EFFECTIVENESS OF PARENT TRAINING PROGRAM FOR TREATING DISRUPTIVE BEHAVIORS ASSOCIATED WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

By

TAMKEEN ASHRAF MALIK

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Dr. Muhammad Ajmal
National Institute of Psychology
Centre of Excellence
Quaid-i-Azam University, Islamabad

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DEDICATIONS

This is to my mother , a courageous and sacrificing woman. To my Khala Sabiha who brought me up and who is no more in this world to see my accomplishments. And off course to Guloo for lot many things.

BACKGROUND

LITERATURE REVIEW

METHOD

RESULTS

ADAPTATION OF THE INTERVENTION PROGRAM FOR PAKISTANI FAMILIES

DISCUSSION

REFERENCES

APPENDICES

CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

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ABSTRACT

Despite the vast literature supporting the efficacy of behavioral interventions for Attention-Deficit Hyperactivity Disorder (ADHD), there is an extreme paucity of empirical support for these interventions in developing South Asian countries, such as Pakistan. The present study aims to implement and evaluate a behavioral parent training program for children with ADHD in a Pakistani urban community. This represents the very first ADHD intervention study conducted in Pakistan. Group parent training was applied among Pakistani families illustrating strategies for addressing potential cultural barriers. The Barkley's parent training program(1997) incorporates in therapeutic process elements to address cultural concerns to enhance engagement of families. In addition, contextual factors were kept in view while introducing these skills. A total of eighty five (85), 4-12 year old children with ADHD and their parents were selected to participate in the present study. A two group Qausi Experimental design was used with an experimental group on which intervention was applied, and a control group only for comparison purpose. Pre- and post-treatment scores on parent and teacher rating scales were collected to assess ADHD, Oppositional Defiant Disorder (ODD), and Conduct Disorder(CD) symptoms as associated impairments. For treatment effects, participants for whom post-treatment measures were obtained, the Analysis of Covariance (ANCOVA) was used in order to adjust the effects of treatment for scores on the baseline measures. Linear Mixed Model (LMM) with Maximum Likelihood approach was used for Intention To Treat (ITT)

analyses. Within group Analysis of Variance(ANOVA) was further used to explain the interaction effects which were significant in ANCOVA and Linear Mixed Model findings. Effect sizes are calculated for both, between subject and within subject for both groups independently. Results showed a significant difference in measures of ADHD/ODD symptoms and the number and severity of problem situations according to parent reports. Within experimental group 40.0% families dropped out after completing fifty percent sessions and could not complete the total number of sessions. Logistic regression was used to explore factors associated with premature termination. Gender turned out to be an important predictor, showing an increased likelihood for parents of male child, to complete the sessions, as compared to parents of female child. Other variables like mother's work status, education, involvement of multiple caregivers and family size turned out to be no more significant statistically. The study provides some preliminary evidence supporting the effectiveness of Barkley's behavioral parenting program for Pakistani parents of ADHD children. Despite its limitations, the results of this study are promising in that they suggest that Barkley's program is effective in reducing ADHD and ODD symptoms, according to parent reports. Considering the very limited mental health services and research examining psychological interventions for Pakistani children, the present study represents a critical first step in an effort to identify evidence-based interventions for ADHD and other emotional and behavioral problems in Pakistan.

Chapter 1

INTRODUCTION

There is a growing surge in western countries, especially from last decade for promoting Evidence-Based Practice (EBP) in health care (Institute of Medicine, 2001; APA Presidential Task Force on Evidence-Based Practice, 2005). Proliferation of clinical practice guidelines and treatment consensus statements have raised the stakes for greater accountability among both practicing and research communities. Emphasis on Evidence-Based Practice, has a profound impact on the way both medicine and psychotherapy has been practiced in technologically advanced countries. As a result of this trend it appears as though the future of psychosocial interventions will require practitioners to deliver intervention that is supported by psychological research.[7] However, in low and middle income countries like Pakistan Eidence-Based Practice[5] still have to pave its way in coming future in all domains of health practice. Deficient resources and trained workforce is a major hindrance to practice such interventions in these countries (Zaidi, Hashim, Iqbal, & Quadri, 2007).

Resources for Evidence-Based Services for Mental Health in Developing Countries.

Human resources available for mental health care in most low and middle-income countries are very limited, and shortages are likely to persist. Stigma about mental disorders in general public also constrains the use of available resources, and people are reluctant of utilizing these services because of fear of being labeled.[8]

Furthermore, information on resources for mental health care is even less available as compared with information on prevalence, type, and burden of mental disorders. Not only there is scarcity of resources for mental health, but they are also distributed disproportionately. Need and access tend to vary inversely—those with highest need have least access to care (Lancet Group of Global Mental Health, 2007).[8, 10]

A review by Saxena, Thornicroft, Knapp, and Whiteford (2007) shows that scarcity of available resources, inefficiencies in their use, and inequities in their distribution, poses the three main obstacles to better mental health, in lower and middle-income countries, including Pakistan.[2] Populations with high rates of socioeconomic deprivation have the highest need for mental health care, but the lowest access to it. According to these reviewers, Inequity of access to scarce resources is especially evident for children and adolescents with mental disorder. Scarcity of available data regarding mental health care has serious implications for policy and practice of mental health, the most direct of which is that people who need care get none.

Evidence for Interventions in Mental Health from Low Income Countries

A series of reviews by Lancet Group of Global Mental Health (2007), have highlighted the relative paucity of trials that assess the interventions for the treatment or prevention of mental disorders in low and middle-income countries, and especially to assess the effectiveness of those interventions which have proven their robustness in developed countries. The group has shown an increased concern regarding inadequacy of evidence for effectiveness for mental health interventions in these countries. They concluded that the coverage of ‘evidence-based services’ for people

with mental illnesses is extremely low in most of these countries. This review further indicates, that evidence about the efficacy of interventions for developmental disabilities(mental retardation, ADHD, Autism), is especially inadequate, and such research is needed to inform the continuing process of service reform and innovation (Patel et al., 2007).

Focusing on four mental disorders that pose the greatest burden in adults and children: depression, schizophrenia, alcohol-use disorders, and developmental disabilities (cognitive disabilities or mental retardation, ADHD, and autism), 11 501 trials were identified worldwide by Patel et al. (2007) that assessed interventions for the treatment or intervention of these disorders. Evidence showed fewer than 1% of identified trials were from low-income countries.[11] The most recent trial for mental retardation was in 1994. Over half of all trials from low and middle-income countries (838/1521) were published after the World Health Report on Mental Health in 2001.

Evidence for interventions in mental health for children

Review of Patel et al. (2007) gives a global picture with greater relevance for child mental health in low and middle income countries. It shows that although children comprise between a third and a half of the population in these countries, little research has focused on interventions for developmental disabilities in childhood, such as mental retardation, autism, and ADHD. The reviewers identified one clinical trial from India showing the efficacy of a herbal preparation(a drug or preparation made by plant having properties of medicine)[12] for management of behavioral and cognitive deficits in children with mental retardation, and a trial from Brazil showing that methylphenidate was effective for ADHD. Focusing on those interventions, that

aim to enhance early mother-child interaction, parenting, and child mental development through group sessions or home visits, this review further identifies, only five randomized controlled trials in Bangladesh, Bosnia and Herzegovina, Jamaica, and Turkey and, two non-randomized controlled trials in Cyprus and Serbia and Mauritius reporting positive outcomes from those interventions which have relevance to improvements in maternal responsiveness, child psychophysiological functioning, cognitive development, problem solving, and self esteem, and reductions in parental distress and maternal depression.

Child Mental Health Services in Pakistan—Current Situation

Pakistan is the 6th most populous country in the world, with a population of over 160 million; 40% of the population is under the age of 18.3(Rehman et al., 2006). However there is an extreme paucity of mental health literature from this developing country (Hussain & Yousafzai, 2006). Inefficient referral system, religious beliefs of the general population, their faith in traditional or alternative faith healers, and monitory constraints are the major hurdles in providing mental health services (Karim, Saeed, Rana, Mubbasher, & Jenkins, 2004). Stigma factor being associated with mental illness and illiteracy seem to be meshed in the social fabric (Hussain & Yousafzai, 2006). Limited allocation of funds are also one of the major hurdles for development of services and conducting integrated large scale research projects (Karim, Saeed, Rana, Mubbasher, & Jenkins, 2004).

There are about six child psychiatrists in the country with an estimated under-18 population of 64 million (Rehman et al., 2006). Till date there are a few service-based set ups for children and adolescents in public sector, which are only

concentrating in major cities. The oldest at the King Edward Medical University in Lahore, Punjab, is an independent department. Another at Lahore is in Children's Hospital, and is part of the pediatrics department. In Karachi, a Psychiatry Clinic is functional as a part of Paediatrics Department at Civil Hospital Karachi. Another one in Karachi, is based at the Aga Khan University Hospital, a private medical university. In 2004, a Child and Adolescent Psychiatry Special Interest Group[14] was established in Rawalpindi, introducing the concept of e-Mental health and methods of distance learning techniques to support the development of child mental health services (Rehman et al., 2006).

Priorities for Effectiveness Trials in Pakistan

There is a large unmet need to train the workforce in Pakistan, and develop evidence-based services which are feasible and sustainable (Rehman et al., 2006). What kind of issues should be prioritized in effectiveness research, is also obvious from the frequency of referrals in the above mentioned set ups during recent years. For example, Syed, Hussein, and Yousafzai (2006) report that at initial phase of development of such services at the Aga Khan Medical University in Karachi, Pakistan, they conducted 290 assessments over a 3-year period. The most frequent diagnoses based on DSM-IV criteria was ADHD (24.8%), other problems included depression (15.9%) and intellectual disability (mental retardation 7.9% and borderline intellectual functioning 3.9%). 'Training clinic' at Rawalpindi shows that during the year 2005, approximately 18% of their patients had behavioral problems primarily using ICD-10 criteria for diagnoses (Rehman et al., 2006). Also a cross-sectional study, at Department of Psychiatry Civil Hospital Karachi included two hundred

children upto the age of 14 years in their study. These children were assessed by a semi-structured interview based on P-CHIPS (Child Interview for Psychiatric Syndrome). Among the psychiatric illnesses Oppositional Defiant Disorder and ADHD were most commonly reported, seen in forty (20%), and thirty-four (17%) cases, respectively (Sarwat, Ali, & Ejaz, 2009).

Attention-deficit/hyperactivity disorder (ADHD) is thought to be the primary reason for referral to mental health services among school-aged children in developed countries like United States (Barkley, 2006). The brief review presented above also verifies the need from mental health service set ups from Pakistan, also providing a platform for exploring *culturally sensitive* evidence-based interventions for these children. The upcoming section will briefly describe the nature of ADHD, associated impairments, assessment and intervention for ADHD.

Attention Deficit Hyperactivity Disorder (ADHD)

Attention Deficit Hyperactivity Disorder (ADHD), is the current diagnostic label for children presenting with significant problems with impulsiveness and hyperactivity, and typically with attention. Children with ADHD represent a rather heterogeneous population who display considerable variation in the degree of their symptoms, in the age of onset, in the cross-situational pervasiveness of those symptoms, and in the extent to which other disorders occur in association with ADHD.

Primary Symptoms and Associated Impairments

ADHD is presented in the Diagnostic and Statistical Manual of Mental Disorders-IV-TR (APA, 2000), as a disorder usually first diagnosed in infancy, childhood or adolescence. This is because the symptoms of ADHD usually appear in early childhood, but are often confused with other disorders or mistaken for normal childhood behaviors.

Hyperactivity and impulsivity are the most noticeable symptoms associated with ADHD. These behaviors often affect academic performance, home-life, and social relationships. ADHD is often associated with academic difficulties, social issues, low self-esteem, and problems within the family. Some hyperactive/impulsive behaviors that parents and teachers often report include restlessness, often displayed through squirming or fidgeting. These children also show an inability to remain seated when quiet behavior is expected a problem of excessive talking, blurting out answers without being called upon to do so, constantly interrupting others and an inability to take turns. Because the symptoms of hyperactivity and impulsivity are very disrupting both at home and at school, parents and teachers are often able to easily recognize the signs of ADHD. These behaviors can also negatively impact a child's social relationships with other children, as they are often viewed as loud, pushy, aggressive, and annoying. They may be unable to sit still, plan ahead, finish tasks, or be fully aware of what's going on around them. To their family, classmates or coworkers, they seem to exist in a whirlwind of disorganized or frenzied activity. Unexpectedly, on some days and in some situations, they may seem fine, often leading others to think the person with ADHD can actually control these behaviors. As a result, the disorder

can spoil the person's relationships with others in addition to disrupting their daily life, consuming energy, and diminishing self-esteem (Barkley, 2005).

Inattention is another important aspect of ADHD that sometimes goes unnoticed. Symptoms of hyperactivity and impulsiveness are more obvious because they cause disruptions at home and school. Some inattentive behaviors that parents and teachers often report include failure to pay attention to details and often making careless mistakes on class work. Along with it they also experience difficulty paying attention to the task at hand or easily distracted by extraneous sights and sounds, problems with organization and planning; may often lose items such as schoolwork, pens, books, or personal items (Barkley, 2005).

Subtyping of ADHD

The DSM-IV-TR (APA, 2000) also defines four diagnostic categories of ADHD based upon the impairments present. If criteria for both inattention and hyperactivity-impulsivity are met, ADHD Combined type is appropriate. If only criteria for inattention is met, ADHD Predominately Inattentive Type is appropriate. And if only hyperactivity-impulsivity criteria is fulfilled, ADHD Predominately Hyperactive-Impulsive Type is appropriate. The fourth category is defined as ADHD Not Otherwise Specified (NOS) and is utilized for those who have disorders with prominent symptoms of inattention or hyperactivity-impulsivity that do not meet the criteria for Attention Deficit/Hyperactivity Disorder.

It is important to note that diagnostic criteria for ADHD (attention-deficit hyperactivity disorder and HKD (hyperkinetic disorder) have changed with each revision of the Diagnostic and Statistical Manual (DSM) and International

Classification of Diseases (ICD). Current DSM-IV-TR (APA, 2000) and ICD-10(1992) diagnostic criteria are similar, with differences relating primarily to symptom severity and pervasiveness. Further revisions are likely to address outstanding issues such as disorder subtypes, age of onset, and the applicability of these criteria across the lifespan. For instance, on the event of 2009 World Congress on ADHD held in Veinna, highlighted that despite progress made, modern international classification criteria such as DSM and ICD remained not fully satisfactory, regarding diagnosis of ADHD in children/adolescents and in adults. There is clearly room for improvement and differences between such systems and other shortcomings will hopefully be addressed in forthcoming editions (Rohde 2009b; Steinhausen 2009). One of the salient messages of this event is the proposal of the DSM-V committee to introduce ‘‘Late Onset ADHD’’ as a distinct and new category (Rohde, 2009b).

The Prevalence of ADHD and Associated Problems

Global picture. In a recent systematic review, after screening 9,105 abstracts published in the last 27 years, a total of 303 full-text articles were reviewed and 102 studies comprising 171,756 subjects. Pooled variance estimate reported in this meta-analyses for ADHD/HD is 5.29 % worldwide. Geographic location was associated with significant variability between estimates from North America and both Africa (p = 0.03) and the Middle East (p = 0.01). Estimates from these areas were significantly lower than estimates from North America. No significant differences were found in prevalence rates between North America and Europe (p = 0.40), South America (p = 0.83), Asia (p = 0.85), or Oceania (p = 0.45; see Polanczyk, Lima, Horta, Biederman,

& Rohde, 2007 for review). It shows that worldwide prevalence estimates of attention deficit hyperactivity disorder (ADHD)/hyperkinetic disorder (HD) are having wide variation[18]. It also verifies that the methodological variables including requirement of impairment for the diagnosis, diagnostic criteria, and source of information are significantly associated with the prevalence rates. In other words, these factors seem to be some of the major possible causes of the varied worldwide estimates. However it also provides an evidence that ADHD is a worldwide transcultural phenomenon exhibiting striking and consistent characteristics which seem to be independent of cultural background. An Iranian study reports a prevalence of more than 10% in boys and approximately 4% in girls (Alizadeh & Armion, 2009). While a Ukrainian study reports a prevalence of 8% (Martsenkovska & Martsenkovsky, 2009). Information available from other cultures further show that, Japan recognizes 7% of its children as having ADHD, China recognizes 6% - 8%, and New Zealand reports up to 7% of its children are 10 diagnosed with ADHD (Barkley, 2006).[19]

Situation in Pakistan. There is no nationwide study being conducted in Pakistan to see the estimates of prevalence of childhood behavior problems. However, two community studies conducted in cities of Lahore and Karachi, are presented here.

One study in past been done in Lahore by Javed,[21] Kundi, and Khan (1992), established the prevalence of emotional and behavioral problems in school aged children, by using the Rutter scales. Behavior problems were reported in 9.3% population and most frequent type of problem was antisocial problems. Although this study used Rutter's scale, which does not provide the picture of ADHD as a disorder,

however, the subscale of antisocial problems gives the broader picture of prevalence of externalizing problems.

In a recent study (Syed, Hussein, & Mahmood, 2007), prevalence of ADHD in a community sample from Karachi was estimated. The Strengths and Difficulties Questionnaire (SDQ) was used, which is a brief mental health-screening questionnaire measuring 25 attributes. Based on parents' ratings on the SDQ, 18.8% of all children were categorized as 'abnormal' on the hyperactivity subset. In this subset 66.7% (*n* = 80) were males and 64.2% (*n* = 77) belonged to community schools; 52.5% (*n* = 63) had uneducated mothers while 38.3% fathers were uneducated (*n* = 46). A prominent majority (78.3%) belonged to lower socioeconomic status (*n* = 94). The frequency was 42.3%on conduct problems, and 37.8% on peer problems subset on the individual behavioral subsets scores. It should be noted that these children may not meet the full criteria for an ADHD diagnosis as SDQ is being used only for screening purpose and is not a diagnostic tool.[20,22] However, some researchers theorize that community-based samples (usually taking ADHD as a dimension, instead of a categorically defined disorder), are an important complement to more clinically oriented research, keeping in view the existing evidence that those children who do not meet the full criteria of ADHD, have still been shown to experience similar negative consequences as those experienced by children fulfilling the diagnosis (Wåhlstedt, Thorell, & Bohlin, 2008)

The above mentioned studies show, that indigenous data is scant, and locally available information is not showing the nationwide picture of childhood developmental and behavioral problems, especially the true picture of ADHD.

However conclusions and links drawn both from locally and wider international literature show that ADHD is not specifically a problem observed in developed countries like US, but is also observed in other cultures with a high prevalence rates.[22]

Co-Morbidities and Associated Features of ADHD

It is widely accepted by scientists studying children with ADHD that they display a greater degree of difficulties with oppositional and defiant behavior, aggressiveness and conduct problems and even antisocial behaviors than typical children do (Barkley, 2006). Barkley indicated that about one quarter of children diagnosed with ADHD also meet the criteria for conduct disorder and about one third meet the criteria for oppositional defiant disorder. Longitudinal studies indicate that in primary school aged children, hyperactive behavior is a risk factor for conduct disorder, a high likelihood of psychiatric diagnosis, violence and other antisocial behaviors, and social and peer problems. Studies also suggest a developmental pathway through which hyperactivity raises the likelihood of impaired social adjustment (Talor, Chadwick, Heptinstall, & Danckaerts, 1996). Studies suggest that from 45% to 84% of children and adolescents will meet full diagnostic criteria for ODD either alone or with CD (Barkley, Du Paul, & McMurray, 1990). These and other co morbidities including anxiety disorders and learning difficulties, result in profound impairments in academic and social functioning across multiple settings (typically, at home, in school, and with peers) and have some important implications regarding treatment planning and management of the disorder. Also, disruptive behavior disorders represented the most common comorbid disorders in the sample of Multimodal Treatment Study of ADHD, which is the world's largest study on

treatment of ADHD (MTA Cooperative Group, 1999a). This study will be discussed in greater detail later in this chapter.

Assessment and Screening of ADHD [33]

There are multiple methods of assessment of defiant children, children with ADHD and Conduct Disorder depending on different informants regarding the type of difficulties the children are facing in various situations (Barkley, 1997; Barkley, 2006). A number of scales are used for the evaluation of Disruptive Behaviors Disorders in children. The scales vary in philosophy and content. The training and background of the rater as well as the validity of items is of dire importance. Often items are not based on the DSM-IV criteria of the disorders and are therefore not reliable to be applied over multiple settings such as school as well as home, and also do not equally represent all disruptive behavior disorders (Silva et al., 2005)

Broadband assessment scales may include Child Behavior checklist (CBCL; Achenbach, 2000) that evaluates children's behavioral and emotional functioning, social problems and competencies. It is the most commonly used rating scale for child behavior and is used for children from ages six to 18. Scales that are specifically used for the assessment of Disruptive Behavior Disorder include DBDRS that has a parent version and a teacher version. DBDRS obtains ratings of the DSM-IV ratings of ADHD, ODD, and CD (only in parent form). High scores on these scales do not mean that the child can now be diagnosed with any of the Disruptive Behavior Disorders, instead a clinician needs to combine information obtained from these rating scales with information obtained through interviews of parents and teachers as well as with

the use of his own expert knowledge in differential diagnosis, before warranting the diagnosis (Barkley, 2006).

The examiner should also investigate the behavior problems the child exhibits in home and school situations. For this purpose Barkley has developed Home Situation Questionnaire (HSQ) and School Situation Questionnaire (SSQ; DuPaul, & Barkley, 1992). The content of Home and School Situation Questionnaire consists of rating the child's behavior in different situations (e.g. while playing alone, when visitors are in the home, during individual desk work, during recess, on the bus). The HSQ & SSQ are not designed to assess certain behaviors but to demonstrate certain situations in which the child might show impairment or difficulty.

The major challenge while working with Pakistani population is that none of such measure has been adapted, developed or standardized for Pakistani children to the best of our knowledge.

Ahmed, Farouqi and Aijaz conducted a study to investigate available scales for assessing psychological health that are available in Urdu (2007). The researchers found out that in Pakistan only nineteen (19) psychometric scales have been validated out of which six were developed in indigenous language but the remaining 13 questionnaires were translated from English. Most of these scales were screening tools for anxiety disorders and depression. Strength and Difficulty Questionnaire (SDQ) is the only scale which is a mental health screening questionnaire for children that assesses the child on five scales: emotional symptoms, conduct problems, hyperactivity symptoms, peer relation problems and prosocial behavior. However

SDQ is a screening measure which is not meant for diagnosis of mental disorders (Goodman, 2006).[33]

Neuropsychological Conceptualization of ADHD and its Treatment Implications

Until recently, ADHD lacked a reasonably credible scientific theory to explain its basic nature and associated symptoms and to link it with normal developmental processes. Consequently the vast majority of research into the treatment of ADHD has remained exploratory in nature, rather than being based upon any theory of the disorder. Treatments were tried principally because they had shown some efficacy for other disorders (e.g., behavior modification with the mentally retarded) or were discovered to have beneficial effects primarily by accident (e.g., stimulant medications). Thus, treatment decisions have not been guided as much by a scientific theory as by pragmatics; whatever seems to work is retained and whatever doesn't is discarded with little guidance from any sound theoretical rationale (Barkley, 2001). Barkley's theory of self regulation has now provided a conceptualization that links behavioral inhibition to executive functions and self-regulation.

Behavioral inhibition is central in this theory in that it is critical to the performance of other executive functions. These other executive functions, in turn, influence the motor control of behavior. Behavioral inhibition is viewed as consisting of three abilities. First is the ability to inhibit likely responses from occurring in the situation; second is the ability to inhibit, or interrupt ongoing responses. These two inhibitory functions allow a span of time during which the executive functions can be employed for self-regulation. The third inhibitory ability then comes into play, which is the ability to protect the executive functions against interference from other events

so that they can operate. In these ways, behavioral inhibition facilitates the workings of the executive functions (Barkley, 2006).

Barkley (2006), proposes four executive functions, each of which has several elements. (1) Working memory allows information to be held in mind so that it may be considered, (2) Internalization of speech facilitates mental reflection on rules and instructions to guide behavior, (3) Self-regulation of affect and motivation refers to the control of the emotions and motivations, thereby implying that these can be redirected when necessary, and (4) Reconstitution permits analysis and synthesis of experiences and creative thinking.

These four executive functions provide the means for the individual to self-regulate his or her behavior. When inhibition is disordered, these executive functions — and thus self-regulation — are adversely affected. Barkley proposes that a disturbance in the frontal areas of the brain is responsible for disordered inhibition (Barkley, 2006).

The theory of self regulation explaining ADHD as a deficit of behavior inhibition, tells us that children with these deficiencies do have difficulty regulating their behavior in response to situational demands. Such “demands” not only include the “stimulus” properties of the settings in which children function (either school or home), but also the “consequences” for their behavior. Modifying these situational parameters (consistency of rewards, immediate gratification), one can reasonably anticipate that changes in ADHD symptoms can be brought by using various behavior therapy techniques (Anastapoulas, Klinger, & Temple, 2001).

Evidence-Based Treatments (EBTs) for ADHD and Associated Disruptive Behaviors

Treatments for attention-deficit hyperactivity disorder include psychotropic medications, psychosocial treatment, homeopathic treatments, biofeedback, meditation, and perceptual stimulation. Traditional psychotherapy is not considered very helpful, and the effectiveness of some other treatments such as play therapy, chiropractics, dietary management, and individual counseling is not documented (Pelham, Wheeler, & Chronis, 1998). Evidence base exists for stimulant medication and behavioral interventions (including parent training and school interventions) which meets the criteria established by APA's presidential task force for 'empirically validated treatments'. ADHD is the chronic impairment by its nature, which affects multiple domains of functioning. Due to this, multimodal treatments are typically recommended to normalize the behavior of these children (Chronis, Jones, & Raggi, 2006).

The following sections describe these treatment strategies in detail, starting from the benefits of a multimodal strategy in context of world's largest study on treatment of ADHD. Multimodal Treatment Study of children with ADHD (MTA),[23] was not only the largest randomized clinical trial for the treatment of ADHD ever conducted (MTA Cooperative Group, 1999a) but also the first major clinical trial of treatment efficacy focused on a childhood mental disorder (Richters et al., 1995). Therefore, it merits particular attention before discussing treatment approaches in detail.

Multimodal Treatment Study of ADHD (MTA Co-Operative Group)[24]

In 1992, the National Institute of Mental Health (NIMH) and six teams of investigators began a multisite clinical trial to systematically investigate the effectiveness of medication and behavioral treatments for ADHD. The study was initiated in 1992 following the publication of a Request for Applications by the National Institutes of Health (NIH). 576 children (96 from each site in both US and Canada) with age range of 7–9 years were randomly assigned to one of four treatment conditions: (1) a medication management-only strategy, (2) a behavioral treatment-only strategy, (3) a combination strategy, and (4) a community-care comparison group. The participating children were selected to reflect a broad range of comorbid conditions (e.g., ODD, anxiety), from diverse referral settings (e.g., school, mental health clinic), and a range of socioeconomic levels. The psychosocial treatment package was comprised of three components: the School Intervention, Parent Training, and the Summer Treatment Program. These components were carefully integrated to form the overall psychosocial treatment strategy (Richters et al., 1995).

At the end of the 14 month treatment, results indicated that Combination and Medication Management interventions were substantially superior to the Psychosocial Intervention and Community Care for the management of core ADHD symptoms. When other domains of functioning were assessed (social skills, academics, parent-child relations, oppositional behavior, anxiety/depression), results suggested slight, but non-significant, advantages of Combination treatment over Medication Management, and a significant advantage over the Psychosocial Intervention and Community Care (MTA Cooperative Group, 1999a). In an effort to provide a concise

answer to the question of which treatment works best, Conners et al. (2001) conducted post-hoc investigation using a composite score as the treatment outcome measure. This secondary analysis and an overall measure of treatment outcome, revealed a statistically significant difference between combined treatment and other treatments in the study.

Findings also suggest that although medication alone was effective in reducing ADHD symptoms, only combined treatment with a behavioral component brought improvement regarding social skills and parent–child interaction, resulting a marked decrease in negative, harsh and inconsistent parenting (Hinshaw et al., 2000). These findings clearly suggest that behavior modification has a marked impact on family discipline practices and parenting behavior.

Psychopharmacological Treatments

Stimulant medications are by far the treatment of first choice. They are the psychotropic medication most frequently prescribed to youth mostly for ADHD in the countries like United States (Riddle, Kastelic, & Frosch, 2001). Stimulant medications currently available include methylphenidate (Ritalin, Concerta), dextroamphetamine (Dexedrine), and the combination of dextroamphetamine and amphetamine (Adderall). However, long acting preparations of Methylphenidate (like Concerta) is not yet been marketed in Pakistan (Imran, 2007). Pemoline is also a long-acting stimulant. However, guidelines by American Academy of Pediatrics (2001) do not include it as a first- or second-line treatment for ADHD. Because of its rare but potentially fatal hepatotoxicity, it is recommended that primary care clinicians should not use it routinely. Methylphenidate is contraindicated in children with seizure

disorders, a history of seizure disorder, or abnormal electroencephalograms (American Academy of Pediatrics, 2001; National Institute of Clinical Excellance, 2009). Non stimulant medication include trycyclics, clonidine and a novel agent atomoxetine (Strattera). The FDA however warns for the use of Atmoxetine, indicating the possibility of severe liver injury in rare cases, and of increased risk of suicidal thinking in children and adolescents **(**FDA Alert: Suicidal Thinking in Children and Adolescents, 2005**).**

Psychosocial Interventions

According to expert consensus guidelines (Conners, March, Frances, Wells, & Ross, 2001), behavioral-psychosocial treatment is an appropriate *first level treatment* in the following instances: (1) For milder ADHD, (2) For pre-school–age children with ADHD, (3) When co-morbid internalizing disorders are observed, (4)When co-morbid social skills deficits are observed, and (5) When the family prefers psychosocial treatment.

Classroom Behavior Management. Behaviorally based classroom interventions constitute an empirically supported treatment for children with ADHD (Chronis, Jones, & Raggi, 2006; Ollendick & King, 2004; Pelham, Wheeler, & Chronis, 1998). Classroom based behavioral interventions may involve more extensive individualized or classroom-wide contingency management programs. Such interventions generally involve regular consultation with the child's teacher regarding the use of behavior modification strategies. Consultation involves psycho-education about ADHD and identification of specific target behaviors, based upon a functional assessment of behavior. Teachers are then instructed for how to use behavioral

techniques, including praise, effective commands, planned ignoring of inappropriate behaviors, time out, and the Daily Report Card (Chronis, et al, 2006). Specific classwide interventions like "The ADHD Classroom Kit" are also available. This program works as an inclusive treatment package for children with ADHD and serves a whole-classroom approach for managing disruptive behavior (Anhalt, McNeil, & Bahl, 1998). The Kit addresses three main areas of concern: consequences for appropriate behavior, consequences for inappropriate behavior, and peer-mediated interventions (involving cooperative learning with small groups of students).

Behavioral Parent Training (BPT). Parent training programs meet the criteria of "well established treatments" of APA's presidential task Force for empirically supported treatments (Ollendick & King, 2004). The National Institute of Clinical Excellence (2009) Guidelines on ADHD also recommend Parent Management Training as primary intervention in children with mild to moderate ADHD.

The primary focus of parent training research since its beginnings has been in the area of children's disruptive behavior. This focus has been the result largely due the belief that disruptive behavior in the home is often inadvertently developed, exacerbated, or sustained by maladaptive parent–child interactions (Patterson, 1982). These maladaptive interaction patterns include reinforcing disruptive behavior, the use of ineffective parental directions, and the failure to adequately reinforce appropriate behavior.

Parent training for ADHD, is also influenced greatly by the research on noncompliant and aggressive children. Since ADHD is associated with a host of

family problems, it is unlikely that stimulant medication for children is sufficient to treat the multiple mental health needs and pervasive impairment common in these families. Behavioral parent training, then, is one of the most effective ways to change parenting and therefore treat ADHD (Pelham et al., 1998).

Rationale for use of Parent Training for Management of ADHD

A glance of relevant literature on treatment outcome quickly reveals that there are many ways to address ADHD associated problems. When faced with a new child referral, many clinicians, especially those early in their training have a difficult time sorting through many of possible treatments. So in order to decide which treatment or treatments to use a particular treatment should be guided by careful consideration of several factors, including (1) the clinician's conceptual understanding of how the disorder arises and is maintained; (2) the manner in which the problem presents itself clinically across development; and (3) the degree to which research findings support its use (Barkley, 2006). With these parameters in mind, various theoretical, clinical, and empirical considerations which provide justification for prioritizing parent training in the clinical management of ADHD will be discussed.

Etiology and Co-morbid conditions. Various neurochemical, neurophysiolgical, and neuoranatomical abnormalities have been implicated in the etiology of ADHD. Genetic mechanisms are thought to be the main pathway by which brain structure and functioning are altered in most cases, while acquired injuries to these pathways may also exist in some cases. Working from the assumption that this neurobiological explanation is valid, one could reasonably argue that medical

treatments, especially those involving stimulant medications are perhaps best suited for the treatment of ADHD (Barkly, 2006).

Part of the answer to this question can be inferred from the current debate of deficits of executive functions, behavioral inhibition and self regulation. To the extent that deficits in behavioral inhibition and executive functioning are central to understanding the disorder. It suggests that children with ADHD will not be very proficient at thinking through the consequences of their actions. Such a limitation arises because children with ADHD have less proficient working memory skills, which limit their capacity to reflect back on their learning experiences or to think ahead with respect to future consequences that may follow their behavior. This impaired capacity to regulate behavior relative to time and to anticipate future consequences is of particular relevance here. To the extent that children's awareness of the connection between their behavior and its probable consequences can be increased, greater external control, as well as self control, over their behavior can be achieved. More so than many other forms of treatment, parent training lends itself especially well to meeting this therapeutic objective (Barkley, 2006).

Justification for Family-based interventions stems from a consideration of the apparent relationships that exists among ADHD, Oppositional Defiant Disorder (ODD), and Conduct Disorder (CD). More specifically recent findings from the field of developmental psychopathology have implicated the possibility of a developmental pathway leading from ADHD to these co morbid conditions (Loeber, Keenan, Lahey, Green, & Thomas, 1993). If having ADHD greatly increases the risk for developing ODD or CD at a later time, then it would seem to be of utmost clinical importance to

begin treatment as soon as possible, to reduce this risk among children not yet affected by these comorbid conditions. Although research of this sort has yet to be conducted, the fact that parent training has worked so well with non compliant children and children with conduct disorder provides an empirical basis for considering its use in such a preventive role. Further justification for using parent training to target comorbid ODD and CD features stems from a consideration of the fact that environmental factors (e.g., coercive parenting, parental psychopathology, family stress), more so than biological factors, are thought to be intimately involved in the etiology of both conditions. Thus, using parent training to address comorbid ODD and CD features is on solid theoretical footing (Barkley, 2006).

Developmental Psychopathology Perspective. ADHD place individuals at risk for a multitude of psychosocial difficulties across the life span. For example preschoolers with ADHD place enormous caretaking demands on their parents and frequently display aggressive behavior while interacting with siblings and peers. At preschool level these family or peer problems tend to be of serious clinical concern. However, as children with ADHD move into the elementary school years, academic problems take on increasing importance. Together with their ongoing family and peer relationship problems, such school based difficulties set the stage for the development of low self-esteem and other emotional concerns (Barkley, 2006).

Whether alone or in combination with various comorbid conditions, ADHD can also have a significant impact on the psychosocial functioning of parents and siblings. Research has shown for example that parents of children with ADHD very often become overly directive and negative in their parenting style. In addition to viewing themselves as less skilled and less knowledgeable in their parenting roles,

especially when comorbid features of ODD are present. Parental depression and marital discord may arise as well. Whether these parents and family complications result directly from the child's ADHD is not entirely clear at present. Clinical experience however suggests that they probably do, at least in part, given the increased care taking demands that children with ADHD impose on their parents. These include more frequent displays of noncompliance, related to these children difficulties in following through on parental instructions. In addition, parents of these children often find themselves involved in resolving various school, peer, and sibling difficulties, which occur throughout childhood and into adolescence as well.

Although stimulant medication therapy is by far the most commonly used treatment in the clinical management of children with ADHD, 10-12-% of those who take such medication do not show clinically significant improvements in their primary ADHD symptomatology (Grennhill, Halperin, & Abikoff, 1999). Even when a favorable response is obtained, some children experience beside effects that are of sufficient frequency and severity to preclude continued use of stimulant medication. Independent of these issues, many parents prefer not to use any of the medication in treating their children. To the extent that there are children with ADHD for whom stimulant medication therapy is not a viable treatment option, alternative treatments must be used. Among these, parent training is certainly worthy for consideration.

Of additional clinical importance is the fact that raising a child with ADHD can place enormous strains on family functioning. In particular level of parenting stress can be quite high along with a diminished sense of parental competence (Mash & Johnston, 1990). Such circumstances are not usually due to faulty parenting. On the contrary, the parents of children with ADHD often use parenting strategies that work

just fine for non ADHD siblings in the family. Alerting the parents of this fact begins the process of alleviating their distress. Teaching them more effective ways of dealing with their difficult child, through the use of parent training can also give a long way toward facilitating their own personal adjustment.

Empirical support. Due to its successful history as a treatment, today parent training is considered one of only a handful of empirically supported treatments for children's externalizing behavior problems. A qualitative review by Chronis, Chacko, Fabiano, Wymbs, & Pelham, (2004), on efficacy of parent training in treating ADHD and comorbid disruptive behaviors, suggests that parent training results in improvements for children with ADHD in several important areas, most notably on observed parent child interaction and parent ratings of problem behavior for child.

The Parent Training Program Layout

Although there are many ways to conduct parent training programs for children with ADHD, little is known about their alternative efficacy. By and large, most of these programs train parents in the use of specialized contingency management techniques, such as positive reinforcement, response cost, and time out strategies. Thus it would not be unreasonable to select the one used in the present study to illustrate how parent training is applied in clinical practice.

Barkley's parent training program. Barkley's Parent training program, published in Defiant Children (1997), is one of the programs widely used with Attention-Deficit Hyperactivity Disorder (ADHD) and the associated disruptive behaviors. The program consists of 10 sessions plus a review/booster session, with 1- to 2-hour weekly training sessions provided either to individual families or in

groups. The program is intended for children aged 2 to 11. The intervention will be operationally defined in the method section, here only its content and steps are given briefly.

1. Review of information on ADHD. In the first session the therapist provides general overview of the nature, developmental course, prognosis, and etiology of ADHD. Providing the parents with additional reading materials, such as a book for parents and DVDs can be a useful addition to this session (Barkley, 2005). Such a session is essential in parent training to dispel a number of misconceptions parents often have about ADHD in children. Furthermore the causes of defiant behavior are discussed in terms of child characteristics, parent characteristics, situational consequences and parenting style, and stressful family events.

2. Pay attention. In this session, parents are trained in more effective ways of attending to child's behavior so as to enhance the value of their attention to their children. Parents are taught not only to ignore inappropriate behaviors, but to greatly increase their attention to ongoing prosocial and compliant child behaviors.

3. Attending to child compliance and independent play. This session extends to the techniques developed in session 3 to instances when parents issue direct commands to children. Parents are advised to increase attention to appropriate behavior and to ignore inappropriate behavior. Essentially, the method taught here amounts to a shaping procedure, in which parents provide frequent praise and attention for progressively longer periods of child nondisruptive activities.

4. Establishing a home token economy. Parents are asked to set up a home token economy to provide external reinforcers for activities not intrinsically motivating, such as home chores.

5. Implementing time out for non-compliance. The home economy system is monitored. And parents are trained to use time out and response cost for noncompliance with rules or requests.

6. Extending time out to additional non compliant behaviors. In this session, no new material is taught to parents. Instead, any problems with previously implementing time-out are reviewed and corrected. Parents may extend then their use of time-out to one or two additional noncompliant behaviors with which a child may still have a trouble.

7. Managing non-compliance in public places. Parents are now taught to extrapolate their home management methods to troublesome public places, such as stores, church and restaurants.

8. Improving child school behavior from home. This session is designed to help parents to assist their children's teachers with the management of classroom behavior problems. Daily Report Card System is introduced to parents to manage the behavior problem of their children at school.

9: Managing future misconduct. The goal of this session is to get parents to think about how these techniques may be implemented in the future if some other form of non compliance develops. The therapist challenges the parents with misbehaviors they have not seen yet and asks them to explain how they might use their recently acquired skills to manage these problems.

10: One month review/booster session. In what is typically the final session, the concepts taught in the earlier sessions are briefly reviewed, problems that have arisen in the last month are discussed, and plans are made for their correction.

Evidence of Effectiveness of Parent Training Programs from Asian Culture

Although not very extensively, Parent training programs have been studied with other Asian populations like Chinese and Taiwanese. Some of the earliest studies with Chinese families help us in knowing some of the process issues while working with Chinese families. For example, Leih-Mak, Lee, and Luk (1984) observed that less education of Chinese mothers, grandparents' role in child rearing, belief of illness in physical terms, considering child's problem shameful in terms of public opinion, difficulty faced by parents in praising the child are some of the issues which therapists may encounter while working with Asian families.

In this context, the first systematic study for effectiveness of a parent training program from Chinese culture, suggest that the behavioral parent training programs do have greater relevance for Asian families (Ho et al., 1999). Study shows a marked decrease in externalizing problems of children, and greater improvement regarding observed parent-child interaction. Furthermore it indicates that behavioral parent training programs with some minor modifications do have universality, and is not a *culturally specific* treatment approach only effective for western communities.

Furthermore, evidence also comes for effectiveness of parent training program for Chinese immigrants in Australia for managing behavior problems of children (Crisante & Ng, 2003).

Adaptation of Barkley's program for ADHD children. Evidence from Taiwan (Huang, Chao, Ching, & Yang, 2003), suggests that Barkley's program has proven its effectiveness for treating ADHD among Taiwanese children. Study shows that keeping in view the Confucius culture promoting conformity, greater compliance, strict discipline, and hierarchical system, Barkley's program is especially useful for families of children with ADHD. Research provides an evidence that this program can be helpful in enhancing the ability of Taiwanese parents to manage ADHD. Authors highlight that difficulty faced by ADHD children in following social rules might be causing an increased burden and greater embarrassment for these families in Taiwan. Program was tried with a sample of 23 preschoolers and showed a marked decrease in all symptom domains of ADHD and associated ODD features and reduced symptom severity in Home Situation Questionnaire according to parent reports (p = .01).

Another study by Liu & Wang (2007) explored effectiveness of Russell Barkley's parent training in children with attention deficit hyperactivity disorder (ADHD) and comorbid oppositional defiant disorder (ODD), and evaluated its applicability in mainland China. Parents of thirty DSM-IV diagnosed ADHD children were given training. Results showed that symptoms of inattention, hyperactivity/impulsivity and ODD declined significantly. Reduction rates of symptoms of inattention, hyperactivity/impulsivity and ODD were (47+/-23) %, (60+/-37) % and (61+/-56) % respectively. The parents reflected that the parent training was suitable to Chinese culture and current social status and parent training could be applicable in Chinese culture and current social status, to alleviate both ODD and ADHD symptoms.

Evidence from India, the other neighboring country of Pakistan also suggests for the cultural relevance of program for South Asian Parents. Although used with small samples (n = 10), Barkley's program in conjunction with self control techniques has proven to be effective for training Indian parents of children with ADHD (Basu & Deb, 1996).

Although the above mentioned studies are not randomized controlled trials, however robustness of the program and its cultural relevance in terms of prevailing child-rearing practices in the region, is evident from the post measures, follow up measures and responses of parents regarding treatment acceptability.

Adaptation and Implementation of Behavioral Parent Training for Pakistani Families: Cultural Sensitivity

There is a growing awareness that much of what is known as psychology today is based on studies with Western population. Kotchick and Forhand (1996) have shown increased concern for how cultural and sociopolitical influences on parenting behavior have largely been ignored in the parent training context.

According to these authors, without sensitivity to and research concerning the *cultural* context of parenting, we will not be informed about *how* parenting programs should be modified for other cultural groups. As a consequence, our success in improving children's behavior through parent training could be severely limited for children for various cultural backgrounds. The authors emphasize on the increasing need of behavior therapists to understand cultural context within which families participating in the parent training programs usually live.

As a critical first step, early interventionists are recommended to understand values and contextual factors of their clients. Research on the role of culture in individual behavior led to increased attention to cultural sensitivity in family programs. There is an increased chance that program goals may be frustrated or defeated simply because of little knowledge of program designers about the cultural-ecological context of the families to be served (Herry, 1992). The notion of cultural sensitivity implies not only an understanding of a group's unique values, beliefs, and customs, but an appreciation of these differences as well. Rather than judging a group by a particular standard, cultural sensitivity acknowledges different ways of being and acting, and differences are not automatically seen as deficits. In parenting programs, this may be reflected in an acceptance of unique childrearing practices or family constellations (Kotchik & Forehand, 1996).

Cultural sensitivity falls along a continuum, demonstrated to a greater or lesser degree in a program's goals, content, and implementation, as well as in the facilitators' attitudes and beliefs (Gorman & Balter, 1997**).** Before attempting to modify parental behavior, behavior therapists must allow the family's cultural background to guide the understanding of which child, as well as adult, behaviors are valued (Kotchik & Forehand, 1996).

Adaptation Framework

There is an absence of *empirically based* framework to guide the process of cultural adaptation for psychosocial interventions. As a result, existing interventions are often modified in community service settings based on clinical intuition and general assumptions regarding relevant cultural values, issues, and the perceived

needs of the target population (Vega & Lopez, 2001). On the other hand a focus on adapting EBTs to be culturally responsive without empirically based framework may prompt haphazard or inappropriate adaptations that may actually compromise the fidelity of the interventions and their effectiveness.

Lau (2006) draws attention of researchers towards less discussion about how research could be employed to direct the development of such treatment adaptations for ethnic minorities and groups other than white community. The author shows an increased concern for less availability of information in the existing literature to guide systematic translational research to inform adaptation.

For adaptation purpose Lau (2006) provides some recommendations for using research to direct the process of treatment adaptations, to ensure community engagement and the contextual relevance of treatment content. The author argues that much can be learned from effectiveness trials to determine what types of modifications may be required to ensure robust effects across diverse settings and groups. At the same time, a compelling case can and should be made for treatment adaptation prior to the conduct of costly trials of standard EBTs.

She proposes an approach to the selective adaptation of EBTs for targeted communities that is systematically guided by evidence. This approach to adaptation prioritizes the use of data to (a) selectively identify target problems that would most benefit from an adapted intervention approach and (b) direct the design of treatment adaptations. A *selective* approach suggests that adaptation efforts be focused on those presenting problem and intervention for which evidence suggests the likelihood of Evidence Based Treatment (EBT) generalization failure. It implies that until there is

no evidence of ineffectiveness of a particular program component, it should not be adapted or modified.[25] It further explains that focus of adaptation should only be on those areas which are not culturally appropriate or relevant and some necessary changes should be suggested targeting those specific treatment components.

A *directed* approach to cultural adaptation likewise emphasizes reliance on data, in this case to derive specific modifications to EBT procedures or content. A data driven adaptation of intervention is more helpful as from one side it gives evidence for treatment generalization and from other side it helps in focusing on those areas which are not culturally relevant and require modification. The interventionist should proceed with adaptation design in an a posteriori manner. The adaptation should be guided by empirical findings gathered from data showing how the adaptation of the EBT may be improved for the target cultural group. By giving example of parent training, she discusses the types of research evidence that may be of value in selecting adaptation targets and directing adaptation design.[25]

Within a research-based approach to treatment adaptation, work may proceed along two parallel lines. Two types of treatment adaptations may be contemplated to ensure fit with the needs of the target community, while attending to the needs of ensuring fidelity to the EBT model. Lau's two pronged approach aims to firstly contextualize the content and second to enhance treatment engagement of participants.[25]

Contextualizing Content. The first arm of adaptation involves contextualizing content, such that the adapted intervention accommodates the distinctive contextual factors related to the presenting problem in the target community. This may involve

the addition of novel treatment components to target these group-specific risk processes, or the addition of components to mobilize group-specific protective factors. Alternately, treatment content may be altered to target symptom presentation patterns that require distinctive intervention elements.

Identification of distinct etiological factors. The author highlights the need of research which identifies the core intervention procedures which may impact theoretically and empirically important mechanisms causing or maintaining problem behavior. Therefore, if there is evidence to suggest that a clinical problem emerges within a distinctive sociocultural context in a given group, treatment adaptation may be indicated to address culturally specific risk processes.

Ecological context and developmental Psychopathology . At the same time research on cultural processes in developmental psychopathology represents an emerging area of inquiry. While ecological context is centrally important in the study of the emergence of disorder and problem behavior, empirical study of cultural influences has been lagging (Garcia-Coll, Akerman, & Cicchetti, 2000). The idea of equifinality, there being multiple pathways to psychopathology, is well accepted. This line of inquiry, however, may represent a major inroad toward identifying fruitful avenues for culturally responsive interventions. Indeed, evidence for the existence of unique processes that protect against the development of clinical problems in specific communities is of key relevance to treatment adaptation. In this case, adaptation would focus on mobilizing or exploiting naturally occurring community-specific protective factors.

Enhancing Engagement. The second thrust of adaptation involves enhancing engagement in EBT strategies. The main challenge is to design adaptations that increase engagement in a standard EBT approach without undermining the therapeutic value of the original intervention. Here, Lau highlights the standpoint of those researchers who think that adaptation should be done in a way that it should enhance program fit while also maximize the fidelity of implementation and program effectiveness (Castro et al., 2004). Data are emerging to suggest that culturally adapted versions of PMT, which make surface-level (e.g., including community-relevant examples, modifying graphic material to depict ethnically similar families, and acknowledging and respecting cultural values) and structural changes (e.g., community network recruitment, conducting groups in churches and other community locations, and addressing basic living needs), result in marked improvements in recruitment and retention for ethnically diverse samples (Harachi, Catalano, & Hawkins, 1997; Kumpfer et al., 2002).

Threats to the Social Validity of Interventions . Lau (2006) invoked the term *social validity* in discussing engagement enhancement. The social validity of a treatment refers to its perceived acceptability and utility, perceptions that might be influenced by cultural worldviews and the practical realities of life circumstances. Conceptually, treatment outcomes can be separated from engagement, yet outcomes are certainly influenced by the characteristics (e.g., problem severity) of those who are recruited and enrolled in interventions, and the extent to which individuals are involved in intervention activities (e.g., dosage). In this case, focus is more on community engagement in the intervention process. A major threat to the successful

dissemination of an intervention is the potential for dilution of treatment strength owing to increased attrition or marginal participation in usual practice contexts. In this regard, the assessment of the social validity of interventions in target communities is informative. Direct and indirect evidence regarding the social validity of a psychosocial intervention can be obtained in a variety of ways. Data from inclusive effectiveness trials may demonstrate differential attrition or participation among certain groups of consumers, making tangible problems with social validity.

Although the recommendations by Lau (2006) are useful regarding adaptation process yet, limited progress has been made toward understanding how cultural context may pattern the processes leading to disordered or healthy development and consequently how these factors can be successfully taken into account while adapting interventions. The program mismatch and evidence for the original treatment program ineffectiveness for a particular population cannot be a relevant point while transporting EBTs to other parts of the world, where sources of this mismatch are generally very obvious. Especially keeping in view the factor of language barrier as a major reason for adaptation. The work regarding adaptation framework for intervention is still in infancy as evidence required for successful implementation of these recommendations is far less than required, and much of this work has yet to be translated into treatment design. The framework sets some ideal standards for adaptation process however looking for the culturally specific etiologic factors that can impact cause is an area requiring persistent inquiry for decades. However, certain areas can be taken into account while adapting the interventions for a population on cross cultural bases. Before moving onward we can look at certain factors which

should be considered before adaptation of a family based intervention. Some of these factors are discussed below.

Parenting in a Broader Ecological Context

Keeping in view the increased importance of adopting an ecological perspective on parenting for future research, clinical practice, and policy development related to families with children we have tried to give a deeper look to the Pakistani context of parenting. As suggested by Belsky (1984), parenting should be examined as the interplay between characteristics of the child (e.g., temperament), characteristics of the parent (e.g., personality, psychological functioning, attachment history), and the family environment (e.g., stress and support) in the determination of parenting practices. Financial strain, marital discord and divorce, parental illness, relationship between social support and adaptive parenting, and parenting stress should be taken as significant factors in parenting behavior. The differences in parenting based on social class, community context, socioeconomic status, race/ethnicity, and other "ecological" factors should also be emphasized while understanding the prevailing child-rearing practices of a culture (see Kotchick & Forehand, 2002 for review).

Keeping in view this broader ecological perspective, it seems like impact of poverty and living in higher danger communities require greater emphases in terms of understanding parenting practices in Pakistan. In context of current ongoing war against terrorism from almost one decade, the State Bank of Pakistan has pointed out that between 2005 and 2009 poverty has risen to 35% in fiscal year 2009 and 62

million people are living below poverty line (Economic Stabilization with a Human Face, SBP Interim Report, 2008).

Poverty and parenting. One of the pathways through which poverty has been found to affect children is the disruption of parenting. The poor mothers are less likely than nonpoor mothers to communicate effectively with their children or to show either verbal and physical affection toward their children, regardless of ethnicity. In terms of poverty's effect on parenting, financial hardship places a great strain on the emotional resources of parents, often resulting in decrements in psychological functioning (e.g., development of depressive symptoms) that then lead to impaired parenting (e.g., Cummings & Davies, 1994). Likewise, parents of lower socioeconomic status are typically less educated and lack the structural resources to provide more stimulating environments for their children that characterized parenting interactions among higher SES families.

Parenting in dangerous and disadvantaged communities.[26] Although poverty has clearly been identified as being detrimental for children and families, further evidence suggests that children can and do achieve psychosocial success when they have access to personal, family, and community resources that serve as buffers against the sustained effects of economic disadvantage. Parenting that emphasizes parental control, monitoring and supervision of children, and high parental expectations for obedience and respect for authority have been found to be particularly adaptive for children growing up in impoverished or dangerous neighborhoods. Research supports the notion that residence in dangerous or impoverished communities is associated with more restrictive parenting practices.

Again, ethnographic research supports this contention by providing narratives that suggest that parents who live in more impoverished or dangerous neighborhoods are less warm and more controlling with their children than parents who live in more advantaged and safer neighborhoods. This parenting style is considered to be somewhat adaptive because it teaches children to take care of themselves in a dangerous and impoverished environment (Forhand & Kotchick, 2002).

Hierarchical family system and self control. Asian culture is diverse in many respects especially in terms of being a collectivistic society. In a collectivist society, the individual's thinking and behavior are largely governed by the influence of the group to which she or he belongs. It could be the extended family, kinship, or even the culture of origin. Achievements in life are principally viewed as bringing honor and glory to the family, a clan, or a religious body. Furthermore, social behavior is guided by cognitions that focus on duties and expectations of others (Triandis, 1995). Revealing emotions is not encouraged for individuals in these group societies. Even though the Asian people have concerns or feelings, they learn to control facial expressions. One reason to hide feelings is to prevent trouble and to avoid challenge or confrontations. Withdrawal rather than aggressive encounters is preferred. It is expected that well-educated, well trained, and strong persons should be able to conceal emotions and control their verbal and physical expressiveness. This self control further reinforces individuals to express illness in physical terms (Pinyuchin & Gray, 1997).

Alternative healing practices and child mental health

Pakistan is a country where religio-cultural traditions are a way of life and influence health-related practices. It also has a culture that is an amalgam of rituals, traditions, and folk beliefs (Mubbasher & Saeed, 2001). Traditional and informal Pakistani explanations for the fortune or misfortune, luck or bad luck, and health or illness. Such traditions also include beliefs in dreams, premonitions, fairies, spirits (good and evil), use of certain items like *taweez (amulet)*[28] for protection or to bring good luck, bad luck signs (e.g., the color black); or folk beliefs and rituals about dying, burial and the funeral. Some Pakistanis consider Sufis (a type of traditional healer) capable of applying magic to speak to the spirits of nature, performing both physical and spiritual healings, and discovering supernatural powers through ecstasy and fasting (Farooqi, 2006).

Some Pakistanis also believe in the supernatural power and divine role of inanimate or non-living things or objects. Some of the main reasons for these folk beliefs and rituals may include the deep impact of Hinduism on the Pakistani Muslim community as being a part of Indo-Pak subcontinent these nations have been living together for centuries, the misunderstood religious beliefs due to ignorance, poverty, political and economic instability, poor formal education, and the deplorably low literacy rate. Another common reason for alternative healing practices may include the lack of costly mental health services, especially in the rural remote areas of Pakistan. As a result, many Pakistanis seek the most affordable spiritual/traditional treatment from Pirs or Aamils (spiritual healers), Hakims(health practitioner

providing herbal treatments),[28] magicians, palm readers, folk healers, and other "quacks" rather than seeking medical, psychological, or psychiatric help from the licensed mental health professionals. Consequently, all types of traditional faith healers enjoy a flourishing business in remote areas of Pakistan where people are mostly ignorant and mental health facilities are almost non-existent (Farooqi, 2006).

An understanding of the religio-cultural background of patients and families and the strengths and weaknesses of the traditional healing practices should be known to all health care professionals in Pakistan so that they could treat the patient with less resistance from the patients and their relatives.

Functional Parenting in Pakistan—Asian and Islamic Context

Pakistani society is an Asian Islamic society, with many cultural factors being shared with other Eastern and communal/collectivistic cultures, (for example Confucius culture and a broader culture of Islamic world). Keeping in view this context, parenting typologies described in western models, like Baumrind's theory, seem to be having less relevance to Asian cultures. Chao (1994) raised a concern that Baumrind's typologies of parenting styles (authoritarian and authoritative) incorporates various *components* (e.g., warmth and parental control), some of which carry different meaning in Asian culture. Consequently researchers are ending up at the notion of Asian parents being Authoritarian, with an emphasis on dominating control, strictness, and less warmth (Chao, 1994). Instead of these typologies, Chao introduced the component of "training", based on the Chinese concepts of *Chio Chun* and *Guan.*

This distinct dimension introduced by Chao, is further studied and verified both in Confucious and South Asian Muslim culture by Stewart et al. (1999). Their findings are showing high degree of relevance of "training" construct to the "collectivistic societies" of Hong Kong and Pakistan, hence leading to the "Indigenous Model of Functional Parenting" and since there is very little information presently available in the international psychology literature on parenting practices in Eastern context and especially countries with a Muslim majority, like Pakistan, this study sounds to fill some gaps regarding parenting and child rearing practices in Pakistani families, and their impact on psychological well-being of the child. The study carries relevance to current study as with its empirical grounds in Baumrind's theory of parenting styles, provides an indigenous context of parenting practices in Pakistan. Hence it holds merit to be discussed in greater detail.

Establishing empirical grounds in Western model of parenting by Baumrind, study compares Confucian and Pakistani culture in terms of "parental control" primarily taken from Chao (1994), with some additional and distinctive dimensions of Pakistani parenting predominantly shared with other Islamic cultures. Relevance of this typology of "training" and its components to both communal societies of Hong Kong and Pakistan, and some additional dimensions exclusive for Pakistani child-rearing practices, explored by these researchers, are discussed as following.

***Chio Shun, Tarbiat,* and Sacrificing role of mothers.** The major component of "training" typology is Chinese concept of *Chio Shun*. Chio Shun or 'teaching" emphasizes the importance of parental role in helping the child in education, and parental involvement, concern and support in that regard. This component emphasizes

the need to do well in school. The Urdu word *tarbiat* is taken by researchers as a parallel to the Chinese *chiao shun*. It carries many of the same connotations of guidance in raising children. Chao (1994), has described the sacrifice that mothers of Chinese culture, are willing to make for the advancement of their children. A similar role is prescribed for Muslim women, who view it as part of their duty in training children for the future (Stewart et al., 1999)

Guan. *Guan* is also a Chinese concept, with literal meanings ‘‘to govern’’, and is taken as the term having a positive connotation in China because it can mean ‘‘to care for’’, ‘‘to love’’, as well as ‘‘to govern’’. Hence, ‘‘control’’ and ‘‘governance’’ not only have very positive connotations for Asians, but also they are regarded as role requirements of responsible parents and teachers. The concept emphasizes the supportive mother-child relationship. Chao suggests that ‘‘strictness’’ interpreted negatively by the Western child ‘‘may be equated with parental concern, caring and involvement’’ by the Chinese child. Islamic and Confucian cultures share some similarities in their views of children and the responsibilities of parents. The words ‘‘training’’ and ‘‘supervision’’ are frequently used in the Islamic literature to describe the parental role. Also, both ideologies combine the viewpoint that children are inherently good, and emphasize the role of parents and the environment in the development of children (Stewart et al., 1999).

Dominant control vs organizational control. Both the notions of *Chiao Shun* and *Guan* have evolved from the role relationships defined by Confucius (Chao, 1994). *Chio Shun, Guan* and Urdu term *Tarbiat* are the aspects of training typology, which emphasize the “organizational control” or a “positive control” of parents in

Asian cultures, with greater emphases on self discipline, concern about education, neatness, organization, penalty on misbehavior, and hard work (Chao, 1994, Stewart et al., 1999). Indeed, the concepts of control(in terms of parental dominance) is more pertinent to American parenting values in which "strictness" is sometimes equated with manifestations of parental hostility, aggression, mistrust, dominance or a “negative control”. For Asians, parental obedience and some aspects of strictness may be equated with parental concern, caring, or involvement and hence are taken positively.

Parenting in context of Conformity and Filial Piety. Conformity is valued in Pakistan, and respect for parents as an important prescription of Islam, takes a central place, considering parents ‘‘second only to God’’ (Obeid, as cited in Stewart, et al., 1999), as it is in most communal cultures, like Thais (Pinyuchin & Gray, 1997). Researchers took its parallel term *filial piety* from Chinese culture with similar connotations.

According to Chao (1994), because relationships are structured hierarchically, the subordinate member in familial structure is required to display loyalty and respect to the senior member, who is required to responsibly and justly govern, teach, and discipline.

This dimension of Pakistani parenting (or in broader term Eastern parenting) also seems to have a considerable overlap with child rearing values of other collectivistic societies. For example, *Respecto* is a term being used by communal cultures (non eastern) of Latin America as an important child-rearing practice in a same manner. These cultures also expect the child to be very respectful and obedient

to all family members, including uncles and aunts (Calzada & Eyberg, 2002). This may indicate that across the world, collectivistic cultures share certain common values regarding child-rearing practices, which make them distinct from individualistic societies.

Role of Izzat and public opinion in child rearing practice. According to Stewart et al (1999), The Urdu term *Izzat* or honour is a central value appears to be shared by other Islamic societies. *Izzat* is translated as a dimension which takes the connotation of pride, honor and self-respect. It is thought to be an important determinant and motivator of behavior. Related to the centrality of this construct in Muslim society, the emotion of shame, and awareness of public opinion are important aspects. The use of shaming as a child-rearing practice is seen as a common socialization strategy in societies which stress mutual interdependence rather than individual autonomy. Elaborating the construct further, researchers state that the child is made to feel ashamed because others *see* him acting wrongly, not because he inwardly *regrets* having done wrong and judges himself accordingly.

Again it seems like this value is shared by non eastern communal cultures as well. Emphasis for a "proper demeanor" particularly in public context is also been described as prominent child-rearing practice in Latin America's collectivist societies. Latin term *Bien educado* actually means "well-educated," meaning that children are expected to exhibit behaviors showing that that they are being raised properly. Opposite to it is *malcriado* which means disrespectful behavior (Arcia, Reyes-Blanes, Vazquez-Montilla, 2000).

Role of religious authority in child rearing. In addition, Stewart and colleagues emphasized that there are also some distinctive aspects of Pakistani culture that do not appear to be shared with Confucius cultures of Hong Kong and China. Religion plays a very important role in Pakistan. The individual's responsibilities to God are emphasized in many aspects of daily life. Stewart's study finds that the role of god to discipline children, (fear of god or effort to please god, both positively and negatively) is an important feature of Pakistani parenting and families reinforce and are reinforced by religion (Stewart et al., 1999).

Differential role of gender in parenting. This study further verified that Pakistani culture differentiates gender roles much more strictly than does Western culture. Eastern culture has given the central role to mothers in raising children, while emphasizing the distance of fathers from their children. In Eastern cultures, father is usually expected to play the role of an authoritative figure, responsible for discipline, while the mother is the real head of the family to whom children turn for economic, physical and emotional support(Stewart et al., 1999).[30]

Some other studies also verify the notion, that the role of eastern mothers is almost exclusively focused on home care and child rearing, whereas more western mothers focus on professional careers (Triandis, 1995). Although eastern mothers are close to their children and exert a great deal of control over them, they lack personal authority; therefore, they exert their control ‘‘in the name’’ of the fathers' authority. An increased responsibility of Eastern mothers within the household, for child rearing, disciplining, and the children's education, puts an additional burden on mothers regarding child's misbehavior. When a child misbehaves, the mother is

exposed to accusations by the family and by the father, whose role it is to ensure the family's physical and economic needs (Dwairy, 1998).

Parental control in terms of Psychological well being of children

We have very limited studies regarding child rearing practices among Pakistani families and their role in psychological well-being of the child. However, research findings from other countries of Eastern region and from non eastern communal cultures can fill the gaps of information and help us in drawing some unique features of eastern parenting.

In comparing the child-parents connectedness and parental control across countries it appears that in countries where children and parents tend to be connected, parents tend to be controlling, suggesting an association between the dimensions of collectiveness and authoritarianism. Evidence show that parental control is associated with culture and with family connectedness. Parents in eastern countries impose higher control on their children than western parents do. It appears that parental control is determined more by cultural and gender-related factors than by socioeconomic factors (Dwairy, 2007).

Inconsistancy Hypothesis. These cultural differences may be explained by the inconsistency hypothesis (Dwairy, 2007), claiming that parental control does not cause significant harm to children in authoritarian/collective societies because control in such societies is considered entirely normal and consistent with the authoritarian general atmosphere in which the children live, whereas in the west, authoritarian parenting and control is not consistent with the general liberal cultural climate, and

thus it may be perceived as an abuse and harmful to children's mental health. Incongruence between parental control and liberal western culture may foster ambivalent feelings towards the parents and the self, and the perception that the parents' attitude is unjust (Chao, 2000; Chao, 2001).

Clinical Implications of Cultural Context and Parenting Styles

The preceding discussion has provided a series of snapshots that describe how parenting may vary across sociocultural contexts. Although a comprehensive model of parenting behavior that includes context as an important factor is not yet been developed which can help and guide researchers and practitioners in a well defined manner while bringing modifications to interventions. However, this review clearly demonstrates that social and contextual factors play an important role in shaping the parenting process. Furthermore it suggests that in terms of parenting research, it should be both common and expected that social and contextual forces be *at least* acknowledged if not directly assessed in models of parenting behavior. Although empirically supported parenting interventions often do not explicitly address or account for the context on their delivery, clinical researchers and practitioners alike have long recognized that broader social and environmental factors influence both parenting behavior and parents' response to treatment. This realization of cultural norms would greatly enhance intervention efforts geared toward improving problematic child behavior or ineffective parenting strategies. Following points should be noted regarding adaptation of interventions on cross cultural bases.

Interpreting "Defiance" using culturally relevant information. In every socio-cultural niche, parenting is guided by both past and current conditions that

dictate which child behaviors are most desirable. Prevailing cultural norms and regional conditions, determine which child-rearing practices are most effective at promoting those outcomes (Ogbu, 1981). Culturally relevant information helps us to view and understand which behaviors are viewed as "adaptive" within a culture and are highly congruent with the larger societal norms, on the other hand how "deviant" behavior is defined and perceived within that culture. It suggests that parental perceptions and concern regarding child behavior is at least partly determined by culturally shaped values and beliefs regarding appropriate child behavior, and this becomes particularly salient when considering definitions of "problematic" child behavior and beliefs about appropriate parental responses (Diaz, Knight, & Chronis-Tuscano, 2008). The cultural values outlined above suggest that Pakistani families may be particularly disturbed by child behavior that is perceived as disrespectful or highly inappropriate bringing shame in front of public or other family members. This might be more stressful for mothers who are given the primary responsibility of "training" and "teaching" appropriate ways to children making them respectful for elders and bringing success in academics.

Parenting is a dynamic process. While working with parents and families, researchers and practitioners should keep in view that parenting is a continually evolving process based on the transactions that take place between parents and children, and between families and their environments. Thus, it is critical for us, to consider the broader social context when attempting to explain, predict, or modify parenting. As mentioned earlier, although parenting styles do play a role both positively and negatively in child's well being, however, parenting itself occurs in a

broad cultural and ecological context, which should not be ignored by researchers and practitioners. Cultural sensitivity in adaptation process should imply *not* to design, modify and practice a parenting program while ignoring context of families. Rather the adapted programs should present strategies in a way that alters the parenting strategies for those groups to fit the environmental circumstances in which they are raising their children so that their children's chances of success are maximized (Kotchick & Forehand, 2002).[31] Parent training programs are been used both as intervention and prevention in different settings and works for both clinical and non clinical population. This context can not be ignored while offering service in any setting and with any population. It equally implies to parent training program of all kinds, whether being provided as an intensive treatment program to children with a particular disorder like ADHD or ODD, or offered as a prevention based service targeting the whole community (e.g Castro, F. G., Barrera, M., & Martinez, C. R, 2004; Crisante & Ng, 2003).[27]

Inter- and intragroup variability. Certain factors like "parental control" might be taking a different meaning in different parts of the world, and some "universal correlates" of child's psychological well-being might also be acknowledged for example, parental warmth (Stewart et al., 1999), and parental acceptance-rejection (Dwairy, 2009a). Gender-roles, poverty, and neighborhoods do play a role, however, considerable intragroup variation in parenting also exists among distinct ethnic and cultural group (see Forehand & Kotchick, 2002, for a review). It shows that "within culture variances" should also be kept in view, which may predict success or failure in terms of treatment outcomes. This variation also constitutes that

“Not all parents will benefit from the program in a same way” and treatment success will vary even while working with the families of same cultural background.

Identifying and utilizing family’s “strengths and resources”. The identification of families' "priorities, resources and concerns" is only possible by professionals if they can work with families in a nonjudgmental mode. This approach helps us to respect families' varying functioning styles and also to offer services consonant with the beliefs of professionals and the system they represent. The job of early interventionists in terms of promoting families' "ability to identify and utilize their own family resources" is only possible by increased knowledge, recognition and appreciation of their cultural context. Thus, professionals' impressions of families' functioning styles may be expected to be influenced by their own, often unexamined, cultural assumptions. Unless we can step outside of our own framework, it can be difficult to see strength in behaviors that reflect different assumptions; it can be difficult to understand that a feature that appears at first glance to be a deficit may actually be a resource (Harry, 1992).

Concept of family in cultural context. Typically, professionals tend to recognize the parents of a child as the main authority in the family; indeed, they may tend to see the biological parents and their children as the core of a family. The existence of the extended family, of course, is well known, but is often seen as an addition rather than an integral part of the family's identity and authority structure. This assumption can be a source of misunderstanding between professionals and families. Professionals working with such families may readily apply their own assumptions about family structure and responsibility and, in so doing, may fail to

recognize the strengths that may accrue from a broader assumption of extended family's responsibility for children. Multiple caregivers are not interpreted as evidence of neglect or lack of interest on the part of parents, but are understood by their communities as acceptable actions done for the good of the family as a whole (Herry, 1992). Furthermore, it should also be noted that social support and reliance on extended families, not always necessarily play a positive role, but in certain cases the involvement of other family members can also add into parenting stress. While working with families, the negative or positive role the extended family might be playing, should also be identified (Ceballo & McLoyd, 2002).

***Goals of Intervention*:** Keeping in view indigenous context it seems like the approach of adaptation and implementation should avoid directly challenging cultural beliefs, but rather it should work within the family framework and focus should be on changing specific parent-child interactions identified by the parents as unhelpful. Promoting the program as a way of creating happier and less stressed parents should be the key focus, so removing a sense of criticism and public shaming as a 'bad parent', which is viewed as culturally inappropriate (Crisante & Ng, 2003).

In the light of above mentioned literature review, relevance of behavioral parent training for Pakistani families of children with ADHD is summed up in the following table.

Table: *Illustrations of similarities between Behavioral parent training and Pakistani parenting context*

Clinical Considerations	**Behavioral Parent Training**	**Pakistani family structure and parenting context**
Theoretical framework	Behaviors can be 'learned' and 'unlearned' putting emphasis on environment.	Children are inherently good; parent's role as 'teachers' and 'trainers'.
Goals of therapy	Helping parents to manage their child's problematic behaviors with emphasis on 'effective commands', ignoring maladaptive behaviors, time out etc.	Families want to know the best ways to manage difficult child which should be consonant with prevailing cultural values [greater parental control, emphasis on disciplining the child and less expression of personal feelings].
Mode of therapy	Put ideas into actions, less emphasis on theoretical knowledge, directive explicit.	Pakistani families are familiar of taking prescriptions [medical model] and receiving advice.
Expected therapeutic outcomes	Solution focused	Looking for 'how to do' model to manage children.

Rationale of the Study

As highlighted at the very beginning in the above mentioned review that evidence-based practice yet has to pave its way in lower and middle income countries, it's the high time to test the effectiveness of interventions at indigenous bases especially for those interventions which have proven to be effective and cost-effective in developed countries. Primary reason for prioritizing parent training as an intervention is the maximum empirical support for effectiveness and best available evidence for effectiveness, making it one of the primary treatments for ADHD according to international guidelines (National Institute of Clinical Excellance, 2009; Ollendick & King, 2004)

Also, in the light of existing evidence regarding prevalence and incidence of ADHD and associated externalizing problems in Pakistan, it seems like ADHD is not a specific problem in terms of ethnicity. It further indicates the immense need and urgency of effectiveness trials to provide a comprehensive manualized treatment program for Pakistani families which should also be consonant with the cultural values and child rearing practices of these families. Our program takes its empirical grounds from Barkley's Neuropsychological model explaining ADHD in terms of behavioral disinhibition and deficits of executive functions motor control systems.

Further grounds regarding relevance of program in cultural terms are taken from the evidence for effectiveness of BPT and especially Barkley's program from those cultures which are close to Pakistan in context of parenting and familial structure. In the light of available evidence, Pakistani parents who value parental control and authority, it seems like program may work effectively for Pakistani

families of ADHD children. Having greater cultural sensitivity while modifying and implementing the program may enhance the effectiveness and lead towards improving problematic child behavior or ineffective parenting strategies. This study should also be taken as a significant[32] first step for developing evidence-based interventions for ADHD in Pakistan.

Chapter-II

METHOD

Objectives

The main objective of the study is to test the effectiveness of Barkley's Parent Training Program for treating ADHD and associated disruptive behaviors including ODD and Conduct Disorder. Specific objectives of the study are presented below:[34]

1. To translate and culturally adapt the Russel Barkley's Parent Management Training (PMT) Program manual, The Defiant Children (Barkley, 1997).
2. To test the effectiveness of the program by providing training to parents of the experimental group, and comparing it with a control group.
3. To explore the factors associated with premature termination, and treatment success including demographic factors (familial and child characteristics) and symptom severity of disorder.[34]

Hypotheses

1. According to parents and teachers reports, core symptoms of ADHD and associated symptoms of ODD and Conduct related problems will decrease after the Parent Training Program in experimental group as compared to control group[38].
2. After the Parent Training Program, the amount and severity of problem situations both at home and at school will decrease according to parent's and teacher's reports for experimental group as compared to control group.

Operational Definition of the Variables

The variables of the research including Attention Deficit Hyperactivity Disorder (ADHD), and the associated disruptive behaviors including features of Oppositional Defiant Disorder (ODD), and Conduct Disorder (CD) are defined and assessed according to the diagnostic criteria given for these disorders in American Psychiatric Association's Diagnostic Statistical Manual-IV-TR (APA, 2001). For detailed diagnostic criteria please see the Appendix-A.

Sample

A sample consisting of 85 children diagnosed with ADHD was selected after assessment. Children with ADHD were recruited from the schools, and hospital settings (including rehabilitation and psychiatric settings). For this purpose, telephone, and personal contacts were made to teachers, psychologists, and psychiatrists in the cities of Rawalpindi and Islamabad. Final sample included fifty five (55) children for experimental group and thirty (30) for the control group. Special interests of families of children recruited from hospitals to be a part of experimental group lead researcher to plan a non randomized control group design. Consequently all children with ADHD were recruited from hospitals (excluding four children due to parents being illiterate)[39] were assigned experimental group and control group for comparison purpose only was selected from school settings. For details regarding sample characteristics see Table 1. Details of sampling procedure are given below.[36]

Sampling Procedure

(1) Initial screening.

From hospitals. For data collection liaisons were developed with professionals from hospital settings. For this purpose, contacts were made to psychologists, psychiatrists and pediatricians. Sixty two (62) children were referred from hospitals and children of all parents showed willingness for participation. Since this study represents the first effectiveness trial of its kind in Pakistan, most of the practitioners and families

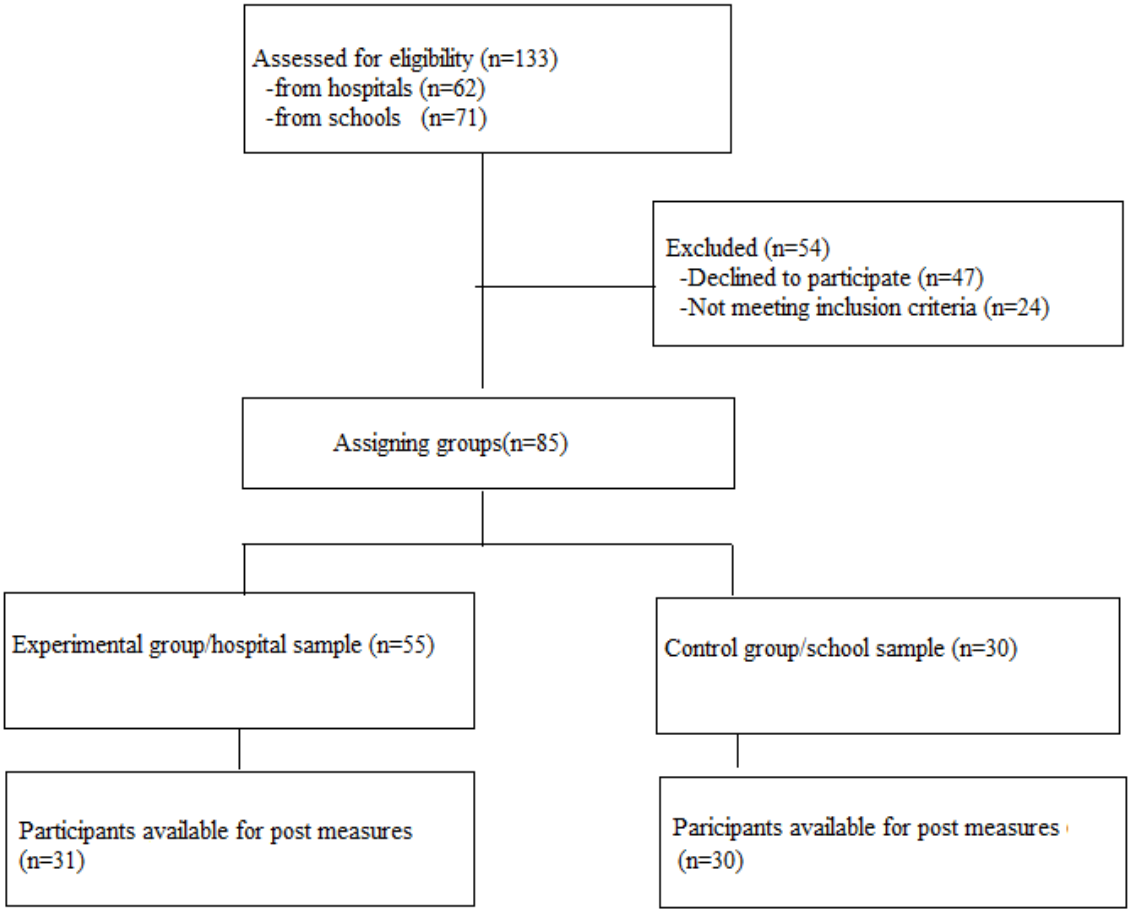

Figure 1. Flow Chart for participant's recruitment

had special requests for inclusion of these children in the experimental group. This made random assignment difficult on practical bases. Hence, due to ethical

considerations it was decided to provide intervention to all the children who were referred from hospitals except those who didn't meet the inclusion criteria after detailed assessment. Four children were not recruited because of their parents being illiterate[36]. So, instead of random assignment we took a sample of ADHD children for comparison from school settings.[36]

From school. The control group was taken from schools of Rawalpindi and Islamabad cities. For this, school administrations were contacted and those schools who gave consent to collect data and to provide intervention were selected. The teachers were further given an orientation for ADHD and its associated problems, and then they were requested to identify those children which exhibit these or the similar kind of problems while being at school. Seventy one (71) Children were identified by teachers as appropriate for the further detailed assessment. As a second step parents of these children were contacted for consent regarding participation in study. Parents of forty seven (47) children expressed willingness to participate in the diagnostic assessment.

(2) 'Narrow Band' assessment for symptoms of ADHD and associated disruptive behaviors. After initial screening a total sample of forty seven (47) parents from school setting and sixty two (62) parents of children with ADHD from Out Patient Departments (OPD) of hospital setting participated in a detailed assessment. Assessment was conducted by obtaining parents and teacher's reports on the Disruptive Behavior Disorders Rating scale (DBDRS). Detailed history regarding birth and pregnancy, postnatal problems, developmental milestones, and medical

history was also taken. The following Exclusion and Inclusion Criteria was used for the selection of final sample.

Table[40]

Sample Description (n=85)

Participant Characteristics	Control Group(n=30) Percentage/Mean(SD)	Experimental Group(n=55) Percentage/Mean(SD)
Father's age	42.12(5.32)	34.5 (0.707)
Mother's age	26.3(4.6)	35.3(4.5)
Annual Income (PKR.)	390000(336116.92)	328000(186623.58)
Family size	6.24(2.88)	7.3(2.6)
Child's age	8.2(1.21)	9.12(2.17)
Child's gender		
Male	27(90%)	42(76.4%)
Female	3 (10%)	13(23.6%)
Familial Structure		
Nuclear	33(60%)	4146.7%
Extended	22(40%)	14(53.3%)
Mother's work status		
Working	6(20.0%)	14(25.5%)
Not working	24(80.0%)	41(74.5%)

Inclusion criteria.

1. Children from 4-12 years of age.
2. The parents/caretakers who were literate were recruited. The primary criterion was the ability to read and write in the Urdu language. As illiterate mothers have difficulty in understanding the nature of the disorder and the importance of the behavior modification principles (Barkley, 1997), consequently less positive outcomes are typically seen in these cases.

3. All subtypes of ADHD including ADHD-C, ADHD-I and ADHD-H. The subcategory of ADHD-I have been on purpose taken in the sample in order to test the effectiveness of the same program for this subtype. Barkley's theoretical model focuses on the two subtypes of ADHD (i.e., ADHD-H and ADHD-C) and suggests that Children diagnosed with ADHD-I type usually don't benefit from behavior modification techniques (Barkley, 1997). Present study also explores the extent to which this theoretical assumption is having cultural and contextual relevance.

Tests and Measures

Disruptive Behavior Disorders Rating Scales (DBDRS) -Parents and Teachers Versions. Developed by Barkley (1997), parent and teacher versions of the DBDRS, obtain the ratings of the DSM-IV symptoms of ADHD and co-morbid features of ODD and CD. These are 4-point rating scales with 0=Never, 1=Sometimes, 2=Often, 3=Very Often.

For the ADHD, symptom ratings are done in a simple way. First count the number of items circled with a 2 or 3 for the Inattention items (Items 1-9). Then count the number of items answered this way for the Hyperactive-Impulsive items (Items 10-18). If at least six symptoms have been answered this way on either list, it is an indication that one of the subtypes may be present and should be corroborated through the clinical interview. Both Parent and teacher ratings were combined to make a diagnosis.

To score the items related to ODD (items 19-26), simply count the number of answers circled with a 2 or 3 as each of these is treated as positively endorsed symptom of the disorder. Items with ratings of 0 or 1 are considered to be normal. If four or more items have been circled with answers of 2 or 3, this may indicate the clinical diagnosis of ODD, which can be corroborated through the parental interview form, provided in Part III of the Barkley's treatment manual.

The remaining items 1-15 at the end of the Parent versions of the DBDRS only, are for Conduct Disorder. Simply count the number of YES answers and use the cutoff score from the DSM-IV for this disorder (Barkley, 1997).

Home and School Situations Questionnaires (Barkley, 1997). The pervasiveness of the child's behavior problems within the home and school setting were examined, as the measures of situational pervasiveness appear to have stability over time. The HSQ and SSQ (Barkley, 1997), provides a mean for doing so, and both scales are being provided in Part III of the manual. The Home Situations Questionnaire (HSQ) requires parents to rate their child's behavior problem across 16 different home and public situations. The School Situations Questionnaire (SSQ), similarly obtains teacher reports of problems in school situations. Both scales are scored, the same way to yield separate scores. The first is the Number of Problem Settings, calculated simply by counting the number of items answered Yes. The second is the Mean Severity Score calculated by summing the numbers circled beside the items and then dividing by the number of Yes answers.

Procedure

The procedure of the study involved three phases. (1) Level-I adaptation: Translation and preliminary adaptation of the Barkley's Parent Training Manual. At this phase manual was translated and adapted by a committee of psychologists in the light of feedback which was gathered from parents and other mental health professionals working in the field. Part 3 and part 4 of the manual *Defiant children (1997)* was translated. Part 3 consists of assessment materials, while Part 4 provides handouts and structured guidelines for parents for each session. Details regarding adaptation of scales and program adaptation are given in Chapter 4. (2) Experimental tryout, with pre and post study measures. During this phase the adapted version of Barkley's manual was implemented with families of children with ADHD and evaluated its effectiveness. (3) Level-II adaptation: Adaptation refinement and further modification of the program was made in the light of experience during group sessions and feedback from the families who participated, the challenges which were encountered during implementation phase, the process issues and the solutions which were provided. The details regarding Level I and Level II adaptation process are given in the chapter III.

Phase II: Main Study/ Experimental tryout

Main study was conducted during Phase II which consisted of pre post study measures with intervention being provided to experimental group and control group only for comparison purpose. The program was implemented in group sessions.

Step I: Pre Intervention measures

Baseline measures for both experimental and control group were taken within two weeks before introducing the intervention. Reports of parents and teachers were collected on scales including DBDRS , HSQ and SSQ.

Step II: Introducing intervention plan to parents

Barkley's parent training program. Adapted Urdu version of Barkley's Parent training program (1997), is used for training parents of children diagnosed with Attention Deficit Hyperactivity Disorder. The program consists of 9 sessions plus a review/booster session, with 1-to 2-hour weekly training sessions provided either to individual families or in groups. The program is intended for children aged 2 to 11 years for whom hyperactive and impulsive behaviour is an issue. Detailed description of each step and all the program components and standard procedure for implementation according to guidelines are given in Appendix-B.

Supporting Visual Educational Package. Supporting visual educational package, including three DVD's and accompanying program manuals was used to give parents a better understanding of ADHD, associated noncompliant and defiant behaviors and systematic behavior management techniques to manage them. Brief description of visual material is provided in Appendix-C while procedure followed for translation is described in chapter 3. These DVDs were used during training sessions to provide better understanding to parents regarding nature of problem and its management. Visual package was provided to parents to watch at home and is also used in chunks during program implementation . The program served two purposes:

first it helped parents to better understand the nature of problem through real life examples and issues which families are generally facing. The purpose is primarily to make the psychoeducation easier for parents. Second, it helped during sessions at those points where role plays were conducted as parents felt more motivated while watching the families trying such skills with their children.

Step-III: Post Intervention Measures

Two weeks after completion of the training, post intervention measures were taken of the children's behavior by both parents and teachers on DBDRS, SSQ and HSQ, to find out whether there is any difference in their behavior after introducing the intervention plan.

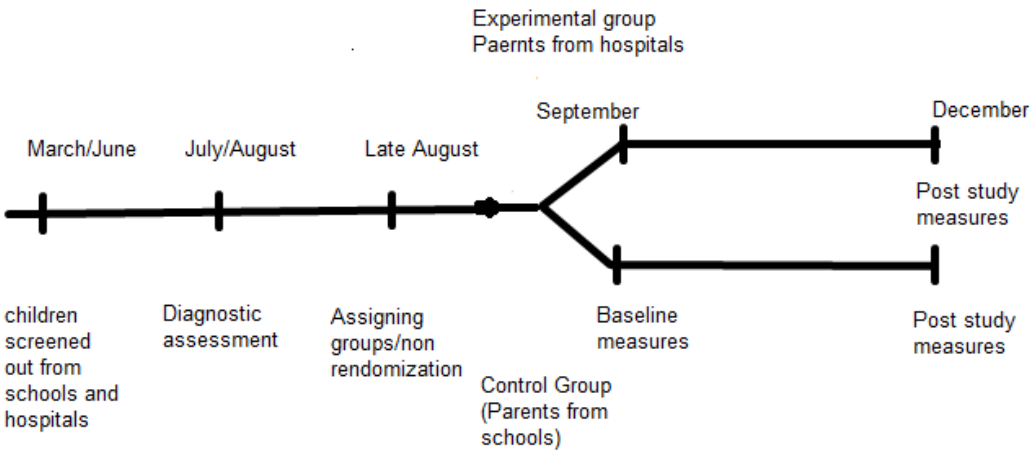

Figure 2. Study time line

Study Design and Analytic Strategy for Main study

The present study is an effectiveness research and a Qausi-experimental two group design, with an experimental group on which intervention was applied, and a control group which was taken for the comparison purpose only.

As a first step outcome measures and scales were translated and back translated into Urdu language by using committee approach according to the criteria given by Brislin (1980). Details of adaptation process are given in chapter III. Psychometric properties of the scale were further established. Alpha co efficient showed the translated scales possess internal consistency to be satisfactory.

Measures were taken within two weeks prior to implementation of intervention program. Initially, families of experimental group were compared with the families of control group to assess the differences in these groups at the outset of the study and to determine potential confounding factors (i.e., covariates) that were also, be needed to be modeled in interpreting any changes in the intensity scores of the outcome measures (i.e., the DBDRS parent and teacher's versions and HSQ).

Pre post change was assessed firstly for only those who completed all number of sessions (i.e., the completer's analyses). For completer's analyses, Analysis of Covariance (ANCOVA) was used. Alison, Gorman and Primavera (1993), pointed out four basic strategies for intervention effects. The first strategy of finding the difference between control group and experimental group on post effects only. This is not a recommended approach according to authors, as it discards the information, and second, it is generally the least powerful of all the approaches. The

second option discussed is to conduct a two-way Analysis of Variance and to look for Time × Group interaction. Authors don't recommend this approach as according to them, many researchers mistakenly interpret one of the main effects in this situation. The third option is to look for gain scores. However according to these reviewers Treatment × Group interaction in the repeated measures approach is mathematically equivalent to the main effect for treatment in the change-score approach and it also increases the bias in this analysis. The final recommended strategy is to use analyses of covariance. It compares the post test scores of experimental group with the post test of control group after controlling the post test scores. ANCOVA corrects posttest scores by means of the actual pretest-posttest correlation. Hence, it represents the treatment effects more precisely and is therefore usually more powerful. This option is also thought to be a recommended option for Qausi experimental designs. In this study the final strategy based on Analysis of Covariance is used for completer's analyses using the GLM (General Linear Model) technique.

However GLM has the disadvantage of "losing subjects" whenever there is a missing value in any of the time points (unless missing values are not imputed). General Linear model also assumes the data to be normally distributed, and seems not a good answer for asymmetrical data. It can distort the pattern of means so that evidence of additive and interactive effects may be artifactual and inflated. To overcome these disadvantages of loss of subjects due to missing data in any of the time points, and the resulting asymmetry, the Mixed Model technique can be used. Mixed effects model have become well accepted for interpretation of clinical trials

without imputing missing values (Gueorguieva & Krystal, 2004). Furthermore, this method was used because repeated measurements relating to same subjects will be correlated over time. Linear Mixed models, or hierarchical linear models as they are often called, relax the standard assumption of ordinary modeling techniques that all data points are independent.

Linear Mixed Model is used to assess change in the behavior of children, and an overall effectiveness of the program. Subscales for which we had significant findings, further analyses was done, by using repeated measures ANOVA for within subject variation, and to assess change in the behavior of children before and after the intervention program. Within subject design is also used to avoid the possible *error variation* due to non equivalent control group.

To explore the factors associated with premature termination and to look for the correlates of treatment retention, preliminary analyses using Chi Square Goodness of Fit and T- test, wherever needed were conducted. Those factors which turned out to be statistically significant in preliminary analyses were further entered in Logistic Regression Model.

Chapter III

ADAPTATION OF THE INTERVENTION PROGRAM FOR PAKISTANI FAMILIES

There are no standard guidelines available for the cultural adaptation of interventions in the scientific literature. Clinical researchers have developed culturally-tailored frameworks for treating ethnic minority groups (e.g., Bernal et al., 1995; Castro & Alarcon, 2002; Sue, 1998); however, formal application of these models in controlled trials is observed to be rare (Huey & Polo, 2008). Moreover, there is an absence of a consensus definition in the field about how to decide whether an adaptation is warranted and how (see Lau, 2006, for an emerging model).

Consequently, the preliminary adaptation of Barkley's program for Pakistani families described here was done in light of basic adaptation guidelines provided by Guillemin et al (1993). Incorporating the widely used translation technique by Brislin (1980), he has suggested that to preserve equivalence in adapting materials developed in one language and culture for use in another language and culture, more than one independent translation and back-translation should be done, and a committee approach should be utilized to produce a final version in the target language. These guidelines have been utilized in all research projects requiring cultural adaptation of treatments at the National Institute of Psychology, Pakistan. However, these guidelines are primarily intended for the adaptation of assessment tools, so

feedback from parents and fellow professionals while adapting the program was also incorporated.

Furthermore, the recommendations given by Lau (2006) for adaptation of parent training programs, were partially followed which focuses on a two-pronged approach: to contextualize the content on one hand and to look for engagement enhancement on the other hand. Data are emerging to suggest that a *hybrid model* that addresses both the issues of fidelity and cultural relevance and specificity can be most useful for ethnically diverse populations. In this model, core components of the intervention serve as a foundation for the adapted program, while the program also incorporates the values of the target population to aid in refining the core components (Martinez & Urbana, 2001). Culturally-adapted versions of behavioral parent training, which not only make changes to surface structure (e.g., including community-relevant examples, modifying examples to depict cultural similarity of lifestyle) but also to deep structure (addressing the core values, beliefs, norms, acknowledging and respecting cultural values), can result in marked improvements in children's behavior (Harachi, Catalano, & Hawkins, 1997; Huey & Polo, 2008; Kumpfer, Alvardo, Smith & Bellmay, 2002).

A planning committee for the initial translation and adaptation of the intervention, was formed which also incorporated consultation from parents and other practitioners. In addition, given the vast cultural differences between Pakistan and the U.S., it was decided to make more rigorous efforts to enhance engagement both prior to and while implementing the program. Extensive literature reviews and details of studies reporting adaptation of such

interventions from other parts of the world (e.g., Crisante & Ng, 2003; Forehand & Kotchick, 1996; Ho et al, 1999; Huang et al, 2003; Gorman & Balter, 1997; Kumpfer et al., 2006; Lau, 2006; Leih-Mak, Lee & Luk, 1984), and feedback from the program developer, Dr. Russell Barkley, and other experts helped to plan the adaptation of the manual.

This adapted program was piloted with a sample of 85 4-12 year old children recruited from schools and hospitals of Islamabad city using a control group Qausi experimental study design. This chapter focus on the adaptation and implementation process with the treatment group only.

Step I: Preliminary adaptation of the Barkley's Manual and translation of supporting visual and educational package

This portion of the manuscript documents the work done to translate and adapt Barkley's Manual "Defiant Children" (1997) for Pakistani families in Pakistan. The adapted content includes the assessment material (i.e., case history sheets, rating scales and a structured diagnostic interview) and treatment materials. The adaptation process began in Spring 2007. Since this adaptation was done prior to the implementation of the program, we refer to this as the "preliminary adaptation phase".

Role of the adaptation committee. The initial question was to resolve the issue of "construct bias" that occurs when the concepts being presented in a program show discrepancy across cultures. One way to deal with such an issue is to have a team of people with expertise in both languages and both cultural contexts adapt and translate the assessment and treatment material

(Brislin, 1980). For this purpose, an adaptation committee was formed, consisting of two faculty members, the supervisor of the study and a doctoral student of the National Institute of Psychology, Qauid-i-Azam University, Islamabad. Three of these faculty members had experience teaching developmental psychopathology to Master's level students and had post-graduate degrees in clinical psychology. The initial translation of both assessment and treatment material was done primarily during committee meetings. The translation and adaptation process was completed after sixteen committee meetings of 2-3 hours each.

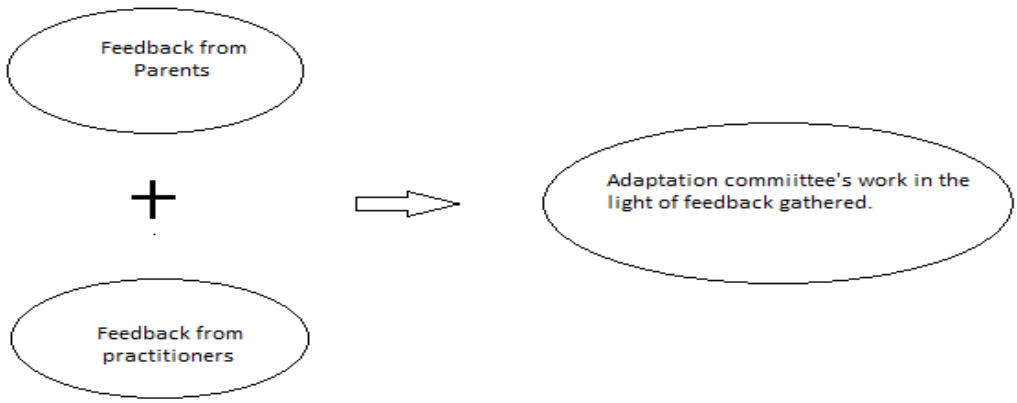

*Figure 1.*Process of preliminary adaptation

For this purpose, the committee of psychologists translated the manual initially. These members met the criteria described by Brislin (1980), who held that translators should: (1) possess a clear understanding of the original language; (2) have a high probability of finding a readily available target language equivalent so that he/she does not have to use an unfamiliar term; and (3) have an ability to produce target language items readily

understandable by the eventual set of respondents who are part of the pilot and the main study.

Consultation with practicing psychologists. It was further decided by the committee to elicit feedback by local practicing psychologists/academic researchers. Four practitioners of psychology from the Pakistani cities of Rawalpindi and Islamabad were contacted, who had a good understanding of child psychopathology, experience working with children, and the ability to read and write in both the Urdu and English languages. These practicing psychologists were asked to review the original assessment and treatment materials and then the adapted materials, to identify those points which may be irrelevant or inappropriate to Pakistani culture, and to suggest alternative options wherever possible.

Consultation with parents. Getting feedback from parents was perhaps considered the most important step of the adaptation process. A Special Interest Group (SIG) consisting of six families (both mothers and fathers) of children with ADHD was gathered. Four mothers among these were housewives with high school or college education. Two were working mothers, one with college education and a school teacher, while the other was a physician by profession. These parents were asked to provide feedback on the content of the assessment and treatment materials and its appropriateness/relevance for their families. They were asked to provide feedback on core concepts of behavior management techniques mentioned in the program, their cultural appropriateness, Urdu expressions and the level of

difficulty for instructions in parent handouts. They were also requested to provide feedback regarding the appropriateness of the examples presented in the program for Pakistani families.

The committee held bi-monthly meetings with these parents and practitioners. The SIG parents and the experts evaluated both the core conceptual framework and the program content. Feedback from this initial phase of adaptation suggested no major changes regarding the deep structure of behavior modification techniques presented in the program. However, many surface structure changes were recommended. Committee members modified the program content in light of this feedback.

Assessment Materials. The assessment material of the manual was translated and back translated from English to Urdu (Brislin, 1980; Guillemin et al., 1993). Three independent initial translations were done and the translated material was further given to three bilinguals for independent back translations. A committee approach was used following three guidelines: (1) maximizing the content similarity between the original material and the target language version; (2) maintaining the relatively simple language level of the original material; and (3) translating and adapting the content according to the Pakistani culture. These experts identified the items in the assessment materials and content in the treatment handouts which they judged to be irrelevant to the Pakistani culture. Experts on the committee also suggested alternatives wherever needed. The committee meetings were also helpful for

us to find the appropriate sources for further consultation regarding the cultural relevance and appropriateness of the treatment material.

Certain assessment items were modified based on the committee review. For example, the item asking about smoking by mothers during pregnancy was not retained, since smoking among middle class women in Pakistan is considered an undesirable behavior. SIG parents suggested that families may therefore be uncomfortable or even insulted by this question. Instead, a question about the use of 'Huqqa' was added, as many mothers suggested its inclusion keeping in view its frequent usage among the rural class.

Other assessment items were deleted because they were judged to be irrelevant to the lifestyle of Eastern cultures. For example, the question "Are parents married?" was excluded because getting married is the only legitimate option for people to have a family life in most eastern cultures, particularly in the Muslim countries. The question about use of alcohol during pregnancy was eliminated, as some parents suggested that families would likely be offended by the questions. This was done keeping in view the prevailing Muslim culture of the country and the unfavorable attitude of middle class families towards the use of alcohol, especially among women. Specific items regarding family structure (nuclear or extended), mother's work status, and the primary caretaker of the child, were added to the assessment. These additions reflected the lifestyle of Pakistani families, which is primarily collectivistic, having many members of family involved as caretakers. Identifying the primary

caretaker of the child helped to involve family members in treatment who were close to the child and involved in their care. Items were added to the birth history section to ask whether delivery was at home or in the hospital, and, if delivery was at home, whether some trained midwife, nurse or doctor was present during delivery. Finally, in the event of complications, parents were asked whether medical help was sought. Figure 1 shows the process of adaptation followed at this initial phase.

Treatment materials. For treatment materials, the sources that could be helpful for changes at surface and deeper levels during the adaptation process were initially identified. As discussed previously, surface structure changes are those changes that are thought to be relatively minor during adaptation and do not interfere with the basic conceptual framework (e.g., providing community-relevant examples and modifying examples to depict cultural similarity of lifestyle). Deep structure changes are the changes that can be inconsistent or contrary to the core theoretical framework of the program (e.g., core values, beliefs and norms).

The committee suggested adapting the program without making major compromises to the fidelity of the original program since evidence for its *ineffectiveness* for Pakistani families is lacking (Huey & Polo, 2008, Lau, 2006). Item elimination was not done at the initial phase, as committee members could not find any treatment material contradictory to Pakistani culture. However, some examples in the treatment manual were modified to

reflect Pakistani culture. For instance, since games like baseball or Nintendo are less common in Pakistan, such examples were replaced with more relevant games, like cricket or carem board. Similarly, examples of public places like the mosque were added for religious services (the example of church was retained, given that there is a visible minority of Christians in Pakistan).

Visual Educational Package. A supporting visual educational package, including three DVDs, was used to give parents a better understanding of ADHD, associated noncompliant and defiant behaviors and systematic behavior management techniques to manage them. Since the literacy rate in Pakistan is only 57% (Pakistan Education Statistics, 2009), and most parents are at ease with visual material, this effort was made to increase generalizability to less educated families. However, since the study was not funded, it was not possible to develop a visual package of our own, so existing DVDs were selected which were, in our view, most useful and relevant in providing Pakistani families with a comprehensive understanding of the nature of ADHD and its management using basic behavior modification techniques. The Guilford Press DVDs by Russell Barkley including, DVD - I “ADHD: What DO We Know?”, DVD-II “ADHD: What Can We Do?”, DVD-III, “Managing the Defiant Child: A Guide to Parent Training”, were translated into Urdu and the DVDs were dubbed for this purpose.

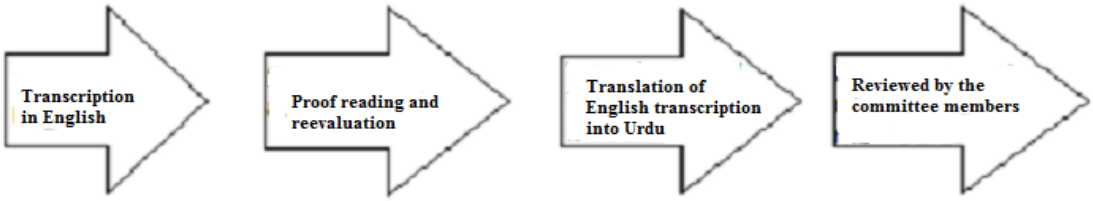

Figure 2. Process of translation of supporting visual educational package

Members of the adaptation committee were also involved in the translation of the DVDs. The first step involved a verbatim transcription of the DVDs in English. Proof reading and re-evaluation of the transcription was conducted by the adaptation committee before proceeding onward. Next, the English transcription was translated into Urdu. These translations were discussed by the committee members carefully and thoroughly reviewed again for cultural appropriateness and relevance. Necessary changes were made and the information not relevant to the indigenous needs of our population was omitted in the manner described previously. Each of the parents and practicing psychologists in special interest group was provided with a set of translated DVDs to watch along with the Urdu language manual, and asked to provide feedback on its relevance and usefulness. Figure 2 shows a process of translation followed for this purpose.

Program Implementation[42]

After preliminary adaptation of the entire package (assessment materials, treatment manual, educational DVDs), the program was piloted on a clinical sample drawn from government and private hospitals in the cities of Rawalpindi and Islamabad, as mentioned in method section. It provides preliminary support for the feasibility and effectiveness of the adapted program.

The program has been implemented following the standard format given in the manual *Defiant Children* (Barkely, 1997). Eight groups each of 6-8 families were made and ten sessions were provided to each group. Each session was of 1 ½ -2 hours duration. Researcher herself conducted all sessions however staff of hospitals also assisted for conducting group sessions and keeping record of sessions. Most of the sessions were at morning times, and in out patient departments of hospitals. However three groups were provided training at evenings keeping in view availability of the parents. Hospital library rooms were also been utilized for these sessions. Although group sessions were taken following standard format of the program (Appendix B), further refinement in the program was brought keeping in view the challenges encountered during implementation phase. Section below describes the refinement of the adapted program while implementing with families.

Step-II: Adaptation Refinement

The program was modified depending upon the contextual needs which were observed during the implementation phase. Since the concept of behavioral parent training is entirely new in Pakistan, among mental health practitioners or and parents, our implementation phase provided critical information regarding how the program could be made more relevant for Pakistani families. During sessions, further observations were made on certain culturally sensitive issues and the context of Pakistani child rearing practices. As behavior problems occur in a broader ecological context, the primary intention was to view children's problems within a broader context of cultural values and practices related to parenting and the child's family. This refinement of the program was primarily based on the challenges encountered during this implementation phase. The focus was primarily on engagement enhancement and reducing attrition (Lau, 2006). Suggestions from practitioners and feedback from SIG members remained crucial at this stage. Following each of the sessions, notes we prepared and questions were noted to bring to the professional and parent SIGs for feedback and alternatives. Help was also taken from other studies of adaptation of parent training in other Asian cultures and the process issues they faced (e.g, Crisante & Ng, 2003; Ho, et al, 1999; Huang, Chao, Tu, & Yang, 2003).

Adaptation of Parent training in terms of broader ecological context

Awareness about mental illnesses and implications for psychoeducation. There seems to be a lack of awareness about mental illness

and developmental disorders among Pakistani families. Many of the parents attending the program did not understand the theoretical basis or the nature of childhood behavior problems. This was addressed by focusing more on psychoeducation than is typically done in Barkley's program. Barkley's first session focuses on explaining reasons for child's misbehavior, the nature of ADHD, and its management in the first session. It was found helpful to incorporate the psychoeducation component in the second session as well. Also, the supporting visual educational package was used in the first session to explain the core concepts more easily and to present examples which seemed to enhance parents' understanding. Use of the translated DVDs during the first session and explaining the nature of disorder through visual means seemed particularly useful for parents for whom the concept of ADHD was entirely new.

An extended orientation to treatment in the initial sessions also served to explain the collaborative roles of the therapist, parents, and the child, and to inform the parent about what will happen in treatment. Misconceptions about treatment process and goals were addressed immediately, so that inappropriate treatment expectations should not lead to dropout. Two hours with a tea break was helpful during the first session to cover all of these activities.

General Understanding of Diagnostic terms. Associated with the problem of less awareness and understanding of mental illnesses among the general public in Pakistan is the understanding of diagnosis and the use of the terms ADHD and ODD, which complicates the psychoeducation component.

The solution which made the most sense was to describe and discuss symptoms or behaviors (e.g., some children have difficulty in following instructions, are easily distracted etc.) rather than diagnostic or disease labels. Focusing on the behaviors which a child exhibits rather than the disease was more helpful in enhancing parents' understanding regarding the nature of the problems they and their children faced.

Stigma associated with Mental Illness and Developmental Disorders. Parents' fear of having their children labeled with a psychological disorder required some attention. Families whose children had less severe symptoms were especially reluctant to seek help from mental health professionals. Even so, parents considered behavior problems of their children to be a private issue which they wished to conceal from other people, even within their families, due to the great stigma associated with mental illness in this society.

It was observed that the degree of severity of the problem was also an important contributor in obtaining parents' interest in parent training groups. More concern and engagement was observed among parents of children with more severe problems and vice versa, which is also consistent with studies conducted in Western culture (Barkely, et al, 2000). As the child's disruptive behavior is more severe, it increases the concern of Pakistani parents for many reasons. First, social pressures and the tendency to blame parents for the child's problem, especially within the extended family, as well as the increased embarrassment related to public opinion generally increased their concern. There were cases when mothers were eager to attend the group

sessions, but tried to conceal it from other family members, with a great fear of their child being stigmatized and/or due to a fear of being labeled a ‘bad mother’. Researches from other Asian cultures have noted similar challenges related to stigma (e.g., Crisante & Ng, 2006). This becomes even more complex in a culture which attributes such problems to “evil spirits” and offers religious explanations for such problems. For example, there is a general public attitude which considers mental illness a punishment given to the child because of a parent’s sins. Such explanations add to the intensity of embarrassment felt by parents. One way to encounter this problem is to explore with families their own belief systems and explanations for their children’s attention and behavior problems. Also while providing psychoeducation, it was found that one should not always challenge these core beliefs (especially the religious beliefs), but should rather try to emphasize more the scientific explanations in simpler terms. Pakistani families are generally more sensitive about religion and challenging most of the religious explanations (especially those given by faith healers) is generally not fruitful. However, during group sessions, generating a discussion between families and getting feedback from other parents in the group, along with emphasizing more the biological and social explanations was quite helpful. It helped to not only reduce parents’ guilt but also instilled hope for improvement. Also given concerns about blame, stigma, and labeling of children, mothers preferred the program to be framed as educational rather than therapeutic. They wanted interventions focused on changing parent behaviors to be presented in a non-blaming manner, as guilt reactions are already commonplace.

Understanding of severe ADHD. No doubt, severe symptoms of ADHD are accepted by parents as an illness in their child. However, linking ADHD to a physical illness seemed to contribute to parents behaving in overly protective ways, which may reinforce the child for adopting the "sick role". Parents of more severe children usually considered the child as handicapped and disabled, which should always be guarded. The severity of the problem makes some parents quite reluctant to place demands on their children. It goes against some principles of parent training, for example, encouraging the child to play independently, setting meaningful goals and tasks for the token economy, and also for the effective use of time out when the child does not perform the required task. A few parents in the treatment group shared their concern during therapy sessions that at involving a "sick child" in household chores, making him responsible for certain activities, and also staying firm and consistent about the chores which a child is supposed to perform is like adding burden for the sick child. Some families were observed to delay putting their child in school because "ill children" require home care and close protection. This issue was successfully addressed by giving parents the understanding that, despite his/her difficulties, the child possesses the ability to be more autonomous and less dependent on others. Asking parents to make a list of child strengths and abilities and encouraging them to enhance these strengths can also change the perception of these parents who think that the child is not able to do some tasks with some responsibility because of being sick/handicapped.

Alternative treatments. Parents of children with ADHD in Pakistan also tend to seek alternative treatments such as taking herbal medicines and, particularly for those with less education, going to shrines, as they think it might bring improvement in their child's misbehavior. These approaches can contribute negatively to the treatment outcomes, as these families intend to show more compliance to the strategies taught by faith healers than mental health providers, since religion carries a central place in their societal values. It is therefore important for the therapists to ask families whether they are seeking alternative treatment, and if yes, which particular kind. If some families preferred to obtain alternative treatments, they were not challenged by the therapists until they asked for the advice in that regard.

Possible Impact of current political climate on parental roles. Parents were observed during group sessions talking about the environment outside homes being less secure and more uncertain. These areas in which this study was conducted (for example, Islamabad city) are undergoing massive transition currently due to terrorism, which might be affecting parents' priorities, goals, values, perceptions and parenting styles. As a result of this political unrest, caregivers see themselves sometimes justified for more closely supervising the child and being overly controlling and overly protective. This dimension of parenting was surely beyond the scope of the current study, but it requires some deeper exploration in future research. International literature also suggests that increased parental control in dangerous environments is observed to be protective for children (e.g., Cabello & McLoyd, 2002), and the same may be true in present day Pakistan.

Cultural values, familial structure and parenting styles

Role of multiple caregivers and identification of the primary caregiver. Many children coming from extended families were more dependent on other family members rather than their biological parents. These caregivers often played a more central role in decision making regarding the child, which could be both positive or negative depending upon the context. Many of the mothers attending the program lived with extended family, and, therefore their approach to child rearing was not solely decided by them.

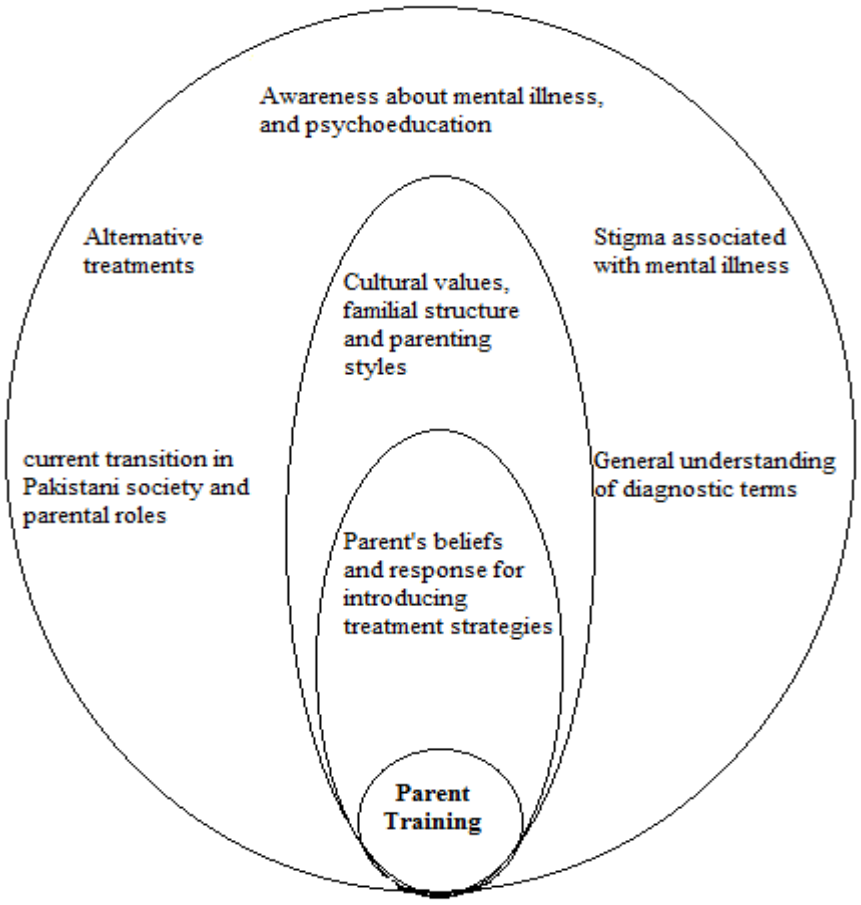

Figure 3. Adaptation of Parent Training Program in a broader ecological context(Adapted from Belsky's model for determinants of parenting: A process model,1984)

This had certain implications for those families in which mother's opinion about child management (or the parenting skills they were taught in the program) were inconsistent with the views or practices of other family members. Interaction between parents and grandparents, and a general concept that elder's opinion should be respected, played a critically important role in the consistent application of strategies in the home setting, as many grandparents did not agree with parents trying a different approach for managing their children. Some grandmothers attending the sessions were critical of the parent's ways of interacting with the child and managing his/her behavior. It was observed that during group sessions, mothers always seemed to talk more about the role of other family members in child rearing than their own, feeling helpless regarding their inability to make independent decisions.

It was therefore important for the therapist to identify these caregivers, how much time a child spends with whom in the family, and what role these caregivers play in the child's and biological parents' lives (negative or positive). Identifying the primary caregivers and making efforts to involve them in the parenting intervention would likely enhance therapeutic outcomes (Brinker, 1992; Hanson & Lynch, 1992).

Also, in a few cases, other family members seemed to get involved in order to "keep an eye" on group session activities and to regulate what mothers were learning. During sessions, this issue was addressed by not only allowing mothers to talk about these challenges but also to ask mothers what alternatives they generally think are possible. Inviting and negotiating with the

other family members and giving them a better understanding about the issue was also helpful for some cases. Individual sessions were utilized for families where disputes sounded more serious and seemed to interfere with treatment success.

Both the potential benefits and problems of having multiple caregivers participate were encountered and many approaches were tried for incorporating alternative caretakers in behavioral parenting programs. Engagement of other family members included calling the other family members directly, sending materials designed to address common concerns about the program, or providing them the adapted visual material to understand the nature of the problem.

Keeping the treatment secret: Implications for diagnosis and labeling. When there are multiple stakeholders involved and differences of opinion regarding the care and treatment of the child with ADHD at home, mothers' problems seem to assume a crucial significance. Interestingly, where many mothers were convinced of the usefulness of the training sessions and were interested in attending them, a few of them also tried to conceal their participation in the program and did not like to disclose their participation to the rest of the family due to concerns about stigma and blaming described previously. This brought some serious challenges to the therapeutic process, as it was hard to involve many family members who played an important role in the child's care. No solution was sought for this challenge, however.

Role of "Bad Mother" and social pressures in extended families. It was also observed that mothers from extended families were experiencing

additional social criticism for being “bad mothers” and for lacking the ability to manage their child appropriately. This social pressure coming from extended family members added incredible stress for mothers, and was made their adjustment in families even more difficult. This social pressure seemed to affect their emotional well-being and contribute to marital distress, which potentially aggravates the negative parent-child interaction (Johnston & Mash, 2001). Again, identifying family members who could provide positive involvement for the child and social support or advocacy for these mothers was helpful in many cases.

Furthermore, since most of the mothers and other caregivers, especially those from low-income groups, were housewives, they had little freedom to move freely without the knowledge, permission and assistance of their spouses and elder family members living with them. They depended heavily on other family members for going out, particularly to arrange transport. The result was there were many absences. For others, it was difficult to be on time for group sessions. Young unmarried aunts serving the role of primary caregivers, in some cases, also faced similar issues, as unmarried women are considered to be even more dependent on other family members for freedom of movement in society. As an ethical consideration, some flexibility was shown in such cases while scheduling the sessions. It was tried to arrange sessions at those times when most participants in a group were able to join the sessions. Also, encouraging them to make contact through telephone more frequently for further help and guidance was also very helpful in some cases.

Response of Parents to specific behavioral treatment strategies

Reinforcement. During the parent training sessions, it was observed that in most families, praising the child is not considered favorable. Some parents think that praising children for minor accomplishments will make the children feel they have done enough, and will not inspire them to perform better. As a result, parents often resist praising their children openly. Reinforcement is also difficult for parents due to an underlying belief that child's opinion is less important in comparison to the view point of elders in the family (Stewart, Bond, Zaman, McBride-Chang, Rao, Ho, Fielding, 1999). Similarly, many children with ADHD and behavioral problems were often physically punished by their caregivers. One way to address this issue is to model and role play positive parenting techniques (praise, reinforcement) with the parents. Putting the parents into child's situation certainly helps to give parents a new perspective on the value of praise and reinforcement for their child. Saying things like "How did you feel while acting like your child and getting reward from your parent?" was quite helpful to give them for a better sense of its importance, to get them prepared, and to feel more comfortable with praise and positive attending.

Special Play Time. The belief that parents are "superior" and play a supervisory role for their children is quite typical of Asian parenting (Chao, 1994). Thus, Pakistani parents typically feel more comfortable having authoritative and distant interactions with their children. This viewpoint has serious implications for assignments like "Special Play Time". It was observed that many parents had difficulty letting the child take the lead during special

playtime. Again, role play was helpful in getting parents to experience how a non-directive strategy would feel. Furthermore asking the parents how they felt after the role plays helped the therapist obtain a better understanding of parents' attitudes towards this activity. Further investigation seems important to find some ways to open parents' minds to this skill and to help parents utilize this skill more effectively.

Token Economy System. Parents required additional efforts to understand the way the token system works. Usually two individual sessions were conducted in certain cases to make them understand the specific aspects of the technique. An additional step taken in this regard was to give parents an assignment before introducing the concept of token economies. Parents were given the homework of making three lists for the child. List A was for the identification of strengths of the child and those things which he is already doing well. List B was for the identification of weaknesses and those tasks which the child was not doing well, or for which parents had some concerns. List C was of the child's likes and interests. This activity helped parents to understand their child's weaknesses (List B), and also to provide them an understanding of how the child's interests and likes (List C) can be utilized for reinforcement. List A was primarily to give parents a realization for the need to praise the child's current prosocial behavior. This homework was helpful and worked as a brainstorming activity before introducing the Token Economy.

Physical abuse and Time out. It was noticed that much care is needed while teaching parents the "Time Out" techniques. In particular, effort should be made to draw a fine line between "Time Out" and physical punishment. It seems like the general belief of Pakistani parents that physical punishment works better to manage behavior problems makes the training of time out procedures more difficult. A few cases of physical abuse of the child were also identified. These cases were very demanding in terms of time and energy during treatment sessions. In general, parents were more amenable to the use of physical punishment rather than "time out". Maintaining an emphasis on positive parent-child relationships and praise was necessary for these parents. For example, among parents who feel committed to a strict discipline approach, time-out may appear to be a "weak" intervention. Our program modifications aimed to sensitively accommodate cultural differences to enhance the acceptance of the intervention. McCabe (2005) suggests that time-out can be framed as in other terms, a "thinking chair". The term was adapted for Pakistani parents and gave it a name "Soch Ki Kursi," which exactly means thinking chair in the Urdu language.

Daily School Behavior Report Card. Since most of the parents think that teachers are less involved and might not be very responsive to their request, they were reluctant to have teachers to rate and observe their child's behavior daily. Many parents also reported that teachers were not very open and responsive. One of the reasons for this reluctance on part of parents and their hesitation in involving school in intervention program was a fear of their child being singled out in class. However apart from most of the parents being

hesitant and teachers being less cooperative, five families still tried it and reported it to be successful after the first week of its implementation. In such cases, therapist also coordinated with the teachers and helped them to individualize the DRC. However, less response on this part shows that the effectiveness of Daily School Behavior Report Card still requires further investigation for use in Pakistan. Emerging data also suggests that introducing DRC as a part of intervention does not cause incremental benefit in terms of symptom reduction, according to teacher's reports of ADHD symptoms and impairment (Fabiano et al, 2010).

Some additional steps for Engagement Enhancement

Model parents. Since many of the less educated mothers had difficulty understanding the core behavioral principles and it was not always feasible for the therapist to provide them extensive and detailed individualized attention, they were partnered with "model parents." Model parents were identified who had a good understanding of the principles and were highly motivated to implement the technique. These parents worked as a support system for these mothers as well as provided the assistance to those who needed. These "model parents" were also helpful to enhance the motivation of other parents and to show greater compliance for the weekly assignments. The idea is similar to the concept of Key Opinion Leaders in school setting introduced by Atkins et al (2008). The use of KOLs follows from Diffusion Theory which posits that

novel interventions are initiated by a relatively small group of KOLs who serve as influential models for others in their social network.

Conclusión

This chapter described the process and approach of adapting a behavioral parent training program for families of Pakistani children with ADHD in Pakistan. Rather than assuming a priori that a standard evidence-based treatment is culturally inadequate and therefore less effective, clinicians might initially treat families from diverse cultures with minimal changes or the changes which are most essential with maximum content similarity with the standard protocol (Huey & Polo, 2008; Lau, 2006). Then, as treatment barriers or opportunities arise, clinicians would consider whether attention to cultural factors is suitable. An increased sensitivity to the cultural differences and keeping in view the broader ecological context provides a great balance between fidelity and integrity of the treatment protocol.

Chapter-IV

Results

This chapter describes the analyses of the data collected, which is further divided into three parts. First, the preliminary analyses were conducted, which included examining the psychometric properties of the measures used in study and the participant's characteristics including demographics and symptom ratings in control and experimental group. This analysis gives us a comprehensive picture regarding how control group and experimental groups differed. This was also to look for the possible covariates for the main study analyses. For details regarding case profiles and birth related history please see the appendix

Second step explores the factors associated with premature termination and the factors which can increase the likelihood of staying in the therapy process. The third step includes the main study findings. Analyses of Covariance (ANCOVA) were used for completer analyses and Linear Mixed Model with Maximum Likelihood approach for intention to treat (ITT). Within group analysis of variance was further used to explain the interaction effects which were significant in ANCOVA and Linear Mixed Model findings. Effect sizes are calculated for both, between groups and within subject for both groups independently.

Fourth step explains the, and explores the correlates of treatment success within treated group only.

Step 1: Preliminary Analyses

This step includes psychometric properties of the outcome measures, case profiles, and demographic characteristics of the sample

Table 1

Alpha co efficient and scale description (N=85)[44]

Variables	No. of Items	M	SD	α	Range Potential	Actual	Skew
DBDRS_Parent Rating							
Hyperactivity	9	15.1	6.78	.82	1-9	1.0-9.0	0.38
Inattention	9	14.9	6.10	.87	1-9	1.0-9.0	-0.46
ODD	8	15.1	5.46	.81	1-8	1.0-8.0	0.32
Conduct Disorder	15	1.49	2.47	.60	1-15	1.0-7.0	0.97
DBDRS_Teacher Rating							
Hyperactivity	9	14.9	6.72	.86	1-9	1.0-9.0	-0.26
Inattention	9	16.5	5.23	.79	1-9	1.0-9.0	-0.34
ODD	8	11.3	5.50	.86	1-8	1.0-8.0	0.23
Home Situation Questionnaire	16	8.79	3.97	.79	1-16	1.0-16.0	0.09
School Situation Questionnaire	12	4.86	2.44	.74	1-12	1.0-9.0	0.18

Note. DBDRS= disruptive behaviors parent rating scale, HSQ= Home Situation, Questionnaire, SSQ= School Situation Questionnaire

Table 1 shows the alpha co-efficient and skewness of all translated Urdu subscales of BDDRS- parents and teacher ratings. The table shows strong internal consistency for all subscales for both parent and teacher versions. It further suggests the relevance of translated scales for Pakistani families.

Table 2

Group differences for ADHD subtypes and associated features[44]

Subtypes and Co morbid features	Total	Experimental Group	Control Group	χ^2
ADHD-C	43(50.6%)	33(60%)	10(33%)	5.52*
ADHD-I	12(14.1%)	8(14.5%)	4(13.3%)	.024
ADHD-HI	27(31.8%)	11(20%)	16(53.3%)	9.95**
ADHD + ODD	56(65.9%)	45(81.4%)	11(36.7%)	17.61**
ADHD + CD	15(17.6%)	12(21.0%)	3(10.0%)	8.42**

P<0.05, p<0.01***

Table 2 shows that sample largely comprised of ADHD combined type, especially in experimental group, and more than 80 percent in the experimental group had ODD as an associated feature. A considerable number of children also had Conduct disorder as associated disruptive behavior, especially in experimental group.

Table 3

Group differences for familial characteristics[44]

Familial Characteristics	Control Group Percentage/Mean(SD)	Experimental Group Percentage/Mean(SD)	t/χ^2
Father's Education			
High School (10 yrs) or less	14(48.3 %)	15(27.8%)	
Secondary School & College (12-14 yrs)	14(48.3 %)	25(46.3%)	7.56*
Master's degree & technical /professional(16 yrs)	1(3.4%)	14(93.3%)	
Mother's Education			
High School (10 yrs) or less	15(51.7 %)	23(41.8%)	
Secondary School & College (12-14 yrs)	11(37.9 %)	20(36.4%)	.824
Masters & technical / professional(16 yrs or more)	3(10.3%)	12(21.8%)	
Marital status			
Parents living together	28(93.3%)	47(78.2%)	3.329
Separately	2(6.7%)	8(21.8%)	
Familial Structure			
Nuclear	33(60%)	46.7%	1.396
Extended	22(40%)	14(53.3%)	
Mother's work status			
Working	6(20.0%)	14(25.5%)	0.32
Not working	24(80.0%)	41(74.5%)	
Father's age	42.12(5.32)	34.5 (0.707)	2.00**
Mother's age	26.3(4.6)	35.3(4.5)	3.365*
Annual Income (Pak Rs.)	390000(336116.92)	328000(186623.58)	0.610
Family size	6.24(2.88)	7.3(2.6)	1.60

*$p<0.05$, **$p< .01$

Table 3 summarizes the familial characteristics of the sample, which included mostly families from urban area of Rawalpindi, Islamabad. Most were bilinguals, speaking Urdu, and other native languages like Punjabi or Pushto. Since the study design was a non-randomized control group, this preliminary data analysis was also to find out the differences and similarities between control group and experimental group on family characteristics. T-tests and chi square analyses were conducted to compare the experimental and waitlist control group on demographic variables. No statistically significant findings were observed at .05 significance level, for any family demographic variable including mother's education, marital status of parents, for family structure, total annual income, family size, and for mother's work status. However, significant differences were observed for father's age, and mother's age, showing higher mean age for fathers of experimental group, and mothers for control group.

Table 4

Group differences for Child's Characteristics (Demographics)[44]

Variable	Control Group Percentage/Mean(SD)	Experimental Group (Percentage/Mean(SD)	t/χ^2
Child's age	8.2(1.21)	9.12(2.17)	-2.15*
Child's gender			
Male	27(90%)	42(76.4%)	2.36
Female	3 (10%)	13(23.6%)	
Child's school			
No School	0%	2(3.6%)	
Private	23(79.4%)	32(58.2%)	5.97
Public	6(20.6%)	21(38.2%)	

*$p<0.05$

Table 4, summarizes the child characteristics of the sample, which included children from school settings for control group, and from hospital settings for experimental

group. *t*- tests and chi square analyses were conducted to compare the experimental and waitlist control group on demographic variables. No statistically significant findings were observed at the .05 significance level, for demographic variables including child gender. However, t-tests showed statistical differences for the mean age of child in both groups, showing average mean age of children in the experimental group higher than control group.

Table 5

Group differences for Child's Characteristics (Symptoms ratings)[44]

	Control Group		Experimental Group		
	M	*SD*	*M*	*SD*	*t- value*
Scores on DBDRS Parent Rating					
ADHD-I subscale	3.37	2.66	6.04	1.93	5.312**
ADHD-HI subscale	4.4	3.0	5.43	2.54	1.686
ODD subscale	2.73	2.66	4.69	1.52	4.315**
CD subscale	1.00	1.14	2.09	2.03	2.702**
Scores on Home Situations Questionnaire					
HSQ No. of problems	6.5	3.64	10.00	3.6	4.183**
HSQ Mean Severity	1.60	1.2	2.8	1.48	3.80**
Scores on DBDRS Teacher Rating					
Inattention Subscale	5.17	2.9	5.67	1.72	0.934
Hyperactivity Subscale	4.4	2.8	5.4	2.29	1.718
ODD subscale	2.4	2.06	4.4	1.72	4.584**
Scores on School Situations Questionnaire					
SSQ No. of Problems	3.96	2.55	5.4	2.2	1.635
SSQ Means severity	1.45	1.08	2.09	1.1	2.494*

**p<0.05, **p< .01*

In table 5 t-tests showed significantly higher means for the experimental group on multiple clinical measures, including symptoms of ODD, inattention, and conduct disorder on parent rating scales. For teacher rating scales, symptoms of inattention, hyperactivity on DBDRS, and total number of problem situation according on School Situations Questionnaire had no statistically significant difference.

Step II: Factors Associated with Premature termination

a) **Preliminary analysis of drop-outs and completers.** Within experimental group 40.0% families dropped **o**ut after completing fifty percent sessions and could not complete the total number of sessions. This preliminary data analyses was to find out the characteristics of those who dropped out before completing the total number of sessions and those who completed. *t*-tests and chi square analyses were conducted to compare the two groups on demographic variables and child symptom severity. These variables are thought to be playing a contributory role in premature termination, according to existing literature on parent training (Reyno, & McGrath, 2006). The analyses presented here are based upon the pre-treatment scores on DBDRS- parent and teacher ratings.

Table 6

Group differences for Familial Characteristics[44]

Familial Characteristics	Drop Outs (*n* = 24) N(%)/Mean (SD)	Completers (*n* = 31) N(%)/Mean (SD)	t/χ^2
Father's education			
10 years or less	4(19.0 %)	11(33.3%)	
12-14 years	13(61.9 %)	12(36.4%)	3.38
16 years & professionals	4(19.0%)	10(30.3%)	
Mother's education			
10 years or less	10(45.5 %)	13(39.4%)	
12-14 years	4(18.2 %)	6(48.5%)	7.005*
16 years/professional	8(36.4%)	4(12.1%)	
Marital Status			
Parents living together	4(18.2%)	4(12.3%)	0.390
Separately	18(81.8%)	29(87.9%)	
Familial structure			
nuclear	9(40.9%)	13(39.4%)	0.013
extended families	13(59.1%)	20(60.6%)	
Mother's work status			
Working	14(63.6 %)	27(81.8%)	2.30
Not working	8(36.4%)	6(18.2%)	
Multiple caregivers			
yes	2(90.9%)	8(24.2%)	2.04
no	20(44.4%)	25(75.8)	
Father's age	41.55(5.80)	42.53(5.02)	
Mother's age	35.20(4.86)	35.47(4.36)	.207
Annual Income Pak Rs.	309125(185286.76)	439769(397388.30)	1.123
Family size	7.14(3.01)	5.6(2.6)	1.943*

**p<0.05, **p< .01*

Table 6 shows no statistically significant findings were observed at .05 significance level, for any demographic variable including father's education, marital status of parents, for family structure, and for total annual income, father's age, mother's age, and for mother's work status .

However, significant differences were observed for mother's education. Mothers who dropped out were more likely to hold higher education degrees like master's degree and technical or professional degrees. In contrast, mothers who completed were more likely to have matriculated (10 years of education) or intermediate and bachelor's degrees (12-14 years of education). Significant differences were also observed for family size, with a larger mean family size for drop outs, as compared to those who completed.

Table 7

Group differences for Child's Characteristics (demographics)[44]

	Drop outs (n = 24) Percentage/Mean (SD)	Completers (n = 31) Percentage/Mean (SD)	t/χ^2
Child's age	9.27(2.30)	8.91(1.99)	.603
Child's gender			
Male	13(59.1%)	29(87.9%)	6.06*
Female	9(40.9%)	4(12.1%)	
Child's school			
Private	14(63.6%)	20(60.6%)	0.05
Public	8(36.4%)	13(39.4%)	

*$p<0.05$

Table 7 summarizes the child characteristics of the sample, which showed no significant statistical difference at .05 significance level, regarding child's age for drop outs and completers, and for private and public schools. However a statistically significant difference was observed for child's gender, showing higher drop out rates for girls as compared to boys.

Table 8

Group differences for Child's Characteristics (symptoms ratings)[44]

	Drop outs (n = 24)		Completers (n = 31)		
	M	*SD*	*M*	*SD*	*t*
Scores on DBDRS Parent Rating					
ADHD-I subscale	5.46	2.04	6.48	1.75	2.00*
ADHD-HI subscale	5.16	2.18	5.65	2.79	.690
ODD subscale	4.58	1.61	4.77	1.47	.457
CD subscale	1.87	2.11	2.25	1.99	.688
Scores on Home Situations Questionnaire					
HSQ No. of problems	9.79	3.84	10.16	3.5	.940
HSQ Mean Severity	2.79	1.49	2.84	1.5	.711
Scores on DBDRS Teacher Rating					
Inattention Subscale	4.6	1.78	6.35	1.31	.348*
Hyperactivity Subscale	5.7	2.05	5.3	2.45	.677
ODD subscale	4.22	4.2	4.57	1.83	.667
Scores on School Situation Questionnaire					
SSQ No. of problems	5.23	2.35	5.53	2.16	.436
SSQ Mean Severity	1.98	0.94	2.16	1.14	.572

*$p < .05$

In Table 8 *t*-tests showed no statistically significant difference among drop outs and completers for symptoms including ODD, hyperactivity, and conduct disorder, for both parent's and teacher's rating scales, except for symptoms of inattention according to both parents and teacher's reports. However there is a consistent pattern of higher average means for completers on all subscales.

Table 9

Logistic regression analysis for factors associated with premature termination

Variables	B	S.E	Exp(B)	CI	
				Lower	Upper
Gender(male)	-1.55	0.75	0.21*	0.49	.919
Family size	-0.19	0.12	0.83	0.66	1.04
Mother's education	-0.12	0.49	0.88	0.34	2.35
Mother's work status	-1.22	0.87	0.29	0.05	1.62
Multiple Caregivers	1.53	1.04	4.63	0.61	35.31
Model χ^2 (5, N=55), =14.23**					

$p < 0.05$, $p < 0.01$ ***

In Table 9 Logistic Regression Model included only those variables which had statistically significant differences in preliminary analyses, and other variables were dropped out. However, mother's work status and the role of multiple caregivers have been explored as in the light of our observations during training sessions it seemed like these factors might be playing a role in drop out and treatment retention. Results showed that gender turned out to be an important predictor, showing an increased likelihood for parents of male child, to complete the sessions, as compared to girls. Mother's work status, education, involvement of multiple caregivers and family size turned out to be no more significant statistically.

Step III: Main Analyses

For completer analyses, the ANCOVA was used in order to adjust the effects of treatment for scores on the baseline measures. Table_10 shows results when baseline measures were included in the model as covariate. Analysis of Covariance was performed to statistically analyze the effectiveness of intervention, with the post-

treatment outcome measures entered as the dependent variable; group (intervention and control) as the fixed factor, and baseline score entered as the covariate.

Table 10

Analysis of Covariance for Self-Report Measures at Pretreatment and Post Treatment

Scales	Experimental Group (n = 31)		Control Group (n = 30)		F Value	Cohen's d
	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment		
	M(SD)	M(SD)	M(SD)	M(SD)		
DBDRS_ Parent's Report						
Inattention	6.48(1.74)	5.83(1.84)	3.36(2.65)	4.0(2.72)	9.517*	.78
Hyperactivity	5.64(4.93)	4.93(2.92)	4.4(3.00)	4.3(2.93)	2.247	.22
ODD	4.77(3.16)	3.16(1.80)	2.7(2.66)	2.86(2.47)	25.886*	.13
Conduct Disorder	2.25(1.99)	1.65(1.81)	1.0(1.14)	0.90(1.18)	1.939	.49
HSQ						
Total no. of Problems	10.16(3.53)	6.38(2.75)	6.5(3.60)	6.44(3.26)	23.082**	.02
Mean Severity	2.84(1.50)	1.60(1.00)	1.6(1.21)	1.43 (1.02)	19.431**	.14
DBDRS_ Teacher's Report						
Inattention	6.47(1.30)	6.17(1.44)	5.17(2.93)	5.38 (2.98)	1.01	.23
Hyperactivity	5.13(2.54)	4.80(2.84)	4.4(2.80)	4.68 (2.84)	1.54	.04
ODD	4.74(1.86)	4.2(1.99)	2.4(2.06)	2.56(2.06)	1.86	.78
SSQ						
Total no. of Problems	5.48(2.2)	6.16(2.67)	3.96(2.54)	6.44(3.26)	1.036	.01
Mean Severity	2.13(1.16)	1.82(0.89)	1.45(1.08)	1.44(0.87)	0.593	.43

Note. DBDRS= disruptive behaviors parent rating scale, HSQ= Home Situation, Questionnaire, SSQ= School Situation Questionnaire

*$p<.05$, **$p<.01$

Table 10 shows that difference in symptoms after adjusting for the effects of treatment, for pre treatment measures is observed to be statistically significant for

symptoms of ODD according to parent reports, for number of situations, and for the problem severity according to Home Situations Questionnaire.

As observed in the preliminary analyses, the two groups also differed significantly on child's age, mother's age and father's age. We had a significantly higher mean age for mother and child in experimental group, while father's mean age being higher in control group. Thus all the analyses were rerun with these demographic variables as covariates along with the baseline measures. After controlling for these demographic variables, results were significant for the HSQ total number of problems ($F = 22.95$, $p < .01$), and for Hyperactivity ($F = 4.34$, $p < .05$). Time × Group interaction was reduced to a marginal trend for ODD ($F = 3.49$, $p < .1$), while effects were no longer significant for the mean problem severity reported on HSQ ($F = .54$, $p = .47$).

To calculate effect size post-treatment mean of the control group was subtracted from the post-treatment mean of the treatment group, and the difference was divided by the pooled standard deviation of the groups at post treatment (Cohen, 1992).

Intent- to- Treat (ITT) Analyses

To overcome the disadvantage of loss of subjects due to missing data at any of the time points, and the resulting asymmetry, the Mixed Model technique can be used. In order to conduct these analyses, we had to transform the usual 'longitudinal data form' for repeated measurement to the 'relational form' by using the SPSS 'restructure' option.

Table 11

Estimates of Fixed effects by using Linear Mixed Model, with Maximum Likelihood Approach (n=85)

	Estimated Marginal Means		
	Experimental Group	Control Group	*F* Value
DBDRS_ Parent's Report			
Inattention	5.94	3.68	$F_{131.570}$= 1.173
Hyperactivity	5.19	4.35	$F_{129.301}$= 0.176
ODD	3.93	2.81	$F_{129.153}$=5.560*
Conduct Disorder	1.87	0.95	$F_{143.278}$=0.386
HSQ			
Total no. of Problems	8.19	6.48	$F_{142.686}$=9.950**
Mean Severity	2.22	1.52	$F_{143.763}$=6.592*
DBDRS_ Teacher's Report			
Inattention	5.69	5.27	$F_{117.69}$=0.033
Hyperactivity	4.83	4.57	$F_{113.59}$=2.598
ODD	4.14	2.57	$F_{117.29}$=1.34
SSQ			
Total no. of Problems	5.52	5.18	$F_{100.38}$=1.42
Mean Severity	1.87	1.43	$F_{127.83}$=1.45

Note. DBDRS= disruptive behaviors rating scale, HSQ = Home Situation Questionnaire, SSQ= School Situation Questionnaire, ODD= Oppositional Defiant Disorder.

**p<0.05, **p<0.01*

In Table 11 the major focus of analyses is on the treatment effects. In the above mentioned table, data has been analyzed only for Fixed Effects aspects of all measures. It shows significant interactive effects for the outcome measures of

oppositional defiant disorder (ODD), symptom severity and number of problem situations according to parent's reports on Home Situations Questionnaire.

When all the analyses was rerun, after controlling for the demographic variables including mother's age, child's age, and father's age, the effects were no longer significant for all outcome measures, except for Number of problem situations on the Home Situations Questionnaire ($F_{82.338}$= 5.670, p = .02) . These covariates were selected from the preliminary analyses as they significantly differed in control group and experimental group.

For further verification of these findings, General Linear Model was used again on the experimental group and control group separately, only for those measures for which we had significant interactions observed in completer's analyses and intent to treat analyses. The control group being non-equivalent, this additional step is taken to see only the pre post effects within treated group for these variables, by using repeated measures ANOVA. This was in order to see the within group trends, and to explain the interaction effects.

Table 12

Within subject effects for control and experimental group for Pretreatment and Post Treatment measures

Measures	Pre-Treatment M(SD)	Post-Treatment M(SD)	F-Value
DBDRS_ Parent's Report			
Inattention			
Control group	3.36(2.65)	4.00(2.72)	10.58*
Experimental group	6.48(1.74)	5.83(1.84)	11.029*
ODD			
Control group	2.7(2.66)	2.86(2.47)	0.525
Experimental group	4.77(3.16)	3.16(1.80)	64.76*
HSQ			
Total no. of Problems			
Control group	6.5(3.6)	6.44(3.26)	0.019
Experimental group	10.16(3.53)	6.38(2.75)	208.80**
Mean Severity			
Control group	1.60(1.21)	1.43(1.02)	2.083
Experimental group	2.84(1.50)	1.60(1.00)	83.47**

Note. DBDRS= disruptive behaviors rating scale, HSQ=Home Situation Questionnaire, ODD= Oppositional Defiant Disorder.

**p<.05, **p<.01*

Table 12 is showing that significant pre-post differences have been observed for the ODD and inattention. Frequency of problem situations and symptom severity is also decreased according to parent reports.

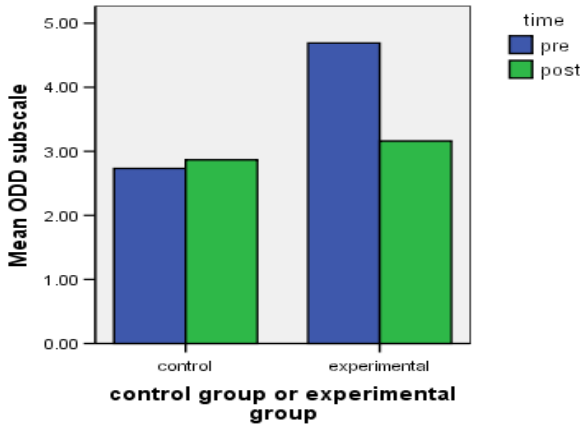

Figure 6. Mean pre-post test scores on ODD subscale of DBDRS-parent rating

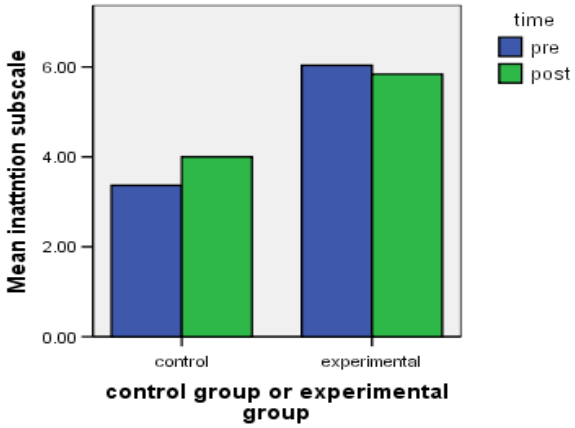

Figure 7. Mean pre-post test scores on inattention subscale of DBDRS-parent rating

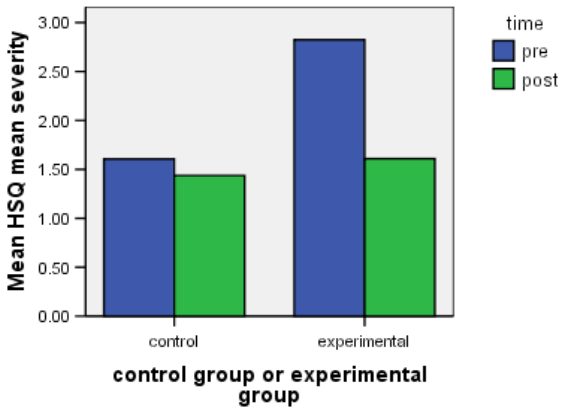

Figure 8. Mean pre-post test scores on HSQ mean severity of problem situations

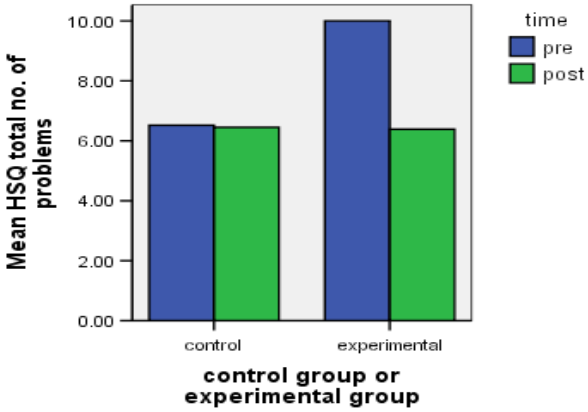

Figure 9. Mean pre-post test scores on HSQ total number problem-situations

Table 13

Within subject effect sizes for both treatment and comparison group

Measures	Pre-Treatment *M*(*SD*)	Post-Treatment *M*(*SD*)	Cohen's d
DBDRS_ Parent's Report			
Inattention			
Control group	3.36(2.65)	4.00(2.72)	.24
Experimental group	6.48(1.74)	5.83(1.84)	.37
Hyperactivity			
Control group	4.4(3.00)	4.3(2.93)	.03
Experimental group	5.6(4.93)	4.9(2.92)	.14
ODD			
Control group	2.7(2.66)	2.86(2.47)	-.5
Experimental group	4.77(3.16)	3.16(1.80)	.59
Conduct Disorder			
Control group	1.00(1.14)	0.90(1.18)	.08
Experimental group	2.25(1.99)	1.64(1.87)	.30
HSQ			
Total no. of Problems			
Control group	6.5(3.6)	6.44(3.26)	.02
Experimental group	10.16(3.53)	6.38(2.75)	.99
Mean Severity			
Control group	1.60(1.21)	1.43(1.02)	.13
Experimental group	2.84(1.50)	1.60(1.00)	.45
DBDRS_ Teacher's Report			
Inattention			
Control group	5.17(2.92)	5.37(2.98)	-.06
Experimental group	6.47(1.30)	5.9(1.23)	.44
Hyperactivity			
Control group	4.4(2.8)	4.68(2.84)	-.01
Experimental group	5.1(2.54)	4.52(2.62)	.23
ODD			
Control group	2.4(2.06)	2.55(2.6)	-.07
Experimental group	4.7(1.86)	4.04(1.74)	.35
SSQ			
Total no. of Problems			
Control group	3.96(2.54)	3.89(1.83)	.03
Experimental group	5.47(2.21)	5.00(1.62)	.21
Mean severity			
Control group	1.45(1.08)	1.44(0.87)	.01
Experimental group	2.13(1.16)	1.76(0.82)	.32

In table 13 effect sizes in within group design were calculated by subtracting the post-intervention mean from the pre-intervention mean and dividing the difference by the pre-intervention standard deviation (Cohen, 1992). The results showed medium to large effect sizes for experimental group but not for control group.

Step IV: Correlates for Treatment Success

At this step the possible correlates of treatment success are explored among those who completed therapy sessions and for which post measures were available. For this we transformed the data into binary form. Cases which were still within the clinical range on post-treatment measures were scored as ‘1’, and for those which were no more in the clinical range were given the score ‘0’. “Treatment success” is defined at this stage in terms of symptom alleviation according to parent’s reports on DBDRS scale. Criteria for success is taken and cut offs are determined by following the DSM-IV-TR diagnostic criteria for ADHD and associated features, as reported on DBDRS (details for cut offs is mentioned in method section).

Table 14

Frequencies and number of cases in clinical range according to parent and teacher reports on DBDRS

Variables	Pre-Treatment *N*(%)	Post-Treatment *N*(%)
DBDRS Parent Rating		
Inattention	23(74.2%)	17(54.8%)
Hyperactivity	19(61.3%)	17(54.8%)
ODD	26(83.9%)	10(32.3%)
Conduct Disorder	13(41.9%)	7(22.6%)
DBDRS Teacher Rating		
Inattention	17(68.0%)	16(64.0%)
Hyperactivity	10(43.5%)	11(47.8%)
ODD	29(55.8%)	28(53.8%)

Table 14 shows number of cases who were successful after program implementation. More cases are not in the clinical range for symptoms of ODD, and conduct disorder and inattention according to parent reports but not many cases are observed as successful according to teacher's reports.

Table 15

Mean difference for successful and not successful cases for baseline symptom severity

	Successful		Not Successful		
	M	*SD*	*M*	*SD*	*t*
Scores on DBDRS Parent Rating					
ADHD-HI subscale	3.29	2.23	7.59	1.33	6.66***
ADHD-I subscale	14.0	5.14	17.0	7.59	5.39***
ODD subscale	4.0	1.00	6.4	0.84	6.55***
CD subscale	1.5	1.4	4.8	1.46	5.48***
Scores on DBDRS Teacher Rating					
ADHD-HI subscale	3.3	2.19	6.9	1.73	6.39***
ADHD-I subscale	3.68	1.9	7.27	1.44	7.73***
ODD subscale	1.6	1.63	5	1.44	7.91***

***$p<.001$

The table 15 shows *t*-test analyses only for DBDRS parent and teachers reports. The above mentioned findings suggest a very strong correlation of treatment success on post measures with baseline symptom severity. It shows that within treated group symptom alleviation was only observed in those cases which had less severe symptoms reported at baseline.

Familial & Child Characteristics and Treatment Success

Table-16

Chi-Square goodness of fit and t- test values for demographic correlates of treatment success

Variables	ADHD χ^2 /*t* (*p*-value)	ODD χ^2 /*t*(*p*-value)	Conduct Disorder χ^2 /*t*(*p*-value)
Gender	1.5 (0.47)	1.98 (0.16)	0.11 (0.74)
Mother's education	7.74 (0.10)	0.02 (0.99)	0.49 (0.78)
Father's education	2.915 (0.57)	0.659 (0.71)	1.032 (0.59)
Mother's work status	1.75 (0.42)	0.41 (0.52)	0.02 (0.88)
Marital status	2.89 (0.24)	0.002 (0.97)	0.33 (0.33)
Family structure	0.11(0.95)	0.47 (0.49)	0.53 (0.53)
Multiple caregivers	2.92 (0.57)	0.87 (0.87)	0.28 (0.73)
Child's age	1.44 (0.36)	0.94 (0.92)	0.36 (0.36)
Family size	0.33 (0.75)	0.22 (0.83)	0.37 (0.91)
Father's age	0.23 (0.82)	1.10 (0.28)	1.23 (0.23)
Mother's age	0.33 (0.74)	0.81 (0.434)	1.09 (0.28)

**p<.05*

Chi square goodness- of- fits test and *t*-test were used to explore possible demographic correlates for treatment success. Results of these analyses have been described briefly in Table-16. Showing *t*/ χ^2 values and level of statistical significance, the table shows that for both ADHD core features and associated features, none of the demographic factor could reach statistical significance.

Chapter-VI

DISCUSSION

Current study is conducted in context of lack of available data regarding effectiveness of interventions from Pakistan, especially for childhood behavior problems. ADHD and the associated disruptive behaviors was the primary focus in present study. This is because of evidence of its being the most prevalent disorder reported both in clinical and community samples in Pakistan (Syed et al., 2007). Behavioral parent training is one of the efficacious treatment for ADHD and associated disruptive behaviors like ODD and CD (Ollendick & King, 2004). The current study also provided a preliminary evidence for effectiveness of this adapted version of Barkley's parent training program for Pakistani community by using a Qausi experimental two group design.

To meet the primary objectives of the present study, the Behavioral parent training program by Dr Russell Barkley, *The Defiant Children* (1997) was adapted and translated in Urdu language. This program was selected for adaptation because of two primary reasons, (1) It has a strong empirical support for effectiveness in studies conducted in western population (2) Program has also proven to be effective when

adapted for other Asian populations such as South Asian and Chinese, and Taiwanese(Basu & Deb, 1996; Crisante & Ng, 2003; Ho et al, 1999; Huang et al, 2003).

The recommendations given by Lau (2006) were followed for adaptation of parent training programs, which focuses on two way approach; contextualize the content on one hand and to look for engagement enhancement on the other hand. According to Lau (2006) if there is lack of evidence for *ineffectiveness* of parent training program in a culture effort should be made to look for the universality of the program as well. This only possible only by keeping the adapted program as much similar to the original program as possible. This decision was also made keeping in view the fact that as compared to most other evidence based treatment categories, the generalizability of PMT treatment effects has enjoyed some empirical support from studies which have included large, and ethnically diverse samples. Data are emerging to suggest that culturally adapted versions of PMT, which make surface-level (e.g., including community-relevant examples, modifying graphic material to depict ethnically similar families, and acknowledging and respecting cultural values) result in marked success and improvements (Harachi, Catalano, & Hawkins, 1997; Kumpfer et al., 2002). Furthermore, the Chinese, Thais and Indian adaptation of Barkely's manual also provide the evidence regarding robustness of the program for Asian cultures, which supported the decision for keeping the intervention closer to the original plan.

As regard to psychometric properties of the scales were further established. Alpha co efficient showed the translated scales possess good internal consistency for all subscales of DBDRS including inattention, hyperactivity and ODD for both parent and teacher rating, Alpha co-efficient value ranging from 0.74-0.86, except for Conduct disorder for which it is 0.60. Alpha values for Home Situations Questionnaire (0.79) and School Situations Questionnaire (0.74) are also good. The high value found for these subscale indicate that the scales can be used with more confidence by researchers and clinicians.

Initial difference in distributions of categorized demographic characteristics between the two groups was assessed using the chi-squared analyses and independent sample t-test wherever applicable. Families of experimental group, were compared with the families of control group to assess the differences in these groups at the outset of the study and to determine potential confounding factors (i.e., covariates). These covariates were identified so that they can be controlled in main study data analyses and to help in interpreting any changes in the intensity scores of the outcome measures (i.e., the DBDRS parent and teacher's versions and HSQ).

Differential attrition was also studied to see the factors associated with drop-out (40 %) which also requires considerable attention. A higher dropout rate among the treated group does not allow us to interpret findings in terms of treatment success. However, it should be noted that higher percentage for drop out is also consonant with

many studies of parent training in the existing literature. For example in a systematic review of studies examining premature termination from parent training, Forehand, Middlebrook, Rogers, and Steffe (1983) reported an overall dropout rate of 28%. However some researchers have reported high drop out rate as approaching 50% of parents (Prinz & Miller, 1994). Similarly a study with Taiwanese parents using Barkley's parent training program also reported that 39% families dropped out from program and couldn't complete the total number of sessions (Huang et al., 2003).

Studies have found that limited attendance in parent training programs is associated with poorer outcomes (Kazdin, Mazurick, & Siegel, 1994; Prinz & Miller, 1994) presumably because without attendance the relevant parenting skills are not learned. Observed differential effectiveness in parent training has led to studies attempting to identify parent and child attributes that influence treatment outcome in parent training. Findings on correlates and predictors of premature termination may provide a better understanding as regards the effectiveness of the training manual for Pakistani families and may provide a better understanding regarding what works for whom in Pakistani context. This analyses may also provide help to identify instances where adaptation could prove advantageous by mitigating threats to treatment engagement.

The criteria for drop out was inability to complete fifty percent of recommended number of sessions. The preliminary analyses was conducted to see the difference

between those who dropped out and those who completed on certain demographic variables which appear to play a contributory role for treatment enhancement . The factors like mother's education, gender, family size and mother's work status turned out to be significant in preliminary analyses of drop outs and completers. These variables were further entered in logistic regression model. Child's gender seemed to be playing a significant role, showing higher probability for parents of girl child to drop out. Other variables included in the model were no more significant for predicting the treatment attendance. Furthermore, the preliminary analysis also suggested a consistent pattern of higher degree of severity for those who completed the sessions. Although this difference was statistically non significant but this might be because of less power keeping in view the sample size. Future studies may explore the degree of severity as a relevant predictor variable for premature termination.

Findings of main study show the impact of intervention on child's ADHD symptoms. It was hypothesized that participation in parent training program would result in a decrease in symptoms of ADHD and associated features according to parent and teacher reports. Results of the completer's analysis, using Analysis of Covariance (ANCOVA) suggested a significant improvement in symptoms according to parent reports for ADHD and oppositional behaviors. For Intent- to- Treat analyses, Linear Mixed Model was used. This method was used because, repeated measurements relating to same subjects will be correlated over time. Linear Mixed models, or hierarchical linear

models as they are often called, relax the standard assumption of ordinary modeling techniques that all data points are independent. Also, it handles missing data without imputation.). The statistically significant findings on outcome measures suggests the usefulness of adapted version of Barkley's Parent training for Pakistani families.

Along with the pre-post difference for the outcome measures we have also further included variables as covariates which were distributed differently between the two groups at baseline measures. This allows the effect of the intervention to be separated from the effects of time and of the initial differences between the intervention and comparison groups. The improvements remained statistically significant even after controlling for factors like father's education, father's age, mother's age and child's age. It suggests that the training program may provide an effective intervention for treating ADHD core symptoms and its associated features.

The findings suggests a declining trend in experimental group for symptoms of ODD, number of problem situations and mean severity reported by parents on post measures. The significant interactions in completer analyses (ANCOVA) and ITT analyses were further explained by conducting within subject repeated measures analyses. The treatment effect is evident in a reduction of the high level of parent reported child behavior problems immediately at post test in the experimental group but not in the control group.

However, we could not find improvement in child's behavior in terms of symptoms reduction according to teachers reports on DBDRS and SSQ. The findings are consistent with those studies where intervention was offered for home environment and not for classroom setting (Webster-Stratton & Reid, 2011). Previous studies also show that treatment effects did not generalize beyond settings where treatment is offered (Barkley et al, 2000). Due to very limited resources and funding constraints we could not incorporate classroom management strategies for teachers in present study. Future works should incorporate classroom-based intervention to ensure that parents and teachers are reinforcing the same behaviors across settings and using similar management strategies and language.

While the post measures show improvement in experimental group over time, it also shows that symptoms of control group got worse overtime on outcome measures (e.g., measures of inattention and ODD according to parent reports and of inattention, hyperactivity and ODD on teacher reports). The intervention turned out to be effective for symptoms of inattention as well, showing a statistically significant mean difference and a declining trend on post measures within treated group. These findings may contradict the basic assumptions of Barkley's Neuropsychological model which only explains the ADHD hyperactive type, and Combined type in terms of deficit of behavioral inhibition (Barkley, 2006). However these findings are consonant with the studies of parent training

effectiveness which shows that behavior modification does bring improvement in core feature of ADHD like inattention (Huang, et al 2003; Jones, Daley, Hutchings, Bywater, & Eames, 2007).

Cohen's approach was followed to calculate the effect sizes (Cohen, 1992). When between group effect sizes were considered, the magnitude of effects of intervention was large for symptoms of inattention, but small for other measures including hyperactivity and ODD on parent reports (Trusty, Thompson, Petrocelli, 2004). However, keeping in view the chance of misinterpretation for between group effect sizes due to control group being non-equivalent, and higher baseline score on all outcome measures for experimental group, an additional step was taken to calculate the effect sizes for pre-post measures only. Cohen's d ranged from 0.21 to 0.99. A systematic review for effectiveness of parent training suggests the average unweighted effect size for pre-post design studies as .63 with a 95% confidence interval of 0.54–0.7. Thus, in the pre-post study designs, the average effect size of .63 appears to be robust (Fabiano, Pelham, Coles, Gnagy , Chronis-Tuscano, & O'Connor, 2008).

In present study, analyses were also conducted to explore the correlates of treatment success. A range of variables that predict response to parent training (including socioeconomic and marital status, low education/ occupation, intensity of child symptoms, maternal psychopathology, and life stress etc) are also found to influence the treatment response (Kazdin., Mazurick, & Bass. 1993; Prinz & Miller, 1994). The

analyses suggest that symptom severity at baseline/pretreatment is lower for those who are successfully treated according to post measures DBDRS- parent rating. However no other variable could reach statistical significance including demographic factors like gender, mother's age etc. This is possibly due to loss of power due to a smaller sample, as the analyses was done only for those cases for which we had post measures.

Limitations and Future Directions

Some degree of precaution is needed to interpret the findings of the present study focusing on its limitations. Firstly, it's a Qausi- experimental two group design and not a true experimental design. Some additional steps were taken during data analyses to control the issue of sampling bias. However, future studies should be evaluating the effectiveness with an improved study design preferably with a randomized control group design.

Second, all outcome measures relied on self report measures from teachers and parents which may have reflected several potential bias. The current design did not allow us to examine whether the intervention resulted in improvement of actual child behavior, which can be possible by some observational measures. The fact that many problem behavior and symptom measures have not been restandardized for the Pakistani population creates a danger of measurement nonequivalence and potential misinterpretation of meaning. Some steps are needed to adapt such measures for

Pakistani culture which will surely add to our information while conducting such kind of studies.

In present study the role of family demographics, child variables, was explored. however strong evidence exists in international literature, for participation variables (including practical obstacles to treatment participation, treatment demands, perceived treatment relevance, and parent–therapist alliance) and parent psychological/behavioral factors (marital distress/dissatisfaction, maternal psychopathology, maternal depressive symptoms, negative life events/parenting stress, and adverse parenting behaviors pretreatment), showing that such factors do play a role in treatment outcomes (Reyno & McGrath, 2006). A role of parental psychopathology and distress, parenting styles and role of dysfunctional families is also needed to be explored in future works. While designing and developing such programs in future, these factors should be considered and some exploratory work is needed to understand the role of these potential variables for Pakistani families. Such exploratory work will help in bringing modifications in the program and to look for the feasibility of adjunct treatments like stress management for caregivers.

Families with less education might not be able to take benefit from such programs, which limits its generalizability especially in countries like Pakistan where literacy rate is very low. An additional step of translating and using a supportive visual educational package was taken, and this turned out to be beneficial for the less educated

mothers and grandmothers. However the DVDs were not developed indigenously and a doubt still exists that the translated material may not be very helpful for those mothers who are not educated at all. Since study was not funded it was not possible to develop a visual package for Pakistani families keeping in view the cultural context, dressing, life style and examples given in the DVDs. However it seems from observation that while working with those caregivers who were less educated (i.e., only able to read and write Urdu language) that the visual program can provide a great support for such families. It helped in providing them the demonstrations during sessions and encouraging them to watch the programs at homes. Future research should explore the parent training models which incorporate the visual material in a way that those parents who have difficulty in seeking such training in a clinical setting and those who are not able to read, may also be able to seek benefit from such programs. The work of Webster-Stratton (1990) is one example in this regard whose feasibility can be explored in future work. Their program The Incredible Years has evidence of reducing child conduct problems in prevention samples including White, Latino, African American, and Asian American families, with few ethnic differences in attrition and outcomes (Reid, Webster-Stratton, & Beauchaine, 2001). There is a high possibility that such program formats might be more helpful if adapted for less educated Pakistani families.

Control group was taken for comparison from school settings and parents of these children also asked questions about services. Less acceptance for the childhood behavior

problems was observed among parents of children from school settings. Most of the parents of these children were hesitant of having such trainings in school settings. Most of them told that this can increase the chance of their child being singled out in classroom and may face discrimination by teachers. However, this area requires further exploration and studies should be conducted to explore the feasibility of such programs for those children who are not been referred to hospitals, and have less severe symptoms. Future work should be done in the direction of introducing some community based programs and to introduce these programs in a seemingly less stigmatizing manner. To make parent training equally effective for children from schools and community, Cunningham's model for parent training (1995) or Triple P program(Zubrick,Ward, Silburn, Lawrence, Williams, Blair, Robertson, & Sanders, 2005), with an increased focus on prevention rather than intervention can help practitioners to gain greater acceptance by parents of children with less severe symptoms. Such preventive models may help those children which are generally not referred to hospitals but still manifest the problems . Furthermore, such redesigning of parent training program may help those parents who have work schedule that do not allow day time participation, or if travel time or transportation costs prevents them from enrolling in such kind of programs.

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