EVALUATING THE EFFECTIVENESS OF AN INPATIENT GROUP-CBT PROGRAM FOR WOMEN WITH DEPRESSIVE SYMPTOMS: A BENCHMARKING APPROACH

A DISSERTATION

SUBMITTED TO THE FACULTY

OF

THE GRADUATE SCHOOL OF APPLIED AND PROFESSIONAL PSYCHOLOGY

OF

RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY

BY

WILLIAM CHRISTIANA

IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE

OF

DOCTOR OF PSYCHOLOGY

NEW BRUNSWICK, NEW JERSEY OCTOBER 2013

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ABSTRACT

Recent trends within inpatient psychiatry have led to shorter lengths of stay, lower reimbursement rates, and a general decline in resources for treatment providers. Inpatient psychotherapy programming must adapt to this changing landscape in order remain effective. Individuals with Major Depressive Disorder (MDD) are the largest subgroup seeking inpatient care, making the treatment of MDD a key priority in this regard. Currently, there is no well-established, empirically supported, psychosocial treatment designed for inpatients with MDD. Within this context, inpatient Group Cognitive Behavioral Therapy (G-CBT) offers a pragmatic, cost-efficient, and empirically driven solution for the development of psychotherapy programming for this population. The present study evaluated the feasibility and effectiveness of an inpatient G-CBT program implemented on a women's inpatient unit. A total of 159 women diagnosed with MDD, Bipolar I Disorder – Current Episode Depressed, Bipolar II Disorder, Depressive Disorder NOS, and Adjustment Disorder with Depressed Mood were given the Beck Depression Inventory – Second Edition at admission and discharge from the program. Attendance rates at G-CBT sessions were high, indicating that the treatment was well tolerated. A statistically significant decrease in depressive symptoms was observed at post-treatment. The obtained effect size (d=1.30) was lower, but comparable, to findings from randomized controlled trials of individual outpatient CBT and controlled studies of individual inpatient CBT. Reliable and clinically significant improvement was observed for the majority of the sample. Overall, the findings indicate that inpatient G-CBT for MDD is a promising and worthwhile treatment approach deserving of future study.

ACKNOWLEDGEMENTS

I would like to begin by thanking my family, whose love, support, and generosity has allowed me to pursue my dreams. Mom and Dad, I owe you more than words can describe, I love you both so very much. To my fiancée Sherry, you have been the guiding light and rock that has kept me grounded through the last five years, always providing the right words of encouragement, kindness, and love. I am so lucky to have found you.

I would like to extend my sincerest thanks to my dissertation committee. First, I would like to thank Dr. Katherine Lynch. You have provided me with the mentorship, resources, and guidance to pursue this worthwhile and meaningful scholarly endeavor. My two years on 6 South were nothing short of incredible. You not only helped me grow as a psychologist, but also as a person. I owe you a sincere debt of gratitude. Second, I would like to thank Dr. G. Terence Wilson, to whom I am also greatly indebted. Since arriving at GSAPP, you have provided me with a strong sense of guidance, always taking time out of your schedule to share your wisdom, insight, and advice. Your involvement in my education has been paramount to my success, from securing practicum, completing this dissertation, and obtaining an internship. I could not have made it this far without your support. Third, I would like to thank Dr. Daniel B. Fishman for his advisement over the last four years. You have helped me navigate the terrain at GSAPP, all the way through my dissertation. Your consultation and support have been invaluable.

Next, I would like to thank Dr. Elizabeth E. Epstein. Before I even started classes, you welcomed me to GSAPP with open arms. My work with you has been exciting, incredibly meaningful, and personally fulfilling. Over the last four years, you have

always been supportive, compassionate, and instructive, providing an environment that has allowed me to grow and flourish as a person and a professional. You always had your door open, no matter what the problem might be, never failing to lend a hand, offer advice, or just simply listen. You are an incredible person, professional, supervisor, and mentor. Thank you for everything.

Finally, I would like to thank the GSAPP community. I feel incredibly lucky to be a part of GSAPP. While the program is fantastic and renowned, it is the people here who make it truly special. To my friends and classmates, I hope we share more good times together. It has been an incredible journey, one that I could not imagine traversing without you. To the faculty, you made my education fun, challenging, and exciting. Thank you for all of the lessons, those about psychology and those about life, that you have imparted. Your support and guidance enables all of us to succeed. We, as students, cannot thank you enough. I would like to extend a special thank you to Drs. Brian Chu and Lew Gantwerk. To be honest, I cannot imagine getting through all of this without either one of your counsel, advice, and support. To all of my clinical supervisors, especially Dr. Michal N. Saraf, thank you for all of your time, effort, and insight. Without you, I could never have grown as clinician and learned the craft of psychotherapy. To the staff, all I can say is that you are incredible. Sylvia Krieger, Alicia Picone, and Arlene Miller, you are the engine that makes GSAPP run. Whenever I had a question, you had an answer. Whenever I had a problem, you not only listened, but you helped me find a solution. Thank you for putting the students first, it does not go unnoticed.

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CHAPTER I

Introduction

Evidence Based Practice and Inpatient Psychotherapy

Over the last fifteen years, there has been a growing interest in forming guidelines for the use of psychotherapies in clinical practice (APA Presidential Task Force on Evidence-Based Practice, 2006). Establishing the efficacy of psychosocial treatments appears to be at the center of this endeavor. While basic criteria for evaluating treatment outcome research have been developed with this in mind (Chambless et al., 1998; Chambless & Hollon, 1998; Task Force on Promotion and Dissemination of Psychological Procedures, 1995), the manner in which Empirically Supported Treatments (ESTs) are subsequently disseminated and implemented is currently being debated (Shafran et al., 2009; Westen, Novotny, and Thompson-Brenner, 2004).

During this time, various forms of cognitive-behavioral therapy (CBT) have been shown to be efficacious in treating a number of different psychiatric conditions, including Borderline Personality Disorder (Linehan et al., 2006), Bulimia Nervosa (Murphy, Straebler, Cooper, & Fairburn, 2010), Major Depressive Disorder (Hollon, Stewart, & Strunk, 2006), Panic Disorder (Barlow, Gorman, Shear, & Woods, 2000), and Post-Traumatic Stress Disorder (Powers, Halpern, Ferenschak, Gillihan, & Foa, 2010). Consequently, there is an increasing demand for the implementation of CBT across a wide range of settings.

Despite the increasing number of CBT packages being developed, tested, and identified as ESTs, much if not all of the emphasis has been placed on the performance of

outpatient CBT in comparison to some form of control group or bona fide treatment (e.g., medication), via the gold methodological standard of Randomized Controlled Trials (RCTs). Problematically, little attention has been paid to treatment packages designed for use with inpatients (Cuijpers et al., 2011). The need to identify short-term, problem focused, and cost-effective treatments is clearly growing as current trends within inpatient psychiatry demand that healthcare providers do increasingly more for patients with an ever decreasing supply of resources. Shorter lengths of stay, a reduction in the number of available inpatient beds, and declines in reimbursement rates for services are some of the most noteworthy obstacles impacting the delivery of services (Strum & Boa, 2000).

Within this context, individuals with mood disorders are reported to be the most common diagnostic group seeking inpatient care in recent years (Russo, Hambrick, & Owens, 2007). In 2005, a total 713,000 out of 1.8 million inpatient psychiatric hospital discharges were classified as mood disorders, with MDD accounting for over half of those presenting with conditions in this category (Levit et al., 2007; Russo et al., 2007). During that same year, the average length of stay for an individual with MDD was 6.6 days, with an average cost of $4,500 per stay and an estimated $1.9 billion spent per year treating those with the condition. These figures highlight the need for efficacious and efficient psychosocial treatments for use within inpatient settings, making this a paramount concern for clinicians and those developing health care policy.

In a recent review, Cuijpers and colleagues (2011) identified only 12 RCTs evaluating inpatient treatment packages for MDD. When analyzing these studies via meta-analysis, the pooled effect size across studies was reported to be small, with the

authors concluding that larger and better controlled trials were necessary before firm conclusions could be drawn about any inpatient treatment for MDD. This includes, but is not limited to, CBT based interventions. Problematically, conducting large scale RCTs within inpatient settings can be extremely costly and complex, limiting the degree to which this methodology has been employed. Yet, if such studies are not conducted and if positive findings cannot be replicated, no inpatient treatment package will meet the burden of proof necessary to be considered a well-established EST under the current guidelines (Chambless et al., 1998; Task Force on Promotion and Dissemination of Psychological Procedures, 1995). As a result, practitioners and administrators working in inpatient settings are left with significantly less guidance in the way of developing evidence-based psychotherapy programming in comparison to their outpatient counterparts. To address this concern, further research investigating psychosocial treatments for inpatient use is clearly needed.

Individual Inpatient CBT for MDD

As it currently stands, the majority of inpatient CBT packages that have been evaluated are based almost exclusively on Beck's Cognitive Therapy, whereby treatment can be defined as "an active, directive, time-limited, structured approach used to treat a variety of psychiatric disorders. It is based on an underlying theoretical rational that an individual's affect and behavior are largely determined by the way in which he [or she] structures the world" (A.T. Beck, Rush, Shaw, & Emery, 1979). According to this model, psychiatric disorders and related symptomatology are predominately the result of dysfunctional thinking and/or information processing. Within this theoretical framework,

information processing can be defined as, “the structures, processes, and products involved in the representation and transformation of meaning based on sensory data derived from the external and internal environment” (Clark, A. T. Beck, & Alford, 1999). Thus, the goal of treatment, in large part, is to restructure or reorganize the abnormal information processing of the patient to a more healthy mental set. This restructuring is then thought to allow the patient to process information in a more accurate and unbiased fashion, with this helping to alleviate the symptoms and subsequent distress associated with mental illness.

However, the model does take into consideration and subsequently integrate the ways in which environmental, emotional, behavioral, and biological forces work to both contribute to, as well as maintain, the presence of psychopathology (J. S. Beck, 1995; Clark et al., 1999). As such, it is highly compatible with pharmacotherapy and the development of inpatient milieus (Wright, Thase, A. T. Beck, & Ludgate, 1993). Its short-term and problem focused nature make it a natural candidate for psychosocial interventions designed for use within inpatient settings, especially when one considers the current constraints placed on inpatient care (Lynch, Berry, & Sirey, 2010; Wright et al., 1993). Prior studies suggest that it offers a promising approach for the inpatient treatment of MDD, both alone and in tandem with pharmacotherapy (Lynch et al., 2010; Stuart & Bowers, 1995; Stuart & Thase, 1994; Veltro et al., 2006, 2008).

In an initial pilot study, Shaw (1980) evaluated the effectiveness of an individual inpatient CBT protocol in the treatment of 11 depressed individuals (as cited in Stuart & Bowers, 1995). Patients received treatment thrice weekly for approximately 8 weeks without concurrent pharmacotherapy. A significant and robust difference between pre-

treatment and post-treatment scores on the Beck Depression Inventory (BDI) was observed. Building on this work, de Jong, Treiber, & Henrick (1986) randomly assigned 30 patients to one of three treatment conditions: 1) Combined Treatment, 2) Cognitive Restructuring Alone, or 3) a wait list control group. In the combined treatment condition, patients received individual therapy which covered activity scheduling in early sessions and transitioned to cognitive restructuring in later sessions. Patients in this condition also participated in a social competence training group twice per week. In contrast, patients in the Cognitive Restructuring (CR) Alone condition received only individual sessions focusing on cognitive restructuring. Patients in the control group received non-directive and supportive psychotherapy on an outpatient basis (de Jong et al., 1986). Notably, no patients received pharmacotherapy during the treatment phase, which lasted between two to three months. When using the BDI as the primary outcome measure, only the combined condition outperformed the control group. When using the Hamilton Rating Scale for Depression (HRSD), all three conditions showed improvement, with no significant differences across conditions.

Wright (1987) compared the effectiveness of individual CBT in conjunction with predetermined levels of pharmacotherapy (i.e., 50mg vs. 100mg vs. 150mg of Nortriptyline) in a sample of 38 patients (as cited in Stuart & Thase, 1994). While there were no between group differences based on dosage schedules, a significant and robust difference between pre-treatment and post-treatment scores on HRSD was observed when data was pooled across all three conditions. Barker, Scott, & Eccleston (1987) investigated the additive effect of individual CBT in a study testing a comprehensive medication regimen for chronic, treatment refractory MDD. A total of 20 patients were

randomly assigned to either a medication only condition or medication plus CBT condition. Treatment was conducted over 12 weeks, with patients in the CBT condition receiving approximately 15 sessions of individual therapy. No significant differences were observed between the two groups, yet improvement was reported for patients in both conditions.

Finally, Bowers (1990) tested the effectiveness of individual CBT by randomly assigning 30 individuals to one of three conditions: 1) CBT plus medication, 2) Relaxation Training (RT) plus medication, or a medication only control group. To note, medication levels in this trial were not standardized as in previous studies (Barker et al., 1987; Stuart & Thase, 1994). Patients in the two treatment conditions received either 12 individual CBT therapy sessions or 12 individual RT sessions over three weeks, while those in the medication only condition received no individual therapy. All psychotherapy was provided by the main author. At post-treatment, both treatment conditions outperformed the control group on the BDI, yet there were no significant differences between the two treatment arms on this measure. However, the CBT group outperformed both of the other conditions when improvement was categorically defined by HRSD ratings.

The results of these studies are both noteworthy and problematic. On the one hand, the results suggest that CBT has the potential to be an effective treatment whether it is combined with medication (Barker et al., 1987; Bowers, 1990; Stuart & Bowers, 1995) or used as the primary intervention within an inpatient setting (de Jong et al., 1986; Stuart & Thase, 1995). The latter is perhaps the most encouraging news for the treatment more generally, as it suggests that it can be effective as a standalone approach to inpatient care.

On the other hand, these findings do not allow for any firm conclusions to be drawn about inpatient CBT specifically. First, the different methodologies implemented, coupled with the various control/comparison conditions employed, make the data difficult to interpret across studies. Second, the CBT treatment protocols varied significantly in terms of service delivery. As result of these two key issues, no positive finding was systematically replicated. Yet these studies would seem to suggest, at least cautiously, that combined CBT and pharmacotherapy represent the most pragmatic of these approaches. Furthermore, combined pharmacotherapy and psychotherapy are more likely to be implemented within an inpatient setting as compared to CBT alone, perhaps making the most logical choice for future study.

Despite concerns about internal validity and the lack of replication, it can be argued that an even larger problem exists when considering the external validity of the aforementioned results. To be specific, the majority of these studies combine general aspects of inpatient treatment (i.e., pharmacotherapy, therapeutic milieu, and adjunctive psychosocial rehabilitation components) with the general aspects of outpatient care (i.e., individual patient sessions) over a protracted period of time (e.g., weeks to months). If we consider that the average length of stay for inpatients with MDD is currently 6.6 days (Levit al., 2007; Russo et al., 2007), as well as the other trends observed within inpatient psychiatry (Strum & Boa, 2000), it seems unreasonable to use these studies as a guide for implementing inpatient CBT programming within the current economic climate. Logistically, providers do not have the resources to offer services resembling those described above. Consequently, inpatient CBT programs require further adaptation, development, and evaluation before they can be considered either feasible or effective.

Inpatient Group CBT for MDD

In an effort to address the declining resources available for inpatient care and increase cost-efficiency, group therapy one of the most the most pragmatic solutions for implementing psychosocial interventions under these constraints. While group therapy is typically considered a core component of inpatient care (Yalom, 1995), there is significant variability in how it is delivered. Problematically, there is a lack of empirical research pertaining to the efficacy, effectiveness, and implementation of group therapy delivered on an inpatient basis for MDD (Cuijpers et al., 2011), with this being particularly true of G-CBT approaches (Lynch et al., 2011; Veltro et al 2006, 2008). However, the available data from studies evaluating outpatient and inpatient G-CBT suggests that it is a worthwhile form of treatment.

In 2008, Oei and Dingle reviewed both controlled (n=13) and uncontrolled trials (n=20) evaluating outpatient G-CBT for MDD. After the data had been pooled for meta-analysis, the average effect sizes for controlled (d = 1.11) and uncontrolled (d = 1.30) studies were large, with this suggesting that outpatient G-CBT is a promising, effective, and possibly efficacious treatment for MDD. Overall, treatment outcomes appeared to be consistent with findings reported by RCTs that evaluated individual outpatient CBT in the treatment of MDD (Oei & Dingle, 2008). Despite the mounting evidence that outpatient G-CBT represents a successful adaptation of CBT in the treatment of MDD, no specific G-CBT protocol has met criteria for being a well-established EST under the current guidelines within the field.

Research studies evaluating inpatient G-CBT approaches are even more limited in number. However, the preliminary results are encouraging. For example, after initiating a

G-CBT program on a short-term inpatient unit in Italy, Veltro and colleagues (2006, 2008) reported high levels of patient satisfaction, reductions in the number of physical restraints used on the unit, improved atmosphere on the unit, and lower readmission rates for patients with schizophrenia and bipolar disorder. Unfortunately, lower readmission rates were not observed for patients with MDD or personality disorders. Lynch, Berry, and Sirey (2011) recently described a G-CBT treatment protocol designed for use on an acute, short-term, psychiatric inpatient unit for women. The implementation of the treatment was associated with improved psychosocial functioning and a reduction in symptomatic distress across a number of diagnostic groups, including those with MDD and other mood disorders. Notably, neither study specifically focused on the treatment of MDD. Yet, their findings do support the feasibility and promise of an inpatient G-CBT protocol being used in the treatment of MDD.

Evaluating the Effectiveness of Inpatient G-CBT for MDD

Taken together, the current body of evidence supports the proposition that a short-term inpatient G-CBT protocol has the potential to be effective in treating MDD. First, substantial research has been conducted on individual outpatient CBT and indicates that it is a standalone EST for MDD (Hollon et al., 2006). The results of efficacy studies evaluating CBT protocols provide the fundamental premise for even considering the use of CBT interventions within inpatient settings. Second, research on individual inpatient CBT packages for MDD suggest that it is an effective, but not necessarily efficacious treatment, when delivered on an individual basis with or without concurrent pharmacotherapy (Barker et al., 1987; Bowers, 1990; de Jong et al., 1986; Stuart &

Bowers, 1995; Stuart & Thase, 1994). Despite the limitations of the research in this area, the adaptation and implementation of the approach for inpatient use is noteworthy and laudable. Third, studies of outpatient G-CBT indicate that it is an effective, but that is not yet an efficacious or well established EST for MDD (Oei & Dingle, 2008). Research from this domain suggests that CBT can be implemented in a group format and achieve clinically meaningful success that is comparable to individual CBT. Finally, the initial results from inpatient G-CBT studies indicate that it is a well-tolerated treatment associated with promising outcomes (Lynch et al., 2011; Veltro et al., 2006, 2008).

Considering this empirical foundation and the current need to identify well established psychosocial ESTs for inpatient use, further research on inpatient G-CBT for MDD can be seen as a necessary endeavor for the continuation of evidenced-based practice in clinical psychology. While one could argue that the existing body of evidence warrants the implementation of inpatient G-CBT treatment programs within clinical practice already, it would seem both wise and cautious to view any inpatient G-CBT protocol as an adapted version of an EST that has not yet fully demonstrated its effectiveness, let alone its efficacy. Perhaps, it is more accurate to view inpatient G-CBT for MDD as pragmatic and data driven solution for implementing evidence based psychotherapy in lieu of clear treatment guidelines. The field cannot readily assume that any inpatient G-CBT program, protocol, or package, despite its theoretical construction and related empirical support, would be efficacious and/or effective when implemented on an inpatient unit. While the available evidence would strongly support this proposition, we must bear in mind that alterations to any treatment protocol have the potential to undercut the theoretical integrity of the original treatment, the mechanisms by

which change occurs and/or is purported to occur, or can limit the intended effect (Swenson, Sanderson, Dulit, & Linehan, 2001; Swenson, Whitterholt, & Bohus, 2007; Wright et al., 1993). Even small changes to the delivery of treatments have been shown be to iatrogenic in the past (Springer, Lohr, Buchtel, & Silk, 1996). In regards to adaptation, dissemination, and implementation, it is these types of concerns which underlie suggestions to "proceed more cautiously…until we see a more extensive research base" (Swenson, 2001, p. 88).

However, until such time that large scale RCTs testing inpatient G-CBT protocols are conducted and the subsequent findings replicated, it cannot be considered an EST under the current guidelines for evaluating treatment outcome research. Obtaining this distinction within an unstable economic climate can be seen as critical, especially when one considers the emphasis on evidence based practice within healthcare and its bearing on reimbursement rates for services. Keeping this in mind, hospital administrators and treatment providers wishing to offer G-CBT interventions to inpatients with MDD are in need of further empirical guidance for developing their treatment programs.

Under these auspices, a program of research evaluating new and/or adapted psychosocial treatments for inpatient use can flourish. In the case of G-CBT packages, researchers need to begin accounting for the current obstacles that influence service delivery within inpatient care. Simultaneously, these studies must also attend to the theoretical integrity and purported mechanisms of action underlying the protocols that are adapted. If the field does not account for the ongoing tension associated with each of these dimensions, the development, evaluation, and identification of feasible and effective treatments will not occur. Traditionally, a research program of this nature would

progress from pilot studies, to efficacy trials, to the application of methodological designs that serve evaluate the dissemination, transportability, and implementation of the treatment in real-world clinical settings. Despite the scientific rigors of this approach, it is quite costly with respect to time and money. Those currently responsible for treatment programming within inpatients settings cannot wait for this lock-step progression to be completed. Instead, they can only rely on the available literature.

G-CBT programs are currently being implemented throughout inpatient treatment programs to increase access to ESTs, with such programming being largely based the type of empirical evidence highlighted throughout this discussion. Problematically, such programs are not being widely described, evaluated, or examined. Even if data is being collected, it is not being put forth into the literature, decreasing the public's access to the information. One could argue that the development and execution of effectiveness or observational studies evaluating such programs would be extremely valuable given the dearth of information in the literature.

From a research perspective, effectiveness and/or observational studies can provide a fertile ground for evaluating the feasibility of G-CBT interventions under the current constraints of inpatient care, achieving a high degree of external validity. This is a pressing issue when one considers the discrepancy between previous inpatient trials and the constraints currently impacting inpatient care. As an evidence base of effectiveness/observational research accumulates, it can be used to identify those approaches that seem most effective, promising, and theoretically sound. The resulting body of evidence could then be used to justify the costly expenditures for conducting RCTs, evaluating only those protocols which have demonstrated the greatest clinical

utility under the most stringent of standards. In a way, this offers a "reverse engineering approach" to the typical lock-step stages of progression for treatment outcome research that are oft employed within the scientific community.

From a clinical perspective, the accumulating evidence can serve as a "preliminary and cautious guide" to implementation for providers who are looking to develop evidence based psychosocial treatment programming within inpatient settings. Given the lack of direct evidence on the topic and the absence of clear guidelines, such research could prove to be extremely valuable to practitioners, administrators, and policy makers until efficacy trials are conducted. To increase research productivity, accountability, and quality of care, it should always be recommended and/or required that systematic program evaluation be used when adapted protocols are implemented in any setting. If the treatment packages are clearly defined, carefully constructed, and combined with a comprehensive and systematic process for evaluation, the subsequent data can be submitted for publication and be used to develop an overarching pool of effectiveness/observational research. This could not only expand upon the existing literature in a substantial manner, but also provide a closer point of intersection for researchers and clinicians. In theory, this could further reduce the gap between science and practice, driving inpatient treatment development in a more empirical direction.

The Present Study

Building on the work of Lynch, Berry, and Sirey (2011), the author will evaluate the clinical effectiveness of an inpatient G-CBT program currently being implemented on an acute, short-term, inpatient unit providing care to women. The present study will

examine patient response to a G-CBT program within a sample of adult women seeking treatment in the midst of a depressive episode. Using a pre-post treatment design, outcomes will be evaluated for the selected sample of patients, with changes in depressive symptomatology being the main outcome measurement. While this approach does not hold the same methodological rigor as an RCT (i.e., no control group, random assignment, etc.), it can be seen as a critical step forward in the program of research outlined earlier, providing a carefully constructed evaluation of an adapted inpatient G-CBT program that operates under the key constraints influencing inpatient psychiatric treatment. Keeping in mind that previous studies evaluating inpatient CBT protocols lacked the necessary external validity to inform inpatient treatment planning within the current economic climate, the basic methodology employed in this study can arguably be seen as a logical step for evaluating the feasibility and effectiveness of the treatment package being implemented.

Further, the present study will have a substantially larger sample size than previous studies evaluating inpatient CBT. It will also add two noteworthy dimensions for interpreting the obtained results. First, pre-post effect sizes for the current sample will be benchmarked against uncontrolled effect sizes from RCTs of outpatient CBT protocols, as well as controlled trials of inpatient CBT protocols. Because the methodological rigor of these studies is substantially greater than that which has been adopted herein, the results from the selected studies can be used to provide an empirical context for evaluating the findings, offering one of the most relevant metrics for treatment outcome researchers. Second, the sample will be broken down into responders and non-responders based on the Reliable Change Index (RCI; Jacobson, Roberts, Berns,

& McGlinchey, 1999; Jacobson & Truax, 1991) established for each patient. The need to identify clinically significant improvement is perhaps the most relevant form of data for clinicians and administrators within inpatient settings. Although these procedures are most often used in outpatient trials (McEvoy & Nathan, 2007), they will aid in the determining the relevance of the findings from both clinical and research perspectives.

It is predicted that this particular inpatient G-CBT program will be associated with the following treatment outcomes: 1) Statistically significant decreases in depression symptom severity, as measured by the Beck Depression Inventory – Second Edition (BDI-II; A. T. Beck, Steer, & Brown, 1996), will be observed at post-treatment; 2) The uncontrolled pre-post treatment effect size obtained in this study will be lower but comparable to those reported in previous outpatient RCTs and controlled trials of inpatient CBT; 3) Using the RCI (Jacobson et al., 1999; Jacobson & Truax, 1991), participants categorized as Recovered and Improved (e.g., responders) will be comparably different from those categorized as Unchanged or Deteriorated (e.g., non-responders) on measures such as length of stay, the number of treatment groups attended, and pre-treatment levels of depressive symptoms. To be specific, responders are predicted to have attended significantly more treatment sessions, have a longer length of stay, and report lower BDI-II scores at admission.

CHAPTER II

Method

Participants

Between 2007 and 2011, a total 541 adult women receiving treatment on the same women's inpatient unit in the New York metropolitan area participated in a study evaluating the effectiveness of an inpatient G-CBT Program. The treatment setting is a 25-bed, locked, inpatient unit designed for short-term treatment and stabilization of female patients presenting with a variety of psychiatric disorders. To be eligible for inclusion in the present study, participants must have received a primary diagnosis of MDD, Dysthymia, Bipolar Disorder – Current Episode Depressed, Bipolar II Disorder, Depressive Disorder Not Otherwise Specified (NOS), or Adjustment Disorder with Depressed Mood at discharge from their treating psychiatrist. Further, participants must have completed the BDI-II at both admission and discharge, responding to at least 80% of the items at each time point. These criteria were chosen to ensure the author's ability to evaluate changes in depressive symptoms and address missing data in an acceptable fashion (Roth, Switzer, & Switzer, 1999).

The following exclusion criteria were used for the present study. First, participants that received a primary diagnosis at discharge other than those listed above were excluded from the analyses. Second, individuals in the midst of Major Depressive Episode that included psychotic features were also excluded, as these participants were not included in the outpatient RCTs and inpatient trials chosen for benchmarking purposes. Third, participants receiving Electroconvulsive Therapy (ECT) were also excluded, as ECT represents a significant deviation from the course of a typical

hospitalization. Finally, individuals with a length of stay shorter than 3 days and longer than 21 were also excluded. Individuals with extremely short or long lengths of stay are not representative of the target population and/or the typical length of stay for individuals in the midst of a depressive episode.

Instruments

Demographic Questionnaire (DQ). The DQ is a study specific self-report questionnaire designed to acquire basic demographic information about participants (Lynch et al., 2011). It contains items inquiring about, ethnicity, age, marital status, education level, living arrangement, employment status, income level, and primary source of income.

Beck Depression Inventory – Second Edition (BDI-II). The BDI-II is a 21-item self-report measure assessing depressive symptomatology and designed to map onto the DSM-IV MDD criteria (A.T. Beck et al., 1996). Each item provides the participant with a series of statements pertaining to a specific depressive symptom, with the participant being asked to endorse one of the statements presented. Each statement is anchored to an empirical value ranging from 0 to 3, with higher scores being indicative of greater symptomatic distress. Accordingly, the instrument has established ranges regarding severity (A. T. Beck, et al., 1996): Minimal (0-13), Mild (13-19), Moderate (20-28), and Severe (29-63).

The BDI-II showed high levels of internal consistency when used with college students ($\alpha = .93$) and outpatients ($\alpha = .92$) during its initial development (Beck et al., 1996). Independent studies have reported similar levels of internal consistency when

testing psychiatric outpatients (α = .92; Steer et al., 1996), college students (α = .92; Dozois, Dobson, & Ahnberg, 1998), and individuals presenting for substance abuse treatment (α = .91; Buckley, Parker, & Heggie, 2001). Test-retest reliability was also reported to be high across the samples mentioned above (A. T. Beck et al., 1996; Buckley et al., 2001; Dozois et al., 1998), with this indicating that the instrument is sensitive to symptomatic changes over time.

Overview of the Treatment Program

The G-CBT program being evaluated in this study contains several components which have been outlined elsewhere in the literature (Lynch et al., 2011). The treatment is a combination of G-CBT, individual pharmacotherapy, adjunctive psychosocial rehabilitation, and comprehensive case management. Pharmacotherapy is delivered by the attending psychiatrists on the unit. Adjunctive psychosocial rehabilitation therapy occurs in a group format and includes topics such as Art Therapy, Pet Therapy, Poetry, Spirituality, and Health and Wellness. Finally, individual case management is provided by licensed social workers, with this including an intake assessment, treatment planning, discharge planning, and a number of other key responsibilities. The latter components represent the common aspects of inpatient care that occur across settings and are not unique to the unit. In contrast, the G-CBT protocol being implemented is unique to the unit and represents the fundamental reason for evaluating the program as a whole.

Upon admission, each client receives a brief orientation to the unit, a succinct rationale for CBT, and a short overview of the treatment as it is delivered on the unit. All patients are given a workbook that covers the content associated with each of the G-CBT

sessions that are offered, including worksheets and other resources that can be used during and after their hospitalization. G-CBT is implemented according to a five-day manualized protocol designed for use with a heterogeneous group of psychiatric inpatients, with two main groups offered each weekday on the unit, Monday through Friday: Core CBT Group (1 hour) and Self-Help Time (1 hour). Further, the CBT approach to care is well integrated into the entire milieu of the inpatient unit (Wright et al., 1993).

The structure of the G-CBT protocol progresses in a stepwise fashion, whereby the concepts and skills covered in one day or session serve as the foundation for material covered in the next. The content for each group is outlined in the treatment manual and patient workbook, with clear and concise details for groups held on Monday, Tuesday, Wednesday, Thursday, and Friday. A five day cycle for content is employed, with the cycle being repeated each week. The short-term duration of the protocol and recycling of the content is critical to the nature and implementation of the protocol, for it takes into account the shorter lengths of stay discussed earlier. Further, if patients are hospitalized for a longer periods of time (e.g., 7 days or more), the repetition promotes increased mastery of the basic skills and concepts that are learned.

G-CBT is delivered to patients by a select group of treatment providers working on the unit (i.e., social workers, attending psychologist, psychology externs, chief psychiatric nurse, and the psychosocial rehabilitation therapist that are assigned to the unit), all of whom who have received training and supervision in the G-CBT protocol from the treatment designer (Katherine Lynch, Ph.D.) . Many of the therapists have

received training in CBT from other outside agencies as well (e.g., Beck Institute for Cognitive Therapy and Research).

G-CBT Session Structure

Each session is run by two co-therapists. After therapist and patient introductions, the norms/rules for the group are reviewed. An overview and agenda for the session are then set. The basic concepts pertaining to the treatment model are subsequently reviewed, with this allowing for new members to join at any time and gain an adequate understanding behind the rationale of the treatment. Following suit, the main skill and corresponding intervention for the session is then introduced. Therapists provide psychoeducation about the skill and use a basic example to illustrate how it can be used effectively. During this time, therapists not only review the example, but they also respond to fundamental questions about the skill, CBT more generally, and work to increase motivation for using the skill on a regular basis.

During the remainder of the session, therapists take a patient example from the group and apply the skill/intervention to a direct clinical issue impacting the volunteer. The example permits the group to see how the skill is used in relation to a peer's life situation, with this allowing the members to learn vicariously through another member's experience. Furthermore, this facilitates improvement in the case of the volunteer and instills hope in other members. At the end of every session, patients are given a homework assignment pertaining to the content that was covered and are asked to complete it during Self-Help Time (see below) with the help of a therapist. If attending

Self-Help Time is not feasible, patients are encouraged to complete the assignment on their own and seek informal feedback on it at another point in the day or evening.

Self-Help Time Structure

Self-Help Time is offered in the early evening for one full hour. During this time, patients are asked to bring their assigned homework exercises and complete them with the help of a therapist. While this intervention is offered in a group context, therapists actually move from one individual to another in order to provide the necessary level of assistance and tailor the intervention/skill to the client's idiographic needs and presentation. For example, some individuals are at a level where they can complete the assigned exercise with minimal to no assistance. In these cases, clinicians will first review the original assignment and either build upon it in or incorporate an additional intervention to address a related component of the patient's presenting problem (e.g., behavioral plan for sleep hygiene). Other patients, for example, may need to review the CBT model with a therapist and/or complete a more basic form of the exercise due to their level of understanding or cognitive ability. In either case, the protocol and nature of the manual encourages clinical flexibility, yet emphasizes the completion of homework to reinforce the acquisition of the skills.

Session Content

Monday: Understanding Automatic Thoughts. The focus of Monday's session is two-fold. First, psychoeducation about the cognitive-behavioral model of psychotherapy and psychopathology is provided. To be specific, therapists introduce the

relationship amongst Antecedent Events (i.e., situations or triggers), Beliefs (i.e., automatic thoughts), and Consequences (i.e., emotions and behaviors) as a precursor for learning how to cope with negative emotions and maladaptive behaviors. Building off of this rationale, a detailed emphasis is placed on learning how to identify automatic thoughts and their link to negative affective states, with cognitive restructuring being proposed as the crux of the treatment and a pathway towards improvement. Careful attention is placed on helping patients learn to not only identify their automatic thoughts, but also how to differentiate those thoughts from emotions and understand the way in which intense emotions precipitate maladaptive behaviors.

Using a modified three-column Dysfunctional Thought Record (DTR: J. S. Beck, 1995), therapists walk the client's through an example that includes a specific antecedent, related automatic thoughts, and subsequent emotions. During the presentation of the example, as well as afterward, clinicians answer questions about the process of identifying automatic thoughts and the CBT model more generally. In the remainder of the session, a patient example is elicited and processed with the help of the therapists, modeling how to identify automatic thoughts and use the three-column DTR correctly. For homework, participants are encouraged to come to Self-Help Time to work on the three-column DTR with the help of a therapist or to complete one on their own before the next G-CBT session.

Tuesday: Modifying Automatic Thoughts – Part I. Tuesday's session builds upon what is covered in the previous day, teaching client's how to reframe maladaptive cognitions into more balanced and adaptive thoughts. After therapist/patient introductions, establishment of group norms/rules, a brief review of the CBT model, and

setting of the agenda, the therapists provide psychoeducation about challenging the validity of negative automatic thoughts and the rationale for doing so, using an example that illustrates the completion of a seven-column DTR (J. S. Beck, 1995). An emphasis is placed on learning ways to identify evidence pertaining to automatic thoughts, determining how that evidence supports or refutes the validity of the thought being evaluated, and subsequently using this newly acquired information to create a more balanced thought to reduce distress. For homework, participants are encouraged to come to Self-Help Time to work on the seven-column DTR with the help of a therapist or to complete one on their own before the next G-CBT session.

Wednesday: Modifying Automatic Thoughts – Part II. Wednesday's session is based on teaching client's how to mitigate the impact of maladaptive automatic thoughts by 1) reviewing how to examine the evidence related to the validity of the thought (i.e., reinforcing the skill from the previous session, 2) learning how to identify when challenging the validity of an automatic thought will not be helpful in reducing distress, and 3) learning how to challenge the utility of automatic thoughts in order to reduce negative affect. After therapist/patient introductions, establishment of group norms/rules, a brief review of the CBT model, and setting of the agenda, the therapists provide psychoeducation about challenging the utility of automatic thoughts and the rationale behind it. Using a modified DTR, therapists guide patients through an example that illustrates the use of this particular skill. As in previous sessions, therapists will field questions from the group about the skills being presented, the rationale for the intervention, and the potential obstacles that could arise when using it. Following suit, a patient example is then elicited from a group member and processed with the help of the

therapists. For homework, participants are encouraged to come to Self-Help Time to work on the modified DTR with the help of a therapist or to complete one on their own before the next G-CBT session.

Thursday: Recognizing Cognitive Errors. Thursday's session focuses on learning how to recognize and subsequently classify cognitive errors/distortions (J. S. Beck, 1995). After therapist/patient introductions, establishment of group norms/rules, a brief review of the CBT model, and setting of the agenda, the therapists provide psychoeducation about cognitive errors/distortions. This material is linked to the identification and modification of automatic thoughts in previous sessions. A review of common cognitive errors/distortions then takes place (e.g., All-or-Nothing Thinking, Disqualifying the Positive, Catastrophizing), with patients being asked to choose a distortion from a handout and read it aloud to the group. Following a review of each error/distortion on the list, the therapists provide an example list of automatic thoughts that represent each of the cognitive errors/distortions discussed earlier. In an interactive fashion, patients are asked to correctly identify the distortion(s) associated with each of the listed thoughts, with therapists providing corrective feedback so as to facilitate accurate identification. Following suit, patients are asked to provide examples of their own automatic thoughts, with the therapists and other group members providing a supportive forum to aid in classifying the automatic thoughts that are shared. For homework, participants are encouraged to come to Self-Help Time to work on the modified DTR with the help of a therapist or to complete one on their own before the next G-CBT session.

Friday: Behaviors Connected to your Thinking and Mood. Friday's sessions focuses on the identification and amelioration of negative/maladaptive behaviors. After therapist/patient introductions, establishment of group norms/rules, a brief review of the CBT model, and setting of the agenda, the therapists provide psychoeducation about maladaptive and self-defeating behaviors. Methods for evaluating the positive and negative consequences of a behavior, as well as strategies for making an action plan for behavioral change, are discussed in detail. An emphasis is placed on setting clear and achievable goals, identifying and overcoming potential obstacles, allotting time for practice, and rewarding personal achievement. In accordance with previous sessions, therapists provide an example for using this skill and respond to patient questions, concerns, and comments. Following suit, an example is elicited from the group and worked through with the help of the therapists. For homework, participants are encouraged to come to Self-Help Time to work on addressing a problem behavior with the help of a therapist or to complete one on their own.

Procedure

The following procedure was approved by the Institutional Review Board at New York Presbyterian Hospital/Weill-Cornell Medical College. Upon admission, newly admitted patients were oriented to the unit by a research assistant. During this time, patients who were observed to be grossly psychotic, deemed violent/aggressive by their psychiatrist, placed on observational status, developmentally/intellectually impaired, or unable to speak English were not approached to participate in the study due their inability to provide informed consent or complete the research materials. All other patients were

briefly told about the opportunity to participate the research study after being oriented to the unit and the G-CBT program. If the patient was interested in participating, a more in-depth description of the study was provided and they were given the opportunity to ask questions regarding their participation or about the study itself.

After obtaining informed consent, patients completed the DQ and the BDI-II, along with a battery of additional self-report and clinician administered measures that were not used in the current study. Pre-treatment data were collected within 24 hours of admission for those patients admitted Monday through Friday, while those arriving on Saturday and Sunday were collected within 72 hours of admission due to the lack of research staff present on weekends. Prior to being discharged, patients were again administered a battery of clinician administered measures and self-report questionnaires that included the BDI-II.

During the participant's stay on the unit, research assistants tracked the number of Core CBT Groups offered, Self-Help Time sessions offered, Psychosocial Rehabilitation Groups offered, and participant attendance at all groups. These data yield a measurement of overall group attendance, G-CBT Group attendance, and Self-Help Time attendance during the participants hospitalization. To note, attendance for all groups is voluntary on the unit under study, with this potentially leading to differences in group participation and exposure to treatment. Upon being discharged, research assistants reviewed the client's discharge summary to ascertain the primary diagnosis, all additional diagnoses, and the medication s prescribed.

Data Analysis Plan

Initially, participants meeting the inclusion criteria were identified and selected for analysis. Descriptive statistics were used to quantify demographic information (e.g., age, education, marital status income, etc.) and diagnostic information (i.e., primary diagnosis, comorbid diagnoses, etc.) for the sample. Comorbid diagnoses were then classified according to broader diagnostic groupings (e.g., Generalized Anxiety Disorder and Panic Disorder will be counted and listed as Anxiety Disorders), save Post-Traumatic Stress Disorder and Attention Deficit/Hyperactivity Disorder. These analyses provided a comprehensive description of demographics and comorbidity rates.

Information relating to G-CBT attendance, Self-Help Time attendance, and overall group attendance (i.e., all adjunctive psychosocial rehabilitation groups, G-CBT, and Self-Help Time) were calculated based on the tracking data collected by research assistants. This provided a measurement of psychotherapy dosage, but also served as an indicator for engagement in treatment. Descriptive statistics were then used to analyze the medications prescribed at discharge, with their being categorized into larger subgroups that represented broader classifications of pharmacotherapy (e.g., Zoloft and Prozac will be counted and listed as SSRIs). These analyses provided a more comprehensive description of the treatment received by the sample.

To adequately assess treatment outcome, a number of analyses were completed. Chronbach's alpha for the BDI-II was calculated for both the pre-treatment and post-treatment data, in order to ensure internal consistency at both time points. Subsequently, all cases were scanned for missing data. Case-mean substitution was then used to impute all missing values (Roth et al., 1999). The following analyses were then run to evaluate

general treatment outcome: 1) A one-tailed t-test was conducted to compare the pre-treatment mean to the post-treatment mean on the BDI-II and 2) Cohen's d was then calculated to gauge the corresponding effect size.

Given the design of the current study and the theoretical basis of the treatment protocol being used, RCTs evaluating Beck's Cognitive Therapy (A. T. Beck et al., 1979) that reported data for the BDI or BDI-II were used to benchmark the obtained effect size (Dimidjan et al., 2006; Elkin et al., 1989; Hollon et al., 1992; Rush et al., 1977). Controlled trials of inpatient CBT were also used if they reported data from the BDI or BDI-II (Bowers 1990; de Jong et al., 1986). To note, while this study implements the BDI-II as opposed to the original BDI, research on the psychometric properties of both instruments indicates that, "the BDI-II is sufficiently comparable to its predecessors, such that, with appropriate caution much of the research on the BDI/BDI-IA can be generalized to the more recent BDI-II" (Groth-Marnat, 2009, p. 587).

While the psychometric properties of the BDI and BDI-II may allow for comparisons across instruments to occur, the ways in which effect sizes are reported and presented in RCTs required additional analyses to be conducted. Specifically, RCTs typically calculate Cohen's d based upon on the mean difference and pooled standard deviations for participants in the treatment condition versus the control condition at post-treatment. If the effect size values from comparison studies were calculated in this way, it could lead to a biased overestimation of the results which would likely favor the findings of the present study. Simply, the data from control groups accounts for extraneous factors and yields a smaller, less inflated, and more accurate value pertaining to the magnitude of the treatment effect. To account for this potential bias, uncontrolled effect size

calculations were used for benchmarking purposes, meaning that the effect sizes from external studies were derived from within group pre-post treatment differences and pooled standard deviations. Moreover, only data from the treatment completers in the CBT arms of the studies were used, as opposed to intent-to-treat analyses, as the latter could also bias the effect sizes derived for comparisons. By calculating all effect sizes in this manner, the metric for comparison is consistent.

In order to evaluate the clinical significance of the results, the sample was divided into treatment responders and non-responders based on the RCI (Jacobson et al., 1999; Jacobson & Truax, 1991). There are two main requirements in order to determine whether clinically significant improvement can be posited to have occurred. First, a decrease in symptomatology must occur to such a degree that it is unlikely to have happened by chance. For this criterion to be established, an individual RCI score must be 1.96 or higher using the formula outlined by Jacobson and Truax (1991). Second, the RCI score must also coincide with improvement that moves an individual away from pathological functioning towards a level of adaptive functioning that is observed within the normal population (Jacobson et al., 1999; Jacobson & Truax, 1991). Although there are several ways for determining a cut-off score that would indicate whether an individual fell within the normal range, only one of these methods requires the use of normative data. Given the amount of empirical research conducted on the BDI-II, normative data was used to develop a cut-off score ($\alpha = .92$; $\overline{X} = 9.11$; $SD = 7.57$; Dozois et al., 1998).

According to the aforementioned criteria, if an individual receives an RCI score of 1.96 or higher and falls below the cut-off they are considered “Recovered.” If an

individual receives an RCI score of 1.96 or higher, but does not fall below the cut-off, they are considered "Improved." If an individual has an RCI below 1.96 they are considered "Unchanged." Finally, if an individual receives an RCI of 1.96 or higher but their symptoms increase, they are considered "Deteriorated." Due the nature of inpatient treatment, where the goal is often stabilization and discharge to a lower level of care (e.g., outpatient, intensive outpatient, day treatment, partial hospital) it could be argued that "Improvement" best captures the goal of treatment providers in this setting as opposed to "Recovered." Consequently, for the purposes of the present study, anyone meeting criteria for "Recovered" and "Improved" were categorized as responders. In contrast, anyone meeting criteria for "Unchanged" and "Deteriorated" were categorized as non-responders. Mean comparisons were then made across these two groups, with respect to Length of Stay, CBT attendance, Self-Help attendance, total group attendance (i.e., CBT, Self-Help, and adjunctive psychosocial rehabilitation groups), and BDI-II scores at admission.

CHAPTER III

Results

Characteristics of the Sample

A total of 159 out of the 584 participants recruited were eligible for inclusion in the analyses based on criteria described earlier. The average age of the sample was 35.85 (SD = 12.31). The current sample was diverse with respect to ethnicity, with 59.1% of participants identifying themselves as "Caucasian," 17.6% as "Hispanic," 6.3% as "African-American," 2.5% as "Asian," 0.6% as "Native American," 6.9% as "Mixed," and 6.5% as "Other." Only one participant did not complete this item. Additional data from the demographic questionnaire is included in Table 1.

Diagnostically, the sample was predominately comprised of individuals with MDD (n=115), followed by individuals with Depressive Disorder NOS (n=21), Bipolar I Disorder - Current Episode Depressed (n=14), Bipolar II Disorder (n=7), and Adjustment Disorder with Depressed Mood (n=2). More than half of the sample presented with comorbid psychiatric diagnoses as well, with 28.3% having two psychiatric disorders, 22.6% having three psychiatric disorders, and 2.5% having four or more psychiatric disorders. Substance use disorders were the most common co-occurring Axis I condition. A more comprehensive breakdown of diagnostic information can be found in Table 2.

G-CBT Attendance and Pharmacotherapy

The average length of stay for the sample was 8.67 days (SD = 3.22). The number of core CBT groups offered ranged from 1 to 13 based on length of stay, with an average

of 5.47 (SD = 2.36) core CBT groups being offered to participants during their hospitalization. The average attendance rate for the core CBT group was 82.3%, with participants attending an average of 4.4 groups (SD = 2.1) throughout their treatment. The number of Self-Help sessions offered ranged from 1 to 12 based on length of stay, with a mean of 4.92 (SD = 2.05). The average attendance at Self-Help was 52.3%, with participants attending an average of 2.5 sessions (SD = 1.75) during their stay. The total number of groups offered to participants ranged from 9 to 80, with participants attending an average of 32.1 groups (SD = 13.7) over the course of their hospitalization. The attendance rate for all groups was 71.4%.

In terms of pharmacotherapy, 93.7% of participants were prescribed at least one psychotropic medication at discharge, with only ten participants having no medications listed in their hospital files. Notably, many participants were taking more than one medication at discharge, with 67.9% being prescribed at least two psychotropic medications, 34.6% being prescribed at least three psychotropic medications, 14.5% being prescribed at least four psychotropic medications, and 2.5% being prescribed at least five psychotropic medications. To note, 5.0% of the sample was also prescribed medications for use on an as needed basis (PRN; Pro re nata). A more comprehensive breakdown of the medications prescribed can be found in Table 2. Prescription medications for medical problems (i.e., hypertension.) were not recorded.

Dependent Measure

Cronbach's alpha for the BDI-II scores at admission was high ($\alpha = .916$, $n = 138$), indicating an excellent level of internal consistency at the first time point. A total of 21

participants did not fully complete the measure and were not included in this calculation. Of those missing data, the majority failed to respond to only one item (n = 16), while the remaining five participants missed either two items (n = 4) or three items (n = 1). In total, only 27 out of the 3339 items were missing values, meaning less than one percent of items were left unanswered. Case-mean substitution was then used to impute all missing values (Roth et al., 1999), resulting in a mean score of 29.67 (SD = 12.6) for the sample at admission.

Cronbach's alpha at discharge for BDI-II scores was also high (α = .948, n = 152), indicating an excellent level of internal consistency at the second time point. A total of seven participants did not fully complete the measure and were not included in this calculation. Of those missing data, the majority failed to respond to only one item (n = 6), while the remaining participant failed to answer two items. In total, only 8 out of the 3339 items were missing values, meaning less than one percent of items were left unanswered. Again, case-mean substitution was used to impute all missing values (Roth et al., 1999), resulting in a mean of 13.55 (SD = 12.3) at discharge.

Treatment Outcome and Benchmark Comparisons

A one tailed t-test indicated that BDI-II scores at discharge ($\overline{X}$ = 13.55 SD = 12.3) were significantly lower than BDI-II scores at admission ($\overline{X}$ = 29.67, SD = 12.6), $t(158) = 14.41$, $p < .001$, d = 1.30. While the corresponding effect size is considered large, it was lower but comparable to the majority effect sizes derived from RCTs of individual outpatient CBT and controlled trials of individual inpatient CBT (Bowers, 1990; de Jong et al., 1986; Dimidjan et al., 2006; Elkin et al., 1989; Hollon et al., 1972; Rush et al.,

1977). A listing of comparisons across studies can be found in Table 4, with a graphic representation being provided in Figure 1.

Reliable Change Index and Clinically Significant Improvement

RCI scores were calculated according to the formula outlined by Jacobson and Truax (1991). For the current sample, a decrease of 10 points or more on the BDI-II was considered clinically significant change. A cut-off score of 17 was derived from the current sample and the selected normative data (Dozois et al., 1998). A total of 31 participants reported scores at or below 17 upon admission. Consequently, these individuals could only be classified as Improved, Unchanged, or Deteriorated at discharge.

Using the aforementioned criteria, 43.4% of the sample qualified as "Recovered," 19.5% as "Improved," 34.6% as "Unchanged," and 2.5% as "Deteriorated." Consequently, these groups were then collapsed into responders (n = 100) and non-responders (n = 59) for purposes of comparison. Length of stay was not significantly longer for responders ($\overline{X}$ = 8.84, SD = 2.95) than for non-responders ($\overline{X}$ = 8.37, SD = 3.64), $t(157) = .88$, $p = .38$. Attendance at the Core CBT Group was not significantly higher for responders ($\overline{X}$ = 4.56, SD = 1.97) than for non-responders ($\overline{X}$ = 4.15, SD = 2.34), $t(157) = 1.17$, $p = .24$. Attendance at Self-Help was not significantly higher for responders ($\overline{X}$ = 2.57, SD = 1.63) as compared to non-responders ($\overline{X}$ = 2.39, SD = 1.95), $t(157) = .63$, $p = .53$. Total group attendance was not significantly higher for responders ($\overline{X}$ = 22.94, SD = 10.24) than for non-responders ($\overline{X}$ = 22.05, SD = 10.68), $t(158) = .52$, $p = .60$. In each case, the null hypotheses were retained and no differences on these

variables emerged. Surprisingly, however, BDI-II scores were significantly higher at admission for responders ($\overline{X}$ = 33.03, SD = 10.95) than for non-responders ($\overline{X}$ = 23.98, SD = 13.24), $t(158) = 4.66$, $p < .001$. This finding goes against the initial hypothesis that BDI-II scores at admission would be lower for responders when compared to non-responders.

Chapter IV

Discussion

Main Findings

The purpose of the present study was to evaluate the effectiveness of an adapted inpatient G-CBT program operating under the current constraints influencing the delivery of inpatient care. To begin, significant decreases in depressive symptoms were observed at post-treatment on the BDI-II, with this supporting the initial hypothesis. While the average length of stay was somewhat longer than the rates reported in 2005 (8.67 days vs. 6.6 days; Russo et al., 2007), treatment occurred within a much smaller time window than previous studies which evaluated individual inpatient CBT for MDD (Barker et al., 1987; Bowers, 1990; de Jong et al., 1986; Stuart & Bowers, 1995; Stuart & Thase, 1994).

The shorter duration, combined with the intervention being delivered in a group format, support the premise that G-CBT can be an effective and efficient psychosocial intervention for inpatients with MDD when combined with the traditional aspects of inpatient psychiatry. The 82.3% attendance rate for G-CBT, coupled with the large effect size, provide further support for the results reported by Veltro and colleagues (2006; 2008) and Lynch, Berry, and Sirey (2011). However, attendance during Self-Help Time was substantially lower at 52.3%, indicating that this component needs to be improved upon. Future studies may wish to consider alternative methods for increasing attendance at this particular group.

The uncontrolled effect size for the treatment can be considered large (d=1.30). While it was expectedly lower than the majority of effect sizes calculated for

benchmarking purposes, we must keep in mind the overarching goals of inpatient treatment are quite different than those made in outpatient care: 1) stabilization and 2) discharge to a lower level of care. Bearing that in mind, the fact that differences across effect sizes were small in some instances can be seen as extremely promising. Specifically, the uncontrolled effect size for the present study (d=1.30) is not much lower than the values derived from the high severity treatment arm (d=1.42) of the Dimidjian et al. (2006) study or the cognitive therapy treatment arm (d=1.47) in Bower's (1990) controlled trial of inpatient CBT. Further, the effect size was substantially larger than the effect size from the Cognitive Restructuring condition (d = 0.50) reported by de Jong et al. (1986). These values are also consistent with effect sizes obtained in controlled (d=1.11) and uncontrolled (d=1.30) studies of outpatient G-CBT for MDD (Oei & Dingle, 2008). Notably, some of the uncontrolled effect sizes derived from the comparison studies exceeded 2.0 and even 3.0. Nonetheless, the large effect size for the current study(d =1.30) was generally comparable to the findings of other studies and indicates that the current G-CBT treatment program is effective, promising, and worthy of continued evaluation and refinement.

When evaluating the clinical significance of the results, 62.9% of participants endorsed reliable improvement in symptoms at post-treatment, the majority of whom would be categorized as "Recovered" under the aforementioned criteria (Jacobson et al., 1999; Jacobson & Truax, 1991). Yet, 37.1% still did not reach clinically significant improvement in their symptom profile. Surprisingly, decreased group attendance and length of stay were not associated with the lack of response. Furthermore, responders actually had significantly higher pre-treatment BDI-II scores than non-responders.

Unfortunately, the current data do not allow for a more detailed analysis of the non-responders as a group, with this preventing the post-hoc identification of potential barriers to treatment response.

Notably, however, each of the participants in the present sample was successfully discharged to a lower level of care by their psychiatrist and treatment team. It is possible that the current dependent variable does not adequately capture clinical improvement for the entire sample. A multifaceted assessment strategy may be required in future studies evaluating inpatient G-CBT, with clinician administered assessment measures, additional self-report measures, and observational data being employed. For example, it is plausible that individuals were judged to be significantly improved when clinically evaluated by their treating psychiatrist (i.e., behavioral presentation, clinical interview, chart review, etc.), yet the patient did not subjectively experience the same degree of symptomatic improvement. Capturing these discrepancies, as well as the related indicators that flesh them out, may prove more helpful and/or useful when evaluating treatment outcomes in an inpatient setting.

Limitations

A number of limitations need to be considered when interpreting these results. First, the study did not utilize a control group. As such, the results only allow for generalizations about the entire treatment program and not the G-CBT protocol on its own. Consequently, it is possible that other aspects of the treatment, such as pharmacotherapy, adjunctive psychosocial rehabilitation groups, or the therapeutic milieu were responsible for a greater proportion of the variance in terms of symptom reduction.

Cautiously, the results of this study can serve as a step in a longer program of research on inpatient G-CBT for MDD. In the development of future studies, careful attention needs to be paid to defining, quantifying, and qualifying adjunctive psychosocial groups, case management, and pharmacotherapy.

Second, the sample was comprised of only female participants. While women maybe more likely than males to present for the inpatient treatment of MDD, it is possible that similar results would not be replicated on a male inpatient unit or one providing services to both men and women. Third, all participants in this study were self-selected. It is possible that participants in this study were more motivated to participate in groups on the unit than other patients that did not elect to participate. The lack of differences in group attendance observed between responders and non-responders potentially speaks to this point. Considering that attendance at groups is voluntary, it is quite possible that patients not participating in the study may have attended substantially fewer groups or participated at an even lower rate. Strategies for addressing this issue, such as tracking group size, composition (i.e., study participants, non-participants), and overall attendance rates for the unit should be considered. Finally, the following study did not implement any measurements of treatment fidelity. While all clinicians were trained in the manual, accounting for therapist drift and treatment integrity would help to ensure that the dosage of the active treatment was consistent over time.

Conclusions

Despite these limitations, the results from the present study provide a promising springboard for the program of research outlined earlier. The significant decreases in

depression, large effect size, and proportion of responders all indicate that the current treatment program is a viable, efficient, and an effective approach worthy of further exploration. Future research addressing the limitations outlined above will help in the adaptation, development, and improvement of the treatment. Moving forward, continued steps toward establishing the effectiveness of G-CBT for MDD appear warranted.

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Table 1

Demographic Information

Demographic Category	Number of Participants	Percentage of Sample
Ethnicity		
1. Caucasian	94	59.1%
2. African American	10	6.3%
3. Hispanic	28	17.6%
4. Asian	4	2.5%
5. Mixed	11	6.9%
6. Native American	1	0.6%
7. Other	10	6.3%
8. Missing	1	0.6%
Marital Status		
1. Never Married	82	51.6%
2. Married	38	23.9%
3. Separated	12	7.5%
4. Divorced	24	15.1%
5. Widowed	2	1.3%
6. Missing	1	0.6%
Level of Education		
1. Eighth Grade or Less	1	0.6%
2. Some High School	13	8.2%
3. High School Graduate/GED	20	12.6%
4. Some College	63	39.6%
5. College Graduate	45	28.3%
6. Graduate Degree	15	9.4%
Living Arrangements		
1. Apartment or House	154	96.9%
2. Shelter	2	1.3%
3. Homeless	2	1.3%
4. Missing	1	0.6%

Table 1 - Continued

Demographic Information

Demographic Category	Number of Participants	Percentage of Sample
Employed		
1. No	77	48.4%
2. Yes, 1-10 Hours per Week	13	8.2%
3. Yes, 12-20 Hours per Week	8	5.0%
4. Yes, 21-30 Hours per Week	6	3.8%
5. Yes, 31-40 Hours per Week	41	25.8%
6. Yes, over 40 Hours per Week	14	8.8%
Annual Income		
1. $0-5,000	18	11.3%
2. $5001-10,000	12	7.5%
3. $10,001-25,000	30	18.9%
4. $25,001-40,000	17	10.7%
5. $40,001-65,000	17	10.7%
6. $65,001-85,000	18	11.3%
7. $85,001-100,000	10	6.3%
8. $100,001 +	23	14.5%
9. Missing	14	8.8%
Primary Source of Income		
1. Employment	62	39.0%
2. Spouse/Partner	27	8.2%
3. Family/Friends	23	14.5%
4. SSI/Disability	23	14.5%
5. Public Assistance	9	5.7%
6. Missing	15	9.4%

Note. A total of 159 participants completed the survey. Missing refers to items where the participant(s) did not provide a response.

Table 2

Comorbid Psychiatric Disorders

Diagnostic Category	Number of Participants	Percentage of Sample
Mood Disorders	2	1.3%
Anxiety Disorders	15	9.4%
Dissociative Disorders	1	0.6%
Substance Use Disorders	38	23.9%
Eating Disorders	12	7.5%
Post-Traumatic Stress Disorder	13	8.2%
Impulse Control Disorders	1	0.6%
Attention Deficit Hyperactivity Disorder	2	1.3%
Somatoform Disorders	1	0.6%
Personality Disorders	29	18.2%

Table 3

Medications Prescribed at Discharge

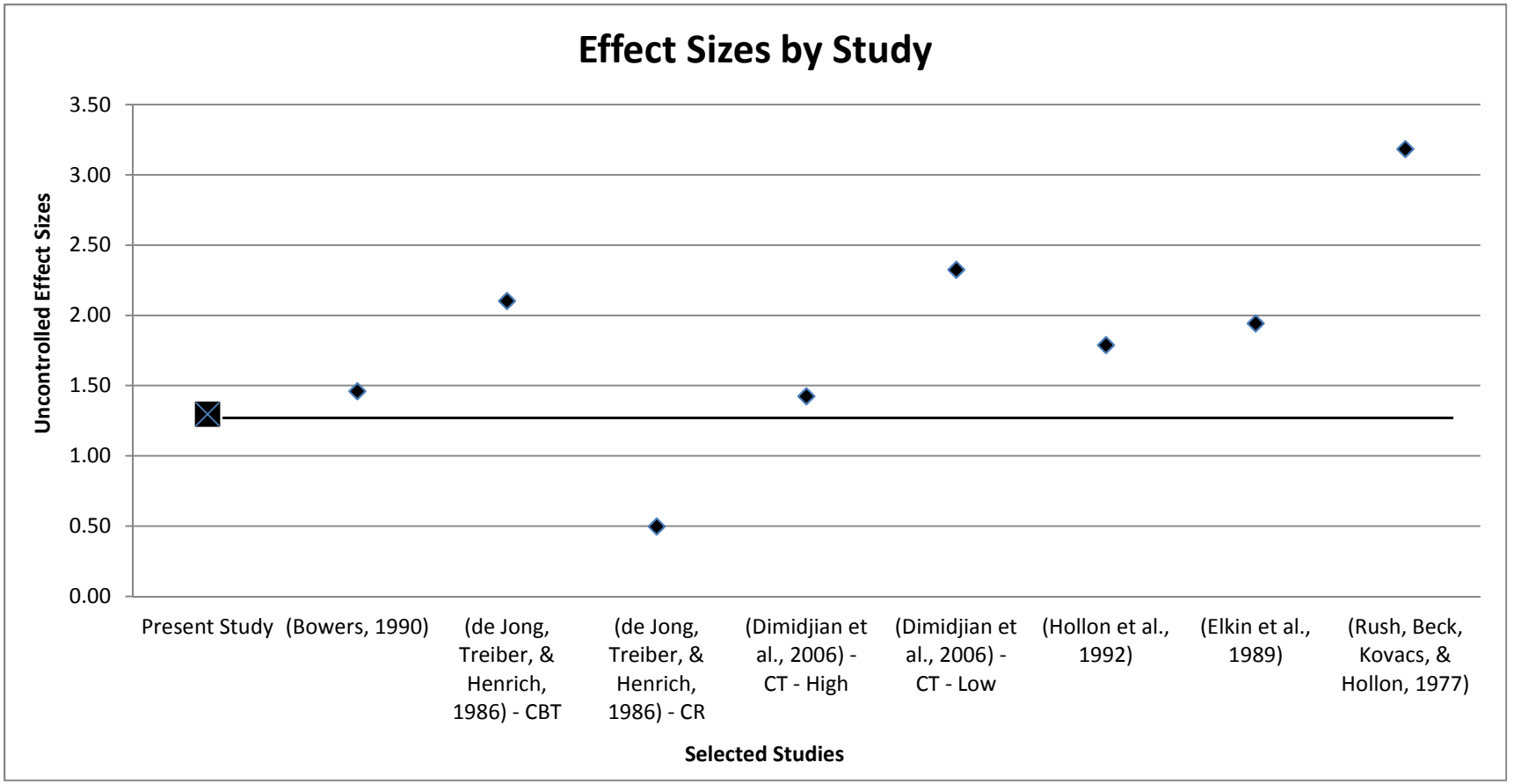
Medication Classes	Number of Participants	Percentage of Sample
Selective Serotonin Reuptake Inhibitor	93	58.5%
Norepinephrine-Dopamine Reuptake Inhibitors	17	10.7%
Serotonin–Norepinephrine Reuptake Inhibitors	36	22.6%
Serotonin Antagonist and Reuptake Inhibitor	35	22.0%
Noradrenergic and Specific Serotonin Antidepressants	4	2.5%
Tricyclic Antidepressants	3	1.9%
Monoamine Oxidase Inhibitors	1	0.6%
Benzodiazepine	37	23.3%
Other Anxiolytic	4	2.5%
Lithium	13	8.2%
Anticonvulsant	29	18.2%
Psychostimulant	7	4.4%
Second Generation Neuroleptic	39	24.5%
Third Generation Neuroleptic	21	13.2%
Conventional Neuroleptic	1	0.6%
Anticholingeric	2	1.3%

Table 4

Studies and Effect Sizes

Studies	Pre-Treatment $\overline{X}$	(SD)	N	Post-Treatment $\overline{X}$	(SD)	N	Cohen's d Pre-Post Effect Size
Present Study	29.67	(12.60)	159	13.55	(12.26)	159	1.30
Inpatient Trials							
✞ (Bowers, 1990)	24.20	(10.55)	10	10.10	(8.68)	10	1.46
✞ (de Jong et al., 1986)							
Combined CBT	29.10	(7.30)	10	12.12	(8.80)	10	2.10
Cognitive Restructuring Only	27.90	(8.90)	10	22.40	(9.90)	10	0.50
Outpatient RCTs							
♦ (Dimidjian et al., 2006)							
High Severity	34.12	(5.67)	25	17.44	(15.57)	18	1.42
Low Severity	27.30	(6.89)	20	9.76	(8.15)	17	2.32
✞ (Hollon et al., 1992)	30.10	(5.70)	25	13.30	(12.00)	25	1.79
✞ (Elkin et al,. 1989)	26.80	(8.40)	37	10.20	(8.70)	37	1.94
✞ (Rush et al., 1977)	30.23	(6.64)	19	7.26	(7.74)	19	3.18

Note. ♦ Denotes the use of BDI-II. ✞ Denotes the use of BDI.



Note. CBT – Cognitive Behavioral Therapy; CR = Cognitive Restructuring Only; CT-High = Cognitive Therapy – High Severity Condition; CT-Low = Cognitive Therapy – Low Severity Condition.

Figure 1. Effect size by study.