Client Engagement with Homework: A Study of Cognitive Therapy for Depression

Dissertation

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By

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Abstract

Homework is considered an essential component of Cognitive Therapy (CT) for depression (Beck, Rush, Shaw, & Emery, 1979), and clients who engage in more homework tend to experience greater symptom improvement over the course of treatment (Kazantzis, Deane, & Ronan, 2000). However, less is known about how therapists can increase clients’ engagement in homework, especially early in treatment. In an initial step toward addressing these issues, the primary objectives of this study were to examine whether specific therapist behaviors serve as predictors of session-to-session homework engagement and to examine the relationship between homework engagement and concurrent depressive symptom changes.

This study examined the first five sessions of 66 depressed clients participating in a course of CT. A team of trained undergraduates rated therapist behaviors using the Homework-Specific Therapist Behaviors scale (HSTB), which is composed of three subscales: Specificity, Motivation, and Problem-Solving. A second team rated the homework engagement variables, which included general homework engagement (time and effort put into homework and the frequency of therapy skill use to cope with feeling sad or upset) and CT-specific homework engagement (amount of cognitive, behavioral, and self-monitoring homework). Clients and therapists also provided ratings on general homework engagement.
To examine therapist behaviors as predictors of session-to-session homework engagement, repeated measures regression analyses using the SAS Proc Mixed procedure (without specification of random effects) were utilized. Controlling for previous homework engagement reported during each session, HSTB subscale scores at each session were examined as predictors of homework engagement variables at the next session. Results indicated that the Specificity subscale was the strongest and most consistent predictor of homework engagement variables (in comparison with the Motivation and Problem-Solving subscales). When rated by therapists, higher general homework engagement was significantly related to greater depressive symptom improvements, but not when engagement was rated by observers or clients. Across all three informants, the frequency with which clients used therapy skills to cope was significantly related to greater depressive symptom improvements. When examining CT-specific homework engagement, cognitive homework engagement was significantly related to greater depressive symptom improvements, whereas self-monitoring homework was unexpectedly related to a smaller magnitude of session-to-session depressive symptom change from session-to-session. The results found with the HSTB Specificity subscale suggest that therapists who devote more time to helping clients really understand homework-relevant skills and know what the assignments they are to work on may be able to enhance clients’ engagement in homework in early sessions of CT.
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Chapter 1: Introduction

Cognitive Therapy (CT; Beck, Rush, Shaw, & Emery, 1979) is an efficacious treatment for Major Depressive Disorder (for a review, see Strunk & DeRubeis, 2001). A central premise of CT for depression is that people with depression process information in a systematically biased way, leading to negative views of themselves, their world, and their futures. This style of thinking makes these individuals vulnerable to developing depression when they face negative life events, such as a job loss or a divorce, and helps to maintain the depressive episode once it has begun (Beck, 2005). The goal of CT is to help depressed clients develop more realistic (and therefore generally more positive) views and beliefs. To attain this goal, therapists work with clients during sessions to help them learn ways of identifying and challenging their views. In addition, therapists utilize between-session homework assignments to help clients practice using these skills in their everyday lives (Beck et al., 1979; Kazantzis & Lampropoulos, 2002). Common homework assignments in CT for depression include scheduling and engaging in activities to promote a sense of accomplishment or pleasure, recording one’s automatic thoughts and devising alternative responses to these thoughts, and engaging in behavioral “experiments” designed to test beliefs (Beck et al., 1979; Beck, 1995). Although therapists may desire frequent practice of the skills learned in therapy and greater use of
the activities assigned as homework, the extent to which clients engage in homework varies considerably—often falling short of desirable levels.

The use of homework is considered an integral part of CT. In fact, a full chapter in the original CT manual is devoted to the use of homework in CT for depression (Beck et al., 1979). Nonetheless, there has been limited research examining the purported benefits of homework. Existing research has examined both differences in treatment outcome when homework is (or is not) utilized (e.g., Neimeyer and Feixas, 1990) and the relationship between clients’ compliance with homework assignments and therapy outcome (e.g., Burns and Nolen-Hoeksema, 1991). Some authors have defined homework compliance relative to any assignments given (e.g., percentage of assignments completed; Coon & Thompson, 2003). Others have defined compliance as the extent to which clients engage in homework activities between sessions—regardless of what was assigned (e.g., Rees, McEvoy, & Thompson, 2005). I focus on the latter definition because this approach to defining compliance is arguably more in keeping with commonly expressed views regarding how homework activities lead to therapeutic gains (Kazantzis & Lampropoulos, 2002). In an effort to make this approach clear, I refer to “homework engagement” rather than homework compliance. By homework engagement, I mean the extent to which clients work on homework in between sessions. My focus on homework engagement is in accord with one of the proposed mechanisms purportedly driving symptom improvement in CT—that the more a client practices the skills learned in treatment, the more symptom improvement will result.
In the compliance literature, one of the most consistent findings is that greater compliance with homework assignments is related to better treatment outcomes for depressed clients (Kazantzis, Deane, & Ronan, 2000). If clients’ compliance is an important determinant of treatment outcome, it would seem important to identify the methods whereby a therapist could most successfully promote compliance. However, very little research exists that examines the factors that predict better homework compliance—particularly in CT for depression specifically. In this study, I examined therapist behaviors in early sessions of CT for depression to identify which (if any) of these behaviors predict subsequent homework engagement. Identifying therapist behaviors that predict better homework engagement is particularly important insofar as this effort could serve as an important step in identifying techniques therapists might utilize to help clients engage fully with the homework of CT. As engagement is probably not best conceptualized as an end in itself, it is also important to examine the how these behaviors are related to changes in depressive symptoms.

To place my study in context, the following sections will: (1) review the evidence of homework compliance as a predictor of treatment outcome; (2) review evidence of homework compliance as a predictor of outcome specifically in studies of CT for depression; (3) consider suggestions from clinical experts regarding a number of (largely untested) ways of improving homework compliance; (4) review evidence from empirical investigations of predictors of homework compliance; (5) review the evidence of predictors of homework compliance specifically in CT for depression, and (6) review the evidence of therapist behaviors as a predictor of symptom change in CT for depression.
Homework Compliance as a Predictor of Treatment Outcome

The use of homework and homework compliance has been examined as a possible predictor of treatment outcome in a variety of cognitive or behavioral therapies for various psychological problems. Cognitive-behavioral therapies for various disorders have included homework as a predictor of treatment outcomes, including those for panic disorder (Schmidt & Wollaway-Bickel, 2000; Westra, Dozois, & Marcus, 2007), generalized anxiety disorder (Stanley, Beck, Novy, Avrill, & Swann, 2003; Westra et al., 2007; Wetherell et al., 2005), social phobia (Westra et al., 2007; Woody & Adessky, 2002), and depression (e.g., Coon & Thompson, 2003; Neimeyer & Feixas, 1990). Behavioral therapies that have included homework as a predictor of treatment outcome include progressive muscle relaxation for tension headaches (Blanchard et al., 1991), covert modeling for assertiveness (Kazdin & Mascitelli, 1982), and exposure therapy for social and specific phobias (Al-Kubaisy et al., 1992).

Two meta-analyses have examined whether the use of, and compliance with, homework are related to better treatment outcomes: the more recent meta-analysis examined comparisons between therapy conditions with and without homework and the earlier meta-analysis examined the relationship between homework compliance and outcome among therapies that involved homework. In the more recent meta-analysis, Kazantzis, Whittington, and Dattilio (2010) studied 46 psychotherapy conditions in 27 independent investigations (26 published, 1 unpublished poster) that compared the efficacy of therapies with and without homework. They found a significantly larger pre-post symptom change ($d = 1.1$) for therapies that included homework than for therapies
that did not include homework \( (d = .63) \). For a subset of the studies \( (n = 8) \) that directly compared the same type of therapy with and without homework, Kazantzis and colleagues found a pooled effect size of \( d = .48 \), which suggested that 62% of clients would show a decrease in symptom severity in a therapy with homework assignments compared to 38% of clients in the same type of therapy if it did not include homework assignments.

The earlier meta-analysis (Kazantzis, Deane, & Ronan, 2000) examined an issue even more central to the current study: the strength of the relationship between homework compliance and treatment outcome in cognitive and behavioral therapies. These authors examined the relationship between homework compliance and treatment outcome in 16 psychotherapy studies. The studies included samples of clients with depression, anxiety disorders, and those who presented for treatment but were not formally diagnosed. The weighted average correlation of these studies, which included a total of 1,327 clients, was an \( r \) of .22—a small effect.

Two aspects of these meta-analyses, however, suggest these findings may not generalize to CT for depression. First, only a subset of the studies included in the meta-analyses examined clients with major depression—5 of the 27 investigations included in the more recent Kazantzis et al. (2010) study and 7 of the 16 investigations included in the Kazantzis et al. (2000) study. Second, of the 10 different studies that examined major depression, 4 examined CT (Bryant et al., 1999; Coon & Thompson, 2003; Startup & Edmonds, 1994). The remainder examined group CT (Neimeyer & Feixas, 1990; Rees et al., 2005), components or variants of CT (Addis & Jacobson, 2000; Zettle & Hayes,
In the following paragraphs, I discuss the studies that do not specifically examine CT for depression, as that discussion will follow in a later section. The current discussion includes studies involving group CT, components or variants of CT, and CT for several diagnoses. These studies are still relevant to discuss as they are related in some ways to the therapy and disorder of interest.

In one of the earlier investigations of the relationship between homework compliance and outcome in depressed clients, Zettle and Hayes (1987) examined a total of 12 women in a component analysis of a variant of CT. There were four conditions in this 2 (cognitive restructuring vs. cognitive restructuring plus distancing) by 2 (behavioral homework vs. no behavioral homework) experimental design. Participants in the cognitive restructuring plus distancing condition were assigned self-monitoring homework to identify depressogenic thoughts to be used during in-session distancing exercises designed to help the client learn to identify thoughts as testable hypotheses instead of facts. These self-monitoring homework activities were assigned regardless of whether they were also assigned behavioral homework. Zettle and Hayes found a significant main effect of behavioral homework, such that clients who were assigned behavioral homework experienced a greater decrease in Beck Depression Inventory scores (BDI; Beck et al., 1961) than those who were not. In addition, Zettle and Hayes also found a significant interaction between conditions such that the clients who engaged
in cognitive restructuring plus distancing who were assigned behavioral homework assignments experienced the greatest decreases in depressive symptoms using the BDI. These effects were numerically similar (but non-significant) for the Hamilton Rating Scale for Depression, an interviewer-based measure (HRSD; Hamilton, 1960).

While component analyses can be helpful for understanding which aspects of a treatment are the most beneficial when separated, the particular design of the Zettle and Hayes (1987) study may affect the generalizability of the findings to CT for depression. First, the comparison was not between homework and no homework conditions per se because participants in the cognitive restructuring plus distancing condition were given some homework assignments. It is possible that the interaction between conditions was due to the fact that those who received cognitive restructuring plus distancing and behavioral assignments received the most homework to complete between sessions. Second, compliance with homework was not assessed, only the assignment of homework. It is possible that some participants who were assigned homework did not choose to complete it or varied in their level of completion. Knowing the level of compliance is helpful because one’s engagement in homework is likely to be a more proximal determinant of treatment outcomes than the mere assignment of homework (Primakoff, Epstein, & Covi, 1986), even though knowing what therapist behaviors can lead to better treatment outcomes has its own practical value.

In the second experimental investigation of the role that homework plays in the outcome of depressed clients in cognitive therapy, Neimeyer and Feixas (1990) examined 63 depressed clients who were assigned to 10 weeks of group CT that either included the
use of weekly homework assignments or did not. These researchers found that having homework assignments as a part of therapy significantly predicted greater improvement in HRSD scores at the end of therapy. However, the difference between conditions was not evident at a 6-month follow-up, nor was it found in self-reported symptom scores using the BDI.

As with the Zettle and Hayes (1987) study, compliance with homework was not formally assessed. It was informally assessed during the sessions in the homework condition, but any between-session practicing in the no-homework condition was intentionally not assessed. The researchers wanted to avoid implicitly encouraging out-of-session practice in the no-homework condition. However, because homework compliance was not assessed in either study, the relationship between the extent to which clients engage in homework and their depressive symptom change remains unclear.

Several more recent studies have made attempts to clarify the nature of the relationship between homework compliance and symptom change. Two studies by Burns and Nolen-Hoecksema (1991, 1992) assessed homework compliance in samples that consisted of a majority of clients with a diagnosed mood disorder; 89% of the 307 clients in the 1991 study and 91% of the 185 clients in the 1992 study were diagnosed with major depression or dysthymic disorder. Clients in both studies engaged in open-ended CT that included an assessment after 12 weeks. At this assessment, both therapists and clients were asked to estimate the average frequency with which the clients completed homework assignments. Responses could range from “never” to “more than three days a week, on average.” In the two studies, both therapist and client retrospective ratings of
homework compliance were significantly related to BDI scores at week 12 ($-0.25 < r_s < -0.14$). Additionally, in the 1992 study, they found that the reported compliance was significantly higher for clients who completed treatment prior to 12 weeks compared to clients who were still in treatment at 12 weeks and clients who dropped out of treatment. One limitation of these two studies, however, is that the retrospective ratings of compliance allow for the possibility that the therapist and client could unknowingly be influenced by the knowledge of how much the clients’ symptoms improved by the end of treatment, thus inflating the relationship between compliance and outcome.

Addis and Jacobson (2000) also explicitly assessed homework compliance. They examined 50 depressed clients who engaged in the three types of therapy from Jacobson and colleagues’ (1996) component analysis of CT. The three therapy conditions included (1) behavioral activation only, (2) behavioral activation and challenging negative automatic thoughts, and (3) behavioral activation, challenging negative automatic thoughts, and identifying core beliefs. They utilized BDI scores and therapist-rated compliance [measured on a 3-point scale: “did not complete the homework, completed part of the homework, and completed the homework” (p. 319)] that were collected at each session. They separately examined early (sessions 4-6) and mid-treatment (10-12) compliance, scores of which were obtained by summing the compliance ratings from each session. These compliance scores were then compared to treatment outcome, which was a composite score of post-treatment HRSD and BDI. Addis and Jacobson found that both early compliance and mid-treatment compliance was significantly related to post-treatment depressives symptoms ($r = .29$ and $r = .28$, respectively).
Rees and colleagues (2005) also assessed homework compliance as a predictor of treatment outcome. A total of 60 clients with a primary diagnosis of major depression and 34 clients with a primary diagnosis of an anxiety disorder engaged in 11 sessions of group cognitive-behavioral therapy that included various homework assignments such as reading psychoeducational materials, relaxation, thought challenging, and behavioral activities. Clients were asked to record their compliance on a daily basis, indicating whether they completed the assigned homework task that day or not. The number of completed homework tasks for each of the four types of assignments was simultaneously entered along with pre-treatment BDI scores into a multiple regression analysis, the results of which indicated that a greater number of reading and behavioral tasks significantly predicted lower post-treatment BDI scores. A greater number of relaxation and thought challenging activities was not related to better post-treatment BDI scores, but completing a greater number of thought challenging activities was related to lower anxiety scores on the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988).

The daily assessment of homework completion was a strength of this study compared to earlier retrospective ratings of compliance, and the examination of how compliance with certain types of homework assignments was related to outcome was a unique component. However, the use of only pre- and post-treatment assessments of symptom change does not allow for an analysis of more immediate effects of compliance on symptom change that the daily assessment of compliance would have allowed had there been more frequent symptom assessments. In addition, the analyses were not
conducted on the depressed and anxious clients separately, which limits the ability to generalize the findings to depressed clients more specifically.

Overall, the meta-analyses and the individual studies discussed thus far appear to suggest that doing more homework in therapy is associated with greater depressive symptom changes across the course of treatment. However, one should consider the possible effects that the various study designs and timing of assessments may have on these results. In addition to the limitations that have already been discussed, the most prevalent limitation in a subset of these studies [specifically, Burns and Nolen-Hoeksema (1991, 1992) and Addis and Jacobson (2000)] is that they examined the relationship between compliance and post-treatment scores without controlling for initial symptom severity, thus allowing for the possibility that part or all of the observed effects could be attributed to initial severity. For instance, it may be true that clients who were less depressed at the beginning of therapy are more likely to do homework and to have lower BDI scores at the end of treatment. Even with these limitations, however, it is still helpful to discuss these studies to understand what research has been conducted in this area.

To summarize the two experimental studies of homework use, both found that the use of homework assignments in treatment was related to significantly greater changes in depressive symptoms on one but not both measures of depression used (Neimeyer & Feixas, 1990; Zettle & Hayes, 1987). In one of these studies (Zettle and Hayes), a small sample size may have been partly to blame as this study examined a total of 12 clients. In the study by Neimeyer and Feixas, the “no homework” condition did involve some
homework, which may have led to fewer differences in between-condition homework use and subsequent symptom improvement than anticipated.

**Homework Compliance as a Predictor of Treatment Outcome in CT for Depression**

Five studies have been conducted that examine the relationship between homework compliance and treatment outcome in CT for depression. These studies are the most relevant to the current study because the treatment and primary diagnosis of each of these studies are the same. In one of the earlier investigations, Persons, Burns, and Perloff (1988) examined the relation of homework compliance and treatment outcome in depressed clients participating in CT. Therapists in the study retroactively rated 70 depressed clients on homework compliance using a two-point scale, with a score of 0 indicating a client did no homework or almost no homework throughout the course of therapy and a score of 1 indicating a client did homework at least every two weeks. Persons and colleagues found that clients who engaged in homework at least every two weeks exhibited three times greater changes in BDI symptoms than those who did little or no homework. There was also a significant interaction between initial BDI scores and homework score such that the higher the initial BDI, the greater the improvement in symptoms when a client engaged in homework.

Startup and Edmonds (1994) examined the relationship between homework compliance and outcome in 25 depressed CT clients. Therapists made ratings of compliance for each assignment using a scale from 0 (“assignment was not attempted”) to 7 (“assignment was completed as agreed”). Compliance ratings from the first two sessions were averaged to create a measure of early compliance and compliance ratings
from the remainder of the treatment sessions were averaged to create a measure of late compliance. Early and late compliance were separately entered as predictors in a model with BDI score at post-treatment as the outcome variable. They controlled for pre-treatment BDI scores along with sex and age. Early compliance was found to account for a significant proportion of the variance (13%), whereas late compliance did not (3%). They then conducted similar analyses using BDI at a 3-month follow-up as the outcome variable. Early and late compliance were not found to be significant predictors of depressive symptom improvement 3 months after treatment had ended.

Bryant, Simons, and Thase (1999) examined homework compliance as a predictor of treatment outcome in 14 out of 26 depressed clients who had participated in 20 sessions of CT and who had a sufficient number of recorded sessions for analysis. A 6-point scale created by Primakoff et al. (1986) was used to rate the degree of homework compliance observed during three therapy sessions (typically sessions, 3, 13, and 19). Bryant and colleagues found that clients’ average homework compliance was significantly related to residual change in HRSD scores from pre- to post-treatment ($r = -.71$). However, average compliance was not significantly related to residual change in BDI scores ($r = -.29$), even though the effect size might have been of interest if significant.

Compared to Bryant et al. (1999), Coon and Thompson (2003) were able to include a larger sample and more assessments of homework compliance. They examined 63 older adults (60+ years) who participated in either 16-20 sessions of CT alone or combined with desipramine. Coon and Thompson used the compliance ratings
therapists’ made at each session to create an average homework compliance score for each client. The BDI and the HRSD were assessed at pre- and post-treatment. The percentage change in symptoms was related to average homework compliance for both the BDI ($r = .31$) and the HRSD ($r = .32$) in the full sample.

Lastly, Burns and Spangler (2000) made an attempt to examine the relationship between homework compliance and depressive symptom improvement in CT more closely. They examined four different possibilities for why compliance and treatment outcome are related: homework compliance leads to greater symptom change, symptom change leads to greater compliance, symptom change and compliance have bidirectional effects, and the relationship between compliance and symptom change is due to a third variable. They analyzed two separate samples of depressed participants ($N = 122$ and $N = 399$) using structural equation modeling. Both therapists and clients retrospectively rated homework compliance. Burns and Spangler found their data best supported a model where homework compliance led to greater changes in depressive symptoms. They found that one-unit increase in homework compliance (measured on a 0-4 scale) was related to a 4.3-point decrease on the BDI. Therefore, according to the model, participants who received the maximum score of four on the homework compliance scale (defined as more than three days a week, on average) during 12 weeks of cognitive-behavioral therapy would be expected to experience a reduction of approximately 17.4 points on the BDI after controlling for initial severity. At the other end of the spectrum, participants who, on average, complete no homework during the course of therapy would be expected to experience very little change in their depressive symptoms.
Spangler also found that homework compliance was not affected by initial severity and did not appear to be a proxy for motivation level, as an assessment of motivation did not affect the relationships between the variables when added into the model.

The studies that focused their attention on understanding the relationship between homework compliance and treatment outcome in CT for depression are more relevant to the current study due to a match in treatment type and diagnosis. Overall, the results support the existence of a relationship between homework compliance and treatment outcome in CT for depression. However, each of the aforementioned studies has limitations that make it more difficult to understand the magnitude of this relationship. In all of the studies, the authors measured symptom change by relying only on pre- and post-treatment assessments of depressive symptoms. Thus, these authors have examined the relation of compliance and outcome over a large time period (i.e., the full length of treatment). It is plausible that a compliance-outcome relation such as this could arise either because of compliance leading to symptom change or early symptom change leading to increases in compliance (i.e., reverse causality). It is also possible that averaged ratings of compliance and the pre-post comparison of symptom change may obscure the extent to which homework compliance is associated with symptom change, with these relations being more evident when examined at the level of session-to-session variability. In addition, the studies reviewed utilized either retrospective or relied at least in part on late-treatment assessments of compliance. Both retrospective assessments and assessments made late in treatment are open to having an important source of bias: raters are aware of how much clients have improved over the course of treatment to that point.
and their ratings of compliance may be influenced by this knowledge. This bias, if present, would likely inflate the magnitude of the compliance-outcome relationship. Therefore, what remains unclear from the literature is the extent to which clients’ engagement in homework is related to more immediate symptom changes.

One primary aim of the current study was to add to the existing literature by examining homework engagement as a predictor of early session-to-session symptom change in CT for depression, utilizing one of the larger sample sizes in this literature and including both observer-rated and client-rated assessments of homework engagement. The examination of early session-to-session change provides a sense of how homework engagement following a given session is related to between-session changes in depressive symptoms. This type of analysis, which utilizes sequential assessments of engagement and symptom change, models within-patient correlations (unlike ordinary least squares regression) and allows for a more precise estimate of the effects of interest. Session-by-session analyses have been utilized in a few recent studies that have assessed variables such as therapist competence, adherence, and alliance as predictors of early depressive symptom changes in CT (Strunk, Brotman, DeRubeis, & Hollon, 2010; Strunk, Brotman, & DeRubeis, 2010; Strunk, Cooper, Ryan, DeRubeis, & Hollon, 2012).

Utilizing both observer-rated and client-rated assessments is beneficial because each type of assessment can have its own advantages. Client-rated assessments take advantage of the fact that clients can have a much better idea of the time and effort they put into completing homework assignments, although there may biases in their reports. Observer-rated assessments, on the other hand, may be better able to objectively rate the
amount of homework the client engaged in, although their ratings are constrained by the information the client reports in the session. In addition, clients’ homework engagement was assessed at each session and therefore only had to rely on the retrieval of recent memories. Observers provided immediate ratings of clients’ homework engagement and actively took notes while listening to the recorded sessions.

Another primary aim of the study was to identify therapist behaviors that are related to greater engagement with homework to better inform therapists’ techniques when assigning and reviewing homework. In the sections that follow, I first describe the recommendations that expert clinicians have made regarding therapist behaviors thought to enhance homework compliance. Largely, these suggestions have yet to be examined in empirical research. I then summarize the empirical literature regarding the therapist behaviors that have been found to be related to compliance, ending with the only previous study that has examined therapist behaviors as they relate to compliance in CT for depression.

**Expert Clinical Opinion on Factors that Predict Homework Compliance**

Given that homework is considered to be an important component of treatment, particularly among advocates of cognitive-behavioral approaches (e.g., Beck et al., 1979; Kazantzis, Deane, & Ronan, 2000), numerous articles have suggested ways of enhancing homework compliance based on expert clinical opinion. These articles are helpful for generating behaviors that might be investigated to determine which, if any, predict homework engagement. The therapist behaviors identified in these articles typically fall into one of three categories, which will be discussed within the process of homework
assignment and review. These categories include behaviors to develop the client’s understanding of the homework assignment, behaviors to help the client plan around possible obstacles, and behaviors to help improve clients’ motivation to do the homework.

The assignment of homework can occur at different points: on an ongoing basis throughout the session, at the end of the session, or some combination. Garland and Scott (2002) emphasized discussing homework assignments on an ongoing basis, instead of only at the end of the session. A number of authors have suggested the importance of providing a rationale for doing homework in general, explaining the rationale for a particular homework assignment, and making sure the client understands why the homework is important (Detweiler and Whisman, 1999; Garland & Scott, 2002; Kazantzis et al., 2000; Kazantzis et al., 2003; Tompkins, 2002).

In accord with the basic principle of structuring tasks in CT, Tompkins (2002) recommends choosing homework assignments that start small and then increase gradually over sessions. This graduated approach is taken in the hope of fostering early successes and reinforcing self-efficacy in later sessions. Several authors have argued that good homework assignments are tied to the focus of the session and the client’s overall goals for treatment (Beck et al., 1979; Kazantzis et al., 2000; Kazantzis, Pachana, & Secker, 2003; Tompkins, 2002). Relating assignments to the client’s concerns and goals may bolster the therapeutic rationale particular assignments. Others have emphasized that homework assignments that take into account a client’s skill level, the level of functioning, and the sociocultural context of the client (Kazantzis et al., 2003; Garland &
Scott, 2002; Tompkins, 2002) are better those that do not. For example, if some clients have difficulty identifying thoughts and emotions, they might be less likely to complete a thought record than those who easily identify their thoughts and emotions. Alternatively, if a client were severely depressed or struggling financially, some assignments (like going to a friend’s party or to dinner with a significant other) might be too difficult or extend beyond the client’s financial ability to complete them. Keeping these factors in mind during the process of homework assignment is thought to increase the likelihood of homework compliance. Finally, creating specific and concrete homework assignments is frequently thought to be related to improved compliance (Beck et al., 1979; Detweiler and Whisman, 1999; Garland & Scott, 2002; Kazantzis et al., 2000; Kazantzis et al., 2003; Shelton & Levy, 1981; Tompkins, 2002). Shelton and Levy (1981) recommended collaboratively working with the client to decide the frequency and length of homework, as well as ideas about when and where the client will complete homework assignments. Greater specificity of assignments may make it more likely both therapist and client will understand what successful completion of the assignment would entail. This shared understanding may increase the likelihood the client will complete the homework assigned.

In addition to the therapist and client coming to a decision about what the homework will be, some authors have also recommended that therapists discuss obstacles that might impede either homework compliance or learning from the assignment (Kazantzis et al., 2000; Tompkins, 2002). Tompkins (2002) recommends several different strategies for helping the therapist and client identify possible obstacles. The
therapist can ask the client to identify any obstacles that might affect homework completion. If the client has engaged in a similar activity in the past, the therapist can ask if any problems were encountered at other times, and, if so, what those problems were. Tompkins recommends following up with the client and asking more questions if the client seems dismissive of attempts to identify obstacles. The therapist can also help clients generate possible obstacles by asking them to imagine the steps needed to complete the homework assignment or by practicing the homework assignment in session, if possible (Tompkins, 2002). To help reduce the likelihood that forgetting to do homework emerges as an obstacle, having clients create written reminders of homework assignments is often recommended (Detweiler and Whisman, 1999; Garland & Scott, 2002; Tompkins, 2002).

As a standard part of Cognitive Therapy, therapists are encouraged to review previous homework assignments (Beck et al., 1979; Garland & Scott, 2002; Kazantzis et al., 2003). If the therapist obtains information about clients’ experiences with each of the assignments in the context of setting an agenda for the session, the therapist may then work with the client to better plan how session time might be used. For homework assignments that were attempted, the therapist could reinforce compliance with praise and assess what the client felt he or she learned from the homework and how it helped the client make progress on treatment goals (Kazantzis et al., 2000; Kazantzis et al., 2003; Tompkins, 2002). The therapist can then use this information to identify any areas in which the client can gain additional understanding from the homework and to generate ways in which future homework assignments can build and improve upon previous
homework. For homework assignments that were not attempted or not completed as planned, the therapist could assess any obstacles that occurred and work with the client to reduce the likelihood that the same obstacles would impede future homework compliance (Kazantzis et al., 2000; Kazantzis et al., 2003; Garland & Scott, 2002). After the homework is reviewed, some authors recommend that the therapist and client come to a conclusion about what was learned from the homework assignments to solidify their understanding and create a written record for future reference (Garland & Scott, 2002; Kazantzis et al., 2003).

Overall, many of the purportedly important techniques for promoting homework compliance involve ways ensuring the client has a good understanding of what the homework entails, improving client motivation, and problem-solving ways of working around possible obstacles. Developing a specific and concrete homework assignment may help clients understand what activities they will be working on in between sessions. Identifying possible obstacles to compliance, deciding on a homework assignment that takes into account clients’ abilities, and examining obstacles that got in the way of past homework compliance may help reduce the likelihood that clients will encounter problems that affect their success in working on the homework activities. Helping clients understand the homework rationale, creating relevant homework assignments, and praising attempts at homework compliance may increase clients’ motivation to work on homework assignments. These therapist behaviors are consistently recommended in the literature on Cognitive Therapy and yet the empirical evidence for these strategies is modest at best.
Empirical Investigations of Predictors of Homework Compliance

While having a sense of the therapist behaviors that experts believe are related to compliance has been helpful for determining the variables to examine in the current study, the question of what therapist behaviors promote compliance is an empirical one. However, few studies have empirically examined factors that predict better compliance. In one experimental study, Cox, Tisdelle, and Culpert (1988) systematically manipulated the way in which behavioral homework assignments were given to thirty patients at an outpatient behavioral medicine clinic. Each of the patients received written homework assignments at one session and only verbal assignments at another session. The investigators found that compliance with behavioral homework was higher when patients were given written instructions for the homework assignments than verbal instructions (78% versus 62% reported adherence, respectively).

Other studies have rated therapy session characteristics or gathered questionnaires from therapists or clients to see what factors predict subsequent homework compliance. Addis and Jacobson (2000) found that providing a strong rationale for treatment and addressing client’s concerns about treatment may also help improve compliance. As mentioned earlier, the authors examined 50 depressed clients who engaged in the three types of therapy from Jacobson and colleagues’ (1996) component analysis of CT. Addis and Jacobson found that depressed clients who exhibited higher acceptance of the treatment rationale during the first three sessions were more likely to exhibit better therapist-rated homework compliance both early in treatment (sessions 4-6) and mid-
treatment (sessions 10-12), although the effect sizes were small ($r = .18$ and $r = .17$ for early and mid-treatment compliance, respectively).

A study by Worthington (1986) examined 61 outpatients at a community counseling facility and found that two therapist variables: checking clients’ attitudes about the assigned homework and not stressing one’s status as an expert predicted better homework compliance ($\beta = .30$ and $\beta = -.22$, respectively). By asking clients what they think and feel about the homework assignment, clients may be prompted to think about their attitudes, potentially becoming more aware of how positively or negatively they feel toward the assignment. If clients express a negative attitude toward the homework assignment, their therapists then can address this attitude before it impedes the clients’ ability to complete the homework as assigned. When a therapist stresses his or her status as an expert during therapy, it can be an off-putting experience for a client, who might then fail to complete the homework.

Worthington (1986) also found that a third variable, therapists’ efforts to emphasize the importance of homework, did not additionally account for a significant amount of variance when entered into a model with the other variables. This finding is interesting in the context of Addis and Jacobson’s (2000) finding that client’s acceptance of the treatment rationale predicted better compliance. Together, these findings suggest a few possibilities. First, a therapist’s discussion of a rationale and the clients’ acceptance of that rationale may have important distinctions. Second, the therapist’s discussion of the rationale for treatment and the rationale for homework may differ in important ways as well. Third, it is possible that differences in the treatments being conducted
(components of CT in Addis & Jacobson’s study and unspecified outpatient treatment in Worthington’s study) may have resulted in different kinds of homework activities being assigned. The difference in findings then may be more understandable given the possible differences in assignments to which clients were complying.

A study by Conoley, Padula, Payton, and Daniels (1994) examined whether the match between the client’s problems and the homework assignment, the difficulty of the assignment, and the extent to which an assignment drew upon a client’s strengths were predictors of homework compliance. A homework assignment was judged to draw upon a client’s strengths if the client verbalized having a positive history in the homework behavior, a knowledge or interest in the behaviors needed for the homework, or knowing how to do the behaviors needed for the homework. The authors rated 37 tapes of early counseling sessions (sessions 2-4) in which a homework activity was assigned. They found that strength, match, and difficulty were each significant predictors of compliance ($\beta = .48$, $\beta = .30$, and $\beta = -.26$ for strength, match, and difficulty, respectively). Thus, clients exhibited greater compliance when the homework was a good match for their problems, drew upon their strengths, and was less difficult.

A study by Scheel, Seaman, Roach, Mullin, and Mahoney (1999) examined predictors of homework compliance among therapists who endorsed a range of theoretical orientations who saw 102 clients at a university counseling center. For one homework activity assigned in early therapy, clients assessed the match between the homework activity and their beliefs about what would help resolve their problems and then rated the extent to which certain variables might impede homework progress (such
as the complexity of the assignment). Scheel and colleagues found that the extent to which clients thought certain obstacles might impede their progress predicted the level of compliance at the next session ($\beta = .26$). The extent to which clients thought there was match between the homework and their ideas of what would be helpful ($\beta = .13$) did not predict compliance at the next session.

Overall, there has been relatively little research on therapist behaviors that may predict homework compliance in treatment contexts other than CT for depression. To summarize, the variables that have been found to predict better homework compliance include providing an acceptable rationale for treatment, creating homework assignments that draw upon client’s strengths and are not too difficult, not stressing one’s status as an expert, and providing written instructions of the assigned homework for the client to take home. Variables that have mixed evidence regarding their ability to predict homework compliance are as follows: creating homework assignments that are a good match for a client’s problems, checking the client’s attitudes about the homework, and discussing obstacles that might impede homework progress. Each of these three variables has had one study that found it as a significant predictor and one study that did not. Finally, emphasizing the importance of homework during the session was not found to be a significant predictor of future homework compliance. By including some of these therapist behaviors in this study, we could observe whether these variables were also important for therapists utilizing CT for depression, as some of them had not been examined in this particular treatment context while others had been examined in only one study in CT for depression, which will be discussed in the section that follows.
Empirical Investigations of Predictors of Homework Compliance in CT for Depression

In addition to being one of the few studies to examine the relationship between homework compliance and outcome in individual CT, Bryant and colleagues (1999) is the only study to date that has attempted to identify specific therapist behaviors that predict homework compliance in CT for depression. Bryant and colleagues examined predictors of compliance in the 26 depressed outpatients treated with 20 sessions of CT. They rated sessions 2, 12, and 18 (or the closest ones available) on four homework-related therapist behaviors: the extent to which the previous week’s homework was reviewed, the extent to which the therapist provided a rationale for the assignments, how much the homework was clearly assigned and tailored to the client’s reported problems, and the extent to which the therapist both sought reactions to the assignment and helped the client trouble-shoot possible problems that might affect compliance. They also rated general therapeutic skills (e.g., agenda-setting, collaboration, and interpersonal effectiveness) and competence using CT-specific components of therapy (not including an item assessing homework) using the Cognitive Therapy Scale (Young & Beck, 1980) to see whether these factors were related to compliance as well. Compliance was assessed by a separate set of raters who observed the sessions following the ones rated for therapist behaviors (i.e., sessions 3, 13, and 19) and rated compliance for each assignment using the Primakoff et al. (1986) scale where a 1 indicates “the patient did not attempt the assigned homework,” and a 6 indicates “the patient did more of the assigned homework than was requested” (p. 441). A consensus rating was made for each assignment and then
the consensus ratings were averaged if more than one assignment was discussed. Finally, compliance scores were averaged across the three sessions.

Bryant and colleagues (1999) found that the CTS general skills subscale was related to compliance ($r = .32$), whereas the CTS CT-specific skills subscale was not ($r = .21$). The overall measure of homework-related therapist behaviors was related to compliance at a trend level ($r = .24$). When examining individual homework-related therapist behaviors, Bryant and colleagues found that the therapist’s review of the previous session’s homework was significantly related to better compliance ($r = .39$), even when controlling for CTS scores and the remaining homework-related behaviors.

Clearly, while there have been some studies investigating therapist behaviors that are related to better homework compliance, the literature with respect to CT for depression is very limited. As discussed in previous sections, a myriad of experts, including the developers of CT, have made suggestions as to what behaviors they believe will improve homework compliance. However, to date, empirical tests of these suggestions have been rare. Additionally, as will be discussed in the following section, empirical tests of the relationship between therapist behaviors and depressive symptom change have also been rare, particularly with respect to specific therapist behaviors.

**Empirical Investigations of Therapist Behaviors as a Predictor of Symptom Change in CT for Depression**

As mentioned previously, some recent studies have conducted session-by-session analyses of predictors of symptom change in depressed clients in CT (Strunk, Brotman, DeRubeis, & Hollon, 2010; Strunk, Brotman, & DeRubeis, 2010; Strunk, Cooper, Ryan,
DeRubeis, & Hollon, 2012). As part of these studies, some general homework-related therapist behaviors have been examined as predictors of inter-session depressive symptom change in CT. Strunk, Brotman, and DeRubeis used the Collaborative Study Psychotherapy Rating Scale (CSPRS; Hollon et al., 1988), which assesses therapist adherence to CT. This scale includes a subscale that examines the therapists’ use of behavioral methods and homework in CT. In a sample of 60 moderately to severely depressed outpatients, the authors did not find that ratings on this subscale at one session predicted subsequent symptom change.

A similar study by Strunk, Cooper, Ryan, DeRubeis and Hollon (2012) also examined adherence using the CSPRS. Early session ratings were conducted for a sample of 176 depressed outpatients who were receiving a combination of CT and antidepressant medications. In this sample, the authors found that the CSPRS subscale that examines behavioral methods and homework in CT was the strongest predictor of session-to-session depressive symptom change (r = -.24).

As part of a third study, Strunk, Brotman, DeRubeis, and Hollon (2010) examined early session tapes of 60 moderately to severely depressed clients in CT. They rated therapist competence using the Cognitive Therapy Scale (Young & Beck, 1988) as a predictor of session-to-session depressive symptom change. This scale includes a homework item that assesses therapists’ competence with assigning and reviewing homework in CT. Strunk and colleagues found that greater competence in assigning and reviewing homework was related to greater session-to-session symptom changes (r = .29).
Detweiler-Bedell and Whisman (2005) examined more specific homework-related therapist behaviors in the context of identifying predictors of treatment outcome. A team of four raters watched between two and five consecutive sessions that occurred within the first month of CT for 24 clients in Hollon and colleagues’ (1992) Cognitive-Pharmacotherapy Treatment Project. Two raters watched each session, and their ratings were averaged across raters and sessions to create one score for each therapist behavior assessed. The authors found a positive relationship between two of the therapist behaviors rated early in treatment (viz., assigning specific homework assignments and giving a written reminder of the homework) and post-treatment depressive symptoms at 12 weeks that were controlled for pre-treatment symptoms. Assigning specific homework assignments early in treatment was related to post-treatment HRSD scores ($r = -.35$) but not BDI scores ($r = -.11$), whereas giving the clients a written reminder of homework was related to both HRSD and ($r = -.61$) BDI scores ($r = -.43$) at post-treatment. Discussing potential barriers to homework was not significantly related to post-treatment depressive symptoms by itself, but there was a significant interaction between the discussion of potential barriers and the involvement of the clients, such that discussing potential barriers lead to greater depressive symptom improvements for clients who were less involved in the assignment of homework.

Although the three studies by Strunk and colleagues (2010, 2012) examined general homework-related therapist behaviors as predictors of session-to-session symptom change and the Detweiler-Bedell and Whisman (2005) study examined more specific therapist behaviors as predictors of treatment outcome, no study to date has
examined specific homework-related therapist behaviors in the context of predicting more immediate symptom change in CT for depression.

**The Current Study**

The current study had two primary objectives. The first primary objective was to identify homework-related therapist behaviors that serve as predictors of early homework engagement (in sessions 1 through 5). I examined the following types of homework-related therapist behaviors that have not yet gained much (if any) empirical support for their purported benefit to the related construct of compliance: (1) therapist behaviors to foster a clear understanding of the homework assignment, (2) therapist behaviors to help the client identify and plan around possible obstacles to engaging in the homework activities, and (3) therapist behaviors to help improve clients’ motivation to do the homework. I expected these types of therapist behaviors, when rated at each of a series of sessions, would predict greater observer-rated homework engagement at the following sessions (Hypothesis 1) and client-rated homework engagement at the following sessions (Hypothesis 2).

The second primary objective of this study was to examine whether homework engagement was related to session-to-session depressive symptom change early in treatment. I expected that homework engagement was likely to have a relatively immediate effect on depressive symptoms. Thus, I examined concurrent change to better assess the strength of the relationship between these two variables. I predicted that greater observer-rated homework engagement would be related to concurrent improvements in depressive symptoms (Hypothesis 3). In addition, I predicted that
greater client-rated homework engagement would be related to concurrent improvements in depressive symptoms as well (Hypothesis 4).

The model underlying CT suggests therapists’ efforts to encourage clients to engage in homework activities is a proximal determinant of clients’ engagement in these activities. Thus, a relationship between therapist behaviors and client engagement in homework is plausibly due to the proximal effects of these therapist behaviors. A primary purpose of this study was to test these relationships. A less proximal relationship that may also be of interest is that between homework-related therapist behaviors and session-to-session symptom change. To provide a more comprehensive account of the possible consequences of these therapist behaviors, I also examined this relationship. I predicted that greater use of homework-related therapist behaviors would predict greater session-to-session depressive symptom improvements (Hypothesis 5).

Finally, I conducted two sets of exploratory analyses. In one set, I examined the relation of measures of homework engagement provided by different informants: observer, therapist, and client. In the second set, I examined therapist ratings of homework engagement as predicted by homework-related therapist behaviors and as related to concurrent depressive symptom changes. While an examination of therapist ratings of homework engagement was not initially proposed in order to limit the number of analyses being conducted, the difference in results obtained using observer and client ratings led to an interest in understanding how therapists’ ratings compared to the other informants’ ratings.
Chapter 2: Methods

Participants

The Cognitive Therapy sessions utilized in this study were drawn from a recent study conducted through the Depression Research and Treatment Clinic at The Ohio State University. Sixty-seven individuals from the Columbus Ohio area participated in Cognitive Therapy as part of the study and attended at least one therapy session. Inclusion criteria into this study were: (1) a primary diagnosis of current Major Depressive Disorder as assessed by the Structured Clinical Interview for the DSM-IV (SCID; First, Spitzer, Gibbon & Williams, 1994); (2) 18 years of age or older; and (3) willing and able to provide informed consent. Individuals were excluded from the study if any of the following were present: (1) a history of Bipolar I disorder or a psychotic disorder; (2) a primary diagnosis of a current Axis-I disorder other than Major Depressive Disorder only if it was judged to require treatment other than Cognitive Therapy; (3) meeting criteria for Substance Dependence in the 6 months prior to intake; (4) a below-normal intelligence (IQ < 80); (5) clear indications of secondary gain; or (6) an acute risk of suicide sufficient to preclude outpatient treatment. Participants were not excluded for being on antidepressant medications, but were required to agree to stay on a stable dosage throughout the course of treatment. For details on participants screened for the study,
reasons for exclusions and details regarding the timing and rate of participant dropout, see Figure 1.

A total of 66 participants attended at least one therapy session and could therefore be used in planned analyses. Of these participants, 37 (56%) were female. The mean age was 36.3 (SD = 13.4, range: 18-69). The racial/ethnic make-up of the sample was 83% Caucasian (n = 55), 11% African American (n= 7), 5% Asian American (n = 3), and 1% were Hispanic/Latino (n = 1). A majority of the sample (91%) had at least some college education, and 45% had graduated from a four-year college. Of the 57 clients who reported their family income, 60% (n = 34) reported an income less than $30,000 a year, with the full range of reported incomes being less than $10,000 a year (19%, n = 11) to over $100,000 a year (9%, n = 5). Two-thirds of the sample (67%, n = 44) were diagnosed as having at least one previous depressive episode, and 61% (n= 40) of the sample were diagnosed with one or more co-morbid anxiety disorders, with Generalized Anxiety Disorder being the most common (33%, n = 22) and Social Phobia being the second most common (18%, n = 12). Less frequently diagnosed anxiety disorders include Anxiety Disorder NOS (12%, n = 8), Post-Traumatic Stress Disorder (9%, n = 6), Specific Phobia (8%, n = 5), Panic Disorder (6%, n = 4), and Obsessive Compulsive Disorder (1%, n = 1). A subset of the total sample (79%, n = 52) attended through session 5, with the remainder of the clients discontinuing treatment prior to session 5. All available data from participants were used to answer study hypotheses.

Therapists

Four post-masters graduate students (three women and one man) in the OSU
clinical psychology program provided Cognitive Therapy. All students were trained in Cognitive Therapy for a total of 48 hours and supervised by Daniel R. Strunk, Ph.D. At the start of the study, two of the therapists had two years of clinical experience and two had one year of clinical experience.

Measures

**Beck Depression Inventory - 2nd Edition (BDI-II).** The BDI-II (Beck, Steer, & Brown, 1996) is the most current version of the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI-II is a reasonably reliable and well-validated 21-item self-report measure that assesses the severity of depressive symptoms according to the Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV; American Psychiatric Association, 1994). Items range in value from 0 to 3 and are summed to yield a total score that can range from 0 (minimal depression) to 63 (high depression).

**General Homework Engagement: Client-Rated (General HE-CR).** This 3-item self-report questionnaire was designed to assess the following homework-related characteristics: the estimated amount of time the clients spent on homework assignments in the past week (Time-CR), the frequency with which the clients used the skills they learned when they were sad or upset in the past week (Frequency-CR), and the effort the clients put into homework assignments in the past week (Effort-CR). Scores range from 0 to 4 for each item, with higher scores indicating more time and effort put into the assignment and using the skills learned in session with a greater frequency between sessions. Item scores (Time-CR, Frequency-CR, and Effort-CR) were summed to create
a total score of client-rated general homework engagement (General HE-CR). Therapists reported on a parallel version of this scale during the same sessions as the clients; analyses of therapists’ ratings are reported in the exploratory analysis section.

**General Homework Engagement: Observer-Rated (General HE-OR).** The General HE-OR scale is an observer-rated version of the General HE-CR described above. Three separate raters rated the General HE-OR for each session, and their scores were averaged to create individual item scores (Time-OR, Frequency-OR, and Effort-OR) and a total score (General HE-OR).

**CT-Specific Homework Engagement: Observer-Rated (CT-Specific HE).**

CT-Specific HE is a three-item scale that assesses the amount of different types of homework that clients commonly engage in during CT. The types assessed are: cognitive homework (primarily thought records), self-monitoring homework (primarily daily activity logs), and behavioral homework, which consisted of a variety of activities that the therapist and client decided the client would engage in between sessions (e.g., exercising, applying for jobs, etc.). Homework engagement was rated by the coders on a 0 (no engagement) to 6 (extensive engagement) scale for each type of homework reviewed in the session. A total homework engagement score (CT-Specific HE) was created for each session by summing the three item scores.

**Homework-Specific Therapist Behaviors Scale (HSTB).** This observer-rated scale was developed for this study to assess therapist behaviors that may serve as predictors of homework engagement. Items were developed using information gathered from two sources: previous studies (described in the literature review) and ratings made
by six experts in CT in a previous study (Strunk & DeRubeis, 2003). First, studies that examined predictors of homework compliance and articles that discussed clinical intuition were reviewed for the variables mentioned as predicting homework compliance and untested variables thought to be related to homework compliance. Secondly, the opinions of six CT experts (who had a range of 11-19 years of experience) were consulted using the data from Strunk and DeRubeis. Each expert was given a list of 103 specific behaviors a therapist might engage in during the course of a session. Each expert then selected which behaviors they considered important when rating the homework item from a measure of therapist competence—the Cognitive Therapy Scale (Young & Beck, 1980). Their responses were consulted to ensure that behaviors that experts agreed were relevant to rating the CTS homework item were represented in the scale.

The HSTB scale that raters used consisted of 26 items divided into three subscales: Specificity, Motivation, and Problem-Solving. The original Specificity subscale consisted of 6 items designed to assess specific therapist behaviors that may help ensure the client knows what to do for homework. The original Motivation subscale consisted of 12 items designed to assess therapist behaviors that may help increase the clients’ motivation to do homework. Finally, the original Problem-Solving subscale consisted of 8 items designed to assess therapist behaviors that help ensure the client knows how to work around possible obstacles that might impede the client’s ability to engage in the homework activities.

On the basis of analyses reported in the results section, the final HSTB scale retained 17 items: 6 items in the Specificity subscale 6 items in the Motivation subscale,
and 5 items in the Problem-Solving subscale. The Specificity subscale items assessed the extent to which the therapist clearly described how to do the tasks assigned for homework (e.g., thought records), practiced the skills needed to do the homework with the client, ensured the client understood how to perform the homework, assigned specific homework, and clearly indicated which activities or recommendations were homework assignments (or not). The Motivation subscale items assessed the extent to which therapist reviewed the homework, involved the client in reviewing homework, assessed the helpfulness of previous homework, praised the client for working on homework, involved the client in assigning homework, and explicitly related the homework to problems discussed earlier in the session. Finally, the Problem-Solving subscale items assessed the extent to which the therapist assessed any obstacles that impeded previous homework progress and extent to which therapists discussed the following with the client: the ways identified obstacles could be minimized in future homework, the ways possible obstacles to upcoming homework could be worked around, the ways of helping the client remember to make time to do the homework, and the ways of challenging thoughts that might interfere with the upcoming homework.

Procedures

Study assessments. The SCID was administered at the intake assessment, and the BDI-II was completed prior to each session. Both the client and therapist-rated HE measures were completed following sessions 2 through 4.

Ratings of CT. Video (or audio) recordings from the first five therapy sessions were coded for this study. Video recordings were preferred, but audio recordings were
used on occasions where the video quality was too poor for adequate rating or when a video recording was not available. To take advantage of all available data, all existing recordings of any of the first five sessions for each client were utilized. A total of 288 sessions occurred between session 1 and 5, and recordings of 282 sessions (99%) were available for coding. Neither video nor audio recordings were available for sessions taking place via phone \((n = 4)\) or when a recording device failed \((n = 2)\).

**Ratings of homework-related characteristics.** A total of 36 trained undergraduates were on one of two teams that coded the CT sessions. The first team of raters \((n = 19)\) engaged in a few tasks. They 1) identified the overall treatment goals discussed at session one, 2) identified the homework assignments for sessions one through four, and 3) rated engagement using the HE-OR for sessions two through five. The identification of overall treatment goals was necessary for the second team of raters (in coding item 7 on the HSTB), and the knowledge of what homework was assigned at each session was necessary for both teams. Three raters from this team coded each of the sessions such that each rater coded no more than one session per client and that each rater was paired with all other raters on a team an approximately equal number of times. The homework assigned at one session was provided to the raters of the next session so that raters rating the next session knew in advance what had been assigned in the previous session. Raters were instructed to use the previous homework assignments to determine which activities the client discussed during the session had been part of a previous homework assignment or had not (and therefore should not be counted as homework engagement).
The second team of raters \((n = 17)\) used the HSTB to rate sessions one through four. As with the HE-OR, three raters from the team coded each of the sessions such that each rater coded no more than one session per client and were paired with other raters an approximately equal number of times. The average of raters’ judgments was used in all primary analyses.
Chapter 3: Results

Refinement of the HSTB Subscales

The goal of the refinement process for the three HSTB subscales was to maintain the maximum number of the original items while removing items that were markedly unreliable (with respect to interrater reliability) or undermined the internal consistency of each subscale. I conducted the refinement process using the individual raters’ scores on the items. Items with either intraclass correlations (ICCs, adjusted for three raters) or item-total correlations of .20 or lower were discarded. Because the average scores of the three raters for each item were used in calculating the total subscale scores, the internal consistencies were reported for the items as they were used (averages of the three raters instead of individual raters’ ratings). I reported the alphas using ratings from all sessions rated as it utilizes all available data. In addition, because the inclusion of multiple sessions per client may inflate the estimates of alpha for each subscale, I also calculated and reported average subscale alphas from 10 samples that included only one randomly selected session per client.

Using the criteria stated above, six items (5, 6, 7, 9, 10, and 11) were removed from the Motivation subscale. Item 11 was first removed due to a below-threshold ICC. The remaining five items were removed one at a time (with the lowest item-total correlation being selected at each step) until all item-total correlations were above .20.
The final Motivation subscale had six items, which resulted in an alpha of .78 for all sessions and an average alpha of .79 ($SD = .03$).

For the Problem-Solving subscale, three items (15, 17, and 20) were removed. Two items (17 and 20) were removed due to low ICCs. One item (15) was removed to allow the subscale to reach an acceptable level of internal consistency (an individual-rating alpha of .70). The final Problem-Solving subscale had five items, which resulted in an alpha of .80 for all sessions and an average alpha of .70 ($SD = .05$).

Finally, no items were removed from the Specificity subscale, as all item ICCs and item-total correlations were above threshold. The Specificity subscale had six items and obtained an alpha of .73 for all sessions and an average alpha of .72 ($SD = .07$).

The interrater reliability of the final subscales was assessed using ICCs adjusted for three raters. The Motivation subscale exhibited excellent interrater reliability (ICC = .90) and the Specificity subscale exhibited good interrater reliability (ICC = .71; Nunnally, 1978). However, the Problem-Solving subscale exhibited poor interrater reliability (ICC = .43), indicating that raters had difficulty reliably rating therapists’ efforts to identify obstacles and engage in problem solving with the clients, possibly due to a greater restriction of range in the scale. Twenty-eight percent of scores on the Problem-Solving subscale were zero, compared to less than one percent of scores in the Motivation and Specificity subscales.

**Refinement of the CT-Specific HE Scale**

An initial examination of the distributions of the scales led to the identification of positive skewness in the individual items of the CT-Specific HE scale (Cognitive HE,
Self-Monitoring HE, and Behavioral HE), which served as some of the dependent variables in Hypothesis 1. Each item had a high percentage of zero values: Cognitive HE had 50% zero values, Self-Monitoring HE had 38%, and Behavioral HE had 69%. These high percentages, coupled with the information that clients engaged in at least some amount of homework 88% of the time, indicate clients commonly did not engage in all three types of homework between each session. This is understandable because therapists assigned all three types as homework in only 15% of sessions. However, while understandable, the amount of skewness in these variables violates the assumption of normality for dependent variables. Skewness values were as follows: Cognitive HE = 1.2, Self-Monitoring HE = .18, and Behavioral HE = 2.3. To reduce the degree of skewness present, scores were collapsed in the following manner: scores from one to three were given a score of one and scores from four to six were given a score of two, thus resulting in a scale with values ranging from zero to two. The total CT-Specific HE scores therefore could range from zero to six.

**Descriptive Statistics for Therapist Behaviors and Homework**

The HSTB descriptive statistics are listed in Table 1. To examine the average relationships between the subscales, correlations were calculated separately at each session, the $r$ values were transformed to $z$ scores then averaged across sessions, then the average $z$ scores was transformed back to $r$ values.

The Problem-Solving subscale exhibited a small average correlation with the Specificity ($r = .18$) subscale and was not correlated with the Motivation subscale ($r = -.01$). The Motivation and Specificity subscales exhibited a moderate correlation with
each other \((r = .26)\), which was only significant at one out of four sessions rated (session 2).

During a majority of sessions 1 through 4 where therapist behaviors were rated, therapists and clients agreed on some amount of homework to be completed between sessions. Homework was assigned in 99% of the 230 sessions that were rated between sessions 1 through 4—only two sessions did not involve homework being assigned. The average number of homework assignments was 2.1 \((SD = 1.1)\), with a range of zero to seven assignments. The most commonly assigned type of homework during these sessions was cognitive homework, which was assigned in 73% of the sessions, followed by self-monitoring homework (60%) and behavioral homework (45%). Either self-monitoring homework or behavioral homework was assigned in 68% of the sessions rated, and in 58% of those sessions they were assigned together.

In sessions 2 through 5 (i.e., the sessions in which homework reviewed was rated), clients reported that they completed some amount of homework in 88% of sessions. The average amount of CT-specific homework completed by clients between each session was 1.9 \((SD = .82)\) out of a possible 6. Breaking this down by the type of homework completed, the average rated amount of self-monitoring homework was 1.0 \((SD = .65)\) out of 2, the average cognitive homework was .57 points \((SD = .44)\) out of 2, and the average behavioral homework was .33 \((SD = .31)\) out of 2. These values indicate that on average clients completed “some” of each type of homework, which is the equivalent of a partially completed DAL between sessions, two thought records, and two
behavioral tasks. As seen in Table 2, the amount of homework that clients completed appears relatively consistent across the early sessions.

When examining client-rated General HE, clients reported an average score of 5.6 ($SD = 1.9$) out of 12 points, which breaks down into an average score of 1.8 ($SD = .78$) out of a possible 4 points for time spent on homework, 1.8 ($SD = .70$) out of 4 for the frequency with which clients reported using therapy skills when feeling upset or sad, and 1.9 ($SD = .88$) out of 4 for the effort that clients reported putting into homework since the last session. These scores indicate that on average clients spent approximately 30 minutes on homework, occasionally used therapy skills when they felt sad or upset, and put moderate effort into completing homework assignments between sessions.

**Overall Analytic Strategy**

Prior to describing the results of the primary hypotheses, I will describe the two sets of session-to-session analyses that were utilized: one for predictive analyses and one for concurrent analyses. Analyses were conducted using the SAS Proc Mixed without specification of random effects. Four covariance structures (unstructured, compound symmetry, autoregressive, and toepliz) were tested and the best-fitting covariance structure, decided by Akaike’s Information Criterion (AIC), was used for each dependent variable examined.

The predictive analyses (for Hypotheses 1, 2 and 5) involved repeated measures regression analyses to examine rated therapist behaviors at each session as predictors of the next session’s homework engagement variables while controlling for the current session’s homework engagement variables. For each of the analyses, I constructed a
vector of lagged engagement scores for each participant (viz., engagement scores from sessions 2-5), which served as the dependent variable. Engagement scores from the previous session were entered as a covariate (e.g., engagement at session 2 served as a covariate in predicting engagement at session 3, engagement at session 3 served as a covariate in predicting engagement at session 4, etc.). HSTB subscale scores at sessions 1 through 4 were first separately examined as predictors. Then, significant subscales were entered together into the same model to examine their unique predictive abilities. Because client-rated engagement variables were available for sessions 2 through 4, analyses using client-rated engagement variables included predictors from sessions 1 through 3 and dependent variables from sessions 2 through 4.

The concurrent analyses (for Hypotheses 3 and 4) involved repeated measures regression analyses to examine homework engagement between successive sessions as predictors of changes in depressive symptom severity that occurred over those same between session intervals. The dependent variable in these models was a vector of lagged BDI scores for each participant (e.g., BDI scores from sessions 2-5). BDI scores from the previous session were entered as a covariate. Homework engagement variables from the same time period (reported in sessions 2 through 5) were also entered as predictors. Analyses using client-rated engagement variables included predictors and dependent variables from sessions 2 through 4.
Hypothesis 1: Homework-Related Therapist Behaviors Will Predict Session-to-Session Observer-Rated Homework Engagement

As shown in Tables 3 and 4, in separate predictive session-to-session models, the Problem-Solving and Specificity subscales were significant predictors of both greater General HE \((r = .22\) and \(r = .35\), respectively) and CT-Specific HE \((r = .27\) and \(r = .31\), respectively). The Motivation subscale was a significant predictor of greater CT-Specific HE \((r = .27)\), but was not a significant predictor of General HE \((r = .20)\). When the significant subscales were examined in the same model as predictors of General HE, only Specificity remained a significant predictor \(\text{(Specificity: } r = .32; \text{ Problem-Solving: } r = .16)\). When the significant subscales were entered in the same model as predictors of CT-Specific HE, Specificity and Problem-Solving remained significant predictors \(\text{(Specificity: } r = .22; \text{ Problem-Solving: } r = .22; \text{ Motivation: } r = .15)\).

I then examined therapist behaviors as predictors of individual components of observer-rated General HE \(\text{(Time-OR, Frequency-OR, and Effort-OR)}\). As shown in Table 4, the Problem-Solving and Specificity subscales were significant predictors of observer-rated time spent on homework \((r = .32, \text{ and } r = .47, \text{ respectively})\) and effort put into homework \((r = .36 \text{ and } r = .45, \text{ respectively})\). The Motivation subscale was a significant predictor of observer-rated time spent on homework \((r = .30)\) but was only a trend for observer-rated effort \((r = .25)\). The Specificity subscale was the only predictor of the observer-rated frequency with which clients used therapy skills to cope with feeling upset or sad \((r = .27)\).
To examine the extent to which the subscales served as unique predictors of observer-rated time and effort spent on homework, I entered the significant predictors into each model simultaneously. When all three significant subscales were placed in the same model as predictors of the observer-rated time clients spent on homework, only Specificity remained a significant predictor (Specificity: $r = .40$; Problem-Solving: $r = .26$; Motivation: $r = .15$). On the other hand, both Problem-Solving and Specificity remained significant predictors of the observer-rated effort clients put into homework (Specificity: $r = .42$; Problem-Solving: $r = .28$).

The therapist behaviors that predict individual types of CT-specific homework were also examined (see Table 4). The Specificity subscale was the only predictor of engagement in cognitive homework ($r = .21$), while the Motivation and Problem-Solving subscales were not ($r = .03$ and $r = .12$, respectively). The Motivation subscale was the only significant predictor of engagement in behavioral homework ($r = .25$), whereas Problem-Solving and Specificity were not ($r = .17$ and $r = .01$, respectively).

The Problem-Solving and Specificity subscales were significant predictors of engagement in self-monitoring homework ($r = .24$ and $r = .24$, respectively), whereas Motivation was not ($r = .15$). When both subscales were entered into the same model, both predictors dropped to the level of nonsignificant trends (Specificity: $r = .20$; Problem-Solving: $r = .20$).

In summary, when examining therapist behaviors as predictors of session-to-session observer ratings of homework variables, both the Specificity and Problem-Solving subscales were found to be unique predictors of CT-specific homework
engagement and the effort clients put into the homework. The Specificity subscale was also found to be a unique predictor of engagement in cognitive homework, the time clients put into homework, and the frequency with which clients used therapy skills when sad or upset. The Specificity subscale, on the whole, had the largest effect sizes, with the Problem-Solving subscale tending to have smaller effect sizes in comparison. The Motivation subscale tended to have the smallest effect sizes in general and was only a unique predictor of engagement in behavioral homework.

**Hypothesis 2: Homework-Related Therapist Behaviors Will Predict Session-to-Session Client-Rated Homework Engagement**

As seen in Table 5, using a predictive session-to-session model, none of the HSTB subscales predicted client-rated General HE in early sessions ($r_s \leq |.16|$). Similarly, none of the HSTB subscales significantly predicted client-rated time spent on homework, frequency with which skills were used, or the effort clients put into homework ($r_s \leq |.19|$).

**Hypothesis 3: Observer-Rated Homework Engagement Will be Related to Concurrent Session-to-Session Depressive Symptom Change**

As seen in Table 6, using the concurrent session-to-session model, observer-rated General HE was related to concurrent session-to-session symptom improvement at the level of a nonsignificant trend ($r = -.22$). CT-Specific HE was not significantly related to concurrent session-to-session depressive symptom change ($r = .07$). An examination of the individual types of homework engagement revealed that while cognitive homework engagement was significantly related to session-to-session symptom improvements ($r = -$
engagement in behavioral homework was not related to symptom change ($r = .04$), and engagement in self-monitoring homework was significantly related to a smaller magnitude of session-to-session depressive symptom change in early sessions ($r = .25$). Observer ratings of the frequency with which clients used skills learned in therapy to cope with feeling upset or sad was significantly related to session-to-session improvements in depressive symptoms ($r = -.32$). The amount of observer-rated time clients spent on homework was not significantly related to session-to-session symptom changes, nor was the observer-rated effort that clients’ put into working on the homework ($r = -.03$ and $r = -.19$, respectively).

**Hypothesis 4: Client-Rated Homework Engagement Will Be Related to Concurrent Session-to-Session Depressive Symptom Change**

Client-rated General HE was not a significant predictor of concurrent session-to-session BDI symptom change ($r = -.19$, $t(60) = -.99$, $p = .30$). Similar to the results obtained for observer ratings, the frequency with which clients reported using skills learned in therapy to cope with feeling upset or sad was significantly related to session-to-session improvements in depressive symptoms ($r = -.29$, $t(60) = -2.34$, $p = .02$). The amount of time clients reported that they spent on homework was not related to session-to-session symptom change, nor was the effort that they reported making on the homework ($r = .11$, $t(60) = .83$, $p = .41$ and $r = -.08$, $t(60) = -.59$, $p = .56$, respectively).
Hypothesis 5: Homework-Related Therapist Behaviors Will Predict Session-to-Session Depressive Symptom Change

Contrary to my hypothesis, using the predictive session-to-session model, none of the subscales of homework-related therapist behaviors served as predictors of session-to-session depressive symptom change (Motivation: $r = -.08$, $t(60) = -.62$, $p = .54$; Problem-Solving: $r = .05$, $t(60) = .40$ $p = .69$; Specificity: $r = .04$, $t(60) = .32$, $p = .75$).

Exploratory Analyses: Relationships among Observer, Client, and Therapist Ratings of Homework Engagement

As seen in Table 7, there were generally moderate associations among observer, therapist, and client ratings of General HE, as well as the specific Time, Frequency, and Effort items. Observers and therapists’ ratings of these homework variables were the numerically most strongly related, with the client ratings being least strongly associated with the other ratings.

Exploratory Analyses: An Examination of Therapist-Rated Homework Engagement as Predicted by Therapist Behaviors and Related to Concurrent Session-To-Session Symptom Change

As seen in Table 8, using the predictive session-to-session model, the Specificity subscale was the only significant predictor of therapist-rated General HE ($r = .39$). When examining the individual items, the Specificity subscale was a significant predictor of the therapists’ ratings of the time and effort clients put into the homework ($r = .41$ and $r = .35$, respectively), but it was not a significant predictor of the therapists’ ratings of the frequency with which clients reported using skills learned in therapy to cope with feeling
upset or sad ($r = .21$). The Motivation and Problem-Solving subscales were not significant predictors of any of the individual therapist-rated General HE items ($rs \leq .21$). These results are more consistent with the findings of the observer-rated homework engagement items than the client-rated items for two reasons: 1) both observer-rated and therapist-rated homework engagement were more strongly predicted by the Specificity subscales and 2) unlike both observer-rated and therapist-rated homework engagement, no significant relationships were found between therapist behaviors and client-rated homework engagement.

Using the concurrent session-to-session model, therapist-rated General HE was a significant predictor of concurrent session-to-session BDI symptom change ($r = -.30$, $t(60) = -2.4$, $p = .02$). Similar to the results obtained for observer and client ratings, the therapists’ rated frequency with which clients reported using skills learned in therapy to cope with feeling upset or sad was significantly related to session-to-session improvements in depressive symptoms ($r = -.35$, $t(60) = -2.9$, $p = .005$). The amount of time that therapists rated clients spent on homework was not significantly related to session-to-session symptom change, and the effort that therapists rated clients made on homework was at the level of a nonsignificant trend ($r = -.18$, $t(60) = -1.4$, $p = .17$ and $r = -.25$, $t(60) = -2.0$, $p = .06$, respectively).
Chapter 4: Discussion

In general, the results of this study indicated that, partially consistent with initial expectations, a subset of the homework-related therapist behaviors, particularly Specificity, was significantly related to homework engagement in early sessions of CT for depression. Furthermore, while there was some support for the relationship between greater homework engagement and greater concurrent improvements in depressive symptoms, this relationship differed by informant and by the specific element of homework engagement examined. Across all informants though, the frequency with which clients used therapy skills to cope with homework was most consistently related to concurrent depressive symptom changes. The details of these findings will be discussed below. Finally, contrary to initial expectations, none of the therapist behaviors examined predicted client-rated homework engagement, nor did any of the therapist behaviors predict session-to-session depressive symptom changes.

Homework-Related Therapist Behaviors as Predictors of General Homework Engagement

One primary question of interest in this study was the extent to which certain homework-specific therapist behaviors predicted homework engagement. Therapist behaviors intended to ensure clients know what to do for homework, as assessed in the
Specificity subscale, were the most consistent and strongest unique predictors of session-to-session homework engagement variables, predicting both therapist and observer-rated general homework engagement ($r = .39$ and $r = .32$, respectively). In contrast, while therapist behaviors related to problem-solving efforts predicted observer-rated general homework engagement, Problem-Solving no longer predicted engagement when Specificity was also entered in the model. Therapist behaviors related to motivation enhancement did not predict observer or therapist-rated general homework engagement.

These findings suggest that Specificity-related therapist behaviors may be particularly important in enhancing clients’ subsequent engagement in homework. The difference in results between the three subscales examined in this study suggests the benefit of separately examining types of homework-related therapist behaviors. The observed differences also help clarify the findings of a previous study by Bryant and colleagues (1999), who examined one scale of homework-related therapist behaviors as a predictor of compliance in CT for depression. Their study grouped together four items that assessed content covered by different subscales in the current study: reviewing homework (Motivation), providing a rationale for homework (Motivation), clearly assigning homework and tailoring the homework to the clients’ problems (Specificity / Motivation), and seeking reactions to the homework and problem-solving possible obstacles (Motivation / Problem-Solving). Bryant and colleagues’ found a nonsignificant trend-level relationship between their therapist behavior scale and compliance ($r = .24$). They then examined the individual items separately to better understand their results, ultimately finding a significant relationship between reviewing previous homework and
subsequent homework compliance. In this study, certain types of homework-related therapist behaviors were created to be separate subscales from the outset, and results found that some of these therapist behaviors (particularly Specificity) predicted subsequent homework engagement more strongly than others.

It is important to note that while therapist and observer ratings of homework engagement were significantly related to client ratings of homework engagement, none of the types of therapist behaviors predicted client-rated general homework engagement (or any of its individual items). While one might expect client ratings of homework engagement to have greater validity than therapist or observer ratings insofar as clients have access to more information about the homework they engaged in between sessions, there is also reason to expect greater validity from the therapist or observer ratings of homework engagement. As each client only provides ratings of his or her own homework engagement, client ratings may reflect both individual differences in clients and individual differences in homework engagement. Clients’ ratings may have been elevated if clients were motivated to please their therapist and appear more engaged in homework or may be inaccurately low if they discounted the time, frequency, or effort associated with the homework they engaged in because did not think the activities they completed were difficult enough to count; they did not think they did a good job on the homework; or they did not do as much as they had planned to do. Because therapists and observers had information from multiple clients, their ratings may have been better calibrated. Clients for instance, may think their level of effort was particularly high (or low),
whereas therapists and observers would be to judge their level of effort on homework in comparison to other clients.

There is one additional reason therapist and observer ratings may have had greater validity. Therapists were aware that at the end of the session they would be asked to rate general homework engagement, and observers rating homework were specifically trained to attend to any discussions of the homework during the session. Clients were less aware that they would be filling out questions related to general homework engagement because while they knew they would be filling out therapy-related questionnaires at the end of each session, they did not know that some of the questions would be specifically related to homework. Therefore, it is possible they may have not been attending as closely to discussions of homework during the session, which may have affected the level of agreement between clients’ ratings and those of the therapists and observers. While there are multiple possibilities to explain why clients’ homework ratings might have differed to the extent they did from the other informants did not display expected relationships with other variables, data from this study are not able to definitively disentangle the role of each of these factors played.

**Homework-Related Therapist Behaviors as Predictors of CT-Specific Homework Engagement**

A related question was whether therapist behaviors also predicted the types of homework that are more commonly associated with CT for depression. Again, the Specificity subscale was the numerically strongest predictor of session-to-session CT-specific homework engagement, and it continued to be significant even when the other
two subscales (i.e., Problem-solving and Motivation) were entered into the model. The Specificity subscale was a significant predictor of cognitive homework, was at the level of a nonsignificant trend for self-monitoring homework, and was not a significant predictor of greater engagement in behavioral homework. Therefore, when therapists utilize better descriptions, practice, and specific assignment of homework, clients are subsequently more likely to engage in cognitive homework and, to a lesser extent, self-monitoring homework. Both cognitive and self-monitoring homework involve activities that a client may not have engaged in prior to therapy. Behavioral homework, on the other hand, typically involves relatively simple activities that a client currently or previously engaged in, such as exercising or socializing with a friend. The clients’ greater familiarity with behavioral activities may explain why greater Specificity did not predict subsequent behavioral homework engagement. The Motivation subscale did predict engagement in behavioral homework, suggesting that therapists who engage in those behaviors (e.g. involving clients in the review and assignment of homework, praising clients for completed homework, relating new homework to problems discussed in session, etc.) might help clients resume or increase beneficial activities.

Lastly, while both the Problem-Solving and Motivation subscales significantly predicted CT-specific homework engagement, only the Problem-Solving subscale continued to be a significant predictor when it was entered in the same model with all three subscales. These results suggest that identifying obstacles to homework engagement and working on minimizing previously experienced obstacles might be helpful for encouraging clients to complete a larger amount of homework in CT.
Nonetheless, relations of Problem-Solving and specific types of CT-specific homework engagement failed to achieve significance. This may be the case because problem-solving behaviors were the least-commonly observed behaviors of the three types of therapist behaviors. In addition, each specific type of CT homework was less frequently observed at each session than total CT homework. As both problem-solving and specific types of CT homework were less frequently observed, a floor effect may have made it more difficult to detect the associations of these variables.

**The Relation of Homework Engagement and Concurrent Depressive Symptom Change**

Another question of interest in this study pertained to the relationship between homework engagement and concurrent session-to-session depressive symptom changes. Evidence for the relationship was mixed across informants. When rated by therapists, general homework engagement was significantly related to concurrent depressive symptom change \((r = -0.30)\). This relation was at the level of a nonsignificant trend when rated by observers \((r = -0.22)\), and was not significant when rated by clients \((r = -0.19)\).

While these relations were not all significant, the direction and magnitude of effects were similar. Moreover, these effect sizes were also similar to the effect size \((r = 0.22)\) that Kazantzis and colleagues (2000) reported in their meta-analysis of studies that examined the relation of homework compliance and treatment outcome.

When examining the individual items of general homework engagement, a consistent pattern of results emerged. Across all three informants, the frequency with which clients used therapy skills to cope with feeling upset or sad was significantly
related to concurrent depressive symptom improvements (therapists: \( r = -0.35 \); observers: \( r = -0.32 \); and clients: \( r = -0.29 \)). While the client-rated homework variables consistently showed the numerically weakest relationship with other variables, in the case of the client rated frequency item, the relation was also statistically significant—highlighting the robustness of the frequency-depressive symptom change relation across informants. In addition, for all three informants, the amount of time and effort clients put into homework was not significantly related to concurrent depressive symptom change. Thus, the relationship between general homework engagement and depressive symptom change appeared to be driven by how frequently they used therapy skills when they felt sad or upset. These findings appear consistent with the types of CT-specific homework engagement that were related to depressive symptom change. Of the three types of CT homework examined, only cognitive homework engagement was related to significantly greater improvement in concurrent depressive symptoms. In comparison with self-monitoring and behavioral homework, engagement in cognitive homework was most related to coping like that assessed by the frequency item. Therapists assign cognitive homework to be completed when clients feel sad or upset to reduce the intensity of negative emotions by identifying related thoughts and examining their accuracy. Self-monitoring homework, on the other hand, is typically completed for information gathering purposes or the facilitation of behavioral changes, and a visual examination of behavioral homework suggested that the assignments were primarily related to behavioral activation (e.g., spending time with friends, exercising, etc.) and not coping per se. That self-monitoring and behavioral homework were not related to depressive symptom
improvements (and self-monitoring was related to significantly less improvement) also suggests the importance of coping-related homework assignments to depressive symptom improvement. The difference in findings among the different types of CT-specific homework engagement, as well as the finding that CT-specific homework engagement as a whole was not significantly related to concurrent depressive symptom change suggests the benefit of assessing engagement in individual types of homework.

**Homework-Related Therapist Behaviors as Predictors of Depressive Symptom Change**

Finally, the last question of interest pertained to whether a relationship existed between homework-related therapist behaviors and clients’ depressive symptom change. Contrary to hypotheses, none of the subscales predicted session-to-session depressive symptom change. Therefore, homework-related therapist behaviors, particularly those measured in the Specificity subscale, predicted multiple homework engagement variables, but did not predict depressive symptom change. It is unclear why this would be the case. Previous studies have not examined specific homework-related therapist behaviors as predictors of more immediate symptoms change in CT for depression, and three of the previous studies by Strunk and colleagues (2010, 2012) examined relatively global assessments of homework-related therapist behaviors. Previous research by Strunk and colleagues and Detweiler-Bedell and Whisman (2005) garnered mixed results when examining the relationship between homework-related therapist behaviors and depressive symptom change—one study by Strunk and colleagues (2010) failed to find a relationship, while the other three studies did. Hopefully future research can clarify
which homework-related therapist behaviors, or under what conditions, these behaviors may be related to subsequent depressive symptom changes.

**Limitations**

This study has a few limitations that will be discussed. One limitation is that, similar to previous studies, examination of concurrent changes in homework engagement and depressive symptom change do not allow for ruling out reverse causality; thus, it is possible that a relation between homework engagement and depressive symptom change could be partly or completely due to improvements in depressive symptoms helping clients engage in more homework. Other limitations relate to the generalizability of the results. The therapists involved in the project were novice therapists, not expert cognitive therapists. It is possible that the therapist behaviors that most strongly predict homework engagement in novice therapists are different from those that would predict homework engagement in expert therapists. Therapist behaviors that most strongly predict homework in expert therapists may have been too infrequently used or not delivered competently enough among novice therapists to adequately establish their relationship with homework engagement. In addition, the focus of this study was on predictors of homework engagement in early sessions of CT for depression. It is unclear whether the findings would generalize to homework later in treatment. It is possible, for instance, that Specificity-related therapist behaviors may not be as strong of a predictor of session-to-session homework engagement once clients become familiar with each of the major assignments in CT.
Conclusion

In closing, in comparison to previous research, the current study involved an examination of a greater variety of homework-related therapist behaviors. Helping clients understand what they are to be working on for homework (by describing the homework, practicing it with them, ensuring they have a written copy of the homework, etc.) predicted greater session-to-session engagement in homework. If replicated or corroborated with experimental evidence, in the future therapists who are interested in enhancing homework engagement may focus on specificity-related behaviors in early sessions to promote homework engagement. In addition, this study examined the relationship of homework engagement and depressive symptom change over between session intervals – a plausible interval over which one might expect any effects of homework engagement to emerge. This study utilized the ratings of different informants (clients, therapists, and trained observers), across multiple sessions, in a moderately sized sample – all strengths relative to previous research. The difference in results between informants (particularly between clients and the therapists and observers) highlights the importance of collecting data from different informants. Future research may examine whether the homework-related therapist behaviors that were found to be important among novice therapists in early sessions of CT for depression are also important in predicting homework engagement with more experience.
References


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Appendix A: Tables and Figures
Figure 1. Diagram Representing the Flow of Participants in the Study.
Table 1

*Means and Standard Deviations for Therapist Behavior Subscales by Session*

<table>
<thead>
<tr>
<th>Variable</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>2.27 (1.18)</td>
<td>11.20 (3.83)</td>
<td>11.16 (3.20)</td>
<td>11.28 (3.38)</td>
<td>8.05 (2.82)</td>
</tr>
<tr>
<td>Problem-Solving</td>
<td>0.99 (1.28)</td>
<td>2.82 (3.22)</td>
<td>2.73 (2.65)</td>
<td>2.72 (2.95)</td>
<td>2.25 (1.53)</td>
</tr>
<tr>
<td>Specificity</td>
<td>17.29 (3.19)</td>
<td>14.64 (3.39)</td>
<td>12.96 (2.67)</td>
<td>13.55 (2.54)</td>
<td>14.99 (2.27)</td>
</tr>
</tbody>
</table>

*Note:* The Mean column represents the average subscale scores of all available sessions for each client, which were then averaged across clients.
Table 2

*Means and Standard Deviations for Homework Engagement Variables by Session*

<table>
<thead>
<tr>
<th>Variable</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
<th>S5</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT-Specific HE</td>
<td>1.72 (0.90)</td>
<td>2.35 (0.96)</td>
<td>2.04 (1.30)</td>
<td>1.85 (1.33)</td>
<td>1.93 (0.82)</td>
</tr>
<tr>
<td>Cognitive HE</td>
<td>0.39 (0.61)</td>
<td>0.78 (0.64)</td>
<td>0.65 (0.68)</td>
<td>0.69 (0.78)</td>
<td>0.57 (0.44)</td>
</tr>
<tr>
<td>Behavioral HE</td>
<td>0.11 (0.32)</td>
<td>0.29 (0.46)</td>
<td>0.50 (0.61)</td>
<td>0.48 (0.58)</td>
<td>0.33 (0.31)</td>
</tr>
<tr>
<td>Self-Monitoring HE</td>
<td>1.21 (0.90)</td>
<td>1.27 (0.83)</td>
<td>0.88 (0.86)</td>
<td>0.67 (0.83)</td>
<td>1.03 (0.65)</td>
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<td>General HE-OR</td>
<td>3.52 (1.94)</td>
<td>4.90 (1.94)</td>
<td>4.22 (2.18)</td>
<td>4.23 (2.54)</td>
<td>4.06 (1.56)</td>
</tr>
<tr>
<td>Time-OR</td>
<td>1.09 (0.59)</td>
<td>1.59 (0.70)</td>
<td>1.42 (0.93)</td>
<td>1.22 (0.93)</td>
<td>1.28 (0.60)</td>
</tr>
<tr>
<td>Frequency-OR</td>
<td>1.33 (0.87)</td>
<td>1.83 (0.84)</td>
<td>1.57 (0.90)</td>
<td>1.76 (1.15)</td>
<td>1.56 (0.64)</td>
</tr>
<tr>
<td>Effort-OR</td>
<td>1.10 (0.70)</td>
<td>1.48 (0.68)</td>
<td>1.22 (0.73)</td>
<td>1.24 (0.84)</td>
<td>1.22 (0.49)</td>
</tr>
<tr>
<td>General HE-CR</td>
<td>5.25 (2.20)</td>
<td>6.10 (2.16)</td>
<td>5.75 (2.33)</td>
<td>--</td>
<td>5.57 (1.91)</td>
</tr>
<tr>
<td>Time-CR</td>
<td>1.78 (0.94)</td>
<td>2.08 (0.81)</td>
<td>1.85 (1.01)</td>
<td>--</td>
<td>1.84 (0.78)</td>
</tr>
<tr>
<td>Frequency-CR</td>
<td>1.55 (0.95)</td>
<td>1.85 (1.06)</td>
<td>2.04 (0.92)</td>
<td>--</td>
<td>1.78 (0.70)</td>
</tr>
<tr>
<td>Effort-CR</td>
<td>1.92 (1.08)</td>
<td>2.17 (0.94)</td>
<td>1.87 (1.06)</td>
<td>--</td>
<td>1.94 (0.88)</td>
</tr>
</tbody>
</table>

*Note:* The Mean column represents the average scores of all available sessions for each client, which were then averaged across clients. CT-Specific Homework Engagement (HE) is the sum of the observer-rated Cognitive, Behavioral, and Self-Monitoring Homework Engagement items. (Continued).
Table 2: Continued.

General Homework Engagement-Observer Rated (OR) and Client-Rated (CR) are the sums of the observer-rated and client-rated Time, Frequency, and Effort items, respectively.
Table 3

Therapist Behaviors as Predictors of Session-to-Session Observer-Rated Homework Engagement

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Predictor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>General HE-OR</td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
</tr>
<tr>
<td>Time-OR</td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
</tr>
<tr>
<td>Frequency-OR</td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
</tr>
<tr>
<td>Effort-OR</td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
</tr>
</tbody>
</table>

Note: \(^+\) p < .1, \(^*\) p < .05, \(^{**}\) p < .01, \(^{***}\) p < .001. “Predictors in Separate Models” identify results when predictors were entered separately into different models. (Continued)
Table 3: Continued.

“Significant Predictors in Same Models” identify results when predictors were entered into the model with other significant predictors of the stated dependent variable. General Homework Engagement-Observer-Rated (HE-OR) is the sum of the observer-rated Time, Frequency, and Effort Homework Engagement items.
Table 4

*Therapist Behaviors as Predictors of Session-to-Session CT-Specific, Observer-Rated Homework Engagement*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Predictor</th>
<th>$t$</th>
<th>df</th>
<th>$r$</th>
<th>$t$</th>
<th>df</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT-specific HE</td>
<td>Motivation</td>
<td>2.67</td>
<td>94</td>
<td>.27**</td>
<td>1.49</td>
<td>92</td>
<td>.15</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>2.77</td>
<td>94</td>
<td>.27**</td>
<td>2.19</td>
<td>92</td>
<td>.22*</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>3.14</td>
<td>94</td>
<td>.31**</td>
<td>2.22</td>
<td>92</td>
<td>.22*</td>
</tr>
<tr>
<td>Cognitive HE</td>
<td>Motivation</td>
<td>0.27</td>
<td>94</td>
<td>.03</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>1.02</td>
<td>94</td>
<td>.10</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>2.11</td>
<td>94</td>
<td>.21*</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Self-Monitoring HE</td>
<td>Motivation</td>
<td>1.44</td>
<td>94</td>
<td>.15</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>2.39</td>
<td>94</td>
<td>.24*</td>
<td>1.92</td>
<td>93</td>
<td>.20†</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>2.40</td>
<td>94</td>
<td>.24*</td>
<td>1.95</td>
<td>93</td>
<td>.20†</td>
</tr>
<tr>
<td>Behavioral HE</td>
<td>Motivation</td>
<td>2.49</td>
<td>94</td>
<td>.25*</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>1.63</td>
<td>94</td>
<td>.17</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>0.08</td>
<td>94</td>
<td>.01</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note:* *p < .05, **p < .01, ***p < .001. “Predictors in Separate Models” identify results when predictors were entered separately into different models. (Continued).
Table 4: Continued.

“Significant Predictors in Same Models” identify results when predictors were entered into the model with other significant predictors of the stated dependent variable. CT-Specific Homework Engagement (HE) is the sum of the observer-rated Cognitive, Behavioral, and Self-Monitoring Homework Engagement items.
### Table 5

*Therapist Behaviors as Predictors of Session-to-Session Client-Rated Homework Engagement*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Predictor</th>
<th>$t$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>General HE-CR</td>
<td>Motivation</td>
<td>-0.01</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>-0.36</td>
<td>-.05</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>1.11</td>
<td>.16</td>
</tr>
<tr>
<td>Time-CR</td>
<td>Motivation</td>
<td>0.00</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>0.29</td>
<td>.04</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>1.32</td>
<td>.19</td>
</tr>
<tr>
<td>Frequency-CR</td>
<td>Motivation</td>
<td>1.09</td>
<td>.16</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>-0.23</td>
<td>-.03</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>0.44</td>
<td>.06</td>
</tr>
<tr>
<td>Effort-CR</td>
<td>Motivation</td>
<td>-0.40</td>
<td>-.06</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>-1.26</td>
<td>-.18</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>1.00</td>
<td>.14</td>
</tr>
</tbody>
</table>

*Note: *$p < .05$, **$p < .01$, ***$p < .001$. For all models, $df = 47$. General Homework Engagement-Client-Rated (HE-CR) is the sum of the client-rated Time, Frequency, and Effort Homework Engagement items.*
Table 6

Observer-Rated Homework Engagement as Predictors of Concurrent Session-to-Session Depressive Symptom Change

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$t$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>General HE-OR</td>
<td>-1.77</td>
<td>-0.22$^+$</td>
</tr>
<tr>
<td>Time-OR</td>
<td>-0.20</td>
<td>-0.03</td>
</tr>
<tr>
<td>Frequency-OR</td>
<td>-2.63</td>
<td>-0.32$^*$</td>
</tr>
<tr>
<td>Effort-OR</td>
<td>-1.50</td>
<td>-0.19</td>
</tr>
<tr>
<td>CT-Specific HE</td>
<td>0.52</td>
<td>0.07</td>
</tr>
<tr>
<td>Cognitive HE</td>
<td>-2.24</td>
<td>-0.28$^*$</td>
</tr>
<tr>
<td>Self-Monitoring HE</td>
<td>2.01</td>
<td>0.25$^*$</td>
</tr>
<tr>
<td>Behavioral HE</td>
<td>0.34</td>
<td>0.04</td>
</tr>
</tbody>
</table>

*Note:* $^+$ $p < .10$, $^*$ $p < .05$. For all models, $df = 60$. General Homework Engagement-Observer-Rated (HE-OR) is the sum of the observer-rated Time, Frequency, and Effort Homework Engagement items. CT-Specific Homework Engagement (HE) is the sum of the observer-rated Cognitive, Behavioral, and Self-Monitoring Homework Engagement items.
Table 7

*Correlations between Observer, Therapist, and Client Ratings of Homework Engagement*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Source</th>
<th>Observer</th>
<th>Client</th>
</tr>
</thead>
<tbody>
<tr>
<td>General HE</td>
<td>Therapist</td>
<td>.75&lt;sup&gt;(3/3)&lt;/sup&gt;</td>
<td>.52&lt;sup&gt;(3/3)&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Client</td>
<td>.52&lt;sup&gt;(3/3)&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Therapist</td>
<td>.68&lt;sup&gt;(3/3)&lt;/sup&gt;</td>
<td>.47&lt;sup&gt;(3/3)&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Client</td>
<td>.41&lt;sup&gt;(2/3)&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>Therapist</td>
<td>.50&lt;sup&gt;(3/3)&lt;/sup&gt;</td>
<td>.38&lt;sup&gt;(2/3)&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Client</td>
<td>.36&lt;sup&gt;(3/3)&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Effort</td>
<td>Therapist</td>
<td>.64&lt;sup&gt;(3/3)&lt;/sup&gt;</td>
<td>.38&lt;sup&gt;(3/3)&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Client</td>
<td>.42&lt;sup&gt;(3/3)&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* The correlations listed are average correlations across sessions 2 through 4. Correlations were *r*-to-*z* transformed prior to averaging. The resulting average was transformed back to an *r*-type effect size. The numbers in superscript indicate the number of sessions (out of three) that the correlations were significant.
Table 8

*Therapist Behaviors as Predictors of Session-to-Session Therapist-Rated Homework Engagement*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Predictor</th>
<th>$t$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>General HE-TR</td>
<td>Motivation</td>
<td>1.06</td>
<td>.16</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>1.70</td>
<td>.24$^+$</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>2.92</td>
<td>.39**</td>
</tr>
<tr>
<td>Time-TR</td>
<td>Motivation</td>
<td>0.79</td>
<td>.11</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>1.50</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>3.13</td>
<td>.41**</td>
</tr>
<tr>
<td>Frequency-TR</td>
<td>Motivation</td>
<td>1.47</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>1.47</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>1.55</td>
<td>.21</td>
</tr>
<tr>
<td>Effort-TR</td>
<td>Motivation</td>
<td>0.95</td>
<td>.14</td>
</tr>
<tr>
<td></td>
<td>Problem-Solving</td>
<td>1.23</td>
<td>.17</td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>2.62</td>
<td>.35*</td>
</tr>
</tbody>
</table>

*Note:* $^+$ $p<.10$, $^* p < .05$, $^{**} p < .01$, $^{***} p < .001$. For all models, $df = 47$. General Homework Engagement-Therapist-Rated (HE-TR) is the sum of the therapist-rated Time, Frequency, and Effort Homework Engagement items.