

THE PREDICTIVE ABILITY OF ADHERENCE TO HOMEWORK AND SKILL
ACQUISITION FOR TREATMENT OUTCOME IN PARENT-CHILD INTERACTION
THERAPY

By

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Thank you to my family and friends.

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Abstract of Thesis Presented to the Graduate School
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Parent-child interaction therapy (PCIT) is a parenting skills training program for preschoolers with disruptive behavior disorders. The treatment emphasizes the importance of adherence to homework and skill acquisition, yet the extent to which homework adherence and skill acquisition influence treatment outcome is not known. This study examined the relations between adherence to homework and treatment outcome for PCIT while incorporating the variable of skill acquisition. Participants were 51 preschoolers with Oppositional Defiant Disorder and their mothers. The mothers were taught skills to increase warmth and security in the parent-child relationship and were assigned to practice these skills in daily play sessions throughout treatment. Therapists collected data on daily homework completion. Skill acquisition was measured by coding mothers' skills during parent-child interactions before and after treatment. Homework completion significantly predicted better attachment security at post-treatment. This study

supports the purpose of the homework assignment, which is to strengthen the parent-child relationship.

INTRODUCTION

Incorporating homework assignments into psychotherapy is a common practice. Assignments are included in treatments for many disorders, including depression, anxiety, phobias, and Obsessive Compulsive disorder (OCD) (DeAraujo, Ito, & Marks, 1996; Edelman & Chambless, 1995; Kazantzis, Deane, & Ronan, 2000). Homework is thought to add several benefits to standard therapy. Patients may show greater improvement if they practice and apply the skills learned in therapy to situations outside of treatment. The practice of new skills may speed both acquisition of the skills and generalization of treatment gains to new situations. In addition, the review of homework assignments in treatment sessions provides an opportunity for the therapist to check the patient's understanding of session content and assess how the client may cope with problematic situations once therapy has ended (Kazantzis & Lampropoulos, 2002). Studies have found that rates of homework adherence are substantially less than 100%, suggesting that many patients may not be receiving the full benefits of therapy (Abramowitz, Franklin, Zoellner, & DiBernardo, 2002; Addis & Jacobson, 2000). It is important to determine the impact of less than perfect adherence on treatment outcome.

Most studies suggest that homework adherence and treatment outcome are related. In cognitive-behavioral therapy for depression, Addis and Jacobson (2000) found significant correlations between homework adherence and improvement early in treatment, at the midpoint of treatment, and at treatment end. In a treatment for OCD, adherence during the first week of treatment alone predicted improvement in several

areas of treatment outcome (DeAraujo et al., 1996). Prediction of long-term outcome was found in a treatment of phobia. During the first eight weeks of a fourteen week treatment, therapist ratings of adherence significantly predicted outcome at 3-month and 2-year follow-up (Park et al., 2001). These studies provide strong evidence of the benefits of homework. A meta-analysis of 16 studies revealed an effect size of .22, indicating a small but real effect of homework adherence on treatment outcome (Kazantzis et al., 2000).

Although most studies support the relation between homework adherence and treatment outcome, it is important to note that the associations have been modest and not supported by all studies. For example, Edelman and Chambless (1993) found that for exposure treatment of agoraphobia, there was no difference in outcome for individuals assigned to a homework condition versus a no-homework condition. Taylor et al. (2001) found no difference in adherence between responders and partial responders to PTSD treatment. In addition, Abramowitz et al. (2002) found that for OCD treatment, initial severity predicted 16% of the variance in outcome, and after controlling for initial severity, homework adherence was not a significant predictor.

Differences in methodology help to explain the variation in findings. One methodological distinction is the source of adherence data. It is possible to have ratings of adherence made by patient, therapist, or independent observer. Timing of the assessments of adherence may vary among studies as well. Assessments may be conducted daily, weekly, or at the end of treatment, retrospectively. As Abramowitz et al. (2002) noted, retrospective assessment may be less reliable than weekly assessment, biased by the patient's improvement in therapy or other factors. Finally, the Kazantzis et

al. meta-analysis (2000) suggested that type of disorder and treatment may affect the relation between adherence and treatment outcome. They found that treatments for anxiety and depression showed a stronger relation between homework completion and treatment outcome than treatments for other disorders. The possibility that this relation may be stronger for some disorders and treatments than others is noteworthy. The studies previously cited used adult participants who were in treatment for their own disorders. The participants, then, were using skills learned in therapy and through homework to benefit themselves directly.

Unlike adult psychotherapy, the adults in parent training are taught skills designed to benefit their child, and the parents' homework completion constitutes the greater part of the child's treatment. The children receive treatment not only during therapy sessions, but also each time parents practice their skills with their children. It is unknown how well existing studies examining homework adherence and treatment outcome in adult psychotherapy generalize to parent training. No published studies were found examining the relation between adherence to homework and outcome for parents in a parenting skills training program.

The importance of skill acquisition to treatment outcome is also unknown. Homework is considered "practice" that enables parents to learn the skills taught in treatment. Yet studies have focused almost exclusively on relations between homework adherence and treatment outcome, rather than skill acquisition and outcome (Edelman & Chambless, 1993). Although some patients may need to complete homework to gain the full benefits of therapy, others may be able to acquire the needed skills with minimal practice, resulting in good treatment outcome without high levels of adherence. For

example, Neimeyer and Feixas (1990) found that participants in group cognitive treatment for depression with better acquisition of skills maintained treatment gains, regardless of assignment to homework or no-homework conditions. Conversely, repeated homework completion may benefit some individuals even if they never achieve optimal levels of skill.

The purpose of this study was to assess the relations among homework adherence, skill acquisition, and treatment outcome for parenting skills training. These relations are important to understand because both adherence to homework completion and therapy skill acquisition are strongly emphasized in parent training programs without evidence that either influences outcome. Rapport between therapist and parent can be jeopardized if the therapist emphasizes adherence to parents who feel unable to complete homework. Strain can also develop if therapists hold parents back to master skills when parents wish to move ahead to new skills. Increased knowledge of the relations between homework adherence, skill acquisition, and treatment outcome would help to inform clinical practice.

This study examined the relations of homework adherence and skill acquisition to treatment outcome for one particular type of parenting skills training program, Parent-Child Interaction Therapy (PCIT). PCIT is designed for young children with disruptive behavior, and its effectiveness is well supported by the literature (Gallagher, 2003). PCIT has two phases, child-directed interaction (CDI) and parent-directed interaction (PDI). In CDI, parents are taught play therapy skills designed to increase the warmth and attachment between the parent and child and to decrease mildly disruptive behaviors. For example, parents are instructed to reflect the child's appropriate verbalizations and to

imitate the child's play. These skills help the child to feel that the parent is really listening and thinks that what the child has chosen to do is interesting and worthwhile. Parents are also taught to ignore inappropriate behaviors such as whining. This strategic ignoring decreases the frequency of the negative behaviors. Therapists teach these skills by coaching parents *in vivo* during treatment sessions. Parents interact in play with their child while wearing a device, the “bug-in-the-ear,” that enables the therapist to communicate with them from an observation room. Coaching provides a way to correct mistakes immediately, and the therapist can aid in troubleshooting difficult parent-child situations. Families are encouraged to attend sessions regularly each week throughout therapy. In addition to practicing these skills in the clinic, parents are assigned to practice their new CDI play therapy skills in 5-minute sessions each day at home with their children. Although parents move to the PDI phase of treatment after their CDI skills meet mastery criteria, they continue to practice the CDI skills during the 5-minute homework sessions throughout treatment.

These CDI play therapy skills are thought to be an important foundation for the second part of PCIT. In PDI, parents are taught to use “time-out from positive reinforcement” (i.e., timeout). Timeout is only effective if children are separated from something that they enjoy, which in PCIT is the play with their parent and parental attention. Thus, CDI is taught first to increase the warmth of the relationship. PCIT is not a time-limited therapy. Treatment ends only when parents demonstrate mastery of the CDI and PDI skills, the child's behavior is within the normal range on a parent rating scale of disruptive behavior, and the parents are satisfied that they are able to manage their child on their own.

Four hypotheses guided this study. Hypothesis one was that adherence to completing the CDI homework would predict number of sessions needed to complete treatment. Parents who practice these skills more frequently would be expected to acquire them more quickly and therefore move through treatment faster (i.e., have fewer treatment sessions). The second hypothesis was that homework adherence and skill acquisition would predict child attachment security at the end of treatment. Hypothesis three was that the measures of adherence and skill acquisition would significantly predict parent-report of child negative behavior at the end of treatment. Hypothesis four was that homework adherence and skill acquisition would predict maternal stress at the end of treatment.

METHOD

Participants

Participants were 51 families involved in a larger treatment study. The target child in each family was between 3 and 6 years of age and had been referred for treatment of behavior problems. The inclusion criteria for the larger study included a diagnosis of oppositional defiant disorder (ODD) in the target child. For this study, the diagnosis of ODD is based on the criteria recommended by Jensen et al. (1996). That is, the child must meet the criteria for ODD on the Diagnostic Interview Schedule for Children (DISC IV-P) and must also score above a *T* score of 61 on the Child Behavior Checklist (CBCL) Aggressive Behavior Scale (Achenbach & Rescorla, 2000, 2001). By requiring criteria to be met on both instruments for diagnosis, some children may have been excluded who would otherwise have been accepted on the basis of only a single approach to diagnosis. Additional criteria included a standard score of >75 on a test of cognitive ability for the parents and children, the Wonderlic Personnel Test and the Peabody Picture Vocabulary Test, respectively (Dodrill, 1981; Dunn & Dunn, 1997). In addition, if taking medication for behavioral or emotional difficulties, children had to have been stabilized on the medication for at least one month. All families included in this study had met treatment completion criteria in the larger study and had been assessed at pre- and post-treatment. Participant demographic information is shown in Table 1.

Measures

Eyberg Child Behavior Inventory (Eyberg & Pincus, 1999)

The Eyberg Child Behavior Inventory (ECBI) is a measure of child disruptive behavior, designed for children ages 2 to 16. It contains two scales, the Intensity Scale, measuring the frequency of child negative behavior, and the Problem Scale, measuring how much of a problem the behaviors are perceived to be by the parents. Only the Intensity Scale was using in this study. The ECBI has good psychometric properties, including discriminant validity, and has shown to be sensitive to treatment change in clinic-referred children (Tynan, Schuman, & Lampert, 1999; Webster-Stratton & Eyberg, 1982). For the current sample, Cronbach's alpha for the ECBI Intensity Scale ranged from .82 to .93, depending on the time point of administration.

Parenting Stress Index- Short Form (Abidin, 1995)

Parenting stress was measured using the Parenting Stress Index- Short Form (PSI-SF). The PSI-SF is a 36-item self-report scale containing three factor-analytically-derived subscales (Parental Distress, Parent-Child Dysfunctional Interaction, Difficult Child) and a Total Scale. The PSI-SF has been shown to have good psychometric properties (Abidin, 1995). In this study, Cronbach's alpha ranged from .81 to .93, depending on the subscale and time point of administration.

Length of Treatment

Total number of treatment sessions was used as the measure of length of treatment.

Attachment Q-Set (Waters, 1987)

The Attachment Q-Set is a parent rating of child attachment. Parents are asked to rate different child descriptions as to how accurately they describe their own child.

Waters and Deane (1985) reported correlations between parent and observer Q-sorts of the same child from .59 to .93, with a mean correlation of .80.

Achenbach Child Behavior Checklist (Achenbach & Rescorla, 2000, 2001)

Child negative behavior was measured using the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000, 2001). The CBCL is designed to assess the frequency of various child behaviors and internalizing problems. The CBCL consists of two forms for children, for ages 2 to 3 and 4 to 18. Two broad-band scales may be derived from the items, an Internalizing scale and an Externalizing scale. Scores on each scale are standardized into *T* scores. The *T* score of the Externalizing Scale from the CBCL was used in this study as a measure of child negative behavior. Cronbach's alphas from this sample ranged from .80 to .88 for the Externalizing Scale, depending on form and time of administration.

Homework Adherence

A homework adherence variable was created for each family. At each session, parents reported to the therapists how often they had practiced the CDI skills since the previous treatment session, and homework adherence was based on this self-reported information. Although parents are also taught PDI skills, this study used only CDI homework adherence. Parent directed interaction homework assignments vary for each family and the PDI skills are used throughout the day, not in discreet practice sessions, making it difficult to assess adherence to PDI. Homework adherence was defined as the number of days the mother practiced CDI during treatment divided by the total number of possible practice days. As noted earlier, treatment is separated into two phases, with the earlier treatment sessions focusing on CDI skills and the later treatment sessions focusing on PDI skills. Although later sessions focus on PDI, the parents are asked to practice CDI

during this phase as well as during the earlier sessions. Therefore, adherence was separated into two variables, CDI homework completion during the CDI phase of treatment and CDI homework completion during the PDI phase of treatment. Researchers commonly separate homework adherence by time in treatment because it is possible for early adherence to have a different relation to treatment outcome than adherence later in treatment (Addis & Jacobson, 2000).

Dyadic Parent-Child Interaction Coding System (Eyberg, Duke, McDiarmid, Boggs, & Robinson, 2004)

The Dyadic Parent-Child Interaction Coding System (DPICS) was used to assess parent skill acquisition. This observational coding system is designed to assess the interaction between parent and child, including vocalizations, verbal behaviors, physical behaviors, and responses to questions and commands. The behaviors included in this study were positive parent verbal behaviors (behavior descriptions, reflections, labeled praises, and unlabeled praises) and negative parent verbal behaviors (questions, commands, and criticisms). During the pre- and post-treatment assessments, parents were observed playing with their children in three situations, each of which is coded separately using the DPICS. In the first situation, the parents are instructed to allow the children to lead the play. Next, the parents are instructed to lead the play and attempt to have the children follow their rules. Finally, the parents are told to have the children clean up the toys by themselves. As the CDI play therapy skills are intended to be used in the first situation, where the children lead the play, only the first situation was used in this study.

Coders were graduate and undergraduate research assistants who had read the DPICS manual and completed DPICS training as outlined in the DPICS coder training manual. Before coding study tapes, the coders obtained .80 accuracy with a criterion tape.

The Kappa coefficients for this study ranged from .49 to .77 for the categories used in this study (see table 2).

Skill Acquisition

Skill acquisition was measured using observational data from the DPICS. Based on two 5-minute coded observations, one each at the pre- and post-treatment assessments, two skill acquisition variables were created for each female caregiver. A “positive behavior” skill acquisition variable included the total frequency of occurrences of Labeled Praise, Unlabeled Praise, Behavior Description, and Reflective Statement. The total frequency of these behaviors was measured during the 5-minute pre- and post-treatment assessment observations, separately. Then, the total number of positive skills demonstrated at the pre-treatment assessment was subtracted from the number of positive skills demonstrated at the post-treatment assessment, resulting in a change variable referred to as the “positive behavior” skill acquisition variable. The same procedure was completed for negative behaviors, creating one variable of “negative behavior” skill acquisition, using the DPICS categories of Information Question, Descriptive/Reflective Question, Indirect Command, Direct Command, and Criticism. The idea of “negative behavior” skill acquisition can be thought of as a parent learning to avoid certain behaviors.

It is important to note the use of change variables rather than measuring skill acquisition scores at one time point, post-treatment. When mothers began PCIT, they had widely varying skill levels. For example, some mothers gave many commands and little praise whereas others came to treatment already using praises and avoiding giving commands. Therefore, each mother had a different amount of change to make in her own behavior to acquire the skills at criterion levels. This amount of change was

conceptualized as a piece of skill acquisition. A change variable captured the variability in the amount of change that each mother needed to make to arrive at the final criteria of skill frequencies required for treatment completion.

Procedure

Families were seen for a pre-treatment assessment that included a clinical interview, demographic questionnaire, questionnaires regarding the parents' psychological functioning and parenting behaviors, and questionnaires regarding the child's behavior. Cognitive screening measures were administered to the parents and child, and the mother completed a computerized, structured diagnostic interview. Finally, the families were observed in the three play situations. In order to obtain a reliable measure of parent-child interaction, the pre-treatment assessment was completed on two separate days, and play situations were completed on each day.

Lead therapists were graduate students in clinical psychology with training in PCIT and prior experience as a PCIT co-therapist. Therapists were involved in weekly group supervision throughout treatment. Once treatment began, families were scheduled to attend weekly sessions that lasted approximately one hour, and they were strongly encouraged to attend weekly. The first treatment session included a description of assigned homework, how to structure the play in the home and, often, problem-solving around where and what time of day to complete the homework. Assignments for daily homework began at the first treatment session. Families were given homework sheets each week on which to record their homework completion. Parents were asked to record their individual practice sessions every day, which included whether they practiced or not, what toys were used in the play, and whether any problems occurred. Families returned the completed sheets to the therapist at the next treatment session.

At the beginning of each session, the therapist reviewed the homework sheets with the parent. If parents had not practiced a majority of the assigned days, they were strongly encouraged to practice daily and the benefits of completing homework were reviewed. Therapists also guided parents in problem-solving how to increase homework completion, as needed. After reviewing the homework, therapists observed each parent interacting individually with the child for five minutes and coded the parents' skill acquisition. The first phase of treatment focused on learning the CDI play therapy skills. When the parents demonstrated mastery level CDI skills during a 5-minute observation period, they were able to move on to the second phase of treatment, PDI, in which parents learned skills to direct their child's behavior effectively. During the PDI phase of treatment, families continued to practice CDI skills in session along with the PDI skills, and the homework assignments continued to include daily 5-minute CDI sessions.

Treatment was not time-limited and ended once several criteria had been met. During play observation, parents had to demonstrate mastery-level CDI and PDI skills, and the child had to comply to at least 75% of commands issued by the parent. In addition, parents had to rate the child's behavior within $\frac{1}{2}$ standard deviation of the normative mean on the ECBI Intensity Scale, a score of less than 114, and to report feeling comfortable ending treatment.

At the post-treatment assessment, families completed the same diagnostic interview and questionnaires as in the pre-treatment assessment, and they were again observed in the structured play interactions. As in the pre-treatment assessment, the post-treatment assessment was completed on two separate days and the parents and children were observed in the play situations on each day.

RESULTS

Two demographic variables were considered for use as control variables, socioeconomic status (SES) and maternal IQ. Pretreatment severity of child behavior problems on the ECBI Intensity Scale and maternal stress on the PSI-SF Total Scale were also considered as control variables (Table 3 shows the correlation matrix of potential control variables and the treatment outcome variables). Only those demographic or other control variables that were significantly correlated with a particular treatment outcome variable were included in the analysis of that outcome variable.

Predicting Length of Treatment

Only homework adherence was examined as a predictor of the number of sessions to successful treatment completion. Skill acquisition was not examined as a predictor of treatment length because the skill acquisition variables could not be created until the end of treatment and, for that reason, were not considered to be useful as predictors. One simultaneous linear regression analysis was conducted, predicting number of treatment sessions. Homework adherence to the CDI homework during each of the two phases of treatment were used as predictors. The model was not significant.

Predicting Post-treatment Attachment Security

The Attachment Q-set security score was the final outcome variable examined (see Table 4). A hierarchical regression was conducted, using the pre-treatment PSI-SF Total score as a control variable and the adherence and skill acquisition variables in the second block. The model predicted a significant amount of variance, R^2 change = .337, F change

$(4,32) = 5.077, p < .01$. The variables contributing significantly to the model were homework adherence during the first half of treatment, $\beta = .420, t = 2.773, p < .01$, and change in maternal negative behavior skill acquisition, $\beta = -.280, t = -2.029, p = .051$.

Although skill acquisition was conceptualized as the change in maternal skills from pre-treatment to post-treatment, it was possible that the frequency of post-treatment skills was the important factor in prediction of attachment security. Therefore, a second hierarchical regression was conducted, with pre-treatment maternal negative behavior in the first block and post-treatment maternal negative behavior in the second block, predicting attachment security at post-treatment. After controlling for pre-treatment maternal negative behavior, post-treatment negative behavior did not significantly predict attachment security

Predicting Child Negative Behavior

Hierarchical regression was used to predict child negative behavior at post-treatment, as measured by the Externalizing Subscale *T* score of the CBCL. No demographic control variable was used because none correlated significantly with the post-treatment CBCL score. However, the initial severity of child behavior problems, as measured by the pre-treatment Externalizing *T* score of the CBCL, was used as a control variable in the first block because it was correlated with the CBCL score at post-treatment. The two adherence and two skill acquisition variables were analyzed simultaneously in the second block. After controlling for pre-treatment CBCL scores,

adherence and skill acquisition did not predict a significant amount of variance in the CBCL score at post-treatment.

Predicting Change in Parenting Stress

Scores at post-treatment on each of the subscales of the PSI-SF, Difficult Child, Parent-Child Dysfunctional Interaction, and Parental Distress, were predicted from the two homework adherence variables and the two skill acquisition variables, each in a separate regression. A hierarchical regression was used to predict the Difficult Child subscale at post-treatment, as two control variables were used. Maternal IQ and SES were included as control variables in the first block. The two homework adherence variables and the two skill acquisition variables were included in the second block. The model was not significant. Two simultaneous linear regressions were used to predict the Parent-Child Dysfunctional Interaction and the Parental Distress subscales at post-treatment, as no control variables were used because none were significantly correlated with the treatment outcome variables. Neither model was significant.

Table 1. Demographic Data of Participants (N = 51)

Gender	
Males	33
Female	18
Age	4.58 (1.13) ^a
Race	
Caucasian	38
African-American	4
Hispanic	3
Asian	1
Biracial	2
SES	39.82 (13.68) ^a
Maternal IQ	107.84 (10.60) ^a

^a Numbers in parentheses indicate standard deviations.

Table 2. Kappa Coefficients for DPICS Categories

DPICS Category	Kappa Coefficient	Classification
Behavior Description	.74	Good
Reflective Statement	.76	Good
Labeled Praise	.77	Good
Unlabeled Praise	.77	Good
Information Question	.67	Good
Descriptive Question	.63	Good
Direct Command	.57	Fair
Indirect Command	.68	Good
Criticism	.49	Fair

Table 3. Correlation Matrix of Potential Control Variables and Treatment Outcome Variables

Treatment Outcome Variable	Socioeconomic Status	Maternal IQ	PSI-SF Total Pre-treatment	ECBI Intensity Pre-treatment
Number of Sessions	-.133	.063	.147	.022
ECBI Intensity Post-treatment	.291*	.126	.069	-.068
CBCL Externalizing <i>T</i> Post-treatment	-.016	-.002	-.007	-.011
ECBI Intensity 6-month Follow-up	.156	-.046	.015	.058
PSI-SF Difficult Child subscale Post-treatment	.369**	.341*	.021	-.087
PSI-SF Par.-Ch. Dys. Int. subscale Post-treatment	.243	.003	.243	-.149
PSI-SF Parental Distress subscale Post-treatment	.007	.111	.269	-.054
PSI-SF Diff. Child subscale 6-month Follow-up	.452**	.144	.151	.043
PSI-SF Par.-Ch. Dys. Int. subscale 6-month Follow-up	.263	-.139	.390*	-.035
PSI-SF Parental Distress subscale 6-month Follow-up	.062	.036	.462**	.017
Q-Set Attachment Security Post-treatment	.039	-.121	-.314*	-.059

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

Table 4. Summary of Simultaneous Linear Regression Analysis for Variables Predicting Child Attachment Security (N=38)

Variable	<i>B</i>	<i>SE B</i>	β
Homework during CDI	4.07E-03	.001	.420**
Homework during PDI	1.171E-03	.001	.138
Change in positive skills	1.295-04	.003	.007
Change in maternal negative skills	-3.923E-03	.002	-.280*

* $p = .051$

** $p < .01$

DISCUSSION

Results from this study provide important information about adherence to completing CDI homework. Partial support was found for hypothesis two, predicting attachment security from adherence to homework and skill acquisition. Parents who practiced CDI homework more often early in treatment rated their children as more securely attached at post-treatment. This finding strengthens one of the basic tenets of PCIT, that CDI is designed to increase attachment in children. However, the result also suggests that CDI homework is more important early in treatment rather than later, as completion of CDI homework later in treatment was not predictive of child attachment at post-treatment. It is possible that CDI homework completion improves child attachment security, but that this improvement is made early in treatment. After this early improvement, child attachment security may reach a plateau, which is why CDI homework later in treatment is not predictive of child attachment security.

Adherence to completing CDI homework was not predictive of length of treatment or ratings of child negative behavior and parenting stress at post-treatment. As attachment is a significant piece of treatment outcome, the lack of prediction of other treatment outcome measures does not negate the importance of CDI homework. However, it does indicate that therapists who encourage parents to increase their frequency of CDI homework may expect to observe an increase in child attachment security, but not an improvement in child negative behavior or parenting stress. In addition, a low frequency of CDI homework practice sessions may not be the appropriate

explanation for why parents may report little or no improvement in child negative behavior or parenting stress. Therapists should also not expect a relation between the frequency with which parents practice CDI and how quickly they move through treatment.

Results provided less information about the importance of skill acquisition to treatment outcome. Maternal skill acquisition of the positive skills (e.g., labeled praise and reflective statements) was not predictive of any treatment outcome measure. Skill acquisition of negative skills (i.e., learning to avoid questions, commands, and criticisms) did not predict treatment outcome in the expected direction. Our results conflict with the earlier findings by Neimeyer and Feixas (1990), suggesting that skill acquisition would be a better predictor of treatment outcome than homework completion. One explanation for our findings is that it is likely that the function of the skills is different at the beginning than at the end of treatment. At the beginning of treatment, when the children are oppositional and defiant, it is important for the parents to avoid questions and commands because the children tend to choose to respond provocatively or defiantly. However, by the end of treatment, when the children's attitudes and behavior have improved, those same parental questions and commands tend not to elicit a negative child reaction. The parents' new, positive skills, such as praising and reflecting, may act initially as substitute verbalizations for the negative parenting behaviors and differ from questions and commands primarily by not requiring a response from the child. In this way, the new skills may not be conducive to an escalation of negative interaction and also

provide the child with attention for positive behavior. By the end of treatment, the positive skills have become a habitual part of the parent's verbal repertoire and can be used outside the 5-minute CDI practice sessions to give the child positive reinforcement.

Several limitations of this study must be addressed. First, due to the retrospective design, parents were not randomized to particular levels of homework adherence and were all encouraged to reach the same level of skill acquisition. There may be parental factors, such as motivation, which influenced homework adherence and skill acquisition and may also have been related to treatment outcome. In addition, quality of CDI homework practice sessions was not measured. Some parents did not complete the practice sessions in the way instructed by the therapists (e.g., use of inappropriate toys or activities). Further, parents began CDI practice sessions before they had learned the skills adequately. These early practice sessions may have a different quality when the parents are not using the skills appropriately and at a high frequency. If the quality of homework were measured, the data would provide additional information about adherence and treatment outcome. These limitations on analyses indicate that the complete picture of skill acquisition and adherence in PCIT needs further study.

More research is required to clarify relations between homework adherence, skill acquisition, and treatment outcome for parent training. This study analyzed one aspect of homework adherence, frequency of CDI homework completion by the mother, CDI skill acquisition, and treatment outcome. Replication of the finding that early homework adherence predicts stronger attachment security would support the continued use of CDI

homework early in treatment. A more complete picture of the relation between CDI homework adherence, skill acquisition, and treatment outcome would be given by incorporating the quality of the CDI homework sessions.

Results from this study support previous results suggesting a moderate predictive ability of homework adherence early in treatment for treatment outcome (DeAraujo et al., 1996). However, results did not support the earlier findings showing skill acquisition to be more predictive of treatment outcome than homework adherence (Edelman & Chambless, 1993; Neimeyer & Feixas, 1990). It is likely that results from this study are not consistent with previous findings because the relations between homework adherence, skill acquisition, and treatment outcome are significantly different for parent training and adult psychotherapy. This calls attention to the need for more research in this area. As parent training programs generally incorporate homework assignments and measurement of skills, it is essential to understand their relations with treatment outcome.

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