

## **The effects of Behavioural Parent Training Program on Families of Children with Attention-Deficit/Hyperactivity Disorder**

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**Abstract:** The present study evaluated the effectiveness of Behavioural Parent Training Program (BPTP) on families of children with ADHD. Using quasi-experimental design, sixty parents of ADHD children from an ADHD centre for children with behavioural and emotional disorders were randomly assigned to experimental and control groups. The program developed by Barkley was administered in nine 90-minute sessions in nine weeks with a one-month follow-up session. Conners' Parent Rating Scales-Revised and ADHD Rating Scale-IV were employed to measure treatment outcomes. Since data did not meet the assumptions of normality distribution, a series of nonparametric tests using SPSS version-16 were used in the statistical analyses. The results of Friedman Tests showed significant results for all the subscales. Further investigation of the results using Wilcoxon Signed Rank Test also showed a statistically significant reduction in symptoms of ADHD and related problem (Optional behaviour, Cognitive problems/inattention and ADHD Index). The results imply that BPTP can be effective for reducing symptoms of ADHD. The outcome of the study could benefit family counselors, psychologists and specifically for psycho-educational interventions as a single treatment. Theoretical and practical implications of the findings, avenues for future research and limitations of the study are discussed.

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### **Introduction**

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most prevalent chronic disorders in childhood psychiatry. It has been estimated, 3–7% of school-aged children are affected by ADHD [1]. ADHD can be detected during childhood; however, its symptoms can continue to adolescence or adulthood [2]. Indeed, in order to make a diagnosis, the DSM-IV-TR mandates an onset of symptoms occurring before the age of seven. People who suffer from the disorder indicate different symptoms that can affect their everyday social interactions or activities which need continuous focus on detail [3].

The prevalence of ADHD in many countries has been reported to be around 8 to 12 % [4]. Conservative estimates indicate that 3 % to 5% and with other estimates as high as 7% to 12% of school-aged children suffer from ADHD [5]. In the prevalence of the disorder in a sample of primary school students (N=2500) in Tehran (Iran), about 3%-5% were estimated to suffer from the disorder [6]. In another study in Iran on 2000 students' parents using ADHD Home-Version, Ghanizadeh [7] found that the rate of prevalence of ADHD was about 10.1%. Its rate among boys and girls was 13.6% and 6.5%, respectively. This researcher concluded that the rate of probable ADHD in Iran was very similar to that in other countries.

Children with ADHD often exhibit impulsive and disruptive behaviors rendering them hard to control at home and in structured settings like school [8].

These children at school-age begin to demonstrate social deficits, low self-esteem, academic failures, as well as a higher risk for injuries. During adolescence, social and academic problems may persist, and impulsive and risk-taking behaviors (motor vehicle accidents, sexually transmitted diseases, unplanned pregnancy, substance abuse/ smoking) are more prevalent in children with ADHD [9]. Reportedly, stimulant medication has proved to be positively effective on 70% to 80% of ADHD children, but it results in a negative or neutral effect on the rest [10]. Furthermore, research demonstrates that after the termination of medication its effect is not long-lasting, and that 20-30% of children with ADHD does not have a positive response to medication [11].

Although the most common treatment for children with ADHD is medication therapy [12], in 10% to 20% of children who consume the medication no significant improvement has been observed [13]. Attention and emphasis on the role of parents as agents of change in the lives of children is not a new concept. Parent training programs (PTP) have a long-standing record in psychology. The case of Freud's 'Little Hans' study can be mentioned as an example of parent

training programs. Freud trained Hans' father how to deal with his son's Phobia. Parents are regarded as the care-givers, instructors, coaches, leaders, discipliners and the primary factors in their children's change or socialization [14].

Empirical evidence indicates that parental training programs can improve parenting skills, reduce parental stress, and reduce the child's aggressive behavior in families with ADHD children [15].

In Iran, a study was performed by Alizadeh and his colleague on the interaction of parenting styles and ADHD children in Iranian parents showed that parenting style is a pervasive and crucial factor that plays a role in children's psychological development [16]. These researchers note that there is a considerable lack of research about the relationship between parenting styles and child psychopathology in Iran. Behavioural Parent Training explicitly provides parents with instruction in the implementation of behavior modification techniques that are based on social learning principles and behavior modification techniques. The main components of most parent-training programs include providing effective instructions and discipline strategies, building parent-child relationship, as well as using positive reinforcement effectively for a child's compliance and responsible behaviors [17].

However, there is evidence that shows the fading effect of such training programs over time. Some studies have indicated that parental training programs may have no significant effect on the treatment of ADHD [18-21]. With regard to high prevalence of ADHD among children and inadequate response to medical treatment; researchers have been focusing on psychosocial treatment for ADHD which has resulted in inconclusive findings. Therefore, further studies are needed to make clear the effectiveness of therapeutic psychosocial interventions for children with ADHD. To best of the researcher's knowledge, there are no published studies that evaluate the effectiveness of Barkley's parent training program on Iranian parents trained in a large group. Therefore, due to the observed inconsistency in the findings of the previous research and in order to investigate the effectiveness of PTP in Iran, the current study is proposed.

### Materials and Methods

Using quasi-experimental design, sixty parents of ADHD children who met DSM-IV-TR criteria for ADHD and based on some of exclusive and inclusive criteria from ADHD Center for Children with Behavioural and Emotional Disorders in Kermanshah city, Iran were randomly assigned to experimental and control groups. The program developed by Barkley [22], was administered in nine 90-minutes sessions in nine weeks with a one-month follow-up session, the

content of each session was based on work done by Barkley [22] and is described in Table 1. The sessions typically began with a review of homework tasks, which the parents were asked to, carry out outside of the sessions. Each session concluded with the setting of further homework tasks. Some written materials were also provided and used. Treatment outcomes were evaluated by Conners' Parent Rating Scales-Revised: Short Form CPRS (short form) [23] and ADHD Rating Scale-IV: Home Version [24], the instruments were completed by the parents in four scheduled administrations - pre-intervention, post-intervention 1, post-intervention 2 and follow-up.

Behavioral Parent Training Program manual used in this study was developed by Barkley [22]. This is a structured curriculum consisting of 10 sessions intended to improve parental competence in dealing with child behavior problems, increase parental understanding about the origins of noncompliant and defiant behavior, improve the child's compliance with parental instructions, and decrease family conflict. The core skills include providing positive reinforcement for appropriate behavior, communicating directions effectively, and being consistent with consequences for disruptive behaviors. Parents learn techniques such as positive attending, selective ignoring, token economies, and time-out. Parenting skills are taught through modeling, role-play, and corrective feedback provided by the therapist. Assignments to implement new parenting skills at home were given after each session (See table 1).

**Table 1: Barkley's Parent Training Program (1997)**

Session 1	Why Children Misbehave
Session 2	Pay Attention
Session 3	Increasing Compliance and Independent Play
Session 4	When Praise Is Not Enough: Poker Chips and Points
Session 5	Time out! And other Disciplinary Methods
Session 6	Extending Time Out to Other Misbehavior
Session 7	Anticipating Problems: Managing Children in Public Places
Session 8	Improving School Behavior from Home: The Daily School Behavior Report Card.
Session 9	Handling Future Behavior Problems
Session 10	Booster Session and Follow-Up Meetings

**Data Analysis:** Exploratory data analysis showed that data do not follow a normal probability distribution. Therefore, a series of nonparametric tests including Mann-Whitney U test, Friedman and Wilcoxon Signed Rank tests were used in the statistical analyses. The

Statistical Package for Social Science (SPSS) version 16 for windows was used to analyze the data collected.

### Results

Results showed that 18 parents (60%) in Experimental group and 14 parents (46.7%) in Control group were more than 35 years old. Five parents (16/7%) in experimental group and 10 parents (33/3%) were between 31-35 years old and 7 parents (23/3%) in experimental group and 6 parents (20%) were 26-30 years old. Results showed that 16 pair of (father and mother) parents (53.3%) in Experimental group and 14 pair of parents (46.7%) in Control group had a good awareness of their children's problem. While, parents' awareness of their children's problem was moderate in 14 pair of (father and mother) parents (46.7%) in Experimental group and 16 pair of parents (53.3%) in Control group. The results of the Mann-Whitney U tests on CPRS-R and ADHD Rating Scale-IV showed no significant difference between the experimental and the control groups at the pre-intervention stage.

To investigate the significance of difference through the four scheduled administrations of the intervention (pre-intervention, Post-intervention1, post-intervention2 and Follow-up session) in Oppositional Behavior, Cognitive problem, Hyperactivity symptoms, Conner's ADHD Index, Inattention (IA), Hyperactivity /Impulsivity (HI), Hyperactivity-Impulsivity (HI) and

Inattention (IA) of ADHD children, a series of Friedman tests were conducted. The results have been presented in Table 2. The results from Friedman tests revealed a statistically significant difference in oppositional behaviour ( $\chi^2=56.46$ ,  $p \leq .001$ ), Cognitive problem ( $\chi^2=59.99$ ,  $p \leq .001$ ), Hyperactivity ( $\chi^2= 37.53$ ,  $p \leq .001$ ), Conner's ADHD Index ( $\chi^2= 45.96$ ,  $p \leq .001$ ), Inattention ( $\chi^2 = 52.17$   $p \leq .001$ ), Hyperactivity /Impulsivity ( $\chi^2 = 52.75$ ,  $p \leq .001$ ). Hyperactivity-Impulsivity (HI) and Inattention (IA) ( $\chi^2 = 64.12$ ,  $p \leq .001$ ) for experimental group. However, control group did not show any significant difference for the measured variables.

In the last step, a series of Wilcoxon Signed Rank tests were performed to examine the changes in the measured variable over time in the treatment group. Results revealed a statistically significant reduction in Oppositional behavioural significant ( $Z = -4.78$ ,  $P \leq .001$ ,  $EF=.87$ ), Cognitive problems ( $Z = -4.78$ ,  $P \leq .001$ ,  $EF=.87$ ), Hyperactivity symptoms ( $Z = -4.63$ ,  $P \leq .001$ ,  $EF=.84$ ), ADHD Index of ADHD children ( $Z = -4.74$ ,  $P \leq .001$ ,  $EF=.86$ ), Hyperactivity/ Impulsivity ( $Z = -4.001$ ,  $P \leq .001$ ,  $EF=.73$ ), Inattention ( $Z = -4.45$ ,  $P \leq .001$ ,  $EF=.81$ ), Hyperactivity/ Impulsivity and Inattention ( $Z = -4.68$ ,  $P \leq .001$ ,  $EF=.85$ ) following participation in the training program.

**Table 2.** Results of Friedman tests for experimental and control group

Variable	Group	Pre intervention		Post intervention 1		Post intervention 2		Follow-Up		$\chi^2$
		M	Mdn	M	Mdn	M	Mdn	M	Mdn	
Oppositional behavior	Experimental	70.37	70	48.1	48	53.8	53	56.13	56	56.46*
	Control	68.7	68	66.1	63	62.97	61	66.87	66	3.48
Cognitive problem	Experimental	70.43	71	50.5	50	55.57	54	52.23	50	59.99*
	Control	69.33	71	64.47	66.5	66.9	68	64.77	65	5.97
Hyperactivity symptoms	Experimental	73.83	78	57.8	65	66.03	68	61.67	60	37.53*
	Control	77.67	82	76.97	79.5	77.27	80.5	75.2	78	4.05
Conner's ADHD Index	Experimental	69.13	72	56.5	59.5	58.17	60	54.07	54	45.96*
	Control	67.87	68.5	66.1	64	67.97	68	65.47	64	5.13
Inattention (IA)	Experimental	90.57	96	72.67	75	70.8	74	68.37	75	52.17*
	Control	90.57	96	87.2	92	86.17	94	83.9	91	3.47
Hyperactivity /Impulsivity (HI)	Experimental	89.73	96	76.7	87	70.8	75.5	66.23	76	58.75*
	Control	94.13	98	92.13	94.5	88.2	96	88.4	95.5	5.76
HI & IA	Experimental	92.27	95.5	75.03	79.5	60.6	64	61.47	69	64.12*
	Control	93.43	97	93.1	95	90.4	95	85.73	93	5.99

\*  $p \leq .001$

## Discussion

The current study demonstrated the effectiveness of BPTP on some of symptoms of ADHD among children is consistent with findings from other studies. For example, in a study, participants who completed the BPT program relative to waiting-list controls showed parent-reported improvements in the overall severity of their children's ADHD symptoms [25]. Others reported positive effects of BPT programs include the improvement of ADHD symptoms and home behaviours of children [26], reduction of oppositional behaviours [27], and of attention deficit and internalizing symptoms [28]. On the other hand, Weinberg [29] found no behavioural improvement among youngsters at completion of the program [30].

This finding was discussed in the context of a possible ceiling effect from the medications that the youngsters were using [29]. Also, Pisterman et al. [31] found that behavioural parent training of ADHD children was not effective on measures of attention. The study's results suggest that the effectiveness of BPTP is possible that has positive effects on behaviours that are important to parents and in home contexts. For example, BPTP was found to increase parental knowledge of ADHD and decrease parental stress [29], decrease maternal stress [27], increase parenting self-esteem [3], and improve parents' confidence in their child management abilities, knowledge of behavioural principles, and parent-child relationships.

The findings of this study are supported by Social Learning Theory [32-34]. According to this theory, all behaviours are learned through a combination of positive and negative reinforcement and modeling. Within this theory learning takes place indirectly by receiving information, observing others or modelling. Bandura's theory also declares that people can learn behaviour without direct experiencing and in absence of any rewards. However, in social learning the social interaction between learners and role models is crucial. Additionally, our finding can be supported by Behaviour Modification Principles (BMP) [35]. Since ADHD is a development delay in the self-regulation of behaviour by internal means of representing information and motivating goal-directed behaviour, then intervention that directly alters the nature of the stimuli controlling behaviour as well as the pattern, timing, or salience of such a consequence by socially arranged means would be useful, at least for symptomatic reduction in some settings and tasks.

In sum, the results of this study support the notion that parent training programs can benefit for families in a number of ways such as reconstructing and creating a new bridge for communication and interaction with their children and elimination most of related problem such as parental stress and changing

their strategists toward them. Additionally, present study provides preliminary evidence that BPTP can be effective for decreasing ADHD symptoms and other related problems to ADHD among samples of children with ADHD as a single treatment.

**Limitations and implications of the study:** This study has several limitations that may suggest some interesting avenues for future research. The first limitation that should be acknowledged is that this study involved only the parents of the children not the children themselves. The second limitation that should be noted is that the effect of the parent training program on children's behaviors was evaluated only at home not at school. The last limitation that should be addressed here is about medical concerns, co-morbid diagnoses, and utilization of psychotropic medications that may influence the outcome of the research, were not considered in this study.

Despite the above-mentioned limitations, some theoretical and practical implications of the present study can be suggested. The findings indicating significant effects of Barkley's program on the Iranian parents of children with ADHD imply that Barkley's program can be used as a therapeutics solution to reduce some of the symptoms in ADHD children. Therefore, it is suggested that mental health professionals, social workers, and psychologists working with ADHA children use Barkley's program in their therapeutic interventions. In terms of theoretical implication, the current empirical research supported Barkley's program as a useful short-term treatment approach in reducing of ADHD symptoms.

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