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# The Relation of Baseline Skills to Psychotherapy Outcome Across Diverse Psychotherapies

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## Abstract

**Objective—**We explored whether patients with varied levels of baseline deficits in compensatory skills and self-understanding had different outcomes across cognitive and dynamic therapies.

**Method—**The assessment battery was administered at intake and termination (N=97; 66% female, 81% Caucasian). We conducted regression analyses predicting symptom change from baseline levels of self-understanding and compensatory skills. We also evaluated the interaction between baseline skill levels and treatment condition in the prediction of psychotherapy outcome.

**Results—**There was a significant interaction between treatment group and baseline compensatory skills in the prediction of HAMD symptom change, $F(1,76) = 4.59$, $p = .035$. Baseline deficits in compensatory skills were significantly related to symptom change for patients who received cognitive treatment, $\eta_\rho = .40$, $p = .037$, while baseline levels of self-understanding were not significantly predictive of treatment outcome in either condition. Baseline skill variables did not predict symptom change as measured by the HAMA.

**Conclusions—**The findings support a capitalization model of cognitive therapy, whereby patients with relative strengths in compensatory skills at baseline have better treatment outcomes.

### Keywords

cognitive therapy; dynamic therapy; psychotherapy process; compensatory skills; self-understanding

Rude and Rehm (1991) discuss two possible models by which skill deficits might affect the process of therapeutic change. The compensation model suggests that patients will benefit most from a treatment that targets their weaknesses by developing and strengthening the skills that they initially lack. In contrast to the compensation model, the capitalization model predicts that patients will benefit most from a treatment that capitalizes on their existing strengths by working to enhance these skills.

Models of the mechanism of cognitive therapy (CT) implicitly or explicitly are based on a compensation model. For example, Barber and DeRubeis (2001) argue that CT for depression works by improving patients' compensatory skills in the face of stressful events, implying that those with initial deficits in compensatory skills are likely to benefit from CT.

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In this model, compensatory skills are defined as the more adaptive cognitions and behaviors used in stressful situations to compensate for the depressotypic thinking that can lead to depression. Although studies of CT have shown that improvements in compensatory skills are associated with symptom reduction over the course of treatment (Barber & DeRubeis, 2001; Strunk, DeRubeis, Chui, & Alvarez, 2007; Connolly Gibbons et al., 2009), no studies to date have specifically aimed to compare the capitalization and compensation models using a measure of baseline compensatory skill deficits. However, studies of other baseline variables that are targeted in CT such as dysfunctional attitudes or negative beliefs have found more support for a capitalization model rather than a compensation model (Cheavens, Strunk, Lazarus, & Goldstein, 2012; Jarrett et al., 2013; Rude & Rehm, 1991).

Most short-term models of dynamic therapy (DT) theorize that this approach works by helping patients gain self-understanding of their maladaptive relationship patterns (Luborsky, 1984; Strupp & Binder, 1984), implying that those with initial deficits in such self-understanding will benefit from DT. Studies of DT have found that improvements in this central construct (self-understanding) are associated with positive outcomes (Connolly et al., 1999; Connolly Gibbons et al., 2009).

Although the capitalization and compensation models have not been specifically contrasted within DT, a review of the literature on insight (Connolly Gibbons, Crits-Christoph, Barber, & Schamberger, 2007) concluded that there is little evidence of a relation between baseline insightfulness and treatment outcome in dynamic psychotherapy, suggesting that neither the compensation nor the capitalization models represent the role of baseline insight deficits in the process of dynamic psychotherapy. Since these treatments focus on balancing supportive interventions for lower functioning patients with interpretive interventions to help patients at relatively higher levels of functioning, DT might both compensate for severe deficits and capitalize on the relative strengths of those with only minor skill deficits at baseline.

The current study builds on the mechanism findings reported by Connolly Gibbons et al. (2009) by examining the relation between theory-specific baseline skills and treatment outcome across both cognitive and dynamic psychotherapies. Consistent with the empirical literature, we hypothesized that CT would work via the capitalization model, whereas we had no specific hypotheses regarding the role of baseline skills in the process of DT.

We explored the role of baseline skills deficits in compensatory skills and self-understanding across both treatment modalities. Although changes in compensatory skills are theoretically specific to CT, previous analyses of this dataset revealed that patients receiving both CT and DT experienced changes in compensatory skills, and that these changes predicted symptom course in both treatment modalities (Connolly Gibbons et al., 2009). Therefore, the current analyses examine the role of baseline levels of both compensatory skills and self-understanding for patients receiving either CT or DT.

## Method

This study utilized a pooled database comprised of multiple studies conducted at the University of Pennsylvania Center for Psychotherapy Research between 1995 and 2002.

Although each study examined a unique population being treated for a specific disorder, all of the studies used a common assessment battery administered at the same points throughout treatment. A detailed description of the methods is provided by Connolly Gibbons et al. (2009).

## Participants

**Patients—**A total of 411 patients completed a baseline assessment of which 184 were deemed eligible for research and entered into one of the five pilot studies. The first pilot investigation (Crits-Christoph, P. et al., 2006) evaluated the effectiveness of 16 sessions of alliance-fostering psychotherapy for patients with major depressive disorder (MDD). The second pilot investigation (Brown, Newman, Charlesworth, Crits-Christoph, & Beck, 2004), consisted of an open trial of CT for a primary diagnosis of borderline personality disorder (BPD). The third pilot included in the pooled database compared 16 sessions of relationship-focused therapy, CT, or waitlist for panic disorder (Connolly Gibbons, Crits-Christoph, Hearon, & Worley, 2006). The fourth pilot investigation (Siqueland, Rynn, & Diamond, 2005) trained therapists in CT combined with family therapy and then compared CT to CT combined with family therapy for adolescents diagnosed with generalized anxiety disorder (GAD) or separation anxiety disorder. Finally, the fifth pilot investigation (Crits-Christoph, Connolly Gibbons, Narducci, Schamberger, & Gallop, 2005), compared supportive-expressive dynamic therapy to supportive therapy for GAD.

Across the pooled database, 97 patients were enrolled in a cognitive or dynamic treatment and completed the outcome assessment and at least one skills measure at baseline. For these 97 patients, the average age was 36.57 (*SD* = 13.76) years old, 66% were female, 81% were Caucasian; 59% had completed college; 40% were married or cohabitating, and 45% were employed full-time. All patients (or their parents/guardians) reviewed and signed informed consent documentation, and the studies were approved by the University of Pennsylvania Institutional Review Board. Treatment completion was defined as attending at least 75% of sessions. For the current sample, 96% of the patients in the alliance study, 41% in the BPD study, 91% in the panic disorder study, 43% in the adolescent anxiety study, and 94% in the GAD study completed the treatment.

**Therapists—**A total of 29 therapists participated in the five studies, all of whom were recruited from the pool of staff therapists at the Center for Psychotherapy Research or the community. Therapists were allowed to participate in more than one study. All of the therapists were Caucasian and 72% were female. Therapists primarily held PhD's (22 out of 29 participants), two held PsyDs, two had MDs, and three held a master's degree. Therapists had between 1 and 27 years of post-degree clinical experience, and 38% had 10 or more years of experience. Supervision was conducted by experienced, doctorate-level clinical psychologists engaged in clinical practice, and therapists received one hour of supervision for every two hours of therapy conducted as a part of these studies.

## Treatment

The alliance-fostering therapy for MDD, relationship-focused therapy for panic disorder, and supportive-expressive therapy for GAD were pooled to evaluate the relation of baseline

skills to outcome for dynamically oriented treatments. Schema-focused CT for BPD, CT and cognitive plus family therapy for adolescent anxiety, and CT for panic disorder were pooled to evaluate the role of baseline skills in CT.

The alliance-fostering therapy followed P. Crits-Christoph and K. Crits-Christoph's (1998) manual, which combined elements of supportive-expressive dynamic psychotherapy (Luborsky, 1984) with additional techniques for improving the therapeutic alliance. The relationship-focused therapy used to treat panic disorder was a modified version of supportive-expressive dynamic psychotherapy (Luborsky, 1984) that included a psycho-educational element. The supportive-expressive therapy for GAD also followed Luborsky's (1984) manual, which was augmented by a manual specific to the treatment of GAD (Crits-Christoph, Crits-Christoph, Wolf-Palacio, Fichter, & Rudick, 1995).

Schema-focused cognitive therapy for BPD adhered to Brown and Newman's (1999) manual, while cognitive therapy for adolescent anxiety was guided by a manual for cognitive behavioral compensatory skills treatment (Siqueland & Diamond, 2000). The cognitive therapy for panic disorder followed Beck's (1992) manual for focused cognitive therapy for panic disorder and Beck and Emery's (1985) manual for cognitive therapy of anxiety disorders.

## Outcome Measures

All outcome measures were administered as part of a core battery of measures which patients completed at intake and treatment termination. Master's-level clinicians employed by the center conducted the interviews across the pilot studies. Interviewers were blind to study, treatment condition, and point in treatment. The termination assessment was conducted at four months for all studies, except the study of schema-focused therapy for BPD, in which treatment was one year in duration. Patients were contacted at four months (or one year for the BPD study) for a termination assessment regardless of whether they completed the full course of treatment.

**Hamilton Anxiety Rating Scale (HAMA; Hamilton, 1959)—**The HAMA is a 14-item measure assessing the presence and severity of typical anxiety symptoms. It was administered using a structured interview guide (Bruss, Gruenberg, Goldstein, & Barber, 1994). Bruss et al. (1994) found good internal consistency for the total score (Cronbach's $\alpha$ = .79 to .83) and good interjudge reliability on test-retest ($\rho_I$ = .96 for the total score). For the current analyses ($N$ = 96), an internal consistency reliability (Cronbach's $\alpha$) of .83 was obtained at termination.

**Hamilton Depression Rating Scale (HAMD; Hamilton, 1960)—**The HAMD, to assessing the presence and severity of depression symptomatology was implemented using the structured interview guide for this measure (Williams, 1988). Williams (1988) reported good interjudge reliability for test-retest assessment of the 17-item score ($\rho_I$ = .81) when using the structured interview guide. For the current analyses at baseline ($N$ = 96), an internal consistency reliability (Cronbach's $\alpha$) of .86 was obtained at the termination assessment.

## Measures of Skills

**Self-Understanding of Interpersonal Patterns Scale – Revised (SUIP-R; Connolly Gibbons et al., 2009)—**The SUIP-R includes 28 items that each represent a potential problematic interpersonal conflict. Subjects rate each of the 28 items that are relevant for their own relationship experiences across a 6-point self-understanding scale. The SUIP-R demonstrates good internal consistency on both a non-patient (Cronbach's $\alpha$ = .94) and patient sample (Cronbach's $\alpha$ = .92). There was good internal consistency for the current subset of 97 patients (Cronbach's $\alpha$ = .93). Final scores on the SUIP-R range from 1 to 6 with higher scores representing higher levels of self-understanding of interpersonal patterns.

**Ways of Responding Questionnaire (WOR; Barber & DeRubeis, 1992)—**The WOR is a measure of compensatory skills in which patients are presented with a stressful situation, prompted by a sample negative thought, and then asked to describe in writing their thoughts and feelings in response to this situation. Trained, independent judges first divide each response into discrete thought units and then choose one category from a list of beneficial cognitive strategies and detrimental cognitive reactions to best represent each thought unit. The numbers of beneficial and detrimental cognitive reactions are tallied across thought units to form the WOR positive and WOR negative scores for each scenario. The WOR negative score utilized in the current sample consists of a tally of the number of negative compensatory skills expressed by the patient averaged across the six scenarios. In the current sample of patients ($N$ = 97), there was good internal consistency (Cronbach's $\alpha$ = .80) and interjudge reliability ($ICC$ (2,2) = .95) for the WOR negative score. Final scores on the WOR negative scale for the current sample ranged from 0 to 6 with higher scores representing relatively higher levels of depressotypic cognitive reactions at treatment baseline.

## Procedure

Patients were recruited for participation through newspaper advertisements and departmental referrals. Patients who were eligible based on a phone screen were scheduled for a baseline evaluation. At the baseline, trained interviewers administered the Structured Clinical Interview for Axis I DSM-IV disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 1997) and Axis II disorders (SCID-II; First, Spitzer, Gibbon, Williams, & Benjamin, 1994) to the patients.

## Statistical Analysis

Two measures of treatment-relevant baseline skills (SUIP-R, WOR negative scale) were examined in relation to two measures of outcome (HAMA, HAMD). Treatment (2 levels) and study (5 levels) were included as covariates in all predictive analyses. Analyses included all patients who completed the termination assessment regardless of the number of therapy sessions attended). Due to missing demographic data, analyses that include demographic covariates are based on a sample size of 89.

Demographic variables included in the original analyses predicting outcome from change mechanisms were also included as covariates in all analyses. Education was coded as a

college degree or post-baccalaureate education versus less than college; marital status included married or cohabitating versus not; race was coded as white versus non-White; employment included full-time employment versus not employed full-time; age was based on a median split, including subjects greater than 35 years old versus those less than or equal to 35 years old; and biological sex included male versus female.

The primary analyses evaluating baseline skill deficits in relation to outcome were conducted with a series of hierarchical multiple regressions. Predictor variables included in model 1 were the demographic variables, treatment, study, the baseline assessment of the outcome variable, and the baseline skill variable. Separate analyses were conducted predicting each outcome from baseline compensatory skills and baseline self-understanding of interpersonal patterns. Model 2 for each hierarchical multiple regression included the interactions between both treatment and study and the baseline skill variable in relation to residual change on the outcome variable. In cases where there was a significant interaction between the baseline skill variable and treatment group in the prediction of outcome, separate regression analyses were conducted within each treatment group predicting outcome from the baseline skill measure controlling for baseline symptoms, study, and demographic variables. We present partial eta's ($\eta\rho$) to represent effect sizes for all analyses.

## Results

Across treatment conditions, there were large significant effects on both the HAMD, $t(95) = -9.20$, $p < .001$, $d = -1.04$, and the HAMA, $t(95) = -9.27$, $p < .001$, $d = -1.08$, indicating significant symptom reduction from treatment intake to termination. Average scores on the HAMA decreased across treatment from an average of 16.48 ($SD = 5.93$) to 10.00 ($SD = 6.10$). Average scores on the HAMD decreased from an average of 14.26 ($SD = 6.03$) at treatment baseline to 8.07 ($SD = 5.86$) at termination. The current sample had a mean of 1.83 ($SD = 1.48$) on the WOR negative score and a score of −0.09 ($SD = 1.75$) on the WOR total score at treatment baseline. There were no significant differences between treatment groups on the WOR negative score at baseline, $t(89) = -1.685$, $p = 0.120$. The current mixed diagnostic sample averaged a score of 2.84 ($SD = 1.33$) at treatment baseline on the SUIP-R. There were no significant differences between treatment groups on the SUIP-R at baseline, $t(93) = 0.692$, $p = 0.343$. There was a small to moderate association between the SUIP-R and the WOR negative scale, $r(91) = 0.22$, $p = .036$, at treatment baseline.

There were no statistically significant main effects for baseline self-understanding in the prediction of outcome on either the HAMD ($\eta_\rho(1) = -.08$, $p = .492$) or HAMA ($\eta_\rho(1) = .06$, $p = .588$) collapsing across treatments. There were no significant interactions between study or treatment and baseline self-understanding in the prediction of outcome on either the HAMD or HAMA.

There were no statistically significant main effects for baseline compensatory skills in the prediction of outcome on either the HAMD ($\eta_\rho(1) = .13$, $p = .239$) or HAMA ($\eta_\rho(1) = .10$, $p = .380$) collapsing across treatments. There were no significant interactions between study and baseline compensatory skills in the prediction of outcome on either the HAMD or

HAMA. Table 1 presents the results for the hierarchical multiple regression predicting HAMD change from baseline compensatory skills. In model 1, higher age ($\eta_\rho(1)$ = .28, $p$ = .013) and receiving CT rather than DT ($\eta_\rho(1)$ = .28, $p$ = .013) significantly predicted worse outcome. However, the heterogeneity of the individual studies across age a diagnosis prohibits the interpretation of these variables included here as covariates. There was a significant interaction between treatment group and compensatory skills, as measured by the WOR negative subscale, at baseline in the prediction of symptom change on the HAMD, $F(1,76) = 4.59$, $p$ = .035 (See Table 1).

In order to understand this interaction effect, we computed multiple regressions predicting symptom change from the WOR negative score at baseline for each treatment condition separately. Relatively lower deficits in the use of compensatory skills at baseline were significantly related to better outcome as measured by the HAMD for patients who received CT, $\eta_\rho(1)$ = .40, $p$ = .037. However, baseline levels of compensatory skills as measured by the WOR negative score were not significantly related to symptom improvement for those patients who received DT as measured by the HAMD, $\eta_\rho(1)$= −.09, $p$ = .556. For the DT condition, there was a small effect (although not significant) in the direction of patients with higher deficits in compensatory skills at baseline having relatively better outcomes as measured by the HAMD. These effects within treatment groups were maintained when we examined the effects within specific studies. For each study of cognitive therapy, the relatively lower deficits in the use of compensatory skills were associated with better outcome ($\eta_\rho$ ranged from .26 to .79). For each study included in the DT condition, higher deficits in compensatory skills were associated with better outcome ($\eta_\rho$ ranged from −.04 to −.64).

## Discussion

Consistent with the empirical literature (Rude & Rehm, 1991), our results support the capitalization model for cognitive therapy in that cognitive treatments were most effective in decreasing depressive symptoms when capitalizing on the relative strengths of patients who began treatment with relatively minor deficits in the use of compensatory skills at baseline. While all patients began treatment with some deficits in their ability to use compensatory skills effectively, some patients were more severely impaired, while others had only moderate deficits and were relatively more skillful in the implementation of these strategies. Patients who possessed relatively minor deficits in compensatory skills at treatment baseline fared better in CT than patients who began treatment with more severe impairments in compensatory strategies.

Our results further demonstrated a differential relation between baseline compensatory skills and depressive symptoms for patients who received DT compared to those who received CT. Analyses within the DT groups indicated that baseline compensatory skills were not significantly related to depressive symptom course, although a small negative effect size was observed, $\eta(1)$ = −.09, indicating higher deficits in compensatory skills were related to relatively better treatment outcome in the DT group. It may be that we did not have enough statistical power to demonstrate the effect within the DT subgroup. Although the significant interaction effect indicates a difference between treatments in the role of baseline

compensatory skills in depressive symptom course, the lack of a statistically significant within group effect for the DT group leaves open the question of whether DT is equally effective across the broad range of baseline compensatory skills or operates through a compensation model providing the greatest benefit for patients with the most severe deficits in baseline compensatory skills.

Our data suggests that CT operates via a capitalization model, providing the greatest benefit to those patients who begin treatment with relatively minor deficits in implementing compensatory strategies in response to stressful situations. These patients may be able to learn quickly from the specific CT techniques designed to enhance their compensatory skills. By entering treatment with some ability to utilize positive compensatory strategies and already implementing only a limited number of negative cognitive strategies to handle stressful events, these patients may be better prepared to learn the skills designed to maximize the effectiveness of CT strategies and apply them more broadly. However, patients with severe impairments in compensatory skills at treatment baseline may benefit more from dynamic therapy's greater use of broadly supportive techniques. Patients who enter treatment with relatively low compensatory skills may be so reliant on depressotypic thinking strategies that they are unable to recognize and halt their automatic negative thoughts and therefore need a period of generalized therapeutic support before they can begin to implement specific cognitive strategies to modify their thinking. Perhaps these patients are not able to make changes in their cognitive strategies until they are more emotionally stable.

Although previous analyses demonstrate that change in self-understanding across treatment is significantly predictive of improvement in both dynamic and cognitive treatments (Connolly Gibbons et al., 2009), our results regarding the role of baseline levels of self-understanding in the process of both DT and CT are inconclusive. It is possible that the lack of findings for self-understanding was due to problems with the measurement of the construct, although previous analyses (Connolly Gibbons et al., 2009) suggested that the measurement of self-understanding implemented in the present study is both reliable and valid.

The conclusions that can be drawn from these results are limited by the heterogeneity and relatively small size of each individual study within the pooled database. For this investigation we pooled multiple cognitive and behavioral therapeutic approaches under one CT umbrella and pooled multiple dynamically oriented approaches for different disorders under the DT approach. The treatment effects obtained here may not necessarily generalize to specific treatments implemented with specific diagnostic groups. Future studies should further explore the role of baseline skills deficits in the process of change for specific treatments. Future studies may also evaluate what therapist variables, in addition to patient baseline skills, may influence the course of treatment.

Although differences between studies were controlled for in the regression analyses, the small sample sizes within individual pilot studies did not allow us to examine the role of these baseline skill variables for specific diagnostic groups. It is possible that the techniques of cognitive therapy operate differently for diverse conditions, perhaps operating as a

compensation model for some disorders but as a capitalization model for others. Finally, the data in this study consist of patients nested within therapist. Nested data require advanced analytical modeling to address the clustering within therapist. We attempted to fit multilevel models to our data structure, but unfortunately these models did not converge leaving us unable to address the variability across therapists. Future research would be needed to understand the therapist contribution to this complex relation between baseline skill levels and symptomatic course.

## Conclusion

In conclusion, our results support a capitalization model for cognitive therapy but failed to support neither a compensation nor capitalization model for the short-term dynamic model. The cognitive treatments were most effective in decreasing depressive symptoms when capitalizing on the relative strengths of patients who began treatment with relatively minor deficits in the use of compensatory skills at baseline.

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## Table 1

Hierarchical Multiple Regression Predicting Change on the HAMD From Baseline Compensatory Skills

| Variable | $F$ ($df_1$,$df_2$) | $p$ | Partial eta |
|---|---|---|---|
| *Model 1* | | | |
| Treatment | 6.44(1,77) | .013 | .28 |
| Study | 2.13(4,77) | .086 | .31 |
| HAMD at baseline | 12.46(1,77) | .001 | .37 |
| Marital status | .59(1,77) | .446 | −.09 |
| Age | 6.44(1,77) | .013 | .28 |
| Education | 1.55(1,77) | .218 | −.14 |
| Biological sex | .51(1,77) | .477 | −.08 |
| WOR at baseline | 1.41(1,77) | .239 | .13 |
| *Model 2* | | | |
| Treatment*WOR | 4.59(1,76) | .035 | −.24 |

*Note*. HAMD = Hamilton Depression Rating Scale; df = degree of freedom; WOR = Ways of Responding Questionnaire.