study did not directly evaluate PT's effect on parent competence, the results from the above studies suggests the efficacy of PT in equipping

parents to feel more confident in their parenting. Similarly, anecdotal evidence from the parents in the current study, who received PT, indicated that their feelings of parental inadequacy were normalized from hearing accounts of struggles from other parents. This boosted their feelings of parental competence. Additionally, parents reported feeling more confident about managing their child's ADHD symptoms after being informed of its characteristics and chronic nature.

Stress related to Child Distractibility decreased for both the PT intervention and support group however the decrease reported by the support group was not significant. Stress related to Child Distractibility is elicited by the child's symptoms such as restlessness, short attention span, failure to complete tasks and not listening to their parents (Abidin, 1995). A possible explanation for this decrease may result from the decrease in stress related to parent competence, as a result of PT. It is reasonable to propose that an increase in understanding and acceptance of a child's ADHD diagnosis, paired with the increased ability to cope with their child's difficult home behaviour, as taught in PT, may result in their child's symptoms of distractibility being less likely to induce stress. This is consistent with previous research conducted by Pisterman et al. (1992), Anastopolous et al. (1993) and Gerdes et al. (2012) who suggest that stress related to child characteristics may be directly reduced as parents engage with others in similar situations and are better informed regarding the biological and chronic nature of ADHD.

Even though there were these two significant within-group changes for the PT intervention group, that were not matched by the control group, our between-groups analyses of the PT intervention and the support group did not differ significantly on parental stress pre- or post-intervention.

In the current study, both the PT intervention and support group provided participants with social support. Therefore, the similar descriptive decreases in stress for both the PT intervention and support group may be explained by the fact that social support generally, and not just within the more structured PT intervention, may decrease parental stress for parents who have children with ADHD. Consistent with this proposition, a previous study exploring the role of social support for caregivers of children with ADHD, found that social support decreased parent stress levels (Lovell, Moss, & Wetherell, 2012). These findings are similar to those reported in previous studies (Van Den Hoofdakker et al., 2007; Wells et al., 2000). These studies indicate that while parental stress significantly decreased following PT intervention programmes, this was not unique to the PT intervention group, with similar improvements in community support control groups.

Our findings were in contrast to those of Pisterman et al. (1992) and Anastopolous et al. (1993), the most commonly referenced studies within this field, who found that participants in the PT intervention showed a greater decrease in parental stress compared to a waitlisted control. An additional more recent study, with no control group, that examined PT intervention's effect on parental stress also found significant decreases in parental stress for the PT intervention (Loren et al., 2013). The difference of our findings in relation to previous studies might be due to the different control groups employed in each study. Pisterman et al. (1992) and Anastopolous et al. (1993) compared stress levels to a waitlist control group that received no support, while our study compared stress levels to a waitlisted control that received social support through informal and unstructured engagement. Furthermore, Loren et al. (2013) did not include a control group.

### **Clinically significant change in PSI scores**

Following the between- and within-group comparisons, we conducted a descriptive analysis of the PSI scores, for both the PT intervention and support group, in terms of the change in the number of parents, pre- and post-intervention, who reported stress scores in the clinically significant range. The number of parents experiencing clinically high levels of stress for both the PT intervention and support group decreased across the majority of the major PSI domains and subscales post-intervention. However, there was an increase in the frequency of clinically high stress scores for the Parent Domain for the PT intervention group, mainly as a result of an increase in the frequency of clinically high stress scores for the Spouse subscale in this domain. High scores in the Parent Domain indicate that sources of stress result from aspects related to parent functioning and well-being rather than from the child (Abidin, 1995). Stress related to the spouse is attributed to a lack of emotional and physical support regarding child management (Abidin, 1995). As the majority of parents attended the PT intervention without their spouse, the behaviour of their spouse could not be influenced by the intervention. Furthermore, the focus of PT was on equipping parents with tools to better manage their child's behaviours rather than specifically targeting stressors pertaining to parent functioning and well being, such as stress related to the spouse.

### **Reliable Change Index of the PSI**

Individual change can be masked by group-level analyses, especially when a study has a small sample size, which undermines its power. Individual change was examined using the RCI. The RCI scores indicate that no clinically significant changes took place in the Child Domain for both PT intervention and support group. However, there was a higher proportion of individuals in the support group who experienced a reduction in stress in the Parent

Domain and Total Stress in comparison to the PT intervention group. Thus, for the support group, the lack of change found in the within-group analyses may be due to group effects. The results from the RCI provide further evidence of the role of social support in alleviating stress. However, in order to conclude that the support received in the support group has a greater impact on individual stress compared to PT, further research needs to be conducted with larger sample sizes.

### **CBCL**

Due to the integral relationship between ADHD child symptomatology and its impact on parent stress, we conducted between and within-group analyses on the CBCL parent-reported outcomes. This analysis was done to investigate whether the changes in CBCL related to the changes in stress reported for the Child Distractibility and Parent Competence subscales. In doing so, we hoped to further explore why parental stress related to these subscales decreased significantly from pre- to post-intervention.

Results for the CBCL between-group analyses showed no significant differences between the groups pre-intervention. Results from the post-intervention between-groups CBCL analyses indicated that there were significant differences in Total Problems, Affective Problems and Somatic Problems between the PT intervention and support group. Parents in the PT intervention group reported significantly lower scores on Total Problems, Affective Problems and Somatic Problems, which were not matched by similar reported changes in the support group. These changes suggest that parents in the PT intervention group did not report their child's symptoms to be as severe as before. The decrease in reported Total Problems for parents in the PT intervention group suggests that participants rate their children's externalizing and internalizing symptoms as less severe (Achenbach & Rescorla, 2001).

One of the aims of PT programmes is to assist parents in developing more effective communication, problem-solving and negotiation skills with their children (Barkley, 1990). Due to the greater decrease in the above CBCL subscales for the PT intervention group (in comparison to the support group), it is reasonable to suggest that the skills and techniques for effective parent-child interactions, taught in PT, may have impacted on the improved parent reported child symptomatology. Given the bidirectional relationship between child symptomatology and parental stress, the decrease in stress related to Parent Competence may mean that parents do not perceive their children's symptoms to be as severe as before participating in the in PT intervention.

Results for the CBCL within-group analysis for the PT intervention group show unique significant decreases in the child's internalizing behaviours such as

Anxious/Depressed Problems and Anxiety Problems. It also shows a significant decrease in an externalizing behavior, such as Aggressive Behaviour, as reported by parents. Post-Traumatic Stress Problems (PTSP) significantly decreased for both the PT intervention and support group post-intervention. There were no other significant changes within the support group from pre- to post-intervention.

As PT aims to teach parents effective communication and positive parenting techniques, decreases in some internalizing and externalizing behaviours may indicate that parents in the PT intervention have learnt more effective ways of getting their child to communicate their feelings rather than act them out. Similar findings were reported by Van Den Hoofdakker et al. (2007) who found that being clear, direct and providing more positive reinforcement were examples of parenting skills that affect depressive, anxious and externalizing symptoms in children.

We expected a corresponding decrease in symptoms of child distractibility and hyperactivity in the CBCL due to the decrease in stress related to Child Distractibility reported in the PT intervention group. However, this expectation was not met. Possible reasons are that while parents in the PT intervention reported a significant decrease in stress related to Child Distractibility, 47% of parents were still experiencing clinically high levels of stress in the Child Distractibility subscale post-intervention. Joyner et al. (2009) and Kaiser et al. (2010) found that parents with high stress levels are more likely to rate their children's ADHD symptoms as severe. Given the high levels of stress in Child Distractibility still experienced by some PT intervention group parents post-intervention, it is understandable that we did not see corresponding decreases in the CBCL for symptoms related to child distractibility.

### **Limitations and Future Directions**

The results of this study must be viewed in the context of its limitations.

First, participation in this study was voluntary and thus the parents who took part may not be representative of all parents who have children with ADHD.

Second, our study relied solely on self-report measures. Thus, parents' answers, and our findings, may have been influenced by expectancy effects. For future research we recommend the inclusion of different informants and assessment methods, such as child and teacher reports as well as direct observations of the parent and child. A double blind design would also provide greater rigour.

A third limitation is our small sample size ( $N=30$ ) especially in our social support groups ( $n=9$ ). Small sample sizes are common in intervention studies (Danforth et al., 2006;

Gerdes et al., 2012) and, in our study, were largely due to the fact that participants were hesitant to commit to an eight-week intervention, as well as to attrition among those who did attend. Similarly, participants who were invited to attend the support group, which was less of a time commitment, expressed concerns about the group's ability to provide meaningful help.

A related limitation is that the overall participant attendance in both the PT intervention and support group was poor. Therefore, many participants were not able to receive the full benefit of the techniques taught in the PT intervention or gain adequate support and guidance from fellow parents in the support group. This in turn, could have affected the results of the study. Barkley et al. (2000) similarly reported poor parental attendance at PT, which could have explained the lack of decrease in parental stress more generally. Future research could run weekly support groups at a children's home where the housemothers do not have to leave their workplace and incur travel expenses to attend the support group. This could increase the commitment to the group and decrease attrition.

Last, the dynamic of the groups might have had an effect on the results and could pose limitations to the study. Some of the intervention groups consisted of a parent with a dominant personality. Consequently, other parents were not able to voice their concerns, which might have been more stress provoking. Similarly, some of the support groups consisted of parents who were not vocal. Parents in these groups might not have learnt from other parents' experiences to the same extent as parents in more vocal groups. The groups who developed a close rapport with each other might have experienced greater levels of social support and this could in part account for lower levels of stress recorded post-intervention. Future research could investigate the mediating effect of social support on parental stress for parents of children with ADHD.

Furthermore, given the high base stress levels of South Africans, future studies should consider a pre-intervention that addresses the macro, chronic environmental stressors that South African parents face before targeting ADHD related stress.

Despite these limitations, we report some positive post-intervention outcomes and the general structures set in place for this study could be used for further research.

## **Conclusion**

This study was the first of its kind to evaluate the effect of a parent-based ADHD intervention, Barkley's (1990) PT, on parental stress in the South African context. The unique decreases in stress for Parent Competence and Child Distractibility as well as multiple improvements in parent reported child symptomatology indicates the potential value of PT in

helping parents feel equipped to manage their child's symptoms. The similar descriptive decrease in stress, post-intervention, reported for both the PT intervention and support group illustrates the importance of social support in helping parents cope with stress related to ADHD. Our study provides preliminary support that a cost-effective PT intervention can be implemented in SA and the contextual knowledge gained in this process can only serve to improve future efforts. Given the bidirectional relationship between parenting stress and ADHD, the results from the study indicate the importance of future parent-based ADHD interventions specifically targeting stressors that pertain to parent functioning in order more effectively alleviate stress.

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## APPENDIX A

## DSM-5 DIAGNOSTIC CRITERIA FOR ADHD

A. A persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, as characterized by (1) and/or (2):

1. **Inattention:** Six (or more) of the following symptoms of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities:

**Note:** The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or failure to understand tasks or instructions. For older adolescents and adults (age 17 and older), at least five symptoms are required.

- a. Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or during other activities (e.g., overlooks or misses details, work is inaccurate).
- b. Often has difficulty sustaining attention in tasks or play activities (e.g., has difficulty remaining focused during lectures, conversations, or lengthy reading).
- c. Often does not seem to listen when spoken to directly (e.g., mind seems elsewhere, even in the absence of any obvious distraction).
- d. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., starts tasks but quickly loses focus and is easily sidetracked).
- e. Often has difficulty organizing tasks and activities (e.g., difficulty managing sequential tasks; difficulty keeping materials and belongings in order; messy, disorganized work; has poor time management; fails to meet deadlines).
- f. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (e.g., schoolwork or homework; for older adolescents and adults, preparing reports, completing forms, reviewing lengthy papers).
- g. Often loses things necessary for tasks and activities (e.g., school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones)
- h. Is often easily distracted by extraneous stimuli (for older adolescents and adults, may include unrelated thoughts)
- i. Is often forgetful in daily activities (e.g., doing chores, running errands; for older adolescents and adults, returning calls, paying bills, keeping appointments).

2. **Hyperactivity and impulsivity:** Six (or more) of the following symptoms have persisted of for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities:

**Note:** The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or failure to understand tasks or instructions. For older adolescents and adults (age 17 and older), at least five symptoms are required.

- a. Often fidgets with or taps hands or feet or squirms in seat.
- b. Often leaves seat in situations when remaining seated is expected (e.g., leaves his or her place in the classroom, in the office or other workplace, or in other situations that require remaining in place).
- c. Often runs about or climbs in situations when is inappropriate (**Note:** In adolescents or adults, may be limited to feeling restless).
- d. Often unable to play or engage in leisure activities quietly

- e. Is often "on the go", acting as if "driven by a motor" (e.g., is unable to be or uncomfortable being still for extended time, as in restaurants, meetings; may be experienced by others as being restless or difficult to keep up with)
  - f. Often talks excessively.
  - g. Often blurts out an answer before a question has been completed (e.g., completes people's sentences; cannot wait for turn in conversation)
  - h. Often has difficulty waiting his or her turn (e.g. while waiting in a line)
  - i. Often interrupts or intrudes on others (e.g., butts into conversations, games, or activities; may start using other people's things without asking or receiving permission; for adolescents and adults, may intrude into or take over what others are doing).
- B. Several inattentive or hyperactive-impulsive symptoms were present prior to age 12 years
- C. Several inattentive or hyperactive-impulsive symptoms are present in two or more settings (e.g., at home, school, or work; with friends or relatives; in other activities).
- D. There is clear evidence that the symptoms interfere with, or reduce the quality of, social, academic, or occupational functioning.
- E. The symptoms do not occur exclusively during the course of schizophrenia or another psychotic disorder and are not better explained by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, personality disorder, substance intoxication or withdrawal).

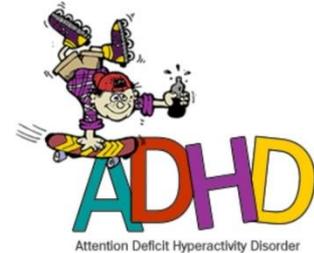
APPENDIX B  
 POSTER ADVERTISING STUDY

# Does your child struggle with symptoms of ADHD?

~ at  
 home  
 ?

~ at  
 school?

~ with  
 friends?



Researchers at the University of Cape Town are looking at the functioning of children with ADHD in all these areas. We are designing an intervention programme for parents, to aid them in:

- communicating with their child
- learn how to better control your child's behaviour

For more information on taking part, please contact:

Mareli Fischer

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[adhd@marelifischer.co.za](mailto:adhd@marelifischer.co.za)





<b>R0-35000:</b>	<b>R276000-325000:</b>
<b>R36000-5000:</b>	<b>R326000-375000:</b>
<b>R76000-25000:</b>	<b>R376000-425000:</b>
<b>R126000-175000:</b>	<b>R426000-475000:</b>
<b>R176000-225000:</b>	<b>R476000-525000:</b>
<b>R226000-275000:</b>	<b>&gt; R526000:</b>

### EDUCATION LEVEL OF CHILD

10. Education (highest grade completed): \_\_\_\_\_

11. Has most of your child's schooling been in a rural or urban setting (circle one)?

RURAL      URBAN

12. Has he/she repeated any grades?

YES                      NO

If yes, please specify which grade(s):

\_\_\_\_\_

13. What grade is your child presently in? (If not in school please indicate this):

\_\_\_\_\_

### EDUCATION LEVEL OF PARENT

13. Education (highest grade in school completed/level of tertiary education)

\_\_\_\_\_

14. Parent(s) current job/vocation

\_\_\_\_\_

PARENTAL MARITAL RELATIONSHIP \_\_\_\_\_

## APPENDIX D

**PT INTERVENTION CONSENT FORM**

You are being asked to take part in a research study. This form provides you with information about the study and seeks your authorization for the collection, use and disclosure of your mental health and other personal as other information necessary for the study. The Principal Investigator (the person in charge of this research) or a representative of the Principal Investigator will also describe this study to you and answer all of your questions. Your participation is entirely voluntary. Before you decide whether or not you want your child and yourself to take part, read the information below and ask questions about anything you do not understand. By participating in this study you will not be penalized or lose any benefits to which you would otherwise be entitled.

**1. Name of Participant (Study Subject)****2. Title of Research Study**

Functional impairment in South African children with Attention-Deficit/Hyperactive Disorder and the design, implementation and evaluation of a targeted intervention

**3. Investigators and Telephone Number(s)**

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Department of Psychology  
University of Cape Town  
Telephone: 0832403453

**4. Source of Funding or Other Material Support**

NRF Innovation scholarship

**5. What is the purpose of this research study?**

The purpose of this research study is to describe the nature of functional impairments in South African children and adolescents with Attention Deficit Hyperactive Disorder (ADHD), and then to design, implement and evaluate a targeted research intervention.

**6. What does participating in this study entail?**

This intervention will consist of an 8 week long parent-training group, where a trained clinician will be teaching parents principles to help you better communicate with their child, and how to control and overcome certain challenging behaviours.

As part of this study you will be given the opportunity of completing the Parenting Stress Index (PSI), a demographic questionnaire, the Child Behaviour Checklist and a depression index before and after the intervention which will be used to view the effect of the parenting training on your levels of stress. The above questionnaires will not elicit any harm and not completing the questionnaires will not affect your participation in the intervention program in any way.

**7. If you choose to participate in this study, how long will you be expected to participate in the research?**

The parent training programme will take place over a period of 8 weeks and will meet for an hour each week.

**8. How many parents are expected to participate in the research?**

40

**9. What are the possible discomforts and risks?**

There are no known risks associated with participation in this study. If you wish to discuss the information above or any discomforts you may experience, you may ask questions now or call the Principal Investigator listed on the front page of this form.

**10a. What are the possible benefits to you and your child/adolescent?**

Participating in the 8 week parent training intervention will expose parents to useful literature about ADHD, as well as information on successful communication and discipline strategies.

**10b. What are the possible benefits to others?**

This study will help validate or disconfirm previous research conducted on the functional impairments of children and adolescents ADHD. All this will help inform the future treatment and diagnosis of ADHD in children and adolescents.

**11. If you choose to take part in this research study, will it cost you anything?**

Participating in this study will not cost you anything.

**12. Will you receive compensation for taking part in this research study?**

No

**13a. Can you withdraw from this study?**

You are free to withdraw your consent and to stop participating in this research study at any time. If you do withdraw your consent, there will be no penalty.

You are also free to decline to answer specific questions or to participate in certain parts of the study.

If you have any questions regarding your rights as the individual participating in the research you may phone the Psychology Department offices at 021-650-3430.

**13b. If you withdraw your child from this study, can information about you still be used and/or collected?**

Information already collected may be used.

**14. Once personal and performance information is collected, how will it be kept secret (confidential) in order to protect your privacy?**

Information collected will be stored in locked filing cabinets or in computers with security passwords. Only certain people have the right to review these research records.

These people include the researchers for this study and certain University of Cape Town officials. Your research records will not be released without your permission unless required by law or a court order.

**15. What information about you or your child may be collected, used and shared with others?**

If you agree to be in this research study, it is possible that some of the information collected might be copied into a limited data set to be used for other research purposes. If so, the limited data set may only include information that does not directly identify you or your child. For example, the limited data set cannot include your name, address, telephone number, ID number, or any other photographs, numbers, codes, or so forth that link you or your child/adolescent to the information in the limited data set.

The results of the research will be presented as part of a doctoral and honours research project for the University of Cape Town. Also, the results may be submitted for publication in a peer-reviewed journal. In both instances neither you nor your child will be identified in any way.

**16. How will the researcher(s) benefit from your being in the study?**

In general, presenting research results helps the career of a scientist. Therefore, the Principal Investigator and others attached to this research project may benefit if the results of this study are presented at scientific meetings or in scientific journals.

**17. Signatures**

As a representative of this study, I have explained to the parent/guardian of the participant the purpose, the procedures, the possible benefits, and the risks of this research study; and how the participant's performance and other data will be collected, used, and shared with others:

\_\_\_\_\_  
Signature of Person Obtaining Consent and Authorization

\_\_\_\_\_  
Date

You have been informed about this study's purpose, procedures, possible benefits, and risks; and how your child's mental health status and ADHD-related functional impairments and other data will be collected, used and shared with others. You have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily consent to allow your child to participate in this study. You hereby authorize the collection, use and sharing of your child's mental health status and ADHD-related functional impairments and other data. By signing this form, you are not waiving any of your legal rights.

\_\_\_\_\_  
Signature of Person Consenting and Authorizing

\_\_\_\_\_  
Date

Please indicate below if you would like to be notified of future research projects conducted by our research group:

\_\_\_\_\_ (initial) Yes, I would like to be added to your research participation pool and be notified of research projects in which I or my child might participate in the future.

Method of contact:

Phone number: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Mailing address: \_\_\_\_\_

## APPENDIX E

**SUPPORT GROUP CONSENT FORM**

You are being asked to take part in a research study. This form provides you with information about the study and seeks your authorization for the collection, use and disclosure of your mental health and other personal as other information necessary for the study. The Principal Investigator (the person in charge of this research) or a representative of the Principal Investigator will also describe this study to you and answer all of your questions. Your participation is entirely voluntary. Before you decide whether or not you want your child and yourself to take part, read the information below and ask questions about anything you do not understand. By participating in this study you will not be penalized or lose any benefits to which you would otherwise be entitled.

**5. Name of Participant (Study Subject)****6. Title of Research Study**

Functional impairment in South African children with Attention-Deficit/Hyperactive Disorder and the design, implementation and evaluation of a targeted intervention

**7. Investigators and Telephone Number(s)**

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**8. Source of Funding or Other Material Support**

NRF Innovation scholarship

**10. What is the purpose of this research study?**

The purpose of this research study is to describe the nature of functional impairments in South African children and adolescents with Attention Deficit Hyperactive Disorder (ADHD), and then to design, implement and evaluate a targeted research intervention.

**11. What does participating in this study entail?**

You will attend a parent support group for one hour, three times in total. As part of this study you will be given the opportunity of completing the Parenting Stress Index (PSI), a demographic questionnaire, the Child Behaviour Checklist and a depression index before and after the intervention which will be used to view the effect of the parenting training on your levels of stress. The above questionnaires will not elicit any harm and not completing the questionnaires will not affect your participation in the intervention program in any way.

**12. How many parents are expected to participate in the overall research?**

40

**13. What are the possible discomforts and risks?**

There are no known risks associated with participation in this study.

If you wish to discuss the information above or any discomforts you may experience, you may ask questions now or call the Principal Investigator listed on the front page of this form.

**10a. What are the possible benefits to you and your child/adolescent?**

You may not personally benefit from the research.

Participating in the support group will expose parents to advice, social support and guidance from other parents in a potentially similar situation to your own.

**10b. What are the possible benefits to others?**

This study will help validate or disconfirm previous research conducted on the functional impairments of children and adolescents ADHD. All this will help inform the future treatment and diagnosis of ADHD in children and adolescents.

**11. If you choose to take part in this research study, will it cost you anything?**

Participating in this study will not cost you anything.

**12. Will you receive compensation for taking part in this research study?**

No

**13a. Can you withdraw from this study?**

You are free to withdraw your consent and to stop participating in this research study at any time. If you do withdraw your consent, there will be no penalty.

You are also free to decline to answer specific questions or to participate in certain parts of the study.

If you have any questions regarding your rights as the individual participating in the research you may phone the Psychology Department offices at 021-650-3430.

**13b. If you withdraw your child from this study, can information about you still be used and/or collected?**

Information already collected may be used.

**14. Once personal and performance information is collected, how will it be kept secret (confidential) in order to protect your privacy?**

Information collected will be stored in locked filing cabinets or in computers with security passwords. Only certain people have the right to review these research records.

These people include the researchers for this study and certain University of Cape Town officials. Your research records will not be released without your permission unless required by law or a court order.

**18. What information about you or your child may be collected, used and shared with others?**

If you agree to be in this research study, it is possible that some of the information collected might be copied into a limited data set to be used for other research purposes. If so, the limited data set may only include information that does not directly identify you or your child. For example, the limited data set cannot include your name, address, telephone number, ID number, or any other photographs, numbers, codes, or so forth that link you or your child/adolescent to the information in the limited data set.

The results of the research will be presented as part of a doctoral and honours research project for the University of Cape Town. Also, the results may be submitted for publication in a peer-reviewed journal. In both instances neither you nor your child will be identified in any way.

**19. How will the researcher(s) benefit from your being in the study?**

In general, presenting research results helps the career of a scientist. Therefore, the Principal Investigator and others attached to this research project may benefit if the results of this study are presented at scientific meetings or in scientific journals.

**20. Signatures**

As a representative of this study, I have explained to the parent/guardian of the participant the purpose, the procedures, the possible benefits, and the risks of this research study; and how the participant's performance and other data will be collected, used, and shared with others:

\_\_\_\_\_  
Signature of Person Obtaining Consent and Authorization      Date

You have been informed about this study's purpose, procedures, possible benefits, and risks; and how your child's mental health status and ADHD-related functional impairments and other data will be collected, used and shared with others. You have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily consent to allow your child to participate in this study. You hereby authorize the collection, use and sharing of your child's mental health status and ADHD-related functional impairments and other data. By signing this form, you are not waiving any of your legal rights.

\_\_\_\_\_  
Signature of Person Consenting and Authorizing      Date

Please indicate below if you would like to be notified of future research projects conducted by our research group:

\_\_\_\_\_ (initial) Yes, I would like to be added to your research participation pool and be notified of research projects in which I or my child might participate in the future.

Method of contact:

Phone number: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Mailing address: \_\_\_\_\_

## APPENDIX F

Table 2  
*Sample Socioeconomic Status (N=30)*

Variable	Group		$F/x^2$	$p$
	Intervention ( $n=21$ )	Support ( $n=9$ )		
Parent Education			2.98 <sup>b</sup>	.807
Less than matric	1	0		
Completed matric	6	1		
Diploma	8	3		
Bachelor degree	4	3		
Honours degree	1	1		
PhD	1	1		
Parental employment			8.515 <sup>b</sup>	.202
High executive, larger business owners	5	1		
Business managers of medium businesses	2	0		
Administrative personnel, managers, minor professionals	3	0		
Clerical sales, technicians	0	0		
Skilled manual (with training)	3	6		
Semi-skilled	5	1		
Unskilled, unemployed	1	0		
Home-maker	2	1		
Neighbourhood				1 <sup>a</sup>
Suburban: Urban: Rural	19:2:0	9:0:0		
Family income bracket: per annum <sup>c</sup>			7.90 <sup>b</sup>	.571
0-35000	0	0		
36000-750000	0	1		
76000-125000	2	1		
126000-175000	0	0		
1760-00-225000	1	0		
226000-275000	2	0		
2760000-325000		0		
326000-3750000	1	0		
376000-425000	0	1		
426000-475000	1	0		
476-525000	1	1		
>5260000	10	5		

Note. <sup>a</sup>Fischers Exact; <sup>b</sup>Chi-Square; <sup>c</sup>Presented in South African Rands (ZAR)

## APPENDIX G

Table 6  
*CBCL: Pre- and Post-intervention descriptive statistics for PT Intervention and Support Group (N = 27)*

CBCL	Groups			
	Intervention		Support Group	
	Pre-test <i>M (SD)</i>	Post-test <i>M (SD)</i>	Pre-test <i>M (SD)</i>	Post-test <i>M (SD)</i>
Total Competence <sup>a</sup>	39.93 (7.78)	43.07 (7.81)	41.22(9.28)	42.25 (10.79)
Activities	48.28 (8.39)	48.89 (8.73)	47.67 (8.72)	46.33 (9.68)
Social	37.06 (9.31)	39.50 (9.19)	42.00 (10.62)	40.33 (14.40)
School <sup>a</sup>	37.94 (7.42)	39.33 (7.65)	38.11 (9.12)	41.75 (10.62)
Total Problems Scale	66.65 (6.74)	65.17 (6.68)	61.67 (8.93)	58.11 (8.00)
Externalising	59.76 (12)	57.72 (11.64)	55.22 (8.69)	52.89 (9.12)
Rule Breaking	58.52 (8.35)	58.52 (8.35)	54.11 (5.69)	53.33 (4.44)
Aggressive Behaviour	62.94 (11.75)	60.94 (10.9)	57.78 (7.19)	56.67 (7.54)
Social Problems	64.53 (9.1)	63.50 (7.85)	61.22 (8.96)	58.11 (7.78)
Thought Problems	65.18 (6.4)	65.61 (7.01)	64.00 (10.61)	61.33 (9.55)
Attention Problems	70.76 (6.79)	69.56 (7.2)	67.33 (9.97)	65.11 (5.88)
Internalising	64.71 (7.97)	62.39 (8.42)	61.67 (8.93)	57.00 (6.83)
Anxious/Depressed	65.94 (9.78)	61.61 (8.89)	62.22 (11.71)	58.56 (8.32)
Withdrawn/Depressed	59.64 (7.89)	59.38 (7.65)	58.78 (7.74)	56.89 (6.99)
Somatic Complaints	61.06 (9.22)	61.33 (9.04)	60.44(6.48)	54.89 (4.54)
DSM-Oriented Clinical Scale				
Affective Problems	65.82 (8.32)	63 (8.3)	61.56 (8.08)	56.89 (8.61)
Anxiety Problems	64.53 (8.62)	58.67 (9.26)	59.89 (9.80)	57.00 (7.16)
Somatic Problems	60.59 (10.16)	61.72 (8.98)	59.89 (9.80)	53.44 (4.48)
Attention/Deficit	68.47 (7.54)	68.11 (8.12)	64.11 (6.31)	64.00 (4.82)
Hyperactivity Problems				
Oppositional Defiant Problems	61.29 (10.79)	59.28 (9.25)	56.00 (5.05)	54.89 (4.83)
Conduct Disorder Problems	59.76 (10.3)	58.22 (8.86)	56.11 (6.92)	56.11 (7.47)
Sluggish Cognitive Tempo	62 (7.88)	59.67 (6.91)	60.11 (9.74)	59.33 (8.11)
Obsessive Compulsive Problems	61.18 (7.4)	61.28 (8.01)	63.67 (11.94)	59.56 (7.81)
Post Traumatic Stress Problems	64.44 (8.69)	64.44 (8.69)	64.33 (8.49)	10.33 (6.83)

Note. Mean with standard deviations in parenthesis. <sup>a</sup>*n*=23

## APPENDIX H

Table 7  
*Within-Group CBCL Comparison for PT intervention (n=18)*

CBCL Scale/Subscale		Groups					
		PT Intervention			Support Group		
		Mean (SD)	<i>z</i>	<i>p</i>	Mean (SD)	<i>z</i>	<i>p</i>
Total Competence Scale <sup>a</sup>	Pre-intervention	39.93 (7.78)	-1.23	.24	41.22(9.28)	-.34	.81
	Post-intervention	43.07 (7.81)			42.25 (10.79)		
Activities	Pre-intervention	48.28 (8.39)	-.399	.69	47.67 (8.72)	-.27	.94
	Post-intervention	48.89 (8.73)			46.33 (9.68)		
Social	Pre-intervention	37.06 (9.31)	-1.16	.22	42.00 (10.62)	-.63	.57
	Post-intervention	39.50 (9.19)			40.33 (14.40)		
School <sup>a</sup>	Pre-intervention	37.94 (7.42)	-1.36	.24	38.11 (9.12)	-1.21	.31
	Post-intervention	39.33 (7.65)			41.75 (10.62)		
Total Problems Scale <sup>b</sup>	Pre-intervention	66.65 (6.74)	-1.40	.17	61.67 (8.93)	-1.7	.10
	Post-intervention	65.17 (6.68)			58.11 (8.00)		
Externalising <sup>b</sup>	Pre-intervention	59.76 (12)	-1.76	.08	55.22 (8.69)	-1.98	.08
	Post-intervention	57.72 (11.64)			52.89 (9.12)		
Rule Breaking Behaviour <sup>b</sup>	Pre-intervention	58.52 (8.35)	-1.69	.1	54.11 (5.69)	-.92	.50
	Post-intervention	57.06 (8.09)			53.33 (4.44)		
Aggressive Behaviour <sup>b</sup>	Pre-intervention	62.94 (11.75)	-2.02	.05*	57.78 (7.19)	-1.76	.13
	Post-intervention	60.94 (10.9)			56.67 (7.54)		
Social Problems <sup>b</sup>	Pre-intervention	64.53 (9.1)	-1.23	.23	61.22 (8.96)	-1.36	.22
	Post-intervention	63.50 (7.85)			58.11 (7.78)		
Thought Problems <sup>b</sup>	Pre-intervention	65.18 (6.4)	-.12	.93	64.00 (10.61)	-1.35	.22
	Post-intervention	65.61 (7.01)			61.33 (9.55)		
Attention Problems <sup>b</sup>	Pre-intervention	70.76 (6.79)	-1.38	.18	67.33 (9.97)	-.71	.52
	Post-intervention	69.56 (7.2)			65.11 (5.88)		
Internalising <sup>b</sup>	Pre-intervention	64.71 (7.97)	-1.28	.21	61.67 (8.93)	-1.61	.13
	Post-intervention	62.39 (8.42)			57.00 (6.83)		
Anxious/Depressed <sup>b</sup>	Pre-intervention	65.94 (9.78)	-2.56	.01*	62.22 (11.71)	-1.15	.32
	Post-intervention	61.61 (8.89)			58.56 (8.32)		
Withdrawn/Depressed <sup>b</sup>	Pre-intervention	59.64 (7.89)	-.25	.83	58.78 (7.74)	-.85	.47
	Post-intervention	59.38 (7.65)			56.89 (6.99)		
Somatic Complaints <sup>b</sup>	Pre-intervention	61.06 (9.22)	-.24	.84	60.44(6.48)	-1.78	.09
	Post-intervention	61.33 (9.04)			54.89 (4.54)		
DSM-Oriented Clinical Scale							
Affective Problems <sup>b</sup>	Pre-intervention	65.82 (8.32)	-1.32	.2	61.56 (8.08)	-2.02	.06
	Post-intervention	63 (8.3)			56.89 (8.61)		
Anxiety Problems <sup>b</sup>	Pre-intervention	64.53 (8.62)	-3.19	.01**	59.89 (9.80)	-1.38	.25
	Post-intervention	58.67 (9.26)			57.00 (7.16)		
Somatic Problems <sup>b</sup>	Pre-intervention	60.59 (10.16)	-.82	.45	59.89 (9.80)	-1.78	.09

Attention/Deficit Hyperactivity problems <sup>b</sup>	Post-intervention	61.72 (8.98)			53.44 (4.48)		
	Pre-intervention	68.47 (7.54)	-0.06	1.00	64.11 (6.31)	-0.12	.92
Oppositional Defiant Problems <sup>b</sup>	Post-intervention	68.11 (8.12)			64.00 (4.82)		
	Pre-intervention	61.29 (10.79)	-1.22	.24	56.00 (5.05)	-1.89	.13
Conduct Disorder Problems <sup>b</sup>	Post-intervention	59.28 (9.25)			54.89 (4.83)		
	Pre-intervention	59.76 (10.3)	-1.69	.1	56.11 (6.92)	-0.14	1.00
Sluggish Cognitive Tempo <sup>b</sup>	Post-intervention	58.22 (8.86)			56.11 (7.47)		
	Pre-intervention	62 (7.88)	-1.1	.31	60.11 (9.74)	-0.41	.81
Obsessive Compulsive Problems <sup>b</sup>	Post-intervention	59.67 (6.91)			59.33 (8.11)		
	Pre-intervention	61.18 (7.4)	-0.37	.73	63.67 (11.94)	-1.48	.19
Post Traumatic Stress Problems <sup>b</sup>	Post-intervention	61.28 (8.01)			59.56 (7.81)		
	Pre-intervention	68.82 (8.29)	-2.48	.01*	64.33 (8.49)	-2.20	.03*
	Post-intervention	64.44 (8.69)			58.78 (6.83)		

*Note.* Means are presented with standard deviations in parentheses. The *t*-statistic is reported for 27 degrees of freedom in each case. \* $p < .05$ , \*\* $p < .01$  <sup>a</sup> $n=16$ . <sup>b</sup> $n=17$ . The *r* value presented here is an estimate of effect size