The relation between knowledge of ADHD and treatment acceptability in a multi-disciplinary pediatric clinic

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THE RELATION BETWEEN KNOWLEDGE OF ADHD AND TREATMENT ACCEPTABILITY IN A MULTI-DISCIPLINARY PEDIATRIC CLINIC

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
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in

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Abstract

Behavior modification and medication have been proven to be the most effective interventions for children with ADHD. For these treatments to be effective, utilization of mental health care services as well as compliance with treatment recommendations is necessary. There has been shown lower care utilization among minorities for the treatment of behavioral disorders. In addition, lack of adherence among these populations to ADHD treatment is not explained by SES, parenting stress, or family coping. An alternative explanation may be parental knowledge of ADHD and opinions of commonly used treatments. The present investigation examined the effect of a brief knowledge intervention aimed at increasing knowledge of ADHD on treatment acceptability of commonly utilized treatments for ADHD in a low SES, minority population seeking initial services at a multi-disciplinary behavior clinic for ADHD. Participants included 48 female guardians. They completed a demographic questionnaire, the Conners’ Parent Rating Scale-Revised: Long Form (CPRS-R:L), six Treatment Evaluation Inventory – Short Forms (TEI-SF), and an Attention-Deficit/Hyperactivity Disorder Knowledge Survey (AKOS-R). Upon their next visit to the clinic, participants were randomly assigned to one of two groups. One group received an educational video intervention while the other group watched a control video. Following the videos, all participants again completed six TEI-SF’s and the AKOS-R.

Results revealed that parent ratings of their child’s behavior did not correlate with treatment acceptability ratings. Baseline knowledge was low and increased significantly for the experimental group when compared to the control group demonstrating good treatment integrity, $F (1, 45) = 29.37, p = .01$. A significant negative correlation was identified between changes in knowledge as assessed by the AKOS-R and the changes in the TEI-SF diet
intervention ($r = -.43, p = .01, r^2 = .19$). Change in knowledge accounted for 18% of the change in treatment acceptability of the diet intervention ($R^2 = .18$). Changes in knowledge scores did not otherwise relate to changes in treatment acceptability ratings. Overall, it appears that adding a parental educational component to the treatment of children with ADHD will not lead to increased acceptability of empirically supported treatments with this population.
Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common reasons children are referred to mental health clinics with estimated prevalence rates of 5% of school-aged children (Barkley, 1998). ADHD is a chronic condition characterized by impairments in impulse control, sustained attention, and the regulation of behavior in response to situational demands (American Psychiatric Association, 1994). ADHD children often display impulsive behavior such as interrupting others, difficulty waiting his or her turn, or talking without permission. These children often begin tasks before directions have been given, talk out of turn, do not show regard for social consequences, and take unnecessary risks. Difficulty maintaining sustained attention often occurs in situations demanding attention to boring, repetitive tasks (Milich, Loney, & Landau, 1982). A child with ADHD frequently does not complete assigned work, daydreams, and has difficulty following directions. Hyperactivity can be displayed both motorically and verbally. These children are frequently described as always on the go, unable to sit still, fidgety, and talkative. Children with ADHD often display great variability in task performance.

The most recent Diagnostic and Statistical Manual of Mental Disorders – Text Revision (DSM-TR; American Psychiatric Association, 2000) contains two symptom groups: inattention and hyperactivity-impulsivity. A diagnosis requires six or more (of nine) symptoms from one group. Symptoms must be present before age seven, cause impairment in two or more settings (e.g., home and school) and have persisted for at least six months.

Children with ADHD frequently meet diagnostic criteria for a comorbid disorder. Szatmari, Offord, and Boyle (1989) report that 44% of children with ADHD have one other disorder, 32% have two other disorders, and 11% have three disorders that are comorbid with
a diagnosis of ADHD. Approximately 25% of children diagnosed with ADHD have a comorbid anxiety disorder and 9-32% have comorbid major depression (Biederman, Newcorn & Sprinch, 1991). Many studies have estimated the prevalence of comorbid oppositional defiant disorder with ADHD to be as high as 54-67% (Barkley, DuPaul, & McMurray, 1990; Biederman et al., 1991; Faraone & Biederman, 1997; Fischer, Barkley, Edelbrock, & Smallish, 1990). Conduct disorder is also a very common comorbid disorder, with estimates of 20-56% of ADHD children and 44-50% of ADHD adolescents carrying both diagnoses (Szatmari et al., 1989). Comorbidity not only complicates the clinical presentation of symptoms but affects treatment as well. For example, comorbidity may reduce responsiveness to stimulant medication treatment (Biederman et al., 1991; Jensen et al., 1997). The use of additional medications and/or psychosocial or cognitive behavioral interventions can serve as an adjunct to stimulant treatment in children that present with a comorbid mood, anxiety, or conduct disorder (Greenhill, Pliszka, Dulcan, & the Work Group on Quality Issues, 2002).

In addition to high rates of comorbidity with other psychiatric diagnoses, ADHD is frequently associated with other secondary problems. Academic underachievement is one of the most frequent problems associated with ADHD with estimates of learning problems affecting approximately 35% of those with ADHD (Barkley, 1991). In addition, studies have reported as many as 56% of children with ADHD require tutoring, 30% repeat a grade, 30-49% are placed in special education, 46% have a history that includes suspension from school, and 10-35% drop out of school before finishing high school (Barkley, Fischer, Edelbrock & Smallish, 1990; Weiss & Hechtman, 1993). A substantial number of children diagnosed with ADHD experience difficulties in interpersonal relationships. These children
are often rejected by peers due to their aggressive and boisterous interactions (Landau & Moore, 1991).

This introduction will first review current etiological theories of ADHD. Next, an overview of empirically validated treatments will be presented, including a description of stimulant medications and behavior modification techniques. Alternative treatments will be briefly reviewed. Finally, research exploring knowledge of ADHD and research conducted on treatment acceptability will be presented.

Etiology of ADHD

Prevailing views on the etiology of ADHD focus on neurological and genetic bases for the disorder. However, great care should be taken in interpreting findings as most are correlational in nature. Zametkin and the National Institute of Mental Health (NIMH) (1990) studied brain metabolic activity using PET on 25 adults with ADHD who also have children with the disorder and found significantly reduced activity in the frontal and striatal regions. Magnetic resonance imaging (MRI) studies have found smaller right prefrontal lobe and striatal regions in children with ADHD (Barkley, 1997; Riccio, Hynd, Cohen, & Gonzalez, 1993). Studies have also consistently found evidence for the smaller size of the caudate nucleus, although which side of the caudate may be smaller has not yet been consistently determined (Filipek et al., 1997; Hynd et al., 1993).

While there is no evidence that ADHD is the result of abnormal chromosomal structures, heredity is one of the most well substantiated etiologies supported by family aggregation, adoption, and twin studies. Large-scale twin studies have shown high heritibility (Edelbrock, Rende, Plomin, & Thompson, 1995; Gilger, Pennington, & DeFries, 1992). For example, when comparing pairs of biological adoptees and unrelated adoptees, Barkley(1997)
found that 47% of the variance in a measure of attention problems could be accounted for by genetics. It has been estimated that only 0-13% of the variance among individuals can be accounted for by shared environment (Levy, Hay, McStephen, Wood, & Waldman, 1997; Sherman, Iacono, & McGue, 1997). Biederman, Faraone, Keenan, Knee, & Tsuang (1990) found that between 10-35% of immediate family members of children with ADHD also have ADHD. More specifically, the risk for offspring of an ADHD parent is 57%, with 32% of siblings sharing the disorder (Barkley, 1997).

There are many other less substantiated theories regarding the etiology of ADHD. Almost all have been plagued by methodological problems. These include poor parenting, resistance to thyroid hormone, elevated lead levels, high intake of food additives and sugar, low birth weight, season of birth, younger maternal age during pregnancy, low SES, and parental drinking and smoking pre and post-pregnancy.

Treatment

Recent treatment studies for ADHD, as well as the current Clinical Practice Guideline for treatment of school-aged children with ADHD developed by the American Academy of Pediatrics, suggest that stimulant medication, behavior modification, and a combination of the two are the most effective treatments for the core symptoms of ADHD and related academic and behavioral problems (Barkley, 1998; Committee on Quality Improvement, 2001; DuPaul & Barkley, 1993; Pelham, Wheeler, & Chronis, 1998).

Stimulant medication is the most frequently employed, least expensive treatment for ADHD and has more short-term empirical support than psychosocial interventions for core symptoms of ADHD (Pelham et al., 1998). Three formal meta-analyses support the short-term efficacy of stimulant medications in the treatment of ADHD (Committee on Quality
Supporting the longer-term efficacy of stimulant medication, a study on 579 ADHD children ages 7 to 10 years found a marked reduction in core symptoms of ADHD over a 14-month period for children treated with medication alone or a combination of medication and behavior management (MTA Cooperative Group, 1999).

The most commonly utilized stimulants include Ritalin, Dexedrine, Concerta and Adderall. Over the past decade, longer acting preparations of stimulant medications have been created to address several concerns including dips in plasma levels that occur during many unstructured times of the day (e.g., lunchtime, bus ride home) (Pelham et al., 2000), and compliance with multiple doses. Ritalin-SR and the Dexedrine Spansule are among several such long-duration versions (there are also slow-release generics including Metadate and Methyl-SR). Even newer preparations, such as Concerta and Adderall-XR, have recently been FDA-approved and specifically target the needs of children with ADHD (Greenhill et al., 2002). These medications address additional concerns such as potential for abuse (Concerta takes the form of a paste when broken so cannot be ground up or snorted and only requires one administration per day allowing for more careful adult supervision) and children who cannot swallow pills (the Adderall-XR capsule can be emptied) (Greenhill et al., 2002). Approximately 75% of children respond to stimulant medication with improvements in the domains of hyperactivity, inattention, and impulsivity (Pelham et al., 1998; Pelham et al., 1999).

The prevalence of stimulant use among school age children is estimated to be 3-6% (Pelham et al., 1998). Information from multiple sources should be obtained to determine appropriate dosage and monitor side effects (DuPaul & Barkley, 1993; Pelham, 1993). Almost all stimulant-related side effects are dose or timing related and are rare and short-lived.
(Greenhill et al., 2002). Common side-effects include appetite suppression, headaches, nausea, stomachaches, jitteriness, social withdrawal, and delay of sleep onset (Greenhill, 1995).

Stimulant medication has been found to have a positive impact on classroom behavior as well as peer and parent interaction (Coffey, 1997). In the classroom, students display less off-task behavior, out-of-seat behavior, aggression, fidgeting, disruptive behavior, noncompliance, and verbalizations (Pelham, 1993; Greenhill, 1995). Short-term beneficial effects on cognitive and behavioral measures are among the most well documented for childhood mental health disorders (Pelham et al., 1999). Stimulants decrease impulsive responding and variability (Tannock, Schachar, & Logan, 1995), and increase performance accuracy, short-term memory, reaction time, problem-solving skills, and math computation on cognitive tasks (Hinshaw, Henker, Whalen, Ehrardy, & Dunniont, 1989). However, no evidence exists demonstrating the positive effects of stimulant medication on standardized academic tasks and there is little evidence that pharmacological intervention alone significantly enhances learning and achievement in the long-term (Brown, Dingle, & Dreelin, 1997). Studies of parent-child relationships have found an increased positive interaction between parent and child as well as increased child compliance and attentiveness in the home with the use of stimulant treatment (Greenhill et al., 2002). Socially, children on stimulant medications display increased attention and decreased disruptive behavior during athletic activities (Reitman, Hupp, O’Callaghan, Gulley, & Northup, 2001).

Behavior modification represents a broad set of interventions aimed at modifying the physical and social environment to alter or change behavior (Committee of Quality Improvement, 2001). These techniques are different from psychological interventions
directed at changing the child’s emotional status or thought patterns, such as cognitive therapy, which have little documented efficacy in the treatment of children with ADHD in the literature (Barkley, 1998). Although some findings suggest that behavior management techniques do not add anything above and beyond the effects of stimulant treatment (Pelham et al., 1998), behavior modification may be useful to achieve long-term benefits, to build upon appropriate skills for children, to reduce problems that are often comorbid to ADHD (e.g., ODD), to assist families that are experiencing dysfunction in other domains (e.g., paternal alcoholism, parental psychopathology), to use with children that are non-responders or have a negative response to stimulant treatment, to use at times when medication is not at therapeutic levels (e.g., early morning, late evenings), or to combine with a lower dose of medication (Pelham, 1993; Pelham et al., 1998). In addition, of the 70-80% of children that respond positively to stimulant treatment, a majority are only “improved”, not normalized (Pelham et al., 1998). Behavioral modification techniques can be divided into several different categories and may include parent training and school-based interventions.

Parent training consists of teaching parents skills so they may serve as primary change agents in their child’s behavior (Newby, Fischer, & Roman, 1991). Parent training improves child management skills (Pisterman et al., 1989), reduces stress directly or indirectly, improves parental confidence and enhances family relations (Anastopulos, Shelton, DuPaul, & Guevremont, 1993), resulting in both short-term (Anastopulos et al., 1993; Barkley, 1987; Pisterman et al., 1989) and long-term (McMahon, 1994) benefits. Studies have consistently found improvement in behavior of children with ADHD across home and school settings on rating scales following parent training (Anastopolous et al., 1993; Barkley, Guevremont, Anastopolous, & Fletcher, 1992; Gittelman et al., 1980; Pisterman et al., 1989).
Parent training programs specifically target noncompliance, aggression, and other problem behaviors. Goals for working with parents of children with ADHD typically include improving parental management skills by teaching techniques such as the use of school-home notes, time out, environmental management, emphasizing the importance of consistency and routine, and increasing parental knowledge of misbehavior and social learning principles (Barkley, 1987). The training format may be either individual or group (Barkley, 1998) and usually involves instruction in effective use of contingent positive reinforcement, giving instructions, time-out, and response-cost (Anastopoulos et al., 1993). Differential reinforcement involves the utilization of consequences with the intention of increasing desirable behavior and decreasing undesirable behavior. With positive reinforcement, parents are taught how to implement a rewards program in a systematic and consistent manner with the use of tools including sticker charts and behavior contracts. Teaching response cost involves teaching parents how to withdraw rewards or privileges contingent on undesirable behavior. Time-out from reinforcement is a procedure taught to parents to decrease undesirable behavior and involves the removal of reinforcement from a child. A child can be placed in a quiet, boring location by him/herself for a designated time period following misbehavior or a toy can be removed from a child for a designated amount of time. Core components of all these procedures are consistency, immediacy and specificity (Barkley, 1987). Pisterman et al. (1989) conducted parent training consisting of education about the etiology, course, and treatment of ADHD, as well as the basic strategies of differential attention (reinforcement for appropriate behavior), appropriate commands, and time-out. Parents participating in the parenting group, when compared to controls, showed significant gains on measures of child compliance and positive parent-child interaction.
The majority of ADHD children experience some degree of academic and behavioral difficulties at school making classroom interventions a central component of the multimodal treatment of ADHD. Interventions in the classroom typically involve the restructuring of the classroom in addition to modifications in task demands. Manipulation of consequences to decrease disruptive behaviors which interfere with performance is also commonly targeted for intervention. Studies investigating antecedent conditions in the classroom have recommended preferential seating for children with ADHD, posting and frequently reviewing classroom rules and procedures, and minimizing transitions (Abramowitz & O’Leary, 1991; Shelton & Barkley, 1995). In addition, presenting materials using multiple modalities, increasing task novelty, breaking tasks down into smaller components, maximizing interactive learning, and scheduling more difficult tasks in the morning have been suggested (Shelton & Barkley, 1995).

Behavioral interventions, such as contingency management, also have been recommended for use in the classroom. Token economies, response-cost, school-home notes, time-out, and increased feedback and positive attention have been shown to improve classroom performance and behavior of ADHD children (Abramowitz & O’Leary, 1991; McCain & Kelley, 1993). Several studies have shown that token economies are as effective as individually administered rewards (Rosenbaum, O’Leary, & Jacob, 1975). For example, Reitman et al. (2001) found that a token economy implemented during sports training with children diagnosed with ADHD significantly decreased disruptive behavior. Pfiffner, O’Leary, Rosen, and Sanderson (1985) evaluated the effects of response cost and verbal reprimands on ADHD children’s off-task classroom behaviors. They found that the continuous use of response cost was the most effective treatment for disruptive and off-task
behavior. Use of negative consequences in conjunction with positive consequences has been found to be an effective way to maintain on-task behavior (Piffner & O’Leary, 1987). In general, the use of response cost in the classroom to improve the behaviors of children with ADHD has been well supported (DuPaul, Guevremont, & Barkley, 1992; Firestone & Douglas, 1977).

The use of a School-home Note is a way of establishing a direct line of communication between parents and teachers and creating an atmosphere of consistency across school and home environments. Each day the child is rated by his/her teacher on several target behaviors. The note is brought home and consequences are provided by the parent based on the teachers’ ratings. School-home notes provide a structure in which teachers evaluate children daily and cue positive behavior (McCain & Kelley, 1993). School-home notes have been found to increase attentiveness and decrease disruptive behavior (McCain & Kelley, 1993). Including a response cost component, in which points are lost for inappropriate behavior, has been found to enhance the efficacy of school-home notes (Piffner & O’Leary, 1987).

Many alternative treatments for children with ADHD have been suggested. Although many have received attention in the popular press, they have received little to no support in the empirical literature or have not been scientifically investigated. Those that have not been supported include cognitive training programs (e.g., training in verbal self-instruction, problem-solving, and self-monitoring), dietary management (e.g., the Feingold diet, eliminating or limiting sugar intake), and nutritional and dietary supplements (e.g., amino acid). Treatments that have not been examined in a methodologically sound manner include psychological treatments (Eye movement desensitization and play therapy), neurological
treatments (e.g., biofeedback, sensorimotor integration therapy), physiological treatments (e.g., acupuncture, antimotion sickness medications), and homeopathic remedies (e.g., pycnogenol). (Waschbusch & Hill, 2001)

Despite the availability of empirically supported treatment for ADHD children, parents of children with the diagnosis often have highly ambivalent attitudes about the primary treatments for the disorder (Rostain, Power, & Atkins, 1993). Adherence to recommended pharmacological interventions for ADHD has typically been reported as fair to poor, with noncompliance estimated at 25 to 50% and increasing over the duration of treatment (Brown, Borden, & Clingerman, 1985; Brown, Borden, Wynne, Spunt, & Clingerman, 1987; Firestone, 1982). Pediatricians’ recommendations for counseling were followed by only 57% of referred families according to a study by Joost, Chessare, Schaeufele, Link, and Weaver (1989), and up to 50% of those that do pursue counseling drop out (Brown et al., 1985; Firestone & Witt, 1982). Lack of adherence to treatments for ADHD has not been explained by factors such as parenting stress, socioeconomic status, or family coping style (Corkum, Rimer, & Schachar, 1999). Alternative explanations may revolve around parental knowledge and opinions of ADHD and it’s treatment.

Knowledge

Despite such widespread prevalence of ADHD, little is known about the level and source of knowledge regarding ADHD among the general population and those affected by the disorder. Bussing, Schoenberg, and Perwien (1998) conducted a study examining levels of ADHD knowledge among a sample of parents with children at risk for the condition. The purpose was to determine actual information sources as well as preferred sources, and to examine the relation between ethnicity and ADHD knowledge levels, information sources,
and explanatory models of ADHD. African American parents, when compared to Caucasian parents, were significantly less likely to have heard about ADHD, and of those who had, significantly fewer African American parents reported knowing some or a lot about the disorder when compared with Caucasian parents. Half of the African American parents, compared to 84% of Caucasian parents, reported knowing someone with ADHD personally. Bussing et al. (1998) also found significant ethnic and SES differences in parents’ understanding of the origins of ADHD, with twice as many African American parents as Caucasian parents indicating a belief that ADHD was caused by consuming too much sugar and more lower SES parents than economically advantaged parents indicating they were unsure of the role of sugar in the etiology of ADHD. Significantly less African American parents than Caucasian parents indicated a belief in the genetic causes of ADHD, and Caucasian parents were significantly more likely to apply a medical label (e.g., ADD, ADHD) to the disorder than African American parents (who were more likely to use terms such as “bad” when labeling). These findings remained significant after controlling for SES, gender, and treatment status. Bussing et al. (1998) also explored parental knowledge of treatment as well as where such knowledge was obtained. They found that African American parents were significantly less certain than Caucasian parents that ADHD can be treated with medication. Although both African American and Caucasian parents report preferring to receive information about ADHD from their doctor, significantly less African American parents than Caucasian parents report actually attaining information that way. Overall, African American parents had significantly lower knowledge scores than Caucasian parents. In addition, parents from a lower SES stratum had significantly lower overall knowledge scores than more economically advantaged parents.
Treatment Acceptability

Treatment acceptability has been defined as “judgements by lay persons, clients, and others of whether treatment procedures are appropriate, fair, and reasonable for the problem or client” (Kazdin, 1981, p. 483). Assessing the acceptability of treatments for ADHD in outpatient clinics may be important for several reasons. Treatment acceptability appears to be involved in clinical outcomes including compliance, improvement, and the continuation of treatment (Tarnowski, Simonian, Park, & Bekeny, 1992). It seems plausible that if a client does not find a treatment to be acceptable, they may be less inclined to carry that treatment out (Reimers & Wacker, 1988). Although there are several equally effective treatment options available, they may not be perceived to be equally acceptable to consumers (Kazdin, 1980). An effective treatment is not necessarily high in acceptability (e.g., electric shock to reduce stereotypic behaviors), and acceptable treatments are not necessarily effective (e.g., cognitive therapy for ADHD) (Cross Calvert & Johnston, 1990). Determining the acceptability of a proposed treatment may be one method for evaluating the likelihood that the change agent will attempt a given treatment. This operates under the assumption that treatments reported as being more acceptable to the consumer will be attempted more often than treatments reported as being unacceptable (Reimers, Wacker, & Koeppl, 1987). If acceptability affects a consumer’s compliance, the most acceptable treatment is likely to be the most successful (Kazdin, 1981).

In addition to the importance to consumers, examining treatment acceptability with the goal of enhancing consumer compliance is of great interest to society and mental health professionals. Due to the growing trend toward third-party payment for mental health care, there is a demand for societal evaluation of mental health services (Cross Calvert & Johnston,
If society is going to pay for psychological interventions, it is important to identify the most cost-effective treatments available. Examining consumers’ perceptions about treatment options may provide such information, as acceptable interventions are more likely to be adhered to, resulting in their increased cost effectiveness. For the mental health professional, treatment acceptability research offers information that may be relevant to patient compliance and continuation of treatment and, in turn, the success of a given treatment (Cross Calvert & Johnston, 1990). Research may also offer suggestions to mental health professionals on modifying effective treatments to make them more acceptable to consumers, such as decreasing the time required for implementation (Kazdin, 1980) or offering education to the consumer about the treatment (Tingstrom, 1989).

Most treatment acceptability research has utilized an analogue methodology in which participants are presented with a description of a child’s problem and several treatment procedures aimed at alleviating the problem (Cross Calvert & Johnston, 1990). Participants are then asked to evaluate each treatment procedure, most frequently utilizing the Treatment Evaluation Inventory (TEI; Kazdin, 1980) or the Intervention Rating Profile (IRP; Witt & Martens, 1983) which is utilized primarily with teachers. The TEI consists of 15 Likert-type items assessing aspects such as willingness to carry out the procedure and acceptability of the procedure for the child’s problem behavior. The IRP is a 20-item Likert-type scale designed to assess teachers’ perceptions of various classroom interventions (Witt & Martens, 1983).

Evaluating the acceptability of treatments may help to identify variables which influence a consumer’s use of a particular treatment (Kazdin, 1980). Identifying factors that affect acceptability may help lead us to recommend more effective treatments (Reimers et al., 1987) in applied settings. Several aspects of a proposed treatment have been found to affect
ratings of acceptability and include problem severity (Frentz & Kelley, 1986), time required to implement the intervention (Witt, Elliott, & Martens, 1984; Witt & Martens, 1983; Witt, Martens, & Elliott, 1984), and the type of treatment suggested (e.g., positive vs. reductive) (Kazdin, 1980; Witt, Elliot, & Martens, 1984).

Studies have found that the greater the severity of the behavior problem, the higher the acceptability ratings of proposed treatments (Frentz & Kelley, 1986; Kazdin, 1980; Martens, Witt, Elliott & Darveaux, 1985; Reimers, Wacker, & Cooper, 1991). In a study by Frentz and Kelley (1986) mothers rated the acceptability of reductive procedures utilizing the TEI (Kazdin, 1980). The procedures were applied to one of two written case descriptions that varied in severity of behavioral difficulties represented. Parents rated all treatments as being more acceptable when applied to a severe behavior problem. Gage and Wilson (2000) found that parents of children with ADHD rated medication as a more acceptable treatment than did parents of children without ADHD. Parents of children without ADHD rated behavioral treatments as more acceptable than did parents of children with ADHD. Mixed results were obtained in a study by Bennett, Power, Rostain, and Carr (1996) who found that among middle income parents, externalizing problems were positively related to parents’ ratings of counseling acceptability but not ratings of medication acceptability. Reimers et al. (1991) found a significant treatment by severity interaction. In their study, positive reinforcement and time-out were rated as relatively more acceptable when applied to low severity behavior problems, and that medication was rated as relatively more acceptable when applied to high severity behavior problems.

Most research on the effects of time required to use a treatment on acceptability ratings has been conducted with teachers. It has been well-documented that procedures which
require a relatively large amount of time to implement are rated less favorably than those that require a minimal time commitment (Elliott, Witt, Galvin, & Peterson, 1984; Kazdin, 1982; Witt, Elliott, & Martens, 1984; Witt, Martens, & Elliott, 1984). Elliott et al. (1984) found that interventions that required less time, skill, and resources were rated more favorably than those requiring greater time commitment, skill, and resources when the target problem was mild, such as daydreaming and obscene language.

Many studies have found that positive treatments are rated as more acceptable than reductive treatments (Kazdin, 1980; Kazdin, French, & Sherick, 1981; Witt & Martens, 1983; Witt, Elliott, & Martens, 1984; Elliott et al., 1984; Singh & Katz, 1985; Witt & Robbins, 1985). Witt, Elliott, and Martens (1984) evaluated teachers’ ratings of acceptability of six treatments. Three treatments were positive (praise, home-based reinforcement, token economy) and three were negative (ignoring, response cost, seclusion time-out). Consistent across target problems, positive treatments were evaluated as more acceptable than were the negative treatments. Miltenberger, Parrish, Rickert, and Kohr (1989) suggested that the previous literature findings might be due to the fact that nonconsumers or potential consumers are being utilized as participants instead of actual consumers. In their study, which utilized actual consumers of services, they found that parents’ ratings of positive and aversive procedures were not significantly different, nor were they rated differently based on problem severity.

Additional factors that may contribute to ratings of acceptability that have received less attention in the literature include treatment cost and side-effects (Kazdin, 1981) as well as raters socio-economic status (SES) and race (Heffer & Kelley, 1987). It would be reasonable to assume that if a treatment is excessively costly it is likely to be rated as unacceptable to the
potential consumer. Similarly, if a treatment is likely to result in negative side effects that outweigh the benefits of a given treatment, it is likely to be rated as an unacceptable treatment option. Kazdin (1981) conducted a study that found that the presence of adverse side-effects dramatically influenced ratings of acceptability. Heffer and Kelley (1987) found that fewer low income African Americans rated positive reinforcement and time-out as at least moderately acceptable than did low income Caucasians and middle income Caucasians and African Americans. The opposite was true for medication and spanking; fewer Caucasian middle-upper income parents rated spanking and medication as at least moderately acceptable than did low income Caucasians and both low and middle-upper income African Americans. In addition, they found that low and middle-upper income parents rated treatments markedly different. Low-SES parents rated time-out as significantly less acceptable than did middle-SES parents. No differences were found between groups on ratings of response cost. SES differences in perceived acceptability of treatments for ADHD may help explain why behavioral parent training, a commonly utilized treatment for ADHD, has met with limited success when used with low socioeconomic status parents (Heffer & Kelley, 1987; Wahler, 1980).

In addition to factors that may affect initial ratings of treatment acceptability there are also several factors that may influence changes in ratings of acceptability. Treatment effectiveness may also affect ratings of acceptability. For example, it is possible that a treatment that is viewed as unacceptable prior to treatment may be viewed as acceptable when the treatment proves effective (Reimers et al., 1987). Reimers and Wacker (1988) found that parents ratings of treatment effectiveness had the largest influence on their treatment acceptance. Related to effectiveness is treatment integrity, which is another factor that may
change ratings of acceptability. If an intervention is not carried out exactly as it was intended it may result in an ineffective treatment which may lead to lower ratings of acceptability (Reimers et al., 1987).

Finally, knowledge of the effects and side effects of a treatment may alter ratings of acceptability. Clearly, a consumer’s willingness to utilize a recommended treatment reflects the perceived acceptability of that treatment (Witt & Elliott, 1985). This, however, assumes that the consumer fully understands the treatment. Witt and Elliott (1985) proposed a model suggesting a reciprocal relation between treatment acceptability, use, integrity and effectiveness. Elaborating on this model of acceptability, Reimers et al. (1987) added the assumption that treatment must be well understood before acceptability can be assessed. Bennett et al. (1996) found that knowledge of ADHD was positively related to parents’ acceptability ratings of medication in middle income families. In addition, general knowledge of treatment methodology and or a disorder may have an effect on acceptability. For example, McKee (1984) found that teachers with a higher level of knowledge, as determined by performance on a measure of knowledge of social learning principles, rated interventions as more acceptable than teachers with lower levels of knowledge. Similarly, Clark and Elliott (1988) found a significant correlation between teachers’ knowledge of behavioral principles and acceptability ratings of social-skills training procedures.

Several studies have suggested that treatment acceptability can be altered by increasing consumers’ understanding of that treatment either through education or by modeling the treatment. Walle, Hobbs, and Caldwell (1984) conducted a naturalistic study of alternative treatments used for child noncompliance. Mothers were instructed to use one of three techniques when their child exhibited noncompliance. Following this, mothers
evaluated the technique they utilized using a TEI. Treatments were comparable and rated highly suggesting that both effectiveness, and the understanding of the technique gained by implementing it, may have resulted in the high ratings.

Singh and Katz (1985) conducted a study of alternative child treatments utilizing undergraduate college students. Initial ratings of acceptability were obtained. Participants then received three one-hour weekly lectures on the positive aspects and possible adverse side-effects of each intervention. Following these lectures, all treatments were judged as more acceptable than previously rated, suggesting that acceptability of treatments may be modified if consumers knowledge of a proposed treatment is increased.

Liu, Robin, Brenner, and Eastman (1991) conducted a study in which half the mothers were attending an Attention Deficit Disorder Clinic for an initial evaluation of their child and half were not seeking services for their child at the time of the study. Parents were administered the TEI and a questionnaire assessing knowledge of ADHD and ADHD treatment. Three months after the clinic visit, parents attending the clinic were readministered the measures. On the initial questionnaires, both the ADHD and control mothers rated behavior modification as most acceptable, followed by a combination of behavior modification and methylphenidate, followed by methylphenidate alone. Mothers’ knowledge of ADHD, as assessed by the Attention Deficit Disorder Information Questionnaire, was significantly correlated with their acceptability of methylphenidate and behavior modification plus methylphenidate, but not behavior modification alone. The authors suggest that the significant correlation between mothers’ knowledge and ratings of acceptability of medication indicate that inaccurate or inadequate information may promote apprehension and low acceptability of this treatment. At follow-up, mothers of treated children increased their
acceptability ratings of methylphenidate and methylphenidate plus behavior modification. Ratings of behavior modification alone did not change significantly over time. It appears that as knowledge increased through experience and education by clinic staff, acceptability ratings also increased, confirming hypotheses that effectiveness and/or knowledge of certain treatment modalities alter ratings of treatment acceptability.

In contrast to the Liu et al. (1991) findings, Rostain et al. (1993) found that the degree of mothers’ knowledge regarding ADHD was negatively correlated with their willingness to accept medication. One possible explanation for the discrepancy may be that in the Rostain et al. (1993) sample was mainly a high socioeconomic stratum and the ADHD Knowledge and Opinions Scale - Revised (AKOS - R; Rostain et al., 1993) was only administered at one time prior to any treatment being implemented.

Odom (1996) evaluated whether an educational intervention targeting knowledge of ADHD would improve low SES mothers’ knowledge of ADHD and treatment options, as well as improve mothers’ sense of parenting competency or self esteem. Twenty-five low SES mothers of male children diagnosed with ADHD and being treated with methylphenidate participated in either an educational group or a control group. The education group received 5-sessions, each lasting approximately 60 to 90 minutes, aimed at improving mothers’ knowledge and opinions about the symptoms, etiology, and medical treatment of ADHD as well as parenting self-esteem and competency. It was similar to a parent training program developed by Barkley (1987) and included information on parenting techniques and a variety of at-home interventions. For the educational group, overall knowledge, medication willingness, and feelings of competency improved. Mothers in the educational group showed a marked improvement in parental satisfaction consistent with previous research findings
(Anastopoulos et al., 1993; Erhardt & Baker, 1990; Pisterman et al., 1992). There are several limitations to this study. The small number of participants warrants caution in making generalized statements regarding findings. The amount of time required to complete the educational group is unrealistic in many settings and with many populations. Even the researcher commented on the significant effort required to ensure compliance among participants. Finally, education included parent training components in which specific behavioral techniques targeting child misbehavior were taught. The effects of implementing these treatments prior to completing post-acceptability questionnaires may have been a confound in acceptability ratings.

In a similar study, Corkum et al. (1999) evaluated parents’ knowledge and opinions of ADHD and its treatments prior to, and following, a 12-month treatment study including medication, parent support, and parent training. Families of 81 children diagnosed with ADHD participated in the study. A majority of the participants were “blue-collar workers”. At baseline, the two nonpharmacological interventions were rated as more acceptable than the pharmacological intervention. A higher level of knowledge, as indicated by the AKOS, was significantly correlated with higher ratings of the nonpharmacological interventions and not with ratings of medication. Families were more likely to attempt treatments if they had a higher knowledge of ADHD and a higher acceptability rating of the treatment they were assigned. Following treatment, parental knowledge was found to significantly increase, however opinions of nonpharmacological interventions decreased significantly. No changes were found in opinions of medication.
Study Rationale

Although many studies have evaluated the relation between parental knowledge and ratings of treatment acceptability, there are several limitations. Previous studies have examined the correlation between knowledge and acceptability ratings; however they have not examined the effects of knowledge on treatment acceptability utilizing experimental methodology. Studies that have in some way attempted to alter knowledge do not examine the relation independent of other variables such as treatment experience and effectiveness. Through my literature search, no previous studies were identified that have examined the direct effects of education about ADHD on parents’ perceptions of common ADHD treatments. The present study builds on previous literature by examining the effect of knowledge on ratings of treatment acceptability through experimental manipulation.

Research has found that African American parents have significantly less knowledge than Caucasian parents (Bussing et al., 1998) and that African Americans differ significantly from Caucasians in their ratings of various treatments commonly used with ADHD (Heffer & Kelley, 1987). The majority of studies have employed primarily White, middle to upper class parents as participants (Heffer & Kelley, 1987). It is possible that different ethnic and/or income groups vary in their knowledge of ADHD as well as their perceptions of acceptable treatments for ADHD. The present study utilized primarily minority, low SES, female guardians; a population that has received little attention in this literature.

Reimers, Wacker, Cooper, and De Raad (1992) as well as Cross Calvert and Johnston (1988) point out that most evaluations of acceptability ratings of alternative treatments have utilized potential consumers (e.g., nonclinic referred parents) or nonconsumers (e.g., undergraduates) rather than actual consumers (Frentz & Kelley, 1986; Kazdin, 1984; Kazdin
et al., 1981). They suggest this may limit the generalizability of findings due to the possibility that ratings obtained from nonconsumers may be different from those obtained from consumers actually obtaining services. Few studies have employed actual consumers’ acceptability ratings in naturalistic settings. In addition, treatments evaluated often represent global categories such as “counseling” and/or “medication” rather than specific treatments that are frequently utilized in the treatment of a behaviorally disordered child such as time-out and contingent rewards. The present study builds on the treatment acceptability literature by utilizing actual consumers in a naturalistic setting and evaluates specific treatments relevant to a target problem.

Finally, studies that have employed an intervention targeting parental knowledge have been fairly time-consuming on the part of the consumer, typically involving from several weeks to several months of training. Feasibility of such methodology is questionable within a multi-disciplinary clinic serving a large number of families; therefore the current investigation utilized a more time and cost efficient methodology.

The present study examines the effect of a brief knowledge intervention aimed at increasing knowledge of ADHD on treatment acceptability of commonly utilized treatments for ADHD in a low socioeconomic, minority population seeking initial services at a multi-disciplinary behavior clinic for ADHD.

Hypotheses

There were three main hypotheses:

1. It was hypothesized that initial levels of knowledge of ADHD would be low and would increase for the experimental group following the intervention. Previous research has found
that knowledge about ADHD is lower among low-SES, African American parents when compared to more economically advantaged Caucasian parents (Bussing et al., 1988).

2. It was hypothesized that scores on the externalizing subscales of the Conners' Parent Rating Scale – Revised: Long Form, indicating the referred child’s problem severity, would correlate with overall treatment acceptability scores on the Treatment Evaluation Inventory – Short Form (TEI-SF). Previous studies have found that the greater the severity of the behavior problem described in a case description, the higher the acceptability ratings of proposed treatments (Frentz & Kelley, 1986; Kazdin, 1980; Martens et al., 1985; Reimers et al., 1991). Bennett et al. (1996) found that severity of their own child’s externalizing behavior problem, rather than a child described in a vignette, was positively related to parent ratings of counseling acceptability. Gage and Wilson (2000) found that parents of children with ADHD rated medication as more acceptable than did parents of children without ADHD.

3. Finally, it was hypothesized that an intervention aimed at increasing parental knowledge of ADHD would lead to higher levels of parental knowledge. In turn, it was hypothesized that these higher levels of parental knowledge would result in higher levels of treatment acceptance of empirically supported treatments for ADHD (medication, contingent rewards, school-home notes, time-out) and lower levels of acceptability of unfounded treatments (diet change, discussion). Previous studies suggest a positive relation between knowledge and treatment acceptability ratings (Bennett et al., 1996; Liu et al., 1991; Clark & Elliott, 1988; McKee, 1984; Odom, 1996; Singh & Katz, 1985; Walle et al., 1984).
Method

Participants

Participants included 48 female guardians attending an initial appointment at a multidisciplinary pediatric ADHD clinic located in a university-based hospital in Baton Rouge, Louisiana. The ADHD Clinic serves a population that consists of mainly minority, low socio-economic status, individuals that cannot afford private health care. All patients were referred by a physician during an outpatient visit and parents were seeking an evaluation and services to address their child’s behavioral problems. The multidisciplinary clinic team includes clinical psychology interns, a Ph.D.-level psychologist, staff pediatricians, and a nurse practitioner.

To meet inclusion criteria, guardians had to be seeking services for one or more children, between the ages of 3 and 14 years, experiencing attentional and/or externalizing behavior problems. These children could not have been previously been diagnosed with a developmental delay, Mental Retardation, a Communication Disorder, or a Pervasive Developmental Disorder. Guardians could not have previously received psychological services for their child’s behavior. Individuals were considered guardians if they were legally responsible for the child for whom they were seeking services. All participants were recruited by obtaining informed consent during an initial clinic visit. Guardians willing to participate signed and returned the consent form (Appendix A). Consent forms were kept separate from other information collected. On all other forms, no identifying information was given. Five female guardians of children brought in for an initial behavior clinic visit refused to participate in the study. Six participants that completed initial questionnaires were excluded from the study because they did not meet inclusion criteria following examination of the
demographic questionnaire. Four of the participants indicated that they had previously received psychological services for their child’s behavior. Two of the participants indicated that their child has been diagnosed with a developmental delay, Mental Retardation, a Communication Disorder, or a Pervasive Developmental Disorder. Eighteen female guardians did not complete the study because they did not attend the follow-up behavior clinic visit to complete the second half of the study or they chose to drop-out of the study due to the time commitment. Forty-eight participants completed the study; 24 participants were in the experimental group and 24 were in the control group. See Table 1 for demographic characteristics.

Measures

The demographic questionnaire (Appendix B) includes data on the child’s race, child’s gender, child’s age, guardian’s race, guardian’s age, guardian’s marital status, guardian’s highest level of education, income, language spoken in the household, number of children in the household, number of adults in the household, presenting complaint, previous psychological services sought, and previous diagnoses the child has received.

Conners’ Parent Rating Scale – Revised: Long Form (CPRS-R: L; Conners, 1997):

The CPRS-R assesses both internalizing and externalizing problems in children between ages 3 and 17. The CPRS-R: L (Appendix C) is comprised of 80 items that are subdivided into 14 scales. Scales include; Oppositional, Cognitive Problems, Hyperactivity, Anxious-Shy, Perfectionism, Social Problems, Psychosomatic, Conners’ Global Index, Restless-Impulsive, Emotional Lability, ADHD Index, DSM-IV Symptoms subscale, DSM-IV Inattention, and DSM-IV Hyperactive-Impulsive. The CPRS-R: L takes between 15 and 20 minutes to complete and conveys detailed information that corresponds to the Diagnostic
Table 1  
Demographic characteristics by group

<table>
<thead>
<tr>
<th></th>
<th>Control(^a)</th>
<th>Experimental(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not married</td>
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<td>18</td>
</tr>
<tr>
<td>Married</td>
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<td>6</td>
</tr>
<tr>
<td>Parent age</td>
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<td></td>
</tr>
<tr>
<td>20-30</td>
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<td>10</td>
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<td>31-40</td>
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<td>2</td>
</tr>
<tr>
<td>Child gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Child age</td>
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<tr>
<td>7-10 years</td>
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<td>11</td>
</tr>
<tr>
<td>11-14 years</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
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<td>American Indian or Alaskan Native</td>
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<td>1</td>
</tr>
<tr>
<td>Hispanic</td>
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<td>3</td>
</tr>
<tr>
<td>Information not provided</td>
<td>1</td>
<td>0</td>
</tr>
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<td>Parent education</td>
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<tr>
<td>Some high school</td>
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<td>5</td>
</tr>
<tr>
<td>High school/GED</td>
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<td>12</td>
</tr>
<tr>
<td>Some college</td>
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<td>6</td>
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<td>Information not provided</td>
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<td>0</td>
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<tr>
<td>Family income</td>
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<td></td>
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<tr>
<td>Below 10,000</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>10,000-20,000</td>
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<td>4</td>
</tr>
<tr>
<td>20,000-30,000</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Above 30,000</td>
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<td>1</td>
</tr>
<tr>
<td>Information not provided</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

\(^a\)\(n = 24\). \(^b\)\(n = 24\).
and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria. Internal consistency is good, ranging from .73 to .94. The CPRS-R also has good test-retest reliability, ranging from .47, on the anxious-shy subscale, to .85 on the hyperactivity subscale. The CPRS-R: L has well established validity. It is a useful screening measure, treatment monitoring device, research instrument, and diagnostic aid.

Treatment Evaluation Inventory – Short Form (TEI-SF; Kelley, Heffer, Gresham, & Elliott, 1989):

The TEI-SF (Appendix D) is a 9-item questionnaire with a 5-point Likert scale response system developed as an alternative to the longer Treatment Evaluation Inventory (TEI; Kazdin, 1980). The TEI takes approximately 2 minutes to complete. The TEI has been the most utilized measure of treatment acceptability in the literature. The TEI-SF is shorter in length than the original TEI, has only a 5-point Likert scale rather than the original 7-point Likert scale, and the test items and instructions have been simplified for use with those who have lower reading levels. The reading level of the TEI-SF is approximately one year below that of the TEI, and is 4.2. The TEI-SF has an internal consistency of .85 (TEI coefficient alpha=.89) and was able to discriminate among three treatment types comparable to it’s original version.

Parents were presented with a written vignette describing an eight-year-old boy named Joe who exhibits behaviors consistent with a diagnosis of ADHD (Appendix D). Written descriptions of six treatment procedures were presented with the vignette and were equal in length and worded similarly. The rationale for inclusion of the six treatments was that they represent a broad range of empirically supported and unsupported treatment options. Empirically supported treatments chosen are those that are most frequently recommended in
the multi-disciplinary behavior clinic from which the sample was drawn and include contingent reinforcement, time-out, school-home note, and medication. Unsupported treatment options were drawn from anecdotal experience with the population being studied, common misperceptions demonstrated by parents of children with ADHD as demonstrated in the literature, and treatment that has received a good deal of attention in the popular press. These include diet and discussion. Presentation order of treatment procedures was randomized to control for sequencing effects. The following are paraphrased descriptions of the six treatments:

**Contingent reinforcement.** Privileges will given for desirable behavior.

**Time-out.** Contingent on undesirable behavior, Joe will sit in a quiet, boring room by himself for 8-minutes.

**School-home notes.** Joe’s parents will receive information about his behavior in school daily and daily and weekly rewards will be earned for desirable behavior.

**Medication.** Joe will talk a pill that has been prescribed by his doctor every morning and afternoon that is supposed to help improve his behavior.

**Diet.** Joe will be put on a special diet where he cannot eat foods with artificial coloring, artificial flavoring, or artificial preservatives.

**Discussion.** Joe’s parents will talk with him about his unacceptable behavior and encourage him to enter a discussion about it with them.

ADHD Knowledge and Opinions Survey – Revised (AKOS-R; Rostain, Power, & Atkins, 1993):

The AKOS-R (Appendix E) is a 43-item questionnaire designed to assess parents’ knowledge of ADHD and their attitudes about counseling and pharmacological interventions.
for ADHD. Only the first 17-items of the survey, which comprise the Knowledge Scale, were utilized in this study as opinions of various treatments was specifically addressed by the TEI-SF. These 17 factual items are presented in a true-false format and assess parents’ knowledge of ADHD. Three items were added to the AKOS-R by the author that are believed to be important in assessing parental knowledge of ADHD.

**Procedure**

**Initial Visit:**

All guardians received a packet containing a brief demographic questionnaire, the Conners Parent Rating Scale-Revised: Long Version (CPRS-R: L; Conners, 1997), a case description with instructions and six treatment descriptions each followed by a TEI-SF, and the knowledge portion of the ADHD Knowledge and Opinion Scale – Revised (AKOS-R; Rostain et al., 1993). Packets took approximately 50 minutes to complete. Research assistants were available to the guardians to answer questions regarding individual items or to orally administer the measures to those guardians that were unable to read them. The later was unnecessary, as all participants were able to independently read the questionnaires.

Following completion of the packet all guardians received a standard care initial visit consisting of a thorough intake interview conducted by a graduate level psychologist to obtain developmental, family, and academic history as well as information related to current functioning. Questionnaires relevant to the referral question were also administered during the initial visit to the ADHD clinic. At the end of the visit all participants scheduled a follow-up clinic appointment.
Second Visit:

Upon arrival for their second visit, guardians were randomly assigned to one of two groups based on assigned participant number. Groups were assigned by participant number utilizing Microsoft Excel prior to the study. The groups were run in an identical manner with the only difference being that one group viewed a brief educational video about ADHD created by the author for use in the study and served as the experimental group and the other viewed a brief video about the importance of being involved in their child’s education and served as the control group.

Experimental Group. The experimental group participated in a brief group video educational intervention aimed at educating them about the characteristics of ADHD as well as empirically supported treatments for ADHD. The video was created in the clinic in which participants were seen and presenters included two pediatricians and one psychologist that work within the clinic. The video was 20-minutes in length. It contained factual information about ADHD including the percentage of children affected by the disorder, common symptoms, the ratio of the disorder in males compared to females, and the longevity of the disorder. The video provided information on the etiology of ADHD and explained how ADHD is diagnosed through the use of parent and teacher report in addition to direct observation. Problems that are frequently comorbid with ADHD such as learning disabilities and poor social skills were briefly discussed. Finally, treatments for ADHD were reviewed in detail and included stimulant medication, school-home notes, contingent reinforcement, and time-out. The video also dispelled common misperceptions regarding ADHD. For example, it explained that ADHD is not caused by poor parenting or too much sugar in a child’s diet as well as the fact that ADHD cannot be diagnosed with a medical test such as blood work. It
also discussed the fact that no empirical evidence supports the efficacy of changing a child’s diet and/or discussion as techniques for managing ADHD. Parents received a handout containing similar information to that presented in the video (Appendix F).

**Control Group.** The control group watched a brief video presenting general information about the importance of being involved in their child’s education. The video was 22-minutes in length and presented information about various ways of becoming actively involved in the school system. Parents also received a handout containing similar information to that presented in the video.

Following the videos, all participants were again given the case description with instructions and six treatment descriptions each followed by TEI-SF and the knowledge portion of the AKOS-R. Packets were matched to previously administered measures on the basis of the guardians’ initials and year of birth. For their participation in the study, guardians each received $5.
Results

Preliminary Analyses

Demographic information was obtained from all participants at the time of the initial visit (Table 1). Independent samples $t$-tests were performed on continuous demographic information and chi-squared analyses were performed on categorical demographic information to establish that participants across the two groups were similar with respect to marital status, parent age, race, child gender, child age, parent education, and family income. An alpha level of .05 was used for all statistical tests. Although groups were randomly assigned by participant number utilizing Microsoft Excel prior to the study, significant differences were found for child gender between groups, $\chi^2 (1, N = 48) = .016, p = .04$. For the control group, 91.7% of the children were males while the experimental group contained only 62.5% males. No other significant differences between groups were revealed.

Independent $t$-tests and chi-squared analyses were conducted to compare participants that did not complete the study to those that completed the study. Parents who failed to complete the study did not differ significantly from those who participated with respect to demographic variables including marital status, parent age, race, child gender, child age, parent education, and family income or scores on the AKOS-R or TEI-SF.

An independent $t$-test was performed to test for the presence of between group differences on the AKOS-R pre-intervention, which has a maximum score of 20 and a minimum score of 0. Findings indicated no significant differences between groups with respect to their total score on the AKOS-R pre-intervention, $t (41.49) = -1.43, p = .16$. Because a significant demographic difference in child gender between groups was identified using chi-squared analyses, an independent $t$-test was also performed to test for the presence
of between group differences between parents of male and female children on the AKOS-R pre-intervention. No significant differences on AKOS-R scores based on child gender were identified, $t(46) = -1.18, p = .24$.

Six independent-samples $t$-tests were performed to test for the presence of between group differences on each of the six TEI-SF’s pre-intervention that corresponded to six different vignettes. The TEI-SF has a maximum score of 45 and a minimum score of 9. Findings indicated no significant differences between groups on any of the six pre-intervention TEI-SF’s. Group means ranged from scores of 28.09 to 35.26 indicating that all treatments were rated as acceptable to moderately acceptable. Again, because of demographic differences on child gender were identified between groups, a similar analysis was performed using gender as the between-groups factor. No significant differences on TEI-SF scores based on child gender were identified.

Main Analyses

Hypothesis 1:

It was hypothesized that initial levels of parental knowledge of ADHD would be low and increase for the experimental group following the intervention. This hypothesis was generally supported. Initial level of parental knowledge was low across groups ($M = 10.19, SD = 1.73$). To evaluate changes in knowledge, a repeated measures ANOVA was conducted. A significant time (pre to post-intervention) x group interaction for the AKOS-R was identified, $F(1, 46) = 29.41, p = .01$. Specifically, the experimental group showed a significant increase in knowledge scores ($M = 3.83, SD = 3.54$), while the control group decreased their knowledge scores ($M = -.54, SD = 1.77$) (Table 2). To ensure there was no effect of child gender on changes in knowledge scores, an identical test was performed with
gender as the between groups factor. No significant difference was identified, $F (1, 46) = .582$, $p = .45$.

Table 2
AKOS-R Mean Scores and Standard Deviations Pre and Post-intervention

<table>
<thead>
<tr>
<th>Control$^a$</th>
<th>Experimental$^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean AKOS-R score</td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
</tr>
<tr>
<td>9.83</td>
<td>9.29</td>
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<tr>
<td>(1.40)</td>
<td>(1.88)</td>
</tr>
<tr>
<td>10.54</td>
<td>14.38**</td>
</tr>
<tr>
<td>(1.98)</td>
<td>(2.83)</td>
</tr>
</tbody>
</table>

Note. $SD = $ Standard deviation.

$^a n = 24$. $^b n = 24$.

$^* p < .05$, $^** p < .01$, to signify significant change pre to post-intervention

Hypothesis 2:

It was hypothesized that parents’ perceptions of their own child’s behavior may be related to acceptability scores. To assess this hypothesis, bivariate correlations were used to examine the relation between problem severity, as assessed by the CPRS-R: L, and initial ratings of various treatments, based on the TEI-SF. Bivariate correlations with a Bonferroni correction, to adjust the observed significance level in light of the number of comparisons made, showed no significance thus not supporting the hypothesis.

Although not hypothesized, exploratory analyses were conducted in order to determine if there was a pre-existing relation between knowledge and treatment acceptability. Bivariate correlations were used to examine the relation between baseline knowledge, as assessed by the AKOS-R, and initial ratings of various treatments, based on the TEI-SF. There was no significant correlation between pretest knowledge and ratings of treatment acceptability.
Hypothesis 3:

It was hypothesized that increases in levels of knowledge of ADHD due to the intervention would correlate positively with treatment acceptability ratings of empirically validated treatments and correlate negatively with ratings of acceptability for unfounded treatments. Prior to evaluating this hypothesis, it is necessary to determine whether treatment acceptability ratings changed over time. To this end, a repeated measures Multivariate Analysis of Variance (MANOVA) was conducted to evaluate changes on ratings of treatment acceptability. Magnitude of effects (eta squared: $\eta^2$) were calculated, in addition to standard tests of significance. Magnitude of effects are categorized according to Cohen’s (1988) criteria such that: $\eta^2 = .01$, small effect, $\eta^2 = .06$, medium effect, and $\eta^2 = .14$, large effect.

Because significant differences in child gender were identified between groups, a MANOVA was initially conducted using child gender as the independent variable to test for the presence of differences between responses of parents of male children and parents of female children. The within-subjects variables consisted of pre and post-intervention responses on the six TEI-SF’s. A significant between subjects main effect for child gender, $F (6, 36) = 2.52, p = .04$, with a large effect size ($\eta^2 = .296$) was identified. Because the current study is not looking specifically at the effects of child gender on treatment acceptability and is specifically examining the effects of an educational intervention on treatment acceptability, child gender was covaried out and a MANCOVA was conducted on pre to post-intervention changes in treatment acceptability ratings.

When gender was controlled for and the independent variable was group membership, findings revealed significant overall multivariate effects as a function of group on total TEI-
SF scores, $F(6, 37) = 3.48, p = .01$, with a large effect size ($\eta^2 = .361$). A significant group x time interaction was identified between group and pre-post intervention responses on the TEI-SF, $F(6, 37) = 3.16, p = .01$, with a large effect size ($\eta^2 = .339$).

Follow-up ANOVA’s identified significant differences in patterns responding across time for the diet intervention $F(1, 42) = 9.46, p = .01$, and the school-home note intervention $F(1, 42) = 5.48, p = .02$, with large effect sizes ($\eta^2 = .184$ and .115 respectively) (Table 3).

Table 3
Mean Scores and Standard Deviations on the TEI-SF Pre and Post-intervention

<table>
<thead>
<tr>
<th></th>
<th>Control$^a$</th>
<th></th>
<th>Experimental$^b$</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre Post</td>
<td>Pre Post</td>
<td>Pre Post</td>
<td>Pre Post</td>
</tr>
<tr>
<td>Contingent reinforcement</td>
<td>35.26 35.29</td>
<td>34.25 34.42</td>
<td>35.29 34.29</td>
<td>34.25 34.42</td>
</tr>
<tr>
<td>$SD$</td>
<td>(4.75) (4.70)</td>
<td>(3.86) (4.20)</td>
<td>(5.01) (4.82)</td>
<td></td>
</tr>
<tr>
<td>School-home note*</td>
<td>33.65 35.29</td>
<td>34.29 34.67</td>
<td>33.65 35.29</td>
<td>34.29 34.67</td>
</tr>
<tr>
<td>$SD$</td>
<td>(5.54) (5.56)</td>
<td>(5.01) (4.82)</td>
<td>(5.01) (4.82)</td>
<td></td>
</tr>
<tr>
<td>Medication</td>
<td>32.35 31.91</td>
<td>34.96 34.75</td>
<td>32.35 31.91</td>
<td>34.96 34.75</td>
</tr>
<tr>
<td>$SD$</td>
<td>(6.00) (7.60)</td>
<td>(3.87) (4.71)</td>
<td>(3.87) (4.71)</td>
<td></td>
</tr>
<tr>
<td>Discussion</td>
<td>30.87 31.71</td>
<td>32.13 27.25</td>
<td>30.87 31.71</td>
<td>32.13 27.25</td>
</tr>
<tr>
<td>$SD$</td>
<td>(8.81) (8.25)</td>
<td>(4.90) (7.42)</td>
<td>(4.90) (7.42)</td>
<td></td>
</tr>
<tr>
<td>Diet**</td>
<td>30.00 31.33</td>
<td>28.83 25.08</td>
<td>30.00 31.33</td>
<td>28.83 25.08</td>
</tr>
<tr>
<td>$SD$</td>
<td>(7.45) (7.94)</td>
<td>(7.06) (7.93)</td>
<td>(7.06) (7.93)</td>
<td></td>
</tr>
<tr>
<td>$SD$</td>
<td>(9.46) (10.02)</td>
<td>(6.17) (5.96)</td>
<td>(6.17) (5.96)</td>
<td></td>
</tr>
</tbody>
</table>

Note. $SD$ = Standard deviation.

$^a n = 24$.  $^b n = 24$.  

* $p < .05$, ** $p < .01$, to signify significant differences between groups in patterns of pre to post-intervention responding

Specifically, participants in the experimental group demonstrated a decrease in acceptability of both the diet and school-home note treatments pre to post-intervention while the control group showed a slight increase in acceptability ratings of these treatments pre to
post-intervention (Figure 1). Although the discussion intervention ratings appear to have significantly changed across time, a MANCOVA takes into account inter correlation. The fact that the discussion intervention was highly correlated to the school-home note intervention negated the significance of the change in ratings of acceptability for discussion.

Given that treatment acceptability ratings changed over time, to further explore the third hypothesis, bivariate correlations were used to examine the relation between changes in knowledge, as assessed by the AKOS-R, and changes in ratings of various treatments, based on the TEI-SF, from pre to post-intervention. Significant negative correlations were identified between changes in knowledge as assessed by the AKOS-R and the changes in the TEI-SF diet intervention \((r = -0.43, p = 0.01, r^2 = 0.19)\).

The correlation matrix was inspected to determine which intervention acceptability ratings may have been affected by changes in knowledge. A linear regression analysis was conducted using change in knowledge score as the independent variable and change in treatment acceptability of the diet intervention as the dependent variable. Change in knowledge accounted for 18% of the change in treatment acceptability of the diet intervention \((R^2 = 0.18)\). The hypothesis was only supported for the diet intervention.
Figure 1.
Changes in TEI-SF scores by group pre-post intervention.
Discussion

The present study examined the effect of a brief ADHD knowledge intervention on treatment acceptability of commonly utilized treatments for ADHD in a low socioeconomic, minority population. Participants were all seeking services at a multi-disciplinary clinic for ADHD. Although many studies have explored the relation between knowledge and treatment acceptability, none identified through a literature search have utilized experimental methodology. In addition, no previous studies identified have examined the effects of education about ADHD on parents’ perceptions of commonly utilized treatments for the disorder. The present study examined the effect of knowledge on ratings of treatment acceptability through experimental manipulation. Overall, the results of the present study failed to find a consistent relation between increased knowledge and changes in treatment acceptability ratings.

As expected, initial knowledge of ADHD as assessed by the AKOS-R was low. Participants in the educational group significantly increased their scores from pre to post-intervention on the AKOS-R while scores remained relatively stable pre to post-intervention for participants in the control group. These findings support the validity of the educational intervention. It appears that training successfully increased knowledge of ADHD in participants who watched the educational video versus the control video.

It was hypothesized that an increase in knowledge through experimental manipulation would increase treatment acceptance of empirically validated treatments and decrease acceptance of non-empirically validated treatments. Although acceptance ratings did change pre to post-intervention on several of the treatments evaluated, this hypothesis was only supported for the diet intervention as it was the only one directly affected by changes in
knowledge. Approximately 18% of the variance in changes in acceptability ratings of the diet intervention was accounted for by changes in knowledge scores. An increase in knowledge scores led to a decrease in acceptability of the diet intervention. Although the amount of variance accounted for is relatively low, given that the present study is unable to rely on past research due to the limited literature available as well as the fact that the present study is clinical in nature, the variance could be considered significant but should be cautiously interpreted. Changes in knowledge did not have a significant effect on the acceptability ratings of school-home note, contingent reinforcement, time-out, medication, or discussion treatments. There are several alternative explanations that may explain these findings.

First, although the educational video discussed medication management, school-home notes, time-out, contingent reinforcement, diet change, and discussion in the treatment of ADHD, the knowledge questionnaire only specifically referenced changes in diet and medication management as treatments for ADHD. Other interventions, such as school-home notes and contingent reinforcement were grouped under the term “psychological treatments” or “behavior modification” on the AKOS-R. Therefore, an increase in knowledge of specific behavioral interventions may not have been accurately measured as it was not actually assessed. Perhaps parents in the experimental group gained knowledge in the specific treatment areas of diet and medication management as evidenced by their increase in score on the AKOS-R, but failed to increase their knowledge in the other four interventions included in the TEI-SF that were not specifically addressed in the AKOS-R. This could potentially explain why an increase in knowledge scores did not result in an increase in acceptability ratings of empirically supported treatments such as contingent reinforcement and school-home notes and a decrease in acceptability ratings of the other non-empirically supported
treatment, discussion. However, this cannot fully explain the lack of relation between knowledge and treatment acceptability, as only the diet intervention was significantly changed as a result of increased knowledge. One would expect knowledge of the other intervention specifically included in the AKOS-R, medication, to have demonstrated a significant relation to treatment acceptability of that intervention if this explanation were to be fully supported.

Second, although parents in the experimental group were able to recall rote information as indicated by their increase in knowledge scores, they may not have had the ability to apply acquired information to a hypothetical situation, as presented with the TEI-SF. Several reasons could account for this. The video was presented immediately before completing the post-intervention questionnaires. Parents may not have had sufficient time necessary to process information presented in the video and integrate it with their own opinions and beliefs. In addition, a majority of parents in the study did not complete a formal high school program. Measures selected for the present study were chosen based on several factors, including low reading level to ensure parents were able to read and understand the items (i.e., the TEI-SF has a 4.2 reading level). Based on information provided by parents on the demographic questionnaire, only 4 participants may not have reached this reading level through formal education. However, the knowledge questionnaire may have functioned more as an assessment of memory than of actual knowledge. Parents may be able to recall information, however they may not have the ability to understand and utilize the information efficiently. Reimers et al. (1987) suggest that treatment must be well understood before acceptability can be assessed. Perhaps participants did not gain adequate understanding of the
various interventions they were asked to rate therefore making assessment of acceptability inaccurate.

Third, although parents may understand factual information presented to them, they may continue to retain longstanding beliefs about child rearing techniques. Most research in this area has been conducted with corporal and other physical punishment. For example, Bower-Russa, Knutson, and Winebarger (2001) found that personal experience with a disciplinary event in childhood was associated with a decreased belief that the form of discipline is an inappropriate strategy. A history of physical punishment was also associated with selecting more punitive disciplinary strategies when individuals were faced with child misbehavior in an analog parenting task. Similarly, studies report that physical punishment is more socially accepted among lower socioeconomic classes (e.g., Gollnick & Chinn, 1990; Hanna, 1988), and that the American middle-class are among the few cultures that use positive reinforcement (Grossman, 1984). There are multitudes of differences in longstanding child rearing beliefs between various cultures. Individuals tend to glean child rearing beliefs, including discipline strategies, from several contextual factors including ethnicity, culture, family socioeconomic status, neighborhood/community, and personal experiences. Further investigation is necessary to evaluate the fortitude of parenting beliefs regarding treatment of ADHD in the population in the current study.

Finally, parents in the present study appeared to feel that all six treatment methods were acceptable to moderately acceptable. No treatments were rated as highly unacceptable to unacceptable, as would have been indicated by scores ranging from 9 to 18 on the TEI-SF, or as highly acceptable, as would have been indicated by scores approximating 45. Most
treatments ranged from acceptable to moderately acceptable, as indicated by scores ranging from 27 to 36. This remained consistent pre to post-intervention.

Mixed results have been found in previous studies examining the specific relation between knowledge of ADHD and treatment acceptability of interventions commonly employed. In a study by Liu et al. (1991), parental knowledge of ADHD was significantly correlated with acceptability ratings of medication and medication plus behavior modification for ADHD, but not related to behavior modification alone. Similarly, in a study by Odom (1996), medication willingness and knowledge were positively correlated, however a slight negative correlation for counseling willingness and knowledge was found. Bennett et al. (1996) also found that parent knowledge of ADHD was positively related to medication acceptability and unrelated to counseling acceptability. In contrast, a study by Rostain et al. (1993) found that the degree of maternal knowledge of ADHD was negatively correlated with acceptability of medication management for their child. Different methodology (e.g., rating the acceptability of a treatment based on a hypothetical case vignette vs. the raters own child) may be partially responsible for the different findings.

The final hypothesis in the study suggested that parents’ perceptions of their own child’s behavior may influence treatment acceptability scores, although parents in the current study were asked to rate treatments based on a hypothetical vignette provided to them. Overall, there does not appear to be a significant relation between child behavior severity (as rated by parents) and treatment acceptability ratings in the present study. This finding is similar to that of Frentz and Kelley (1986) and Tarnowski et al. (1992), who found that parents’ perception of their child’s behavior was unrelated to treatment acceptability ratings.
As in the current study, the Tarnowski et al. (1992) study asked parents to rate the acceptability of various treatments applied to hypothetical situations and children.

**Limitations**

Several factors should be kept in mind when interpreting these results. First, the sample in the present study was drawn from a low-SES, minority population, which limits the generalizability of the findings to other populations. In particular, acceptability ratings of different types of treatments has been found to vary according to ethnicity and SES (Heffer & Kelley, 1987). In addition, a majority of participants in the present study did not complete a formal high school program. It would be interesting to explore whether or not parents with a higher level of education, SES and/or more varied ethnicity demonstrate a more significant relation between knowledge and treatment acceptability. Nevertheless, these findings have major implications for understanding the relation between knowledge and treatment acceptability for the population studied.

Second, again having to do with sample, it is unclear as to why a significant difference with child gender occurred between groups, as groups were randomly assigned prior to the study beginning. Ideally, both groups would have been similar with respect to all demographic characteristics. Future research should explore the effects of child gender on treatment acceptability ratings for this population.

Third, environmental constraints made attending to the study tasks difficult for some participants. Due to the structure of the clinic, participants completed questionnaires with their children present. Many participants appeared distracted by their children and/or rushed through the questionnaires due to child behavior. In addition, because participation in the study was time consuming, participants were often times called back for their appointment
prior to completion of the questionnaires, or were rushed due to transportation issues. Therefore, the accuracy of some data collected is questionable. Future studies should ensure a less distractible environment to ensure reliable data collection. In addition, time required to complete the study could be reduced by eliminating the CPRS-R: L which took participants approximately 20-30 minutes to complete and appeared unrelated to the main measures of interest.

And finally, again due to environmental constraints, participants completed the post-intervention immediately following the intervention phase of the study. Due to the high drop-out rate at the clinic as well as the variability in time between clinic visits for patients, it was necessary to complete the study within two sessions. It would be interesting to examine whether knowledge of ADHD remained higher for the educational group versus the control group over time. In addition, as mentioned earlier, it would be interesting to see if more time to process information presented in the educational video would affect treatment acceptability ratings.

Implications

Overall, findings in the current study demonstrate that increasing parent knowledge about ADHD does not affect treatment acceptability in a significant way for this population. The present study was operating under the assumption that an increase in knowledge would lead to an increase in treatment acceptability which may, in turn, lead to an increase in treatment adherence. The later assumption was based on a vast theoretical literature suggesting such a relation (e.g., Tarnowski et al., 1992; Reimers & Wacker, 1988; Reimers et al., 1987; Kazdin, 1981). It appears that adding a parental educational component to the
treatment of children with ADHD will not lead to increased acceptability of empirically supported treatments with this population.

Future research should explore these findings with different populations and in different settings. Hypotheses for why treatment acceptability ratings did not change significantly in this population should be explored to determine why ratings did not change with an increase in knowledge about the treatments assessed. In addition, it would be interesting to determine what factors affect treatment acceptability in this population so that treatment efficacy can be enhanced by making treatments utilized more acceptable.
References


Appendix A

Consent Form
1. **STUDY TITLE:** The relationship between knowledge of ADHD and treatment acceptability in a multi-disciplinary pediatric clinic.

2. **PERFORMANCE SITES:** Guardians will be recruited on a voluntary basis from an outpatient hospital clinic, Earl K. Long Medical Center.

3. **CONTACTS:** Contact the following investigators with any questions regarding this study:
   - Rebecca Currier, MA   LSU Baton Rouge Dept. of Psyc.   (225) 358-1321; 8am-4:30pm
   - Mary Lou Kelley, PhD   LSU Baton Rouge Dept. of Psyc.   (225) 578-4113; 9am-4pm

4. **PURPOSE OF THE STUDY:** The purpose of this research study is to examine the relationship between knowledge of ADHD and acceptability of commonly used treatments of ADHD. Female guardians of children attending the initial appointment at the behavior clinic can participate in this study. Information that we get about the relationship between knowledge of ADHD and the acceptability of treatments for ADHD will help clinicians better help other guardians learn about ADHD and deal with it more effectively. You will be asked questions about you child’s oppositional behavior, cognitive functioning, attentional abilities, activity level, and social behavior. You will be asked questions about ADHD and also asked about how you feel about a variety of different treatments of ADHD.

5. **INCLUSION:** Female guardians attending the initial appointment at a multi-disciplinary pediatric behavior clinic, seeking services for one or more children experiencing externalizing behavior problems.

6. **EXCLUSION:** Male Guardians. Guardians who have previously received psychological services for their child’s behavior. Guardians who’s child has previously been diagnosed with a developmental delay, Mental Retardation, a Communication Disorder, or a Pervasive Developmental Disorder.

7. **DESCRIPTION OF THE STUDY:**
   Participants will be the female guardians of first time patients referred to a multi-disciplinary pediatric behavior clinic for externalizing behavior problems. They will be recruited from the waiting room of the clinic. Participants will use their first and last initial and year of birth on all questionnaires instead of their name so that they cannot be identified, directly or indirectly. Signed consent forms will be kept separately from all other data. All participants will be given a packet containing a consent form, a demographic measure, a Conners Parent Rating Scale-Revised (Long Form), a case description with instructions and six treatment descriptions each followed by a Treatment Evaluation Inventory-Short Form, and an ADHD Knowledge Questionnaire. The packets should take approximately 50 minutes to complete. Research assistants will be available to the guardians to answer questions
regarding individual items or orally administer the measures to those guardians that cannot read them. Following completion of the packet all guardians will receive a standard care initial visit consisting of a thorough intake interview conducted by a graduate level psychologist and the administration of questionnaires relevant to the referral question. At the end of the initial visit all participants will schedule a second clinic appointment.

Upon arrival for their second visit, guardians will be randomly assigned to one of two groups. The experimental group will participate in a brief group video educational intervention aimed at educating them about the characteristics of ADHD as well as empirically supported treatments for ADHD. The video will be 20-minutes in length and include information regarding the etiology of ADHD, it’s diagnosis and symptomatology, comorbid problems associated with ADHD, and treatments for ADHD. The video will also dispel common misperceptions regarding ADHD. Parents will also receive a handout containing similar information to that presented in the video. The control group will watch a brief video presenting general information about pediatric health care. The video will be 22-minutes in length and present information about the importance of being involved in their child’s education. Parents will also receive a handout containing similar information to that presented in the video. Following the videos, all participants will again be given the case description with instructions and six treatment descriptions each followed by TEI-SF and the knowledge portion of the AKOS-R. Packets will be matched to previously administered measures on the basis of the guardians’ initials and year of birth. For their participation participants will receive $5. Forty-eight guardians will participate in the study.

8. BENEFITS TO SUBJECT: Participants will provide valuable information to mental health professionals about the utility of providing guardians information regarding their child’s diagnosis and treatment. Such information may improve the client-therapist relationship, thus increasing compliance with recommended treatments. Participants will benefit from a greater understanding of their child’s behavior and treatment.

9. RISKS TO SUBJECT: We do not believe that there are any significant risks associated with this proposal.

8. ALTERNATIVES TO PARTICIPATION IN THE STUDY: Participation in the study is voluntary. Guardians may choose not to participate in the study without penalty. Guardians and children will continue to receive services at the outpatient clinic if they choose not to participate.

10. SUBJECT REMOVAL: Subjects may be removed from the study without their consent if they fail to complete all questionnaires.

11. SUBJECT’S RIGHT TO REFUSE TO PARTICIPATE OR WITHDRAW: Study subjects may refuse to participate or withdraw from the study at any time without jeopardizing, in any way, any benefits to which they are entitled. Should significant new findings develop during the course of the research which may relate to the subject’s willingness to continue participation, that information will be provided to the subject.
12. SUBJECT’S RIGHT TO PRIVACY: The results of the study may be released to the LSUHSC Department of Psychiatry and LSU Baton Rouge Department of Psychology. The results of the study may be published. The privacy of subjects will be protected and they will not be identified in any way.

13. RELEASE OF INFORMATION: The records related to the study are available to the LSU IRB and the LSUHSC IRB. Confidentiality is guaranteed, as no identifying information will be associated with completed measures. Signed consent forms will be kept separately from all other data. Records will be kept private to the extent allowed by law.

14. FINANCIAL INFORMATION: There is no cost for participation in the study. Participants will receive $5 following completion of the second packet of measures.

15. SIGNATURES: The study has been discussed with me and all my questions have been answered. I understand that additional questions regarding the study should be directed to investigators listed on page 1 of this consent form. I understand that if I have any questions about subjects’ rights, or other concerns, I can contact the Chancellor of LSU Health Sciences Center, at (504) 568-4801. I agree with the terms above, acknowledge I have been given a copy of the consent form and agree to participate in this study. I understand that I have not waived any of my legal rights by signing this form.

____________________________   ________________
Signature of Subject               Date

____________________________   ________________
Signature of Witness              Date
Appendix B

Demographic Form
Demographic Form

1. Guardians First and Last Initial ________________

2. Guardians Year of Birth/ Age ________________

3. What is your marital status?
   ___ single    ___ divorced
   ___ married   ___ widowed
   ___ separated

4. What is your relationship to the child you are seeking services for?
   ____________________________

5. What race/ethnicity do you consider yourself to be?
   ___ White    ___ Asian or Pacific Islander
   ___ Black    ___ American Indian or Alaskan Native
   ___ Hispanic ___ Other

6. What race/ethnicity do you consider your child to be?
   ___ White    ___ Asian or Pacific Islander
   ___ Black    ___ American Indian or Alaskan Native
   ___ Hispanic ___ Other

7. What is your child’s gender? _____ Male      _____ Female

8. How old is the child for whom you are seeking services? ________

9. What language(s) do you speak at home? ________________________________

10. What is the highest level of education you have completed?
    ___ No school completed    ___ High school graduate (or GED)
    ___ Less than 4th grade    ___ Some college (no degree)
    ___ 5th-8th grade    ___ Associates degree in college (2 years)
___ 9th grade ___ Bachelor’s degree
___ 10th grade ___ Master’s degree
___ 11th grade ___ Doctorate degree

11. What is your family’s yearly gross income? ___________________

12. How many adults are there in your family? _______

13. How many children are there in your family? _______

14. In your own words, what problems is your child exhibiting that you are currently seeking services for?
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

15. Have you previously sought services for your child’s behavior problems?
___ Yes ___ No

16. Has your child been diagnosed with a developmental delay, Mental Retardation, a Communication Disorder, or a Pervasive Developmental Disorder? ___ Yes ___ No
Appendix C

Conners’ Parent Rating Scale – Revised (L)
**Conners’ Parent Rating Scale – Revised (L)**

Below are a number of common problems that children have. Please rate each item according to your child’s behavior in the last month. For each item, ask yourself “how much of a problem has this been in the last month?”, and circle the best answer for each one. If none, not at all, seldom, or very infrequently, you would circle 0. If very much true, or it occurs very often or frequently, you would circle 3. You would circle 1 or 2 for ratings in between. Please respond to all the items.

<table>
<thead>
<tr>
<th>NOT TRUE AT ALL</th>
<th>JUST A LITTLE</th>
<th>PRETTY MUCH</th>
<th>VERY TRUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Angry and resentful</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. Difficulty doing or completing homework</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3. Is always “on the go” or acts as if driven by a motor</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4. Timid, easily frightened</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5. Everything must be just so</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6. Has no friends</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7. Stomach aches</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8. Fights</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9. Avoids, expresses reluctance about, or has difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10. Has difficulty sustaining attention in tasks or play activities</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11. Argues with adults</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12. Fails to complete assignments</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>13. Hard to control in malls or while grocery shopping</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14. Afraid of people</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15. Keeps checking things over again and again</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16. Loses friends quickly</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>17. Aches and pains</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>18. Restless or overactive</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>19. Has trouble concentrating in class</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20. Does not seem to listen to what is being said to him/her</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21. Loses temper</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>22. Needs close supervision to get through assignments</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>23. Runs about or climbs excessively in situations where it is inappropriate</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>24. Afraid of new situations</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>25. Fussy about cleanliness</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>26. Does not know how to make friends</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>27. Gets aches and pains or stomachaches before school</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>28. Excitable, impulsive</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>29. Does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand)</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>30. Has difficulty organizing tasks and activities</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>31. Irritable</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>32. Restless in the “squirmy sense”</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>33. Afraid of being alone</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>34. Things must be done the same way every time</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>35. Does not get invited over to friends’ houses</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
36. Headaches.......................................................... 0 1 2 3
37. Fails to finish things he/she starts.......................... 0 1 2 3
38. Inattentive, easily distracted................................ 0 1 2 3
39. Talks excessively................................................. 0 1 2 3
40. Actively defies or refuses to comply with adults’ requests.. 0 1 2 3
41. Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities........ 0 1 2 3
42. Has difficulty waiting in lines or awaiting turn in games or group situations........................................ 0 1 2 3
43. Has a lot of fears..................................................... 0 1 2 3
44. Has rituals that he/she must go through.................. 0 1 2 3
45. Distractibility or attention span a problem................ 0 1 2 3
46. Complains about being sick even when nothing is wrong.... 0 1 2 3
47. Temper outbursts.................................................... 0 1 2 3
48. Gets distracted when given instructions to do something.... 0 1 2 3
49. Interrups or intrudes on others (e.g., butts into others’ conversations or games)...................................... 0 1 2 3
50. Forgetful in daily activities....................................... 0 1 2 3
51. Cannot grasp arithmetic......................................... 0 1 2 3
52. Will run around between mouthfuls at meals.............. 0 1 2 3
53. Afraid of the dark, animals, or bugs........................ 0 1 2 3
54. Sets very high goals for self..................................... 0 1 2 3
55. Fidgets with hands or feet or squirms in seat............. 0 1 2 3
56. Short attention span.............................................. 0 1 2 3
57. Touchy or easily annoyed by others......................... 0 1 2 3
58. Has sloppy handwriting.......................................... 0 1 2 3
59. Has difficulty playing or engaging in leisure activities quietly............................................................ 0 1 2 3
60. Shy, withdrawn...................................................... 0 1 2 3
61. Blames others for his/her mistakes or misbehavior........ 0 1 2 3
62. Fidgeting............................................................. 0 1 2 3
63. Messy or disorganized at home or school.................. 0 1 2 3
64. Gets upset if someone rearranges his/her things........ 0 1 2 3
65. Clings to parents or other adults............................ 0 1 2 3
66. Disturbs other children.......................................... 0 1 2 3
67. Deliberately does things that annoy other people........ 0 1 2 3
68. Demands must be met immediately – easily frustrated..... 0 1 2 3
69. Only attends if it is something he/she is very interested in.. 0 1 2 3
70. Spiteful or vindictive.............................................. 0 1 2 3
71. Loses things necessary for tasks or activities (e.g., school assignments, pencils, books, tools, or toys). ........ 0 1 2 3
72. Feels inferior to others.......................................... 0 1 2 3
73. Seems tired or slowed down all the time................... 0 1 2 3
74. Spelling is poor...................................................... 0 1 2 3
75. Cries often and easily............................................ 0 1 2 3
76. Leaves seat in classroom or in other situations in which remaining seated is expected.................................... 0 1 2 3
77. Mood changes quickly and drastically........................ 0 1 2 3
78. Easily frustrated in efforts...................................... 0 1 2 3
79. Easily distracted by extraneous stimuli..................... 0 1 2 3
80. Blurs out answers to questions before the questions have Been completed.................................................. 0 1 2 3
Appendix D

Attention-Deficit/Hyperactivity Disorder Knowledge Survey
ATTENTION-DEFICIT/HYPERACTIVITY DISORDER KNOWLEDGE SURVEY

The purpose of this survey is to help us better understand your knowledge of Attention-Deficit/Hyperactivity Disorder (ADHD). Below is a series of true-false statements. Circle T if you believe the statement is true or right. Circle F if you think the statement is false or wrong.

1. Most children with ADHD have problems with attention when they become teenagers. T F

2. Children with ADHD can be OK in some situations (such as at home) and can be distractible and disruptive in others (such as at school). T F

3. Special diets, like the Feingold diet, have been scientifically proven to improve the symptoms of most people with ADHD. T F

4. Medical tests given in a psychologist’s office are necessary for making the diagnosis of ADHD. T F

5. Medication often reduces a child’s tendency to be aggressive with others at school. T F

6. ADHD may sometimes be inherited (passed along in the family). T F

7. Almost all children with ADHD meet national and state standards for learning disabilities. T F

8. Boys and girls have similar rates of ADHD. T F

9. Children with ADHD are usually brighter than those without ADHD. T F

10. In most cases, medication will help a child achieve better grades in school. T F

11. There is a medical test that is very effective in identifying children with ADHD. T F

12. For most children with ADHD, psychological treatments are not as effective as medication in improving attention and reducing disruptive behaviors. T F

13. The medication(s) used to treat ADHD are of little benefit when children reach adolescence or adulthood. T F

14. There is reliable evidence that ADHD is often caused by having too much sugar in a child’s diet. T F

15. Children who are hyperactive at the age of 3 almost always become identified as having ADHD by the age of 7. T F

16. There are new medications available that are more effective and safer than previous medications such as Ritalin. T F

17. The diagnosis of ADHD can be made if symptoms first develop at the age of 10. T F

Items added to measure:

18. The most effective treatment of school-aged children with ADHD are stimulant medications, behavior modification, or a combination of the two. T F

19. 75% of children respond to stimulant medication. T F

20. Side effects of stimulants are rare and short-lived but include stomachaches and social withdrawal. T F
Appendix E

Treatment Evaluation Inventory
This is a story about Joe, an 8-year-old boy who has problems behaving at home and school. On the next pages are 6 different ways Joe’s mother might use to correct his problem. Please read each different treatment, and then answer the 9 questions that follow each treatment in the order in which they are given. Please do not look ahead or look back to other treatments. Please ask for help if you do not understand what you should do or if you have trouble with any of the words. Thank you.

Joe is an 8-year-old boy who misbehaves at school and at home. He has a hard time paying attention and this causes him to forget to obey instructions. Joe always seems to be touching and doing things he shouldn’t. He interrupts other people and talks a lot. Joe often acts without thinking, which can lead to him doing things that are dangerous to himself or others. Joe has been this way for as long as everyone can remember. Because of his poor behavior at school, Joe isn’t getting good grades, doesn’t have a lot of friends, and is frequently in trouble. Because of his behavior at home, Joe gets in trouble a lot with his parents.
**School-Home Note**

To improve Joe’s behavior in school, Joe’s parents use daily school-home notes. The notes contain a list of behaviors Joe has problems with such as staying seated. The notes are completed in about 3-5 minutes daily by the teacher and given to Joe to bring home. Joe’s parents go over the notes with him each night and give him daily and weekly rewards if he brings home good school-home notes. Some rewards are late bedtimes, a small amount of money, a special snack, or special time with mom or dad.

Please read the items listed below very carefully. Then place a checkmark on the line next to each question that best indicates how you feel about the treatment.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
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<td>7.</td>
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**Time-Out**

To improve Joe’s behavior, his parents make him sit in a quiet, boring room by himself for 8 minutes each time he misbehaves. While he is in the room his parents, brothers, and sisters ignore him and he is not allowed to play. If Joe misbehaves while he is in the room or if he leaves before the 8 minutes is up, he must go back to the room again for another 8 minutes. If Joe misbehaves again after the 8 minutes is up, he must go back to the room for another 8 minutes.

Please read the items listed below very carefully. Then place a checkmark on the line next to each question that best indicates how you feel about the treatment.

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<th></th>
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**Diet Change**

To improve Joe’s behavior, his parents put him on a special diet where he cannot eat certain foods. His parents believe that he may have allergies to these things that lead to his bad behavior. He is not allowed to have things with artificial coloring, like fruit punch and jello, artificial flavoring, or artificial preservative, like many cookies and candies. Joe is not allowed to eat a lot of sugar.

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Medication

To improve Joe’s behavior, his parents took him to a doctor and the doctor gave Joe medication to help him calm down. The medication is called a stimulant. Joe has to take a pill every morning before school and afternoon during school that is supposed to help him improve his attention and behavior. Joe’s parents, or the school nurse, remind Joe to take his pill and watch him swallow it. It is important that Joe takes his pill at the same time each day.

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**Discussion**

To improve Joe’s behavior, his parents try talking with him whenever he misbehaves. They talk with Joe about what he has done wrong and what he should have done instead. They allow him to talk about his feelings and why he acted the way he did. Joe’s parents do not punish Joe, but instead talk with him calmly and encourage him to discuss the problem with them. Each time he misbehaves Joe’s parents talk with him for 5 minutes.

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Contingent Reinforcement

To improve Joe’s behavior, his parents make him earn his privileges when he behaves. The privileges include things that Joe really enjoys like watching T.V., going to a friend’s house, eating a dessert or snack, and staying up late. At lunchtime, dinner, and bedtime, Joe earns one privilege if he has been good during the last five hours. Also, Joe’s parents praise him when he is “good”.

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Appendix F

Educational Handout
Attention Deficit Hyperactivity Disorder

What is ADHD?
- A developmental disorder with symptoms appearing early in life
- Affects 3-5% of school-aged children
- Common symptoms include
  - Impulsive behavior
  - Difficulty waiting their turn
  - Little regard for social consequences
  - Take unnecessary risks
  - Distractible/poor attention
  - Difficulty following instructions
  - Always on the go
  - Unable to sit still/fidgety
- Many children with ADHD have learning difficulties, however they are NOT more or less intelligent than peers and don’t necessarily meet standards for learning disabilities
- Boys are 3 times more likely to have ADHD than girls
- ADHD affects all races and socioeconomic groups
- Children do NOT outgrow ADHD - children with ADHD will have problems with attention into their teen years and adulthood

How does a child get ADHD?
- ADHD is often inherited (passed along in the family)
- ADHD is NOT caused by too much sugar (so special diets have not been found to be an effective treatment)
- ADHD is NOT caused by poor parenting or elevated lead levels

How is ADHD diagnosed?
- There is NO medical test that can be used to see if a child has ADHD
- A child is diagnosed through historical report, parent, teacher and other caregiver completed questionnaires, and direct observation of the child
- Children may act different in different environments, so it’s important to gather information based on many different times and settings (for example,
just because a child can sit for hours and play video games does not mean that (s)he does not have ADHD if they have symptoms at other times

- Symptoms must be present before age 7 (so if symptoms start at age 12 the child does NOT have ADHD)
- Symptoms must be developmentally inappropriate (so, almost all 3 year olds are active, but most don’t have ADHD because high activity level is not inappropriate for a 3 year old)

How is ADHD treated?

- The most effective treatments for ADHD include stimulant medications, behavior modification, or a combination of the two
- The most commonly used medications to treat ADHD are Ritalin, Dexadrine, Adderall, and Concerta. These medications are equally safe.
- 75% of children respond to stimulant medication
- Medication does NOT make a child smarter or get better grades – they increase attention and compliance, and decrease disruptive behavior which may have a positive affect on grades
- Medication may reduce aggressive behavior
- Medication can be used successfully into adolescence and adulthood
- Side effects of stimulants are rare and short-lived (for example, appetite suppression, headaches, nausea, and stomachaches)
- Behavior modification is extremely effective in the treatment of ADHD, although to a lesser degree than medication
- Behavior modification includes school-home notes, contingent reinforcement, and time-out, all of which are very effective interventions with few negative side effects.
  - School-home notes are an excellent way to improve school behavior in children with ADHD. They require minimal time commitment.
  - Contingent reinforcement increases appropriate behavior and also requires minimal time commitment.
  - Time-out is an effective way of decreasing inappropriate behavior and is brief.
- The above techniques have received scientific support and are highly effective with many children and adolescents with ADHD. They result in minimal to no discomfort
- Special diets, such as the Feingold diet, have no scientific support
- Discussion is NOT an effective way to deal with problems related to ADHD
Vita

Rebecca Owen Currier, daughter of Jerry and Marilyn Currier and sister of Julie and Sheila Currier, was born in Fairfax, Virginia, on March 12, 1975. She graduated from Chantilly High School in 1993. Following high school, she attended Virginia Polytechnic and State Institute in Blacksburg, Virginia. She participated as a member of the Division I NCAA varsity swim team during her freshman, sophomore, and junior years. She chose not to participate on the team her senior year so as to better focus on her interest in psychology, working closely with Thomas Ollendick, Ph.D. and his graduate fellows on a variety of research projects. Rebecca attended graduate school at Louisiana State University in Baton Rouge, Louisiana. She participated in a wide variety of training experiences, including work with local Head Start programs, a juvenile detention center, a partial-day treatment program, a clinic providing services to children and adolescents diagnosed with or exposed to HIV, a diabetic clinic providing health care services to children and adolescents, a surgery clinic preparing children for a variety of surgical procedures, a Behavioral Pediatrics Clinic, and programs offering both inpatient and outpatient services to children and their families for a variety of behavioral and medical issues. Rebecca completed a Predoctoral Internship in Pediatric Psychology at the Kennedy Krieger Institute, an affiliate of The Johns Hopkins University School of Medicine located in Baltimore, Maryland, in June, 2003. She participated as a member of the Behavioral Psychology Pediatric Consultation Service providing both inpatient and outpatient services to children and their families. Rebecca has been working as a psychology fellow at the A. I. duPont Hospital for Children in Wilmington, Delaware, since August, 2003. She has accepted an offer to continue as a Post-doctoral Fellow at the hospital for another year (August 2004-2005) to pursue her career working with
children with chronic and acute illnesses and their families in a medical setting. Rebecca is a candidate for the Doctor of Philosophy degree in clinical psychology from Louisiana State University in May, 2004.