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Motivation to change parenting in mothers of children with and without ADHD: Associations with demographic and psychological characteristics.

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Motivation to Change Parenting in Mothers of Children with and without ADHD: Associations
with Demographic and Psychological Characteristics

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Thesis submitted to the
Eberly College of Arts and Sciences
at West Virginia University
In partial fulfillment of the requirements

For the degree of

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in
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Abstract

Motivation to Change Parenting in Mothers of Children with and without ADHD: Associations with Demographic and Psychological Characteristics

Stephanie M. Wagner

Motivation to change is considered an important factor in treatment adherence and outcome, yet there is a lack of research on parental motivation to change in the child psychotherapy literature. The current study examined the internal consistency of a measure of parental motivation, the Parent Motivation Inventory (PMI) and investigated associated demographic and psychological characteristics in 61 mothers of children who exhibited varying degrees of inattentive and/or hyperactive/impulsive symptoms. Results demonstrated that the PMI has high internal consistency, can distinguish between mothers of children with and without ADHD, and that an additional 7% of variance in the PMI can be explained by child externalizing problems after controlling for other variables. Although further research on the utility of the PMI is needed, these results suggest that this measure may be useful in clinical research and practice.

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Motivation to Change Parenting in Mothers of Children with and without ADHD:
Associations with Demographic and Psychological Characteristics

Motivation to change is considered to be an important element of successful behavioral change and is necessary for positive treatment outcomes for many adult psychological disorders (Miller & Rollnick, 2002). Little research on motivation to change exists in the literature on childhood disorders and interventions, even though motivation to change may help predict treatment attendance and outcome (Littell & Girvin, 2005; Nock & Photos, 2006). When considering the treatment of childhood disorders, parental motivation may be particularly relevant given the major role that parents play in the implementation and administration of many empirically-supported child treatments (Nock & Ferriter, 2005). The current study advances the literature on parental motivation to change by examining its association with demographic and psychological variables in a clinic-referred sample of mothers of children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) compared to a sample of mothers of children without ADHD. The goals of this study were to provide further validation for a measure of parental motivation to change and to identify potential variables associated with parental motivation to change that could be targeted in an intervention aimed at increasing parental motivation.

Literature Review

Motivation to Change and Treatment

Historically, the construct of client motivation or readiness for change has been conceptualized in a couple of different ways. Initially, Prochaska and DiClemente (1984) developed the Transtheoretical Model of Change (TMC) to describe the process of behavioral change. According to their model, individuals move through the following discrete stages of change: (1) precontemplation in which the individual does not recognize the problem or possess the desire to change; (2) contemplation in which the individual recognizes the problem and is thinking about change; (3) preparation in which the individual is planning to make the change; (4) action in which the individual is taking the steps necessary for change; and (5) maintenance in which the individual continues with the steps taken in the action stage (DiClemente & Prochaska, 1998). However, recently there has been some debate over whether this model oversimplifies the process of behavioral change and whether change occurs in discrete or continuous stages (e.g., Littell & Girvin, 2002). Therefore, Littell and Girvin recommend using measures that assess continual change along a dimension as opposed to measuring discrete stages of change. Research in this area has examined both specific stages of motivation based on the TMC and variations in motivation along a continuum. Regardless of specific debatable characteristics of the change process, motivation to change has important implications for treating adult and child psychopathology.

Motivation to Change and Adult Treatments

Client motivation or readiness for change is considered an essential ingredient for favorable treatment outcomes for many adult disorders, particularly substance abuse (e.g., Miller & Rollnick, 2002). Numerous studies have reported a relation between a lack of motivation and

poor outcomes following treatment, early termination of treatment, and poor adherence to treatment (e.g., Miller & Rollnick, 2002; Ryan, Plant & O'Malley, 1995). Moreover, there is evidence that interventions targeting a client's motivation result in favorable outcomes for treating problems such as substance abuse (e.g., Burke, Arkowitz, & Dunn, 2002; Burke, Arkowitz, & Menchola, 2003; Burke, Dunn, Atkins, & Phelps, 2004).

Motivation to Change and Child Treatments

Recently, motivation to change has been a topic of interest to researchers studying the treatment of childhood disorders and the treatment of disruptions in the parent-child relationship (e.g., Littell & Girvin, 2005; Nock & Photos, 2006).

6). In particular, there has been interest in measuring parental readiness for change and motivating parents who have abused or neglected their children (e.g., Littell & Girvin, 2005). Predicting readiness for change is of utmost importance in this area given the need for caseworkers to determine the likelihood that parents will make the required changes in their parenting and to use this prediction to determine whether out-of-home placements are necessary (Littell & Girvin, 2005). Littell and Girvin examined parents' intention to change and problem recognition in 353 primary caregivers who had previously been abusive or neglectful and found that initial reports of problems in taking care of children predicted improvements in parenting one year later. Additionally, Nock and Photos (2006) extended the literature on motivation to change parenting to parents of children with conduct problems and found that more change in parent motivation predicted fewer barriers to treatment, which then was predictive of increased treatment attendance.

In addition to examining parental motivation to change and treatment outcomes, a few studies have examined the effects of adding a component aimed at increasing parental motivation

to an intervention (Chaffin et al., 2004; Nock & Kazdin, 2005). Chaffin and colleagues (2004) compared the addition of a motivational enhancement component to both an enhanced form of parent-child interaction therapy (PCIT), in which additional psychological services were offered to families, and standard PCIT for abusive parents and found that the two groups did not differ in reports of abuse following treatment. However, given that both groups received motivational enhancement, the effects of this component on PCIT remains unclear.

Other research on adding motivational enhancement components to parent training demonstrate promising results. Nock and Kazdin (2005) found that the addition of a brief intervention increased treatment attendance and adherence in parents of children referred for disruptive behavior problems. Also, Lim, Stormshak, and Dishion (2005) found that parents who received a one-session combined parent training and motivational intervention may have slightly increased parental involvement with their young adolescent and increased positive family interactions compared to a control group who did not receive the treatment. Given these findings regarding adding motivational techniques to treatment and findings linking motivation to change and outcome, further research on motivation to change is warranted. For instance, it is plausible that examining motivation to change and associated factors will help researchers find ways to modify empirically-supported interventions to increase treatment participation, outcome, and long-term maintenance for many childhood disorders, especially externalizing disorders.

Children with externalizing disorders, including Conduct Disorder (CD), Oppositional Defiant Disorder (ODD), and ADHD, are often referred for treatment because their behavioral problems are distressing and disturbing to other individuals, such as parents and teachers (Waslick & Greenhill, 2004). Accordingly, effective treatments for these disorders rely on parents and teachers to learn and use behavioral management strategies. In these instances,

although the child may be the individual who needs to receive treatment, it is the parents' responsibility to implement and maintain changes (Nock & Ferriter, 2005). For example, behavioral parent training programs are empirically-supported interventions for child ADHD, ODD, and CD (Brestan & Eyberg, 1998; Pelham, Wheeler, & Chronis, 1998) in which the parent is required to learn and implement effective strategies for managing their child's aggressive, oppositional, and other disruptive behaviors. Therefore, in this treatment, it is the parents' motivation rather than the child's which appears to be an important factor in the success of the intervention.

ADHD, one of the most frequent referrals for child mental health services, affects an estimated 3-5% of school-aged children (APA, 1994; Waslick & Greenhill, 2004). ADHD was once considered a disorder of childhood, but it is now evident that the characteristic symptoms of ADHD, inattention, hyperactivity, and impulsivity, continue into adulthood and place individuals at risk for many negative long-term outcomes including substance abuse and juvenile delinquency (e.g., Flory, Milich, Lynam, Leukefeld, & Clayton, 2003; Young, 2000). Although there are empirically-supported treatments for children with ADHD, including stimulant medication, behavior modification, and the combination of behavior modification and medication (Pelham et al., 1998), that can reduce the risk of negative outcomes, all of these treatments require some degree of parental involvement (i.e., implementation, administration) (Nock & Ferriter, 2005). Therefore, due to the fact that ADHD is a frequently-occurring chronic disorder associated with long-term negative outcomes, it is imperative to investigate factors associated with motivation to change in parents.

Predictors of Motivation to Change in Adult and Child Treatments

Demographic Factors

Motivation to change may be related to specific demographic characteristics. For instance, several researchers in the substance abuse field have found that motivation or desire for change increases with age for both adults and adolescents (e.g., Breda & Heflinger, 2004; Melnick, De Leon, Hawke, Jainchill, & Kressel 1997). Additionally, motivation to change and problem recognition have been linked to having previously received treatment for a mental health problem (Boyle, Polinsky, & Hser, 2000; Nwakeze, Magura, & Rosenblum, 2002). Cox, Blount, Bair, and Hosier (2000) found that education has not been linked to determination to change but may have a negative relationship with problem denial in individuals who abuse substances. However, the literature is not entirely consistent on the importance of demographic factors. For instance, in a study examining motivation to change fruit and vegetable dietary intake, Perkins-Porras and colleagues (2005) found that individuals in the preparation stage of change were more likely to be a younger age, to be female, and to have received more education than individuals in earlier stages of change (i.e., precontemplation or contemplation). However, research on treatment adherence in parents who are managing their children's type I diabetes suggests that socioeconomic status and gender do not reliably predict treatment adherence (Chisholm et al., 2006). Although treatment adherence (i.e., attendance, compliance) and motivation (i.e., interest in and desire for treatment) for treatment differ, it is possible that similar characteristics are predictive of both variables (adherence and motivation). Given the limited literature in this area and differences in various constructs examined, it is possible that demographic factors associated with change are specific to particular disorders or problems (i.e., substance abuse, nutrition, diabetes management, and parenting).

Overall, there is a paucity of research examining background (e.g., medication status, treatment history) and demographic factors related to parental motivation to change their parenting. It has been hypothesized that parents of children with ADHD who are medicated may be less motivated to change their parenting because their child's symptoms have decreased as a result of medication (Chronis, Chacko, Fabiano, Wymbs, & Pelham, 2004). However, this prediction has not yet been examined empirically. With regard to demographic factors, Nock and Photos (2006) extended the research on motivation by examining the relation between parent motivation to change and child, parent, and family characteristics in a sample of children referred for conduct problems. These researchers did not find an association between motivation and any demographic variables. Specifically, parent and child demographic factors including parent age, parent marital status, child gender, child ethnicity, and child age were not related to motivation to change. Additionally, Nock and Photos did not find an association between parental motivation and family characteristics such as whether or not the family received public assistance, was involved with the Department of Child and Family Services, and the number of people who were living in the home. However, the authors did not examine other psychosocial factors that may be related to motivation to change such as symptom severity, child comorbidity, parental psychopathology, stress, and beliefs and knowledge. In particular, Nock and Photos mention that their failure to measure beliefs and attitudes was a limitation of their study because parental beliefs about treatment may mediate the relationship between demographic characteristics and motivation to change. Given their findings, it seems important to examine both psychological variables and demographic/background characteristics when attempting to identify variables that may be associated with motivation to change.

Symptom Severity

The association between symptom severity and motivation to change has been examined in the substance abuse literature. Specifically, many studies found an association between motivation to change or entry into treatment and severity of substance use and problems resulting from substance use in adults (e.g., Finney & Moos, 1995; Prokhorov et al., 2003; Ryan, et al., 1995). These studies have demonstrated that individuals who have more severe substance use and related problems are more likely to enter treatment or report higher motivation to change.

Symptom severity and readiness for change have also been examined in the literature on parenting and children. For instance, a qualitative study examining parent motivation for consulting a physician found that symptom severity and complexity of symptoms were important factors (Ertmann, Soderstrom, & Reventlow, 2005). Additionally, in research on child abuse, Littell and Girvin (2005) found that parental reports of problem recognition and intention to change were likely related to initial problem severity. In particular, problem recognition was linked to more child behavior problems. It is likely that parents who are dealing with a child who exhibits more severe behavior problems will be more inclined to recognize the problem and demonstrate greater readiness to make changes than a parent of a child with fewer behavioral problems. Therefore, it is probable that parents of children with ADHD may be more apt to recognize the need to change their parenting than parents of children without ADHD.

Comorbidity and Parental Psychopathology

In addition to examining symptom severity and motivation to change, research on substance abuse has studied motivation to change in individuals with substance abuse and co-occurring psychological disorders (e.g., Blume & Schmaling, 1997; Hiller, Knight, & Simpson, 1999). In general, the research demonstrates that an increase in psychological problems is

associated with greater motivation to change in adults and adolescents (Barnett et al., 2002; Celluci, Krogh, & Vik, 2006; Hiller et al., 1999). Other research has focused on the relation between specific comorbid disorders and readiness to change. For instance, Blume and Schmalzing also found that mood symptoms and physical symptoms predicted lower levels of precontemplation and higher levels of contemplation and readiness to change. Celluci and colleagues found that increased anxiety was associated with greater interest in seeking help in college-aged problem drinkers. Although this research deals with psychopathology and readiness to change, it may not apply to parental motivation. Specifically, this research has focused on substance users with comorbid psychopathology which may be very different than parents who exhibit psychopathology and also have a child with multiple behavior problems. However, it is likely that the degree of co-occurring externalizing problems in children will relate to parental motivation because externalizing problems usually are distressing to caretakers, teachers, and other individuals in a child's life.

Currently, there is no research on parental psychopathology and parent readiness to change their parenting. However, a qualitative study examining parental motivation for taking a child to a physician found that fear and anxiety regarding their child's illness was an important factor in physician consultation (Ertmann et al., 2005). In contrast, parental psychopathology has been linked to poor treatment outcomes including increased treatment dropout and poorer treatment adherence for many childhood disorders (Chronis, et al., 2004). In particular, maternal depression has been linked to negative outcomes following parent training for child externalizing problems (e.g., Griest & Forehand, 1982; Webster-Stratton, 1985). Based on this research, it is likely that parents who are struggling with their own challenges and problems will be less ready

to change their parenting to help their child than parents who are not struggling with these problems.

Stress

Stress may be another important factor in both treatment attendance and motivation to change. Specifically, in a qualitative study examining reasons why patients kept or did not keep behavioral health appointments, Reust, Thomlinson, and Lattie (1999) found that 35% of the participants interviewed cited illness-related reasons including overwhelming or multiple stressors for reasons why they did not keep an appointment for behavioral health care. However, Finney and Moos (1995) found that problem drinkers were more likely to enter treatment if they reported experiencing multiple stressors in their lives.

Stress may also be predictive of motivation to change. Specifically, general mental distress has a positive association with readiness to change substance use in adolescents (Battjes, Gordon, O'Grady, Kinlock, & Carswell, 2003). Furthermore, O'Hare (1996) found that clients seeking outpatient mental health services who were in the precontemplation stage of change rated psychophysiological and family distress below average, whereas clients who were in later stages of change (i.e., contemplation, participation, and maintenance) rated distress above average in these domains. Also, distress over internalizing and externalizing behaviors may be related to parent, teacher, and adolescent desire to change (Duhig & Phares, 2003; Phares & Danforth, 1994). Therefore, it is possible that stress that parents experience in their role as a parent may be related to motivation to change parenting.

Beliefs and Knowledge

Beliefs and knowledge regarding positive and negative consequences of a particular behavior may also be important when considering motivation to change. For instance, adults who

anticipated greater negative consequences of their substance abuse were more likely to make changes (Sobell, Sobell, Toneatto, & Leo, 1993). Additionally, youth who experienced many negative consequences as a result of substance use reported increased intrinsic motivation and readiness to change when compared with youth who did not experience as many negative consequences (Breda & Heflinger, 2004). Furthermore, the attributions made about positive and negative consequences may be important. For instance, adolescents who received treatment in the emergency room for an alcohol-related injury reported greater readiness to change when the injury was perceived negatively and when they attributed alcohol as the cause of their injury (Longabaugh et al., 1995).

Beliefs and knowledge about future risks and susceptibility to negative consequences may also be related to motivation to change. Turner and Mermelstein (2005) examined parental knowledge and child sun protection and found that parents who were in earlier stages of change were more likely to have positive beliefs about sun exposure and report lower levels of child susceptibility than parents who were in later stages of change. Risks have also been examined in the literature on smoking. For instance, Strecher, Becker, Kirscht, and Eraker (1985) found that individuals who perceived high levels of susceptibility to an illness as a result of smoking reported increased desire to quit smoking compared to individuals who perceived decreased levels of susceptibility. Moreover, a study examining smoking beliefs and stages of change in college students found that smokers in early stages of change such as precontemplation were less likely to believe that quitting smoking would improve their health and that continuing smoking would be detrimental to their health than smokers who were in later stages of change such as preparation (Prokhorov et al., 2003). Hall, Weinman, and Marteau (2004) found that women smokers who were given a leaflet with information on smoking and cervical cancer reported

more intentions to quit and higher perceptions of vulnerability to cervical cancer than women who were not given a leaflet. Hall and colleagues theorized that people may need a logical and understandable explanation accounting for the relationship between a threat (e.g., cervical cancer) and the action that is recommended to reduce the threat (e.g., quitting smoking).

It is possible that parents who are knowledgeable about ADHD and treatments for the disorder will better understand why they need to change their parenting to reduce the risk of negative outcomes for their child and report higher motivation to change than parents who are not knowledgeable about the disorder, long-term risks, and treatments. For instance, it is likely that parents may not be motivated to change their parenting if they believe that their child will outgrow ADHD. However, research on specific attitudes of parents regarding treatments of ADHD including medication and counseling found that attitudes regarding medication and counseling did not predict parents' enrollment in treatment (Bennett, Power, Rostain, & Carr, 1996). These findings illustrate that the role of both attitudes and knowledge about ADHD in treatment and in motivation to change remains unclear.

Statement of the Problem

Motivation to change is an important factor to consider in developing and implementing interventions for adult and child psychopathology. Much research has been conducted on the predictive validity of motivation to change and treatment outcome as well as factors related to motivation to change in adults who abuse substances. However, there is a lack of literature on parent motivation to change their parenting to help their child, despite some preliminary evidence that the addition of motivational components to treatments enhances treatment attendance and adherence (Nock & Kazdin, 2005). The only published study discovered in the

current literature search examining factors related to motivation to change parenting solely evaluated demographic characteristics and did not look at other psychological characteristics that may be important (Nock & Photos, 2006). The two primary aims of the present study were as follows: to examine the internal consistency of the Parent Motivation Inventory (PMI) (Nock & Photos) to provide information regarding the utility of this measure in future studies examining parent motivation to change and to investigate the association between motivation to change and various factors, including, symptom severity, child comorbidity, parental psychopathology, stress, and knowledge and opinions about ADHD in a sample of parents of children who vary in the degree of symptoms of ADHD that they exhibit. Given that the PMI is a relatively new measure and that the internal consistency of the PMI may influence decisions regarding future analyses (i.e., the analysis may suggest that certain items do not tap into the construct of parental motivation and should be deleted to improve the scale's reliability), this aim was addressed first in the current study. Additionally, given the paucity of research in this area, exploratory analyses were conducted to examine correlations between parental motivation to change parenting and demographic and background characteristics and to examine correlations between motivation and different characteristics in the two groups (mothers of children with ADHD and mothers of children without ADHD).

Research Questions and Hypotheses

Research Question 1

Is the PMI internally consistent as an overall measure and are the subscales internally consistent?

Hypothesis 1

Are there differences in parental motivation to change parenting in parents of children with ADHD and parents of children without ADHD? It was hypothesized that parents of children with ADHD would be more motivated to change their parenting than parents of children without ADHD. The hypothesis is based on research indicating that higher motivation to change is associated with higher symptom severity in individuals who are in treatment for substance abuse (e.g., Finney & Moos, 1995; Prokhorov et al., 2003; Ryan, et al., 1995) as well as research showing that greater parental problem recognition is related to more child behavior problems in abusive parents (Littell & Girvin, 2005).

Hypothesis 2

Which psychological characteristics account for variance in parental motivation to change? Based on the literature review, the following psychological variables were hypothesized to account for variance in parental motivation: child attention problems; child externalizing problems; parental psychopathology; overall parenting stress; and ADHD knowledge.

In particular, the severity of child attention problems was hypothesized to account for variance in parental motivation because research on substance abuse demonstrates that symptom severity has a positive association with motivation (Prokhorov et al., 2003). Additionally, research on child abuse suggests a relationship between severity and parental recognition of the problem (e.g., Littell & Girvin, 2005).

The extent of co-occurring child externalizing problems was hypothesized to significantly contribute to variance in parental motivation because the adult substance abuse literature suggests that comorbidity related to increased motivation to change (Barnett et al., 2002; Hiller et al., 1999). Additionally, children are often referred for treatment because their externalizing behaviors are distressing and disturbing to others (Waslick & Greenhill, 2004).

Parental psychopathology was hypothesized to be related to parental motivation; however, no research currently exists on parental psychopathology and motivation to change parenting. Parental psychopathology is related to poor treatment outcomes in parent training (Chronis et al., 2004). Given that parental motivation is likely important in treatment outcome, it is likely that parental psychopathology is also related to decreased motivation.

Parental distress also was hypothesized to account for variance in parental motivation. Research suggests that distress and the experience of multiple stressors may be related to increased motivation to change (e.g., Duhig & Phares, 2003; Phares & Danforth, 1994; O'Hare, 1996).

Lastly, knowledge was hypothesized to be related to parental motivation. Previous research has shown that increased knowledge regarding risks and consequences of a behavior is related to readiness to change (i.e., Turner & Mermelstein, 2005) in areas such as parental regulation of sun exposure and sunscreen use in children.

Exploratory Research Question

Are demographic characteristics (including age, income, education, and ethnicity) and background characteristics (including previous mental health treatment for both parents and their children) related to motivation to change parenting? The link between demographic characteristics and parental motivation to change will be examined in an exploratory manner because the literature on factors such as age and education and adult motivation to change is somewhat inconsistent (e.g., Breda & Heflinger, 2004; Cox, et al., 2000; Perkins-Porras et al., 2005). Given that the one study examining child, parent, and family characteristics did not find a relationship between these factors and parental motivation to change (Nock & Photos, 2006), it is important to determine whether the current study supports or contradicts these results.

Method

Participants

Participants included 61 mothers of children between the ages of 6 and 12. Specifically, 31 participants were mothers of children with a diagnosis of ADHD and 30 participants were mothers of children who did not have ADHD. The sample size was determined based on the results of a power analysis conducted with Sample Power which demonstrated that 60 participants were needed to obtain a power of .82 in a regression with 5 predictor variables with a cumulative r square of .20. The current study examined parental motivation to change in a sample of mothers instead of a sample comprised of both mothers and fathers because the majority of research on behavioral parent training has been conducted with mothers (for a review see Tiano and McNeil, 2005). Specifically between 1981 and 1988 only 37% of studies included fathers (Coplin & Houts, 1991). Moreover, Tiano and McNeil reviewed father involvement in behavioral parent training and concluded that based on the current literature, the influence of fathers on treatment outcome cannot be determined.

Both mothers of children with ADHD and mothers of children without ADHD were recruited from the North Central West Virginia region. The average child age was 8.7 years old and over 90% of the sample was Caucasian. Specific characteristics of the sample are presented in Table 1. Mothers of children with ADHD were recruited in several ways. Specifically, potential participants were contacted about the study while at a hospital-based ADHD Clinic for an intake, feedback, follow-up, therapy, or medication appointment for their child. Additionally, the health care provider at a hospital-based ADHD Clinic and an assistant to the provider conducted a chart review to identify potential participants' names and contact information. The use of a chart review in recruitment of participants in a study utilizing a clinical population is

considered ethical if the researcher has taken appropriate human subject training course, has a plan to ensure the confidential storage of data, and is studying a sample that would be very difficult to recruit without the use of a review. In addition, a HIPAA Waiver needs to be approved by the appropriate Institutional Review Board (IRB). In the current study, a HIPAA Waiver was requested and obtained from the IRB by the research team. After the chart review, the provider or assistant contacted potential families to explain to them about the study and see if they were interested. Interested mothers then scheduled appointments at their convenience to consent to the study and complete study-related measures.

Mothers of children without ADHD were recruited from afterschool and summer programs in the North Central West Virginia community. Mothers had the options of consenting to the study and taking forms home to complete, completing forms while waiting for their child, or scheduling an appointment to complete forms. Mothers who wanted to complete the forms at home consented to the study and then received instructions for completing the measures. These mothers then returned forms to the researcher at the afterschool program and mothers who did not return forms promptly were given reminder calls.

Upon completion of the measures, forms were briefly checked for missing or incomplete responses. Mothers with incomplete forms or missing items had the option of completing the items or leaving them blank. Mothers of children with ADHD and mothers of children without ADHD were paid \$10 in cash upon returning measures to the researcher.

Measures

Parent Motivation Inventory

The Parent Motivation Inventory (PMI; Nock & Photos, 2006) is a 25-item measure that was used to assess parental motivation to participate in treatment of their child. The PMI measures parental motivation along a continuum; and therefore, does not assess specific stages of change. This measure was developed using a sample of 76 parents of children ages 2 to 12 referred to an outpatient clinic for disruptive behavior problems. The PMI is comprised of three subscales measuring overall motivation including: (a) desire for child change which contains 7 items; (b) readiness to change parenting behavior which contains 14 items; and (c) perceived ability to change parenting behavior which contains 4 items. Nock and Photos reported a mean of 115.6 with a standard deviation of 10.2 for the total scale, a mean of 31.7 with a standard deviation of 3.6 for the desire for child change, a mean of 65.5 with a standard deviation of 5.8 for readiness to change parenting behavior, and a mean of 18.5 with a standard deviation of 1.7 for the perceived ability to change scale. Although there are three subscales for this measure, a principle component analysis demonstrated that the construct of parent motivation is best represented by a single component, or overall motivation (Nock and Photos). Nock and Photos reported a Cronbach's alpha of .96 and a test-retest reliability between the first and fifth session of treatment of .76 for the overall scale. Nock and Photos found that changes in the PMI predicted parents' perceived barriers to treatment and that perceived barriers to treatment predicted treatment attendance. In the current study, mothers circled their responses on a 5-point likert scale, ranging from strongly disagree to strongly agree.

Demographic/Background Form

Mothers also completed a demographic/background form designed specifically for this study, to assess demographic information and information related to previous treatment. On this form, participants indicated their age, child's age, relationship to the child (i.e., biological parent, step-parent, or adopted parent), race/ethnicity, yearly household income, years of education completed, marital status, and employment. They also reported on their spouse's relationship to child (biological parent, step-parent, or adoptive parent) age, education, employment status, and race/ethnicity. Additionally, participants were asked to record whether their child is medicated, what types of treatments they have pursued for their child, and an estimate of time spent in each treatment. Finally, mothers were asked to record the amount of psychosocial treatment or medication visits they have received for their own psychological problems.

Child Behavior Checklist

The Child Behavior Checklist (CBCL; Achenbach, 1991) consists of 113 items that assess child externalizing and internalizing behavior problems on dimensional, empirically-derived scales. Participants were asked to rate their child's current behavior problems on a 3-point scale, ranging from not true to somewhat/sometimes true to very/often true. The CBCL has internal consistency that ranges from .56 to .92 and a 1-week test-retest reliability that ranges from .63 to .97 (Achenbach, 1991). The CBCL has concurrent validity with other measures of child behavior problems including the Conners' Parent Rating Scale, and it reliably discriminates between clinic-referred and non-referred children (Achenbach, 1991). The current study examined the narrowband scales measuring attention problems as well as the broadband externalizing problems scale, which is comprised of the following narrowband scales: rule-breaking behavior and aggressive behavior.

Brief Symptom Index-18

The Brief Symptom Index-18 (BSI-18; Derogatis, 2000) is an 18-item self-report screening instrument for psychological distress and psychiatric disorders. The BSI-18 measures symptoms of somatization, depression, and anxiety dimensions. In the current study, mothers rated their own symptoms within the past seven days on a 5-point likert scale ranging from not at all to extremely. Derogatis (2000) reported coefficient alpha ranging from .74 to .89 for individual dimensions and the total scale. Additionally, the dimensions on the BSI-18 are highly correlated with dimensions on the SCL-90-R (Derogatis, 2000).

Parenting Stress Index Short Form

The Parenting Stress Index Short Form (PSI/SF; Abidin, 1995) is a 36-item self-report measure that assesses sources of stress an individual experiences related to their role as a parent. The PSI/SF contains three subscales measuring parental distress, difficult child, and parent-child dysfunctional interaction, which comprise a total stress score. Participants rated stressors on a 5-point likert scale ranging from strongly disagree to strongly agree. Abidin (1995) reported internal consistencies for the PSI/SF ranging from .80 to .91 and test-retest reliability ranges from .68 to .74 for individual subscales and the total stress score. Additionally, the PSI/SF is highly correlated with the standard form of the PSI. Normative data, including the cutoff for clinically elevated stress, is available for parents of children with ADHD.

ADHD Knowledge and Opinions Scale- Revised

The ADHD Knowledge and Opinion Scale- Revised (AKOS-R; Bennett, et al., 1996) is a 43 item-measure that contains a section assessing knowledge about the disorder and a section measuring opinions regarding counseling and pharmacological treatments for ADHD. The knowledge scale contains 17 items on which participants rated whether the statements about ADHD are true or false, and the opinion scale contains 26 items on which participants indicated

on a likert scale how much they agree or disagree with each item. Bennett and colleagues reported a mean on the knowledge scale of 11.0 with a standard deviation of 2.4 for mothers of children seen at a clinic for ADHD. The AKOS-R scales have the following five-week test-retest reliability: .59 for counseling acceptability, .92 for counseling feasibility, .91 for medication acceptability, and .75 for knowledge. Bennett and others (1996) reported Cronbach's alpha of .85 for counseling acceptability, .76 for counseling feasibility, and .89 for medication acceptability.

Procedure

After consenting to participate in the study, mothers were provided with a packet containing the study measures. The order in which mothers completed these measures was as follows: CBCL, PMI, BSI, PSI, AKOS, and the Demographic/Background Form. Parents who were recruited in-person from the ADHD Clinic completed the measures during their child's visit when they had time; however, the majority of participants either took the packet home to complete on their own or they set up an appointment with the experimenter or research assistant to come to their home to administer the surveys. Mothers recruited through the chart review set up a time with the researcher to complete forms at their home. Mothers of children without ADHD were recruited from afterschool programs and clubs in the community and completed the forms at home or while waiting to pick their child up. On average, mothers took about an hour to fully complete the study (completing the consent form, HIPAA form, and all study measures).

Results

Before conducting analyses to address the research questions of the current study, the distributions of all scales and subscales were examined for skew, kurtosis, and the presence of outliers. None of the distributions examined displayed significant problems with skew and

kurtosis; and therefore, no transformations were necessary. Additionally, an examination of outliers revealed that cases designated as outliers changed depending on whether the distribution looked at the overall sample or each group separately (ADHD group and Comparison group). Therefore, given that the examination of outliers was inconsistent, there were few to zero outliers on each scale and subscale, and the outliers were not significantly skewing the data, outliers were not recoded or excluded from subsequent analyses.

An examination of missing data on the subscales demonstrated that 16 out of 61 participants had one item or more than one items missing from a subscale on one of the measures. In regard to scales and subscales utilized for the regression analyses, two of six scales or subscales were missing data prior to data imputation. Missing data with the exception of missing demographic data were imputed for individual participant's subscales with the individual participant's average on items on that particular subscale, if the specific participant had responded to at least 75% of the items on the subscale. Data was imputed after the internal consistency analyses were conducted on the overall scale and subscales of the PMI. After data imputation, only the following subscales had missing data because the individual had not responded to enough items on the subscale to meet the requirement for data imputation: AKOS Counseling Acceptability (missing $n = 3$), AKOS Medication Acceptability (missing $n = 2$), and AKOS Counseling Feasibility (missing $n = 3$). All of these subscales were not necessary for any analyses pertaining to the two primary aims of the study. The sample sizes reported for each analysis are based on missing data remaining after data imputation. Participants with missing data on these subscales were excluded from exploratory analyses pertaining to the specific subscale but were not excluded from analyses examining other subscales on the AKOS. After

examining distribution characteristics and imputing missing data, analyses were conducted to address the specific research questions and hypotheses.

Research Question 1

Prior to examining between-group differences in motivation and factors associated with parental motivation, the internal consistency of the PMI and its subscales was examined to address the first research question. The Cronbach's alphas for the overall scale and the subscales in the current study were as follows for the entire sample: (a) .95 for desire for child change; (b) .97 for readiness to change parenting behavior; (c) .79 for perceived ability to change; and (d) .97 for overall motivation (see Table 2). Cronbach's alphas were also computed separately for the ADHD group and the comparison group. Internal consistency ranged from .63 for the perceived ability to change subscale to .95 for the overall scale for the ADHD group and from .83 for the perceived ability to change subscale to .97 on parental readiness to change subscale and the overall scale for the comparison group (Table 2).

Hypothesis 1

Prior to conducting analyses to determine if there were differences between mothers of children with and without ADHD, a series of t-tests and chi squares were conducted on demographic characteristics in these two groups. Specifically, these analyses were conducted to determine if families of children with ADHD significantly differed from families of children without ADHD on several demographic variables that may influence any analyses examining between group differences in parental motivation. Results are displayed in Table 1 and indicate that these mothers do not significantly differ on the following characteristics: marital status, (married, single, or divorced) $\chi^2(3, N = 61) = 4.72, p > .05$, maternal education, $t(59) = 1.67, p > .05$, maternal ethnicity (Caucasian or other), $\chi^2(1, N = 61) = 1.14, p > .05$, family monthly

income, $\chi^2(3, N = 61) = 0.28, p > .05$, maternal age, $t(55) = 1.98, p > .05$, child age, $t(59) = 0.05, p > .05$, child gender, $\chi^2(1, N = 61) = 2.02, p > .05$, and mother relationship to child, $\chi^2(1, N = 61) = 0.00, p > .05$, (i.e., biological parent, or other relation such as step-parent, adoptive parent).

To address the first hypothesis, which was that mothers of children with ADHD would report greater motivation to change their parenting than mothers of children without ADHD, a series of one-way analyses of variance (ANOVAs) were conducted. Means and standard deviations for the groups are presented in Table 3 and F ratios and effect sizes are presented in Table 4. Mothers of children with ADHD reported significantly more desire for change, $F(1, 59) = 22.11, p < .001$, readiness to change, $F(1, 59) = 20.52, p < .001$, perceived ability to change, $F(1, 59) = 5.17, p < .01$, and total motivation, $F(1, 59) = 24.01, p < .001$, than mothers of children without ADHD ($p < .05$) (Table 4). An examination of eta squared for each subscale and the overall scale demonstrated small and medium effect sizes according to Cohen's (1992) guidelines for classifying effect sizes (see Table 4).

To examine whether the PMI could discriminate parents of children with ADHD from parents of children without ADHD, an exploratory logistic regression was conducted. Overall motivation on the PMI correctly predicted 73.8% of parents overall, 66.7% of parents of children without ADHD, and 80.6% of parents of children with ADHD. Results of the regression were statistically significant, and are presented in Table 5. The odds ratio obtained from the regression was 1.073 (Table 5).

Hypothesis 2

A multiple regression analysis was conducted to address the second hypothesis, which was that the severity of child symptoms, child externalizing problems, parental psychopathology, parenting stress, and ADHD knowledge would account for significant variance in motivation to

change. Specifically, CBCL attention problems, CBCL externalizing problems, BSI global severity index, PSI total stress, and the AKOS knowledge scale were entered as predictor variables and the PMI total motivation was entered as the outcome variable. Given the limited literature in associations with parental motivation, all variables were entered on the first block of the regression. Correlations among the variables entered in the regression are presented in Table 6 and demonstrate that all variables were significantly correlated with each other ($p < .05$), with the exception of ADHD knowledge which was not significantly correlated with the other variables ($p > .05$). The results of the multiple regression analysis are presented in Table 7. The model significantly accounted for 38% of the variance in parental motivation, $F(5, 55) = 6.79, p < .01$. CBCL externalizing problems significantly accounted for the variance in parental motivation ($\beta = .46, t(60) = 2.56, p < .05$). None of the other variables uniquely accounted for the variance in parental motivation (see Table 7).

To determine whether externalizing problems significantly accounted for the variance after controlling for the other variables, an exploratory hierarchical regression analysis was conducted. BSI global severity index, CBCL attention problems, PSI total stress, and AKOS knowledge scale were placed on the first block and CBCL externalizing problems was placed on the second block of this analysis. The majority of the colinearity indices (tolerance, variance-inflation factor, condition indices) were within the normal range for the variables, demonstrating that the error terms of the variables were not associated. Results are presented in Table 8 and demonstrate that externalizing problems as reported on the CBCL significantly accounted for the variance in parental motivation after controlling for attention problems on the CBCL, total stress on the PSI, ADHD knowledge, and maternal global psychopathology ($\Delta R^2 = .07, p < .05$).

Exploratory Analyses

To explore the associations between parent motivation and other psychological characteristics, a series of exploratory correlations were computed. These correlations were computed in three ways: (a) the correlation coefficient for parents of children with ADHD; (b) the correlation coefficient for parents of children without ADHD; and (c) the overall correlation coefficient for both groups. Given the number of correlations computed and the exploratory nature of these analyses, all subsequent results are preliminary.

Findings for these correlation analyses are presented in Table 9. Overall across the whole sample, the following subscales were linked with Parent Total Motivation at the $p < .05$ level: CBCL Externalizing Problems, CBCL Internalizing Problems, CBCL Attention Problems, BSI Depression, BSI Anxiety, BSI Somatization, BSI Global Severity, AKOS Counseling Acceptability, PSI Parent Domain, PSI Defensive Responding, PSI Parent-Child Dysfunctional Interaction, PSI Difficult Child, and PSI Total Stress. These correlations were all small to moderate in magnitude (Table 9).

Correlations for the characteristics in the ADHD group and comparison group are also presented in Table 9. None of the characteristics significantly related to parent motivation in the comparison group. In the ADHD group, the following characteristics significantly related to parent motivation at the $p < .05$ level: CBCL Externalizing Problems, BSI Depression, AKOS Counseling Acceptability, PSI Defensive Responding, PSI Difficult Child, and PSI Total Stress. These statistically significant correlations were medium in magnitude (Table 9).

Correlation coefficients were also computed on parent motivation and demographic/background characteristics. Across the entire sample, none of the demographic variables were significantly associated with Parental Motivation. In the ADHD group, the number of children in

the family was negatively linked to Parental Motivation ($p < .01$) (see Table 10). In the Comparison group, child age was negatively linked to Parental Motivation ($p < .01$) (Table 10). These significant correlations were medium in magnitude (Table 10).

Discussion

The current study examined the internal consistency of a scale assessing parental motivation to change parenting, differences in parental motivation in a clinical and comparison sample, and factors associated with maternal motivation in a sample with children with a range of attention and externalizing problems (mothers of children with ADHD and mothers of children without ADHD). Generally, the current findings are consistent with previous research while at the same time these findings uniquely contribute to the understanding of parental motivation. In particular, this study provided further evidence of the utility of the PMI as well as identified factors that may be important in understanding parental motivation to change.

Research Question 1: Internal Consistency of the PMI

This study added to the evidence supporting the psychometric properties of the PMI as well as the majority of the subscales that make up this measure. This is important because currently there are only two published studies utilizing the PMI (Nock, Ferriter, & Holmberg, 2007; Nock & Photos, 2006). Results of the internal consistency analyses were generally consistent with the findings of Nock and Photos. In particular, the highest level of internal consistency was found for the overall scale and the lowest level of internal consistency was found for the perceived ability to change subscale, replicating the findings of Nock and Photos. In the present study, the internal consistency of the subscale (.79) was just below the threshold that is generally considered acceptable (.80). In addition to supporting previous research, there

are other explanations for why the perceived ability to change subscale had the lowest internal consistency. Specifically, this subscale was relatively brief as it was only comprised of four items.

Further examination of the internal consistency of the perceived ability to change subscale revealed some interesting characteristics. In particular, there were notable differences in the overall internal consistency of the subscale and the internal consistencies in the two groups which indicated that the internal consistency was below the threshold in mothers of children with ADHD (.63). However, it was not below the threshold in mothers of children without ADHD (.83). Unfortunately, the relatively small sample sizes of each group in the current study prevented further examination of this discrepancy between groups. It is possible that there were differences in response sets for the two groups or perhaps, parents of children with ADHD have conflicting beliefs about their ability to change. For instance, they may feel that they have the ability to change their parenting but may also believe that their child's behavior is 'out of their hands' given the neurological underpinnings of ADHD. Therefore, further research is needed to investigate the appropriateness of this subscale for clinical populations.

Overall, the PMI demonstrated strong internal consistency even though the Cronbach's alpha of one subscale was significantly lower than the other subscales and the total scale. However, other factors are also important in the development and use of a measure for clinical research and practice, including the ability of a measure to discriminate between groups.

Hypothesis 1: Between-Group Differences in Motivation

In addition to examining the internal consistency of the PMI, the current study examined differences on the overall PMI and subscales between groups. This was the first study to investigate differences in parental motivation in a clinical and comparison sample. Results

demonstrated that overall mothers of children with ADHD reported more desire for change, readiness to change their parenting, perceived ability to change, and overall motivation than parents of children without ADHD. Although this finding was consistent with the current hypothesis and published literature (i.e., Littell & Girvin, 2005), the relatively small effect sizes were surprising. However, these results must be interpreted with the understanding that the current ADHD sample consisted primarily of parents who were receiving treatment. The fact that a high percentage of the children with ADHD were receiving medication at the time of the study (87.1%) combined with the finding that the majority of mothers of children receiving medication reported some degree of improvement in their child since starting medication (82.14%), it appears that treatment status might have affected motivation to change. It is likely that the effect sizes would be larger in a sample of parents whose children had not yet received any psychosocial or pharmacological treatment. This statement is supported by the finding that the mean of the PMI in the ADHD sample was significantly less in the current study than the mean obtained by Nock and Photos (2006) who gave the PMI to parents of children referred for disruptive behavior problems during the first and fifth therapeutic session. Therefore, it is possible that parental motivation to change in the current study would be higher if more children were not yet receiving effective treatment targeting their symptoms of inattention and/or hyperactivity/impulsivity.

Another potential contributing factor to the small and medium effect sizes with regard to between group differences in motivation to change may be due to specific characteristics of the comparison group. Specifically, although mothers were excluded from participating in the comparison group if their child had a diagnosis of ADHD, it is possible that some of these children had either subclinical levels of inattention and/or hyperactivity/impulsivity or other

psychological problems that were causing problems at home and at school. Also, mothers were not questioned and excluded from the comparison group if their child had externalizing behavior problems (oppositional or conduct problems). This resulted in a comparison sample with several children with externalizing problems as measured on the CBCL in the borderline or clinical range. Given that externalizing problems explained a significant amount of variance in parental motivation and attention problems was not a significant factor, the failure to control for the presence of externalizing problems in the comparison group may have decreased between group differences. Therefore, it is possible that mothers of children who had externalizing problems or either subclinical or undiagnosed ADHD reported higher levels of parent motivation than parents of children who exhibited minimal or no symptoms of externalizing problems or ADHD. This explanation is supported by the moderate correlations between parent motivation and attention problems and externalizing problems on the CBCL. In that way, the failure to exclude mothers of subclinical children from the comparison group may have contributed to the small effect sizes for group differences in parental motivation.

An additional interesting finding from the between-group data analysis was the exploratory logistic regression that correctly classified the majority of participants into the ADHD and comparison groups based on the maternal report on the PMI. This finding also supports differences in parental motivation between the two groups; however, should be interpreted with caution due to the small odds ratio and relatively small sample size. The odds ratio and percent correctly classified in the logistic regression likely would be improved by utilizing a sample of clinic-referred parents and children who have not yet received treatment and assessing comparison children to exclude for externalizing problems as well as borderline or subclinical levels of attention and hyperactivity/impulsivity problems. Taken together, the

between-groups analyses demonstrated differences in the clinical and comparison groups that lend support to the potential clinical utility of the Parent Motivation Inventory.

Hypothesis 2: Psychosocial Factors in Parental Motivation

In addition to investigating the utility of the PMI by examining the internal consistency of the measure and examining the ability of the measure to discriminate between children with and without ADHD, the current study explored which psychosocial factors accounted for variance in parental motivation. Findings demonstrated that child externalizing problems accounted for the most variance in parental motivation. Although it is somewhat surprising that other variables such as parenting stress, ADHD knowledge, parental psychopathology, and child attention problems did not significantly account for variance in motivation, child externalizing problems have been found to be very distressing to parents, and thus, contribute to their motivation above and beyond other psychosocial factors (Ross, Blanc, McNeil, Eyberg, & Hembree-Kirgin, 1998). Particularly, parents whose children exhibit conduct problems and oppositional symptoms such as physically fighting with their siblings and refusing to obey their parents may find these behaviors most salient when thinking about their motivation to make changes in the way that they parent. Additionally, these symptoms are not directly targeted by medication for ADHD. For instance, medication does not target problems with siblings, family members, or peers that often co-occur with attention problems and disruptive behavior (Pelham, 1999). It is therefore likely that these problems are still present and impairing even after medication has decreased symptoms of inattention and/or hyperactivity/impulsivity. Findings from the current study showed that other variables significantly accounted for variance in parental motivation before child externalizing problems was added to the model. However, after child externalizing problems was added, the other variables were no longer significant. This finding is also

consistent with research in the substance abuse field that suggests that symptom severity (e.g., Finney & Moos, 1995; Prokhorov et al., 2003; Ryan, et al., 1995) and comorbid psychopathology (Barnett et al., 2002; Hiller et al., 1999) are linked to motivation to change.

The finding that knowledge about ADHD was not correlated with parent motivation was unexpected. Further examination of this finding demonstrated ADHD knowledge did not significantly differ in mothers of children with and without ADHD. Given the high prevalence of ADHD and the subsequent focus that the disorder has received in the media, it is likely that the general public is fairly knowledgeable about this disorder. However, research supporting increased prevalence and general public knowledge is inconsistent. There is some evidence suggesting an increase in prevalence of ADHD. For instance, Robison, Sclar, Skaer, and Galina (1999) 2.3- fold increase between 1990 and 1995 in diagnosed cases of ADHD following a clinic referral and visit. Findings from questions in the General Social Survey administered in 2002 to 1,139 individuals suggest that although 64% of the sample had heard of ADHD, most were not able to give more detailed information on it (McLeod, Fette, Jensen, Pescosolido, & Martin, 2007). Therefore, it is possible that general public knowledge is not very high but that the current sample was savvier than the general population. It is plausible that knowledge may not be important in explaining differences in motivation.

Additionally, it is possible that the type of knowledge assessed on the AKOS is not important in motivation. For instance, some items on the AKOS do not directly link the disorder to negative outcomes. Particularly, the knowledge of items such as ‘boys and girls display similar rates of ADHD’ may not reflect on parental knowledge of the course of the disorder, empirically-supported treatments, and long-term outcomes. Previous researchers on knowledge and motivation have suggested that having a logical understanding of the consequences of a

particular behavior or decision may be important (Hall et al., 2004), although there is a lack of empirical research examining this hypothesis.

Exploratory Findings

Findings from the majority of the correlations conducted in the current study confirmed results from the regression. However, when correlations were computed separately for the ADHD group and the comparison group, none of the psychosocial characteristics were significantly related to parental motivation in the comparison group. These results should be interpreted cautiously given the number of analyses and limited power of the sample to detect differences. However, it is possible that other factors such as the desire to learn new techniques and improve parenting may be more relevant than factors such as stress and child behavior problems in a sample of mothers of children without significant attention problems.

The exploratory analyses examining the correlation between specific demographic and background characteristics and parental motivation failed to find any significant findings for correlations for the overall sample. This result is consistent with the findings of Nock and Photos' (2006) examination of demographic variables and parental motivation. Additionally, the failure to detect associations is not surprising given the inconsistency in the substance abuse and health behaviors literatures on demographic characteristics (e.g., age, gender, and education) and motivation (e.g., Breda & Heflinger, 2004; Melnick et al., 1997; Perkins-Porras et al. 2005).

Although overall sample correlations were not significant, two correlations were significant when each group was examined separately. Specifically, in the ADHD group, the number of children living in the home was negatively related to motivation to change parenting. In other words, parents of ADHD children were less motivated to change parenting when there were more children in the home. Perhaps the presence of siblings provided parents with more

experience and confidence or perhaps siblings without ADHD symptoms enhanced parental efficacy.

The finding that there may be a negative relation between parental motivation and number of children in the home in clinical samples is inconsistent with Nock and Photo's (2006) research. However, it is possible that having more children in the home who do not have externalizing problems is seen as evidence by parents that they are doing a good job parenting and that their child is the individual that needs to change. Alternatively, this association could have occurred because the number of children in home is a proxy for chaotic, crowded, and busy homes. Perhaps, the number of children in a home is indicative other problems which lower motivation. Therefore, future research examining this finding is warranted.

The other significant finding that there is a negative relation between parental motivation and child age in the comparison group is inconsistent with Nock and Photos' (2006) results. However, the finding in the Nock and Photos' study occurred in a clinic-referred sample and the finding in the current study occurred in the comparison group. It is likely that parents who have children who are not exhibiting significant behavior problems become more confident in their ability to parent as the child gets older and subsequently, may be less motivated to change. Specifically, research examining factors related to parenting self-efficacy in mothers of school-aged children found a positive relation between efficacy and experience with children (Coleman & Karraker, 2000). Parents may feel that they have how to parent figured out and that their child is "turning out okay." More research is needed to add support for this finding and to better understand whether parental motivation changes over time. Although this finding related to the comparison group, it may have important implications for researchers and clinicians interested in prevention. Perhaps, parents are more open to trying different techniques when their children are

younger and population-based prevention programs need to target parents of younger children. However, the current study examined school-aged children; and therefore, a broader age range including preschoolers and adolescents would provide more information on the association between parental motivation and child age.

Overall, these exploratory findings need to be taken with caution given the number of analyses conducted and the increased probability of a Type I error. However, these findings suggest that future research may be warranted regarding the relationship between parental experience and motivation to change parenting.

Other Important Variables in Parental Motivation

Although the results of the analyses indicated that child externalizing behavior accounted for over one-third of the variance in parental motivation, there is still a large amount of variance left unexplained in the model. It is likely that other psychosocial and possibly other demographic characteristics contribute to differences in parental motivation. Specifically, factors such as parental attributions for their child's behavior, locus of control, self-efficacy related to parenting, and personality traits may be important factors in parental motivation. Parents who feel that their utilization of specific parenting skills can influence their child's behavior and feel confident about their ability to improve their parenting may also report more motivation to change their parenting. This is an interesting area to investigate further given that mothers of children with ADHD view their child's noncompliant behavior as less controllable (Gerdes & Hoza, 2006). Additionally, in the substance abuse literature, a recent study found that increased self-efficacy was linked to increased interest in seeking help (Cellucci et al., 2006).

In addition to attributions and self-efficacy, certain personality traits such as openness to new experiences and neuroticism may relate to parental motivation. It is possible that these

persistent and stable traits account for more variance in parental motivation than the state of being anxious or depressed. In particular, parents who have higher openness may have more motivation to change and parents who possess a greater degree of traits associated with neuroticism may be less motivated to change. Although these personality traits have not yet been examined in relation to parental motivation or motivation to change in other areas (i.e., substance use, health behaviors), personality may be an important area to consider.

Limitations

The current study had a number of limitations; some of which have been already discussed in the context of explaining and understanding specific findings. However, in addition to the limitations above, there are three other major limiting factors including sample characteristics, the clinical utility of parental motivation, and demand characteristics of the current study.

One limitation of the study was that the sample was comprised primarily of Caucasians; and therefore, these results may not generalize to other racial and ethnic groups. Specifically, cultural factors may play a role in motivation to change parenting or try specific strategies. For example, research has demonstrated that certain cultures may be less accepting of praising their child, a common skill taught in most parent training programs. For instance, research on treatment acceptability among Mexican American parents demonstrates that these parents prefer response-cost techniques compared to positive parenting techniques (Borrego, Ibanez, Spindlove, & Pemberton, 2007). Therefore, parents who identify with different cultures may be more or less motivated to change their parenting depending on specific treatment characteristics. Future research could examine the relation between cultural factors, treatment acceptability, and motivation to change parenting. This is an important area to research given that treatment

attitudes have been found to distinguish PCIT treatment completers and dropouts (Werba, Eyberg, Boggs, & Algina, 2006).

Another limitation of the sample was that the clinical sample of mothers of children with ADHD was a very heterogeneous group with regard to their child's diagnosis and treatment status. Specifically, some children had been in treatment for years, whereas others had just received their diagnosis. Parental motivation and associated factors may differ depending on the amount of time since assessment and the child's response to treatment. Although the current study did not find an association between parental motivation and the estimated number of sessions for ADHD-related services, additional research is needed that accounts for the type of treatment received as well as the child's response to the intervention.

In addition to differences in diagnosis and treatment status, another related limitation was that the majority of children in the ADHD sample were being treated with stimulant medication (87.1%). Other researchers have theorized that the utilization of stimulant treatment may decrease motivation to change parenting (Chronis et al., 2004). The current study did not find a significant correlation between medication acceptability reported on the AKOS and parental motivation. Additionally, the current study did find a high degree of motivation to change parenting among mothers in the ADHD sample even with the high percentage of children receiving stimulant medication. However, sample characteristics prevented the direct comparison of motivation differences based on medication status.

An additional sample limitation was the exclusion of fathers. Although research in the area of behavior parent training has focused on mothers, researchers are beginning to recognize the importance of including fathers (Tiano & McNeil, 2005). Research suggests that father involvement in treatment may be important in the maintenance of treatment gains (Bagner &

Eyberg, 2003). Therefore, research is needed to investigate characteristics associated with father motivation to change parenting and the relation between paternal and maternal motivation.

In addition to sample characteristics, another important limiting factor to recognize is that motivation is not synonymous with treatment attendance, adherence, or outcome. More research is needed to better understand the relations between these variables. Nock and Photos (2006) found that barriers to treatment might mediate the relation between motivation and outcome. It is also possible that the quantity and quality of treatment barriers moderate this association. For instance, parents high in motivation with few barriers to treatment may comply with treatment and have beneficial outcomes. However, perhaps parents who are high in motivation who also have many barriers to treatment (e.g., financial problems, transportation problems) will only benefit from the intervention if treatment barriers are addressed (e.g, providing transportation or home-based services).

A major limitation of this study was that all measures were maternal self-report forms and social desirability may have influenced reporting of parental motivation to change. For instance, mothers may have felt that disagreeing with certain statements on the PMI such as ‘I am eager to participate in treatment’ reflected poorly on their character. Although steps were taken to reduce social desirability, including giving mothers instructions that there were no correct or incorrect answers, it is possible that social desirability influenced responses. However, the PMI does not possess a validity index to assess constructs similar to impression management, defensive responding, or social desirability. Although research suggests parental reports of their child’s ADHD and their parenting are not strongly influenced by impression management (Johnston, Scoular, & Ohan, 2004); it is possible that social desirability influenced the results in

the current study. Future research may be enhanced by the inclusion of validity indices when evaluating parental motivation to change.

Future Directions and Clinical Implications

Results from the current study suggest that more research on the PMI is needed before determining its utility in clinical research and practice. The PMI looks promising given the internal consistency of the measure and its ability to discriminate between an ADHD clinic-referred and a comparison sample in which ADHD was an exclusionary criterion but other the presence of other psychopathology was not excluded. However, more research is needed to better understand low levels of motivation, other factors that may account for parental motivation, as well as the predictive value of parental motivation in psychotherapy attrition, attendance, compliance, and outcome.

One area in need of further investigation is developing a better understanding of parents who have a child with behavior problems and who report low levels of motivation to change their parenting. These parents may be at risk for prematurely terminating treatment and/or poor outcomes. By examining factors that contribute to lower levels of motivation, researchers may be able to design and investigate ways to enhance empirically-supported parenting interventions. Although the current study was informative in identifying the importance of child externalizing problems, the high degree of motivation in the current sample prevented the investigation of factors that may account for low levels of motivation in clinic-referred families. However, this is an important area to research with larger clinic-referred samples as individuals with low levels of motivation may benefit from additional treatment components. For example, if many families low in motivation also have an external locus of control with regard to parenting, then perhaps the addition of several sessions focusing on psychoeducation regarding the relationship between

parenting and child behavior and/or sessions focusing on challenging cognitive distortions about parenting (i.e., "There's nothing I can do") would enhance motivation. A better understanding of low parental motivation could assist treatment developers in matching treatment components to the needs of families who are challenging to treat.

Another area in need of further research is assessing the predictive utility of parental motivation. In particular, parental motivation is only clinically meaningful if motivation levels can predict treatment outcome and/or compliance. Nock and Photos (2006) found preliminary results suggesting that the relationship between changes in parental motivation and treatment attendance was mediated by barriers to treatment. Specifically, decreases in motivation predicted increased barriers to treatment, which then predicted poorer treatment attendance. Although this finding lends some support for the utility of the PMI in clinical research and practice, more research is needed to better understand the relationship between motivation, treatment barriers, and treatment compliance and outcome.

Despite the necessity for further research on the PMI and on parental motivation, findings of the current study are informative and generally consistent with the literature. Given the high attrition rates (oftentimes ranging from 28 to 50 percent) in parenting interventions for disruptive behavior disorders (i.e., Kazdin, Mazurick, & Siegel, 1994; Forehand, Middlebrook, Rogers, & Steffe, 1983; Prinz & Miller, 1994), a more complete understanding of parental motivation to change is needed to enhance the outcomes as well as the cost-effectiveness of our empirically-supported treatments (i.e., attrition negatively influences cost-effectiveness and a better understanding of motivation may help researchers develop techniques to reduce dropout; and therefore, increase cost-effectiveness).

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Table 1

Demographic Characteristics of Mothers and Children

Characteristic	<u>ADHD Group</u>		<u>Comparison Group</u>		<i>t/χ²</i>
	<i>M/%</i>	<i>(SD)</i>	<i>M/%</i>	<i>(SD)</i>	
Child age (years)	8.74	(1.63)	8.77	(2.03)	0.05
Child sex (% male)	70.97		53.33		2.02
Mother race/ethnicity:					
% Caucasian	96.80		90.00		1.14
Mother age (years)	34.57	(6.86)	38.00	(6.19)	1.98
Mother education (years)	13.65	(2.52)	14.63	(2.06)	1.67
Mother relationship to child:					0.00
% Biological parent	93.55		93.33		
Mother marital status					4.72
% Married	51.61		40.00		
% Single	16.67		10.00		
% Divorced	13.33		36.67		
Family monthly income					0.28
% under \$1,000	29.03		23.33		
% \$1,001-\$3,000	32.25		36.67		
% \$3,001-\$5,000	26.67		25.81		
% over \$5,000	6.45		6.67		

Note: All *p*'s > .05

Table 2.

Cronbach's Alphas of Parent Motivation Inventory and Subscales

Scale	<i>N</i>	Overall α	ADHD Group α	Comparison Group α
Parent Motivation Inventory	58	.97	.95	.97
Readiness to Change	59	.97	.93	.97
Desire for Change	61	.95	.95	.92
Perceived Ability to Change	60	.79	.63	.83

Table 3

Parent Motivation Inventory Means and Standard Deviations for Mothers of Children with and without ADHD

Scale	ADHD Group		Comparison Group	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Desire for Change	25.71	7.29	17.23	6.77
Readiness to Change	59.93	8.92	45.59	15.12
Perceived Ability to Change	16.51	2.50	14.60	3.94
Parent Motivation Inventory	102.14	16.39	77.39	22.59

Note: *N* = 61.

Table 4

One-Way Analyses of Variance (ANOVAs) for Parent Motivation in Mothers of Children with and without ADHD

Scale	<i>SS</i>	<i>MS</i>	<i>F</i> (1, 59)	η^2
Desire for Change				
Between Groups	1095.39	1095.39	22.11***	.27
Within Groups	2923.75	49.55		
Readiness to Change				
Between Groups	3136.88	3136.88	20.52***	.26
Within Groups	9017.66	152.84		
Perceived Ability to Change				
Between Groups	55.98	55.98	5.17*	.08
Within Groups	638.94	10.83		
Total Score				
Between Groups	9335.48	9335.48	24.01***	.29
Within Groups	22859.35	387.45		

Notes: $N = 61$, * = $p < .01$, and *** = $p < .001$.

Table 5

Summary of Logistic Regression Analysis Predicting ADHD

Variable	β	SE	Odds ratio	Wald statistic
Parent Motivation	.07	.02	1.073	12.06
Inventory				

Notes: $N = 61$ and *** = $p < .001$.

Table 6

Intercorrelations for Parent Motivation to Change and Other Psychosocial Measures

Measure	1	2	3	4	5	6
1. Parent Motivation to Change	--					
2. BSI Global Severity Index	.40**	--				
3. CBCL Attention Problems	.51**	.45**	--			
4. CBCL Externalizing Problems	.60**	.52**	.75**	--		
5. PSI Total Stress	.43**	.62**	.58**	.67**	--	
6. AKOS Knowledge Scale	.10	.12	.02	.00	.13	--

Notes: BSI = Brief Symptom Inventory, CBCL = Child Behavior Checklist, PSI = Parenting Stress Index, and AKOS = ADHD

Knowledge and Opinion Scale.

** = $p < .01$.

$N = 61$.

Table 7

Regression Analysis for Variables Accounting for the Variance in Parent Motivation

Variable	B	SEB	β
CBCL Attention Problems	.26	.32	.14
CBCL Externalizing Problems	.91	.36	.46*
BSI Global Severity Index	.22	.27	.11
PSI Total Stress	-.03	.14	-.04
AKOS Knowledge Scale	.83	1.07	.08

Notes: CBCL = Child Behavior Checklist, BSI = Brief Symptom Inventory, PSI = Parenting Stress Index, and AKOS = ADHD Knowledge and Opinions Scale.

$R^2 = .38$ ($N = 61$, $p < .01$).

* = $p < .05$.

$N = 61$.

Table 8

Hierarchical Regression Analysis for Variables Accounting for the Variance in Parent Motivation

Variable	B	SEB	β	R ²	ΔR^2
Step 1				.31***	
PSI Total Stress	.09	.14	.10		
AKOS Knowledge Scale	.54	1.12	.05		
CBCL Attention Problems	.74	.27	.38*		
BSI Global Severity Index	.32	.28	.16		
Step 2				.38***	.07*
CBCL Externalizing Problems	.91	.36	.46*		

Notes: PSI = Parenting Stress Index, AKOS = ADHD Knowledge and Opinion Scale, CBCL = Child Behavior Checklist, and BSI = Brief Symptom Inventory.

*** = $p < .001$ and * = $p < .05$.

$N = 61$.

Table 9

Scale and Subscale Correlations of Parent Motivation in Mothers

Measure/Characteristic	ADHD Group	Comparison Group	Overall
CBCL Externalizing Problems	.51*	.31	.60**
CBCL Internalizing Problems	.39	.21	.50**
CBCL Attention Problems	.27	.22	.50**
BSI Depression Scale	.41*	.13	.42**
BSI Anxiety Scale	.28	.09	.33*
BSI Somatization	.34	.18	.38**
BSI Global Severity Index	.34	.15	.40**
AKOS Knowledge Scale	.00	.05	.10
AKOS Medication Acceptability	.06	.30	.03
AKOS Counseling Acceptability	.58**	.29	.41**
AKOS Counseling Feasibility	.11	.26	.04
PSI Parent Domain	.31	.15	.30*
PSI Defensive Responding	.39*	.17	.34**
PSI Parent Child Interaction	.11	.16	.34**
PSI Difficult Child	.59**	.15	.53**
PSI Total Stress	.39*	.18	.43**

Notes: CBCL = Child Behavior Checklist, BSI = Brief Symptom Inventory, PSI = Parenting Stress Index, and AKOS = ADHD Knowledge and Opinions Scale.

* = $p < .05$ and ** = $p < .01$.

Overall $N = 61$ except for: AKOS Medication Acceptability ($N = 59$), AKOS Counseling Acceptability ($N = 58$), and AKOS Counseling Feasibility ($N = 58$).

ADHD group $n = 31$ for all analyses.

Comparison group $n = 30$ except for: AKOS Medication Acceptability ($n = 28$), AKOS Counseling Acceptability ($n = 27$), and AKOS Counseling Feasibility ($n = 27$).

Table 10

Demographic/Background Correlations of Parental Motivation in Mothers

Characteristic	ADHD Group	Comparison Group	Overall
Mother age	.17	-.37	-.23
Mother education (years)	.32	-.17	-.06
Child age	.16	-.51**	-.22
Number of children in family	-.49**	.03	-.05
Number of reported ADHD visits	-.04	--	--
Number of mother mental health visits	.26	.03	.17

Notes: ** = $p < .01$.

Overall $N = 61$ except for: Mother age ($N = 57$), Number of children in family ($N = 55$), and Number of mother mental health visits ($N = 58$).

ADHD group $n = 31$ except for: Mother age ($n = 30$), Number of children in family ($n = 28$), and Number of mother mental health visits ($n = 30$).

Comparison group $n = 30$ except for: Mother age ($n = 27$), Number of children in family ($n = 27$), and Number of mother mental health visits ($n = 28$).