

Direct comparisons of cognitive-behavioral treatments and bona fide non-cognitive-behavioral  
treatments for adult anxiety disorders: A meta-analysis

By

Timothy P. Baardseth

A dissertation in partial fulfillment of the  
requirements for the degree of

Doctor of Philosophy  
(Counseling Psychology)

at the

UNIVERSITY OF WISCONSIN-MADISON

2012

Date of final oral examination: 05/11/2012

The dissertation is approved by the following members of the Final Oral Committee:

Bruce E. Wampold, Professor, Counseling Psychology  
Takuya Minami, Associate Professor, Counseling Psychology  
Mindi N. Thompson, Assistant Professor, Counseling Psychology  
Amy D. Bellmore, Assistant Professor, Educational Psychology  
Corissa C. Lotta, Faculty Associate, Counseling Psychology

## **Dedication**

To my mother and father.

I could not ask for more supportive, helpful, and loving parents.

This accomplishment is as much yours as it is mine.

“Takk skal dere ha!”

## Acknowledgments

This dissertation was only possible due to the collective support provided to me from faculty, friends, and family. This journey has not only changed me but also those around me. Notably, faculty have become friends, friends have become faculty (and remained friends), and family have fortunately remained family.

Bruce, I was fortunate to begin and finish my graduate school career with your presence. From my first ever graduate course in the master's program (7:45am Theories of Counseling course!) to the Ph.D. hooding ceremony at the Kohl Center, I have appreciated your wisdom, intellect, humor, and support throughout the graduate program. In particular, I have come to truly respect your relatively recent mastery of the ever-so-important jokes pertaining to the Norway-Sweden rivalry. In all honesty, thank you dearly for the encouragement and the amazing experiences that would not have been possible without you. You truly exemplify all of that which embodies both an excellent scientist-practitioner and a wonderful person.

Thank you to my committee members for your support and contributions. Corissa, you provided me with my first true introduction to the clinical realm of psychology. Although the concept of F.O.L.E.R. remains almost equally influential as you, I could not have asked for a more talented, authentic, and fun individual for my initiation into the therapeutic context. Tak, it has been my pleasure getting to know you better since your return to Madison. The department, and the university, is a better place with your energetic presence and curious intellect. Mindi, thank you for your feedback and help along the way. It has been my pleasure to share important experiences during this journey such as witnessing your navigational expertise at APA San Diego, and especially your passion for social justice issues at the regional level. Amy, I appreciated your teaching style, and thank you for your willingness to serve on the committee.

My friends. Oh my friends! You are all important to me, and you have all helped me in your own particular way throughout this epic journey. Dr. Laska and Dale, this dissertation was borne of your idea and it led to many impromptu research and life discussions at the Old Fashioned and Barriques. Thanks for your help and friendship K-Laska! Dr. Del Re, your support and friendship during this journey are greatly appreciated. It has been my pleasure to witness your transformation into a research titan, which fortunately has not overshadowed the fact that you rock, particularly in a punk way. Drs. Imel and Portmanteau, our summer night research conversation in 2006 at the terrace ultimately led me to “entering the rabbit hole,” and with your help, I never looked back. Thanks for your guidance and inspiration along the way. Drs. Gresham and Besson, we finally made it through the program! You have both become dear friends these past several years, and I look forward to the “Rather Challenge” in the years to come. Mr. Barber, thanks for being a steadfast friend during the times when I would finally emerge from my academic cave. And to the Wampold Research Team (Simon, Nick, Andrew, and Martin), thank you for your help and assistance on this project.

Lastly, thank you to my family for their endless support. Mom and dad, I could not have finished this without your help and supportive words. I, along with you, will never forget your remarkable editing skills leading up to the dissertation proposal. To my Madison family (Katie, Blake, Kristina, and Sigrid), thank you for your supportive words and the much-needed respites at your home. The home-cooked meals and insightful advice was a welcomed necessity throughout my time in Madison. To my Parisian family (Christie, Reza, Anahita, and Cyrus), thank you for your continual support and encouragement from afar. Our visits together always provided me with a timely, and rejuvenating, reprieve from graduate school.

## Abstract

Despite growing evidence that all treatments intended to be therapeutic (i.e., bona fide treatments) are equally efficacious, the question of relative efficacy persists. In fact, cognitive-behavioral treatments (CBT) have gained a more favorable status over non-CBT treatments for adult anxiety disorders. However, the assertion that CBT treatments are superior is premature due to conceptual and methodological issues affecting the extant CBT research. This meta-analysis addressed these limitations by consensually identifying CBT treatments and determining the true relative efficacy of bona fide CBT and bona fide non-CBT treatments for adult anxiety disorders. The study employed strict inclusion criteria to identify randomized clinical trials that contained at least one direct comparison of a bona fide CBT treatment and a bona fide non-CBT treatment. Additionally, 91 CBT experts from the Association of Behavioral and Cognitive Therapists (ABCT) were surveyed to identify the bona fide treatments as CBT or non-CBT. Thirteen clinical trials met inclusion criteria. CBT treatments and non-CBT treatments were found to be equally efficacious across targeted and non-targeted outcome measures. Additional analyses revealed that researcher allegiance did not account for the significant heterogeneity. The results are consistent with the increasing evidence for uniform efficacy among treatments intended to be therapeutic, and stand in contrast to assertions for the superiority of CBT treatments for adult anxiety. This meta-analysis contributes to the growing body of research revealing that a particular therapeutic approach is not more effective than another treatment when intended to be therapeutic.

## Table of Contents

DEDICATION.....	i
ACKNOWLEDGMENTS.....	ii
ABSTRACT.....	iv
LIST OF FIGURES.....	vii
LIST OF TABLES.....	viii
CHAPTER	
I. STATEMENT OF THE PROBLEM.....	1
II. REVIEW OF THE LITERATURE.....	6
Anxiety Disorders.....	6
CBT Treatment Proliferation.....	7
A Brief Historical and Conceptual Overview of CBT Treatments for Anxiety.....	8
Behaviorism and traditional behavior therapy for anxiety.....	9
Cognitivism and traditional cognitive therapy for anxiety.....	11
Cognitive-behaviorism and traditional CBT treatments for anxiety.....	14
Conceptual and Definitional Issues with CBT Treatments.....	15
The Medical Model Influence.....	19
Medical versus contextual model.....	20
Empirically Supported Treatments and Randomized Clinical Trials.....	22
RCTs of CBT for adult anxiety disorders.....	23
Meta-Analysis.....	26
Meta-analyses of treatment efficacy for adult anxiety disorders.....	28
A meta-analysis of CBT and bona fide non-CBT treatment for anxiety.....	34
Factors involved in heterogeneity.....	37
The Role of Researcher Allegiance in Meta-Analysis.....	39
Study Rationale and Hypotheses.....	42
III. METHODOLOGY.....	45
Methodological Overview.....	45
Inclusion criteria.....	45
Literature search.....	46
Bona fide treatment condition.....	47
CBT and non-CBT treatment categorization.....	49
Researcher allegiance coding.....	50
Analytic unit and effect size calculation.....	51
Statistical analysis.....	52
IV. RESULTS.....	55
CBT Survey.....	55
Meta-Analyses.....	60
V. DISCUSSION.....	66
Limitations.....	76
Conclusion.....	79

REFERENCES.....	80
APPENDIX.....	102
A.....	102
B.....	103
C.....	104

**List of Figures**

1. Flow Diagram of Study Selection Process for the Current Meta-Analysis..... 47

2. Flow Diagram of Bona Fide Treatment Identification and Bona Fide Study Selection..... 49

3. Flow Diagram of CBT Treatment Identification and Selection Process of CBT vs. Non-CBT Clinical Trials..... 60

4. Forest Plot of Effects for Targeted Outcome Measures..... 63

5. Forest Plot of Effects for Non-Targeted Outcome Measures..... 64



**List of Tables**

1. Survey of Bona Fide Treatments for Adult Anxiety Disorders as CBT or Non-CBT Treatments.....	55
2. Comments from Participating CBT Experts on the CBT Survey.....	58
3. Included Studies in the Current Meta-Analysis.....	60
4. Omnibus Effect Sizes for Targeted and Non-Targeted Outcomes.....	62
5. Moderator Analyses – Allegiance.....	65

## Chapter I: Statement of the Problem

Anxiety is one of the most common mental health disorders in the United States. Over 30 million Americans have struggled with an anxiety disorder at some point in their lives (Eaton, Kessler, Wittchen, & Magee, 1994; Karno & Golding, 1991). In fact, the prevalence rate for anxiety disorders is the highest among all psychiatric disorders, resulting in annual and lifetime rates of 18.1% and 28.8%, respectively (Kessler et al., 2005a; Kessler Chiu, Demler, & Walters, 2005b). Furthermore, anxiety disorders are considered one of the most expensive mental health issues to the US population and remain financially costly to the individual and society (DuPont, et al., 1996). The estimated total cost is \$46.6 billion per year and it accounts for 31% of overall mental health costs in the United States (Rosenblatt, 2010). It is evident that anxiety impacts a large portion of the population and has a sizeable economic impact. Accordingly, identifying effective treatments for individuals diagnosed with anxiety disorders has emerged as an important mental health concern.

Psychotherapy is one of the primary interventions for treatment of mental health issues, including anxiety. More than 400 psychotherapeutic approaches have been identified in the field of psychotherapy (Corsini & Wedding, 2005). Yet, despite the diverse number of varying psychological approaches, cognitive-behavioral therapy (CBT) has emerged as the treatment of choice for anxiety disorders (Arch & Craske, 2008). In fact, CBT treatments have remained the most extensively studied psychological intervention for the treatment of anxiety disorders (Barlow, 2002) and are considered to have the largest evidence base of all psychotherapies (Roth & Fonagy, 1996). Thus, there is an overwhelmingly strong presence of CBT treatments for adult anxiety disorders. For example, all of the psychological treatments endorsed by Division 12 (Clinical Psychology) of the American Psychological Association (APA) as having *strong*

*research support* for the treatment of anxiety are traditionally recognized CBT treatments such as cognitive treatment, behavioral treatment, exposure and response prevention, prolonged exposure, and cognitive processing therapy (Society of Clinical Psychology, 2009, “A Guide to Beneficial Psychotherapy”, para. 1). As CBT treatments are increasingly recognized as empirically supported treatments (ESTs; Chambless & Ollendick, 2001), their status as the privileged psychological intervention strengthens. In fact, the dominant status of CBT treatments has led to an assumption that CBT treatments are superior to other psychotherapies (Eysenck, 1994; Hunsley & Di Giulio, 2002). However, CBT treatment’s favorable status as the predominant treatment for anxiety appears to be premature after a thorough examination of the extent literature on CBT treatments. Specifically, vague operational definitions and a growing body of outcome research on CBT treatment efficacy limit assertions of CBT treatment superiority for the treatment of anxiety.

The literature on CBT treatment currently reflects a psychological treatment that can be difficult to precisely define. In fact, CBT treatment lacks a specific theoretical or therapeutic model and instead represents a broad family of therapies and interventions (Forman & Herbert, 2009). Furthermore, CBT treatment fails to be static and predictable, and CBT treatment is frequently characterized as an evolving treatment that continually generates new treatments within the CBT field (Herbert & Forman, 2011). Therefore one significant challenge affecting the field of CBT treatment is the lack of clarity in the operational definition of CBT (Mansell, 2008). Although the more defined traditions of behaviorism (e.g., behavior therapy) and cognitivism (e.g., cognitive therapy) have clearly contributed to present day CBT treatment, it is increasingly clear that contemporary CBT treatment is not suitably defined. Consequently, the lack of clarity in defining CBT treatment hampers assertions of CBT treatment’s superiority as it

is unclear what specific aspects of CBT (e.g., cognitive, behavioral) are considered a necessary part of cognitive-behavioral therapy.

In addition to the challenge of operationally defining CBT treatments, the dominant and privileged status of CBT treatment for anxiety stands in contrast to evidence demonstrating that various psychological treatments intended to be therapeutic are equally efficacious (Luborsky, Singer, & Luborsky, 1975; Rosenzweig, 1936; Wampold et al., 1997). Such evidence – frequently recognized as the common factors perspective – indicates that all effective treatments share therapeutic factors that are common to each other. These factors include a cogent rationale of therapeutic change, which is modified to individual needs, and delivered in a manner that is consistent with the therapeutic principles of the particular treatment (Frank & Frank, 1991; Wampold, 2001; Wampold, 2007). Thus, the premise that CBT treatments are superior stands in contrast not only to the common factors perspective, but also a growing body of evidence that suggests treatments intended to be therapeutic are uniformly efficacious.

In fact, meta-analytic evidence has documented little to no differences among psychological treatments (Grissom, 1996; Shapiro & Shapiro, 1982; Smith & Glass, 1977; Smith et al., 1980; Robinson, Berman, & Neimeyer, 1990), although not without limitation. The seminal work by Wampold et al. (1997) addressed the limitations of previous meta-analyses by only comparing treatments that were directly compared in the same study, avoiding the classification of treatments into categories, and including only *bona fide* psychotherapies (i.e., treatments intended to be therapeutic). Wampold et al. (1997) substantiated the previous meta-analytic evidence and provided additional support for the conclusion that treatments intended to be therapeutic are equally efficacious. Despite providing further corroboration of uniform efficacy, Wampold et al. (1997) was critiqued for failing to account for outcome measure

variability (Crits-Christoph, 1997) and specific psychological disorders (Crits-Christoph, 1997; DeRubeis, Brotman, & Gibbons, 2005). Yet subsequent meta-analyses addressed these concerns and provided additional support for the conclusion that treatments intended to be therapeutic are equally efficacious for specific disorders such as alcohol use disorders (Imel, Wampold, Miller, & Fleming, 2008) and youth disorders (Miller, Wampold, & Varhely, 2008).

Similarly, there is growing evidence that for anxiety disorders, treatments intended to be therapeutic produce similar outcomes. For example, Benish et al. (2008) analyzed 15 studies that included a total of 958 participants and found no difference between bona fide psychotherapies for the treatment of PTSD. In an effort to examine the hypothesis of whether CBT treatments were more effective than non-CBT treatments for childhood anxiety disorders, Spielmans, Pasek, and McFall (2007) meta-analyzed 5 studies and found no differences on measures of general psychological functioning. Most recently, Tolin (2010) attempted to address the same hypothesis as the Spielmans et al. meta-analysis, but for adult anxiety disorders. The author adopted the Wampold (1997) method by utilizing direct comparisons of bona fide treatments. Contrary to previous claims of treatment equivalence (e.g., Benish et al., 2008; Wampold et al., 1997), Tolin found CBT treatments to be superior to bona fide non-CBT treatments for adult anxiety disorders. Yet, despite attempts to correct for bias in previous meta-analyses and incorporate the method used in Wampold et al. (1997), the Tolin (2010) meta-analysis was plagued by a multitude of severe methodological limitations, including an unclear operational definition of CBT treatment. These limitations, which will be further discussed in the subsequent chapter, significantly limit and hamper the validity of Tolin's conclusion that CBT treatments are superior to bona fide non-CBT treatments for anxiety disorders.

Given the methodological limitations of the Tolin (2010) meta-analysis, the primary aim

of this meta-analysis is to address these limitations to accurately determine the true relative efficacy of bona fide CBT treatments and bona fide non-CBT treatments for adult anxiety disorders. In addition to addressing the relative efficacy of psychotherapy intervention for adult anxiety, this study will also attend to the lack of clarity regarding the operational definition of CBT treatment. Specifically, it will reveal which bona fide treatments the contemporary field of CBT identifies as CBT treatment and non-CBT treatment for adult anxiety disorders.

## Chapter II: Literature Review

### Anxiety Disorders

Anxiety disorders are the most widespread of mental health disorders (Eaton et al., 1994). As previously mentioned, 18.1% of adults each year and 28.8% of the population at some time during their lifetime are affected by anxiety disorders (Kessler et al., 2005a). As such, the rates for each particular adult anxiety disorder vary: specific phobia (12.5%), social anxiety (12.1%), post-traumatic stress disorder (PTSD; 6.8%), generalized anxiety disorder (GAD; 5.7%), panic disorder with or without agoraphobia (4.7%), obsessive-compulsive disorder (OCD; 1.6%), and agoraphobia without a history of panic attacks (1.4%; Kessler et al., 2005b). These figures demonstrate that the various anxiety disorders represent the most common and pervasive psychiatric illnesses in America.

In addition to the high prevalence rate, anxiety disorders are also the most expensive of mental health illnesses. The cost of anxiety disorders has garnered significant attention in respect to its economic impact (Koerner et al., 2004). In fact, anxiety disorders are responsible for 31% of total psychiatric costs, standing in contrast to 22% for mood disorders and 20% for schizophrenia (Rice & Miller, 1993). Greenberg et al. (1999) approximated that the annual cost of anxiety in 1990 was \$42.3 billion, which translated to \$1,542 per patient. Further breakdown of the total expense indicated estimated costs of \$23 billion (54% of the total cost) in non-mental health medical costs, \$13.3 billion (31%) in mental health care costs, \$4.1 billion (10%) in indirect workplace costs, \$1.2 billion (3%) in mortality costs and \$0.8 billion (2%) in prescription drug costs. These findings indicate that anxiety, the most prevalent mental health disorder, has a significant impact on the economy. These statistics and figures highlight the seriousness of anxiety disorders as a public health problem. The sheer prevalence and impact of

anxiety on the general population underscores the necessity of effective treatments such as psychotherapy.

### **CBT Treatment Proliferation**

CBT treatments have become the preferred psychotherapy for the treatment of anxiety disorders, and they are now considered the most rapidly growing psychotherapy in the world (Prochaska & Norcross, 2007). As expected, psychotherapists frequently deliver CBT treatments in their respective clinical settings. In a survey of 591 American Psychological Association (APA) members, 45.4% identified CBT as their primary theoretical orientation (Stewart & Chambless, 2007). Psychotherapist identification with CBT greatly surpassed other theoretical orientation, including psychodynamic (21.9%), eclectic (19.8%), humanistic/experiential (4.4%), family systems (3.9%), and other (4.6%). It is evident that CBT is frequently delivered by practicing psychologists in the mental health field. In addition to the clinical utilization, the dominance of CBT treatments is also apparent in dissemination and implementation policies.

Government agencies, both in the US and abroad, have developed financial incentives and regulatory mandates totaling several billion dollars to support evidence-based treatment (McHugh & Barlow, 2010). Several federal-level programs implemented expansive rollouts of CBT treatments to a wide range of treatment providers. For example, the Improving Access to Psychological Therapies (IAPT) program in the United Kingdom is the most far-reaching and centralized endeavor to disseminate and implement evidence-based treatments (see Clark et al., 2009). The IAPT utilized the National Institute of Health Clinical Excellence (NICE) treatment guidelines that recommend the rollout of CBT treatment as the central evidence-based treatment for implementation and dissemination throughout the United Kingdom. The CBT rollout by the British government received approximately \$435 million in funding from 2007 to 2010



(McHugh & Barlow, 2010). Similarly, the Veterans Health Administration (VHA) — the largest American health care system — is another national program implementing an extensive and centralized effort to disseminate evidence-based treatments. The VHA rollout identified CBT treatments (e.g., cognitive-processing therapy; Resick, Monson, & Gutner, 2007; prolonged exposure; Foa, Hembree, & Rothbaum, 2007) as the favored treatments for dissemination. In fact, the VHA system received \$316 million in 2007 and \$380 million in 2008 for this large-scale initiative (McHugh & Barlow, 2010). Both the IAPT and VHA initiatives represent large scale efforts to promote CBT treatments. These extensive dissemination and implementation mandates have further enhanced the dominance of CBT treatments within both the professional and public realms. Given the recent emergence and dominance of CBT treatments as the preferred psychotherapy, it is essential to understand the foundational theoretical traditions and associated treatments that led to the current state of contemporary CBT treatments.

### **A Brief Historical and Conceptual Overview of CBT Treatment for Anxiety**

Although the origins of psychotherapy can largely be traced to Freud's theoretical explorations (Bankart, 1997), the advent of contemporary psychotherapy is marked by the appearance of a multitude of psychotherapy paradigms and treatments. Several psychotherapeutic treatments for anxiety emerged during the rise of contemporary psychotherapy. However, cognitive and behavioral treatments have become the most extensively studied psychotherapy for anxiety disorders (Barlow, 2002) and, specifically, CBT treatments have emerged as the favored treatment for anxiety (Arch & Craske, 2008). The contemporary view of CBT frequently identifies the distinctly defined behavioral and cognitive traditions as the primary contributors to the current state of CBT (Herbert & Forman, 2011). However, the current field of CBT treatment is plagued by a lack of clarity in regard to the operationalization

and definition of a CBT treatment. In order to understand the emergence of contemporary CBT treatment and its current operational problems, a brief review of CBT's unique historical, theoretical, and treatment issues is essential.

**Behaviorism and traditional behavior therapy for anxiety.** Behaviorism emerged as a major movement within psychotherapy in the 1950's (Bankart, 1997). In fact, the shift toward behaviorism was developed as part of the movement away from the psychoanalytical model (Zinbarg & Griffith, 2009). Franks and Barbrack (1991) aptly stated, "Behavior therapy began in the late 1950s as an antimentalistic, somewhat blinkered alternative to the prevailing disease-oriented model of psychodynamic psychotherapy" (p.551). Despite its emergence in the 1950s, behaviorism can be traced to the functionalist movement, which was a product of animal psychology (Schultz & Schultz, 2004). In fact, Ivan Pavlov (1849-1936) was one of the foremost pioneers that facilitated the relationship between animal psychology and behaviorism. Pavlov focused primarily on learning through the process of conditioning. In brief, Pavlov found that experimental animals learn about the association between one stimulus and another, and his observation of this stimulus-response pairing eventually led to his theory of classical conditioning (Fancher, 1990). Consequently, Pavlov's theory of conditioning asserted that varying behaviors are shaped through the exposure to a discriminatory environment (Glassman & Hadad, 2004). In addition to his theoretical contributions, the utilization of the experimental design by Pavlov also provided the scientific foundation to more fully understand the development of abnormal behavior (Mineka 1985, 1987). Clearly, Pavlov's seminal model of classical conditioning resulted in a concrete explanation of abnormal behavior. Consequently, the principles put forth by Pavlov provided an important scientific foundation for the eventual emergence of behavioral therapy.

Pavlov's fundamental work on the acquisition of abnormal behavior through the use of classical conditioning provided the foundation to apply these particular tenets to human behavior (Kimble, 1991). Several prominent figures such as Edward Lee Thorndike (1874-1949), John Watson (1878-1958), Clark Hull (1884-1952), Hans Eysenck (1915-1997), Joseph Wolpe (1916-1997), and B.F. Skinner (1904-1994) contributed to the rise and development of behavior therapy. Despite the significant contributions of all of these behaviorists, the preeminent work by Wolpe and Skinner is notably associated with the emergence of modern behavior therapy and its treatment of anxiety (Fishman, Rotgers, & Franks, 1988). Wolpe specifically conceptualized fear and other psychological disruptions as a learned behavior that was considered non-adaptive. One of his primary contributions to the emergence of behavior therapy was the finding that the fear response could be extinguished through repetitive exposures to the learned, and fear-instilling, stimulus (Poppen, 1995). Clearly, Wolpe's foundational behavioral principles of exposure and deconditioning are reflected in the methods of modern behavioral therapies. Similar to Wolpe, Skinner also greatly contributed to the theoretical foundation of behavioral theory. Specifically, Skinner put forth the assertion that environmental consequences have the potential to reinforce or punish the likelihood of an individual's behavior (Hothersall, 2004). In fact, Skinner proposed that the corrective reinforcement could reshape behavior by changing the individual's previous history of reinforcement and conditioning (Hothersall, 2004). Both of these prominent behavior theorists clearly viewed human nature through observable actions that characterize the concept of behavior.

Reflecting the emphasis on that which can be observed, behaviorism focuses primarily on the end results rather than on the process or other factors (Spiegler & Guevremont, 1998). In essence, behaviorists place sole value on observable behaviors and environmental aspects to

understand and explain human behavior. Skinner once stated, “There is no place in scientific analysis of behavior for a mind or self” (1990, p.1209). Thereby, true behaviorist theory entirely separates cognitive or inferred processes from causal explanations of behavior (Goldfried & Davison, 1994). These general tenets of behavioral theory shaped the development of various traditional behavioral therapies for anxiety disorders. Exposure-based treatments are one of the most recognizable and common behavioral therapies for anxiety disorders. Current exposure-based treatments can be administered in various modalities such as in vivo exposure, imaginal exposure, and interoceptive exposure. Response prevention, also identified as *ritual prevention*, is another prominent behavioral approach utilized in the treatment of anxiety such as obsessive-compulsive disorder (Foa, Franklin, & Kozak, 1998). One of the most identifiable behavioral approaches for anxiety disorders is a combination of exposure-based treatment and of response prevention. In fact, the resultant exposure and response prevention (ERP) is the preferred behavioral therapy for the treatment of OCD. Traditional behavior therapies also consist of a wider span of therapeutic techniques which are not limited to just exposure or response prevention tenets. The use of reinforcements led to coining of the term, *behavior modification* (Kazdin, 1978), which can also include more recent behavioral treatments such as social skills training therapies, applied relaxation, and biofeedback. Although these specific therapies account for a small fraction of the current behavioral treatments, they provide a representative sample of the variety of treatments identified as behavioral therapy in contemporary psychotherapy.

**Cognitivism and traditional cognitive therapy for anxiety.** The *cognitive revolution* (Craske, 2010; Mahoney, 1974, 1991) surfaced in the 1960s following the emergence of behaviorism in the 1950s. The field of psychotherapy began to display signs of dissatisfaction

and, thus, allowed for the emergence of the cognitivism. In fact, the growth of cognitive therapy was a reaction to the behaviorist movement, and, consequently, the professional milieu became more amenable to the use of cognitive concepts (Reinecke & Freeman, 2003). The cognitive movement essentially satiated the desire to move beyond the strict behaviorist movement. Despite the growing discontent toward behaviorism, the cognitive movement did not gain prominence among the field of psychotherapy until the publication of Beck's (1976) seminal study titled *Cognitive Therapy and the Emotional Disorders*. These events and circumstances, along with the growing influence of prominent figures such as Beck, led to the emergence of cognitive theory. The basic and overriding principle of cognitive theory is a belief or meaning system that provides a lens through which experiences are interpreted (Reinecke & Freeman, 2003). Albert Ellis, another prominent cognitive theorist, embraced a similar view that psychological distress results from faulty cognitions. More specifically, Ellis worked within a therapeutic structure that focused on the relationship between thoughts and emotions, which he labeled as rational-emotive therapy (RET: Glassman & Hadad, 2004). Although their respective cognitive theories differ to varying degrees, both of these cognitive theorists emphasized the idea that a therapeutic cure lies in correcting cognitions and their processes. Underscoring the similarities among contemporary cognitive theories, Beck and Ellis invoked the well-known Epictetus passage – *individuals are not moved by things but the views which they take of them* – to communicate the apparent theoretical simplicity underlying cognitive therapy (Murdock, 2004). The importance of the cognitive element is clearly essential to this theory.

Despite nuances among varying cognitive perspectives, traditional cognitive theory holds a number of basic assumptions. Reinecke and Freeman (2003) listed five fundamental assumptions underlying the cognitive theory. First, the construal or interpretation of events and

situations dictates how an individual will feel and behave. Second, this interpretation is an active and ongoing process. Third, individuals develop faulty belief systems that guide behavior. Fourth, stressors contribute to a functional impairment of an individual's cognitive processes which consequently activates maladaptive coping. Fifth, the cognitive specificity assumption proposes a distinct cognitive profile for each psychiatric syndrome. The basic assumptions put forth by Reinecke and Freeman (2003) encapsulate the theoretical foundation of cognitive theory found among the increasing number of traditional disorder-specific cognitive treatments. For example, the traditional cognitive model for anxiety disorders asserts that individuals essentially narrow their awareness to threats, engage in defective behaviors, and formulate catastrophic interpretations of unclear stimuli due to the influence of danger-oriented cognitions (Beck, Emory, & Greenberg, 1985). This particular model led to a multitude of cognitive therapies designed to treat specific anxiety disorders such as panic disorder, social anxiety, social phobia, and PTSD. For example, the authors applied this general framework to develop the disorder-specific therapy put forth in Beck et al.'s (1985) cognitive model for social anxiety disorder. Beck and Greenberg (1988) also produced a cognitive model specifically designed for the treatment of panic disorder. This model suggests that individuals predisposed to panic have overstated beliefs. Furthermore, these flawed beliefs unfortunately facilitate individuals to make mistaken interpretations of sensations (Beck, 2005). The aforementioned cognitive treatment models provide a representative glimpse of various cognitive therapies for anxiety disorders. Although the field of cognitive therapy put forth a few disorder-specific cognitive treatments, the emergence of highly focused and specialized disorder-specific treatments for anxiety disorders gained significant momentum as the cognitive and behavioral traditions coalesced into the CBT movement.

**Cognitive-behaviorism and traditional CBT treatments for anxiety.** The cognitive and behavioral movements both influenced the eventual emergence of cognitive-behaviorism. As previously mentioned, the rise of behaviorism in the 1950s resulted from the discontent of the psychoanalysis' focus on introspection (Zinbarg & Griffith, 2009) and the shift toward cognitive concepts in the 1960s was facilitated by dissatisfaction with behaviorism (Leahy, 1992). Thus, the merging of cognitive therapy and behavioral therapy into CBT gathered momentum in the late 1980s (Bankart, 1997). The momentum toward the integration of cognitive and behavioral therapies was propelled by a few seminal works. Although attributing the origins of a treatment to a particular person or date is challenging (Meichenbaum, 1992), the proponents of CBT treatments specifically identify the ideas of Clark (1986) as the foremost influential conceptual piece in the CBT movement.

Clark outlined a cognitive model of panic disorder that specified that the core feature was misinterpretation of sensations in the body. Before Clark's (1986) work on panic episodes, these episodes were considered a secondary phenomenon that occurred alongside agoraphobia (Craighead, Craighead, Kazdin, & Mahoney, 1994). Essentially, panic episodes were not treated directly but instead would fade with the treatment of agoraphobia. Clark's (1986) theory provided an alternative psychological explanation where "panic attacks result from the catastrophic misinterpretations of certain bodily sensations" (p.462). Despite attempts by the aforementioned cognitive therapy developers of disorder-specific treatment, the historical significance of Clark's theory was that it developed into a more succinct model for the conceptualization of a specific anxiety disorder. It essentially provided a successful and effective theory that put forth a highly focused treatment model for the CBT field. Additionally,

it further propelled the development of disorder-specific treatments that currently characterizes the contemporary field of CBT treatment.

The advent of CBT treatments — popularized by Clark (1986) — introduced several highly focused therapies for the treatment of anxiety. In fact, the CBT models increasingly proposed specific features for each particular anxiety disorder. Although Clark's (1986) cognitive theory of panic disorder remains the preeminent theory which the CBT movement recognizes as the most influential and groundbreaking, several CBT treatments were developed for the treatment of specific anxiety disorders. Similar to Clark's model, Salkovski's (1985) cognitive model of OCD provided an underlying cognitive element to the interpretation of a highly subjective experience. Working collaboratively, these preeminent developers continued to put forth disorder-specific explanations and treatment such as the Salkovski and Clark (1993) model of health anxiety. These early CBT treatments provided the impetus that led to a proliferation of disorder-specific CBT treatments for a variety of anxiety disorders such as post-traumatic stress disorder (Ehlers & Clark, 2000), social anxiety (Clark & Wells, 1995), obsessions (Clark, 2004; Rachman, 2003), and compulsive hoarding (Frost & Hartle, 1996, Steketee & Frost, 2003). The integration of cognitive and behavioral treatments into a CBT treatment noticeably put forth several disorder-specific treatments categorized as CBT. However, the merging of the two prominent traditions into a CBT orientation has led to considerable disagreement and inconsistency regarding the operational and definitional qualities of a CBT treatment.

### **Conceptual and Definitional Issues with CBT treatments**

Certainly the merging of cognitive therapy and behavioral therapy into CBT treatment drew upon the theoretical bases of both respective traditions. Despite the apparent integration of



cognitive and behavioral elements, problems with the operational definition continue to plague the CBT field. A basic understanding of the term CBT implies a treatment package that incorporates both behavioral and cognitive aspects. Reinecke and Freeman (2003) succinctly highlighted this through the theoretical uniqueness of each theory, as well as their integration, by stating:

Cognitively focused models emphasize the central role of cognitive and perceptual processes in adaptation and change, whereas the more behaviorally focused models emphasize the role of behavioral skills and reinforcement history. Most contemporary cognitive-behavioral models acknowledge the role of both environmental and cognitive processes in the development of psychopathology and use both cognitive and behavioral techniques (p.229).

This foundational perspective of CBT treatment places an equal value on both the cognitive aspects as well as the behavioral components.

Despite the apparent equal contribution of cognitive and behavioral theory to CBT, disagreements exist about the relative value of each element to CBT treatment. It has been asserted that the primary theoretical component of CBT is the cognitive element (Beck, 2005). This perspective of CBT infers that the cognitive component is the key element for a treatment to be considered CBT. Butler, Chapman, Forman and Beck (2006) state:

A defining feature of cognitive-behavioral therapy is the proposition that symptoms and dysfunctional behaviors are often cognitively mediated and, hence, improvement can be produced by modifying dysfunctional thinking and beliefs (Dobson & Dozois, 2001).

CBT can be contrasted with purely behavioral treatments in which cognition is not

considered an important explanatory variable and is not identified as a specific target for intervention (p.19).

This theoretical lens of CBT indicates that cognitive therapy can essentially stand alone as a treatment and still be considered a CBT treatment, or as “one variant of a larger family of cognitive-behavioral therapy” (Dobson & Dobson, 2006, p.265). Accordingly, the necessary theoretical element within CBT is the cognitive processing of the individual. Beck (2005) attempted to equally value the behavioral component of CBT. However, he essentially emphasized the sole importance of cognition for CBT theory by stating:

The terms CT and cognitive-behavior therapy (CBT) are frequently used as synonyms to describe CT based on the cognitive model. However, the term CBT is also used to designate a package of techniques in which a CT module is used in combination with a set of behavioral modules. In addition, CBT has been used as an umbrella term to include both standard CT and the atheoretical combination of cognitive and behavioral strategies (p.955).

The behavioral element is clearly subjugated to less importance in a CBT treatment through this particular perspective.

The assertion that the cognitive element is necessary to be deemed a CBT treatment stands in stark contrast to the leading professional organizations’ inclusion of behavioral treatments as CBT. The Association for Behavioral and Cognitive Therapies (ABCT; 2012), the foremost organization for the training and dissemination of CBT treatment, initially circumvents a definitive description of CBT treatment and instead defines CBT as “the term used for a group of psychological treatments that are based on scientific evidence” (About Psychological Treatment section, para. 1). ABCT further asserts, “there are differences between cognitive

therapies and behavioral therapies” (About Psychological Treatment section, para. 4) and then ABCT provides distinct descriptions of both cognitive therapy and behavioral therapy. Although ABCT clearly includes distinct behavioral therapies in its understanding of CBT, it fails to provide a concise and descriptive definition of CBT treatment. While ABCT provides an evasive definition of CBT, the National Association of Cognitive-Behavioral Therapists (NACBT; 2012) specifically states, “Cognitive-behavioral therapy does not exist as a distinct therapeutic technique. The term cognitive-behavioral therapy (CBT) is a very general term for a classification of therapies with similarities” (“What is Cognitive-Behavioral Therapy?” para. 1). Professional organizations and theorists alike continue to struggle in providing an all-inclusive definition that encapsulates the apparent broad range of CBT treatments. Rachman (1997) asserted that the original merging of cognitive and behavioral therapy revealed both theoretical ambiguities and a “pot pourri” of diverse terms. A growing chorus of adherents has directly highlighted the theoretical ambiguity of CBT treatments through the lack of definition. Jensen and Van Buren (1987) succinctly stated, “no definition of cognitive behavior therapy has been universally accepted” (p.4), and Herbert and Forman (2011) similarly reported, “the term CBT has become so broad as to defy clear definition” (p.3).

The attempt to clearly define CBT treatment frequently results in the admission that CBT fails to put forth a specific theoretical or therapeutic model and it instead represents a broad family of therapies and interventions (Forman & Herbert, 2009). In fact, the critique that CBT comprises an expansive range of similar, yet differing, therapies has prompted significant concern among CBT adherents. Mansell (2008) articulated several future challenges that may prevent CBT treatment from simultaneously enhancing its overall efficacy within the field and its general impact on public health. The most pivotal challenge identified in this critique

concerns the lack of clarity in defining CBT treatment. It stresses that “successful systems within science and technology use terms with precise meanings, CBT is not in such a certain state” (Mansell, 2008, p.641). Paralleling ABCT’s ambiguous definition of CBT, the author also emphasizes “organizations responsible for training, assessing and disseminating CBT generally agree on its characteristics, but there is limited clarity as to the features that would identify it and distinguish it from other therapies” (Mansell, 2008, p.643).

Between professional organizations and prominent CBT adherents, it becomes increasingly clear that the arena of CBT is fraught with significant concerns regarding the conceptualization and definition of CBT treatments. Efforts to identify and clarify the fundamental aspects and terminology of CBT treatment could facilitate the psychotherapy field’s understanding and utilization of CBT treatments for anxiety disorders. Furthermore, the behavioral and cognitive therapies, and subsequent emergence of CBT treatments, undoubtedly raise questions as to which treatments best explain and treat psychological distress. The cognitive, behavioral, and CBT traditions have spawned a multitude of psychotherapies designed to treat anxiety disorders. Yet, to understand the empirical literature on the treatment of anxiety disorders, it is essential to appreciate the underlying controversy as to what is most important in creating psychological change.

### **The Medical Model Influence**

The medical model of psychotherapy is a meta-theory which gives a rationale for understanding the psychological change process. The medical model is pervasive and its thorough understanding has become a de facto requirement for the examination of psychotherapies (Wampold, 2001). Understanding the medical model of psychotherapy and the alternative meta-model — the contextual model of psychotherapy — provides a more clear

understanding of the psychological treatment of anxiety disorders. More importantly, it provides the backdrop to understand the extent psychotherapy outcome research on CBT treatments for adult anxiety disorders.

**The medical versus contextual model.** The medical model of psychotherapy contains several essential components, including: (a) the client presenting with a disorder, problem, or complaint, (b) a psychological explanation existing for the disorder, problem, or complaint, (c) a theory-driven conceptualization sufficient to posit a psychological mechanism of change, (d) the therapist providing a set of therapeutic ingredients which are derived from psychological explanation and from the mechanism of change, and (e) the positive benefitting of psychotherapy due to the specific ingredients. Notably, the component that is characterized by the requirement of specificity is the most essential characteristic of the medical model of psychotherapy because it emphasizes the importance of the specific ingredients to a particular treatment package (Wampold, Ahn, & Coleman, 2001). Specificity relates to the assertion that positive benefits of a treatment result only from the unique aspects of that particular treatment. CBT advocates, for example, proclaim that the unique features of CBT treatment (i.e., cognitive and/or behavioral elements) are solely responsible for the positive outcomes.

In contrast to the medical model, the contextual model of psychotherapy maintains that the common factors are most important, with a particular emphasis on the context of psychotherapy. The contextual model of psychotherapy, based on Frank and Frank (1991) but elaborated by Wampold (2001), identifies several necessary conditions: (a) an emotionally charged and confiding relationship with a psychotherapist, (b) a therapeutic process that occurs within a healing context, (c) the existence of a rationale, conceptual scheme, or myth that offers a credible explanation for the individual's symptoms and is consistent with their worldview, and

(d) a procedure or ritual that is consistent with the treatment's theory requiring participation of both the client and the psychotherapist. This model stresses the mechanisms of change that arise mainly in the therapeutic relationship such as the psychotherapy process, the client's desire for meaning-making, and the view that the therapist serves as an agent of change instead of deliverer of a treatment containing specific ingredients (Wampold, Ahn, & Coleman, 2001).

Consequently, the contextual model asserts that various forms of psychotherapy share these effective aspects, which are consequently more contributory to treatment outcome than specific factors.

Proponents of the medical and contextual model clearly espouse divergent views for understanding the psychological change process. The medical model of psychotherapy embraces the importance of specificity, which identifies a treatment's specific ingredients (e.g., cognitive and/or behavioral components in CBT) as the primary mechanism of change. Alternatively, the contextual model emphasizes the common therapeutic factors present among treatments (e.g., psychotherapy process, therapist, etc.) as the effective change component. While proponents of each model continue to dispute the validity of the opposing model, research on relative efficacy has emerged as an important factor to better understand the continuing debate. Specifically, the medical and contextual models put forth differing predictions regarding the relative efficacy among treatments. Whereas the medical model expects variation in relative efficacy, the contextual model predicts uniform efficacy among treatments (Wampold, 2001). Therefore treatment outcome research on relative efficacy has assumed an important role in understanding the competing models of change. In fact, relative efficacy has been largely influenced by the emergence of empirically supported treatments (ESTs) and the subsequent emphasis on randomized clinical trials (RCTs). Despite their important role in relative efficacy, the influence

of the medical model emerges upon closer examination of ESTs and RCTs.

### **Empirically Supported Treatments and Randomized Clinical Trials**

The growing adoption of the medical model of psychotherapy is apparent in the increased utilization of ESTs by contemporary psychotherapy. Notably, Division 12 (Clinical Psychology) of the American Psychological Association formed the Task Force on the Promotion and Dissemination for Psychological Procedures (Task Force on Promotion and Dissemination of Psychological Procedures, 1995) as a professional initiative to identify ESTs and to publicize the identified treatments for practitioners and training institutions (Norcross, 2002). The efforts, such as the Division 12 Task Force, to identify ESTs reinforced the adoption of the medical model because the EST movement utilizes the RCT to establish treatment efficacy. In fact, the RCT has become the *gold standard* for establishing treatment efficacy for such movements (Montgomery & Turkstra, 2003). Designation as an EST requires that treatments be superior to psychological control conditions in a RCT, be administered with treatment manuals, and demonstrate comparable efficacy to other established treatments (Chambless & Hollon, 1998). In essence, identification and preference of treatments that produce definite benefits over less effective treatments in RCTs typifies the logic of the EST movement (Task Force of Promotion and Dissemination of Psychological Procedures, 1995). Specifically, the RCT design requires patients to be randomly assigned to at least two of several possible treatment conditions including: (a) wait-list/no treatment, (b) supportive/non-specific controls, or (c) a bona fide psychological treatment (Wampold, 1997). Clearly the treatment design of the RCT model places sole focus on the importance of the specific treatment. Consequently, the RCT paradigm neglects the key processes deemed crucial to clinicians (Goldfried and Wolfe, 1996), such as many of the aforementioned elements emphasized by the contextual model (e.g., psychotherapy

process, client's desire for meaning-making, role of the therapist).

Despite the concern that RCTs overemphasize the specific treatment and neglect other key psychological elements, the EST movement continues to emphasize the RCT paradigm for the evaluation of relative efficacy between treatments. Moreover, the EST movement has led to an overwhelmingly strong presence of CBT treatments among anxiety disorder for adults. Therefore psychotherapies involving cognitive-behavioral principles have overwhelmingly been established as ESTs for anxiety disorders (Chambless & Ollendick, 2001). Given the large number of RCTs involving CBT over the last two decades (Dobson & Dozois, 2001), a brief overview of recent RCTs comparing CBT treatments with active treatment conditions provides a more clear understanding of the current empirical status of CBT treatments for the treatment of adult anxiety disorders.

**Randomized clinical trials of CBT for adult anxiety disorders.** Clinical trials comparing CBT treatments with active treatment controls reveal varying results regarding the efficacy of CBT. Several studies demonstrate the effectiveness of CBT treatment over other active treatments. Devilly and Spence (1999) compared CBT treatment and eye movement desensitization and reprocessing (EMDR) for the treatment of PTSD among an adult patient population. The results revealed that CBT treatment was statistically more effective in decreasing the symptoms of PTSD. In a similarly designed clinical trial, Durham, Murphy, Allan, and Richard (1994) attempted to establish empirical support of CBT treatment for adult GAD. Durham et al. found that CBT treatment was significantly more effective than psychodynamic psychotherapy for adults suffering from GAD. More recently, Shear, Houck, Greeno, and Masters (2001) investigated the effectiveness of CBT against emotion-focused psychotherapy for patients being treated for panic disorder. Similar to Durham et al. (1994),



Shear et al. (2001) found CBT to be more effective than the comparison psychotherapy. Thus, Shear et al. concluded that CBT was more effective than emotion-focused psychotherapy. The findings from these clinical trials clearly provide evidence for the superiority of CBT treatments over active treatment control therapies for adult anxiety. However, the assertion that this evidence proves the superiority of CBT treatment may be premature with a further evaluation of other clinical trials of CBT for adult anxiety disorders.

Contrary to the aforementioned clinical trials, the results from other clinical trials on adult anxiety disorders reveal that CBT treatments underperform when directly compared to active treatment controls. Arntz (2002) compared cognitive therapy and applied relaxation for adult GAD. The findings indicated that both therapies were equally efficacious at the end of treatment. Yet, their results indicated that applied relaxation was more effective than cognitive therapy at a one month follow up. McDonagh et al. (2005) investigated whether CBT would be superior to present-centered therapy for PTSD. In contrast to their assumption, the superiority of CBT over present-centered therapy (PCT) for decreasing PTSD symptoms was not supported. Significantly more patients dropped out of CBT than dropped out of PCT. In terms of the relative efficacy of these two treatments, the authors state, “the two active treatments did not differ significantly at any assessment time point on any other outcome measure (including PTSD severity)” (p. 520). The findings from Arntz (2003) and McDonagh et al. (2005) suggest that CBT and other active treatments may produce similar outcomes, and, in fact, that CBT treatments underperform.

Whereas the findings from clinical trials provide evidence for both the superiority of CBT treatments (e.g., Devilly et al., 1999; Durham et al., 1994; Shear et al., 2001) and the inferiority of CBT treatments (e.g., Arntz, 2003; McDonagh et al., 2005), the results from other

clinical trials show that CBT treatments are uniformly efficacious when compared to active treatment controls for the treatment of adult anxiety. Power et al. (2002) evaluated the treatment efficacy of CBT and EMDR for the treatment of adults with PTSD. The findings revealed significant and substantial symptom reduction for both the treatments. No significant treatment differences existed between the two different treatments. Similarly, Borge et al. (2008) investigated the comparative efficacy of cognitive therapy and interpersonal therapy (IPT) for social phobia. No significant differences were observed between the psychotherapies at post-treatment. In a clinical trial focused on GAD, Leichsenring et al. (2009) compared CBT and short-term psychodynamic psychotherapy. Paralleling the findings of Power et al. (2002) and Borge et al. (2008), the findings demonstrated no significant differences between treatments in regard to primary outcome measures. These recent RCTs found CBT treatments to be equally efficacious to the active treatment comparison conditions. In addition to the research supporting both the superior and inferior treatment efficacy of CBT treatments, these clinical trials provide additional mixed evidence that weakens the claim for superiority of CBT treatment for adult anxiety.

The unmistakable synopsis emerging from these representative clinical trials of CBT treatment for anxiety disorders is that there are mixed findings. Clearly no one particular clinical trial can provide a definitive answer to the relative efficacy of CBT treatments over non-CBT treatments. The assertions about the relative efficacy of psychotherapies based entirely on a single clinical trial are unjustified. Every study has limitations and a particular study that demonstrates a specific psychotherapy's superiority could be due to a Type I error (Wampold, 1997). Due to the limitations of making causal inferences from a single study, researchers need a method to examine results across several investigations. Consequently, meta-analysis provides a

more accurate method to evaluate relative efficacy by synthesizing the results of RCTs as a whole. In fact, the primary method for understanding a body of literature with mixed results is meta-analysis (Quintana & Minami, 2006). Thus, a brief overview of notable meta-analyses and the resultant methodological issues provides a more comprehensive understanding of relative efficacy of CBT treatments for adult anxiety disorders.

### **Meta-Analysis**

The use of meta-analytic methods to integrate the results of clinical trials has increased over the last few decades. Treatment outcome researchers identify meta-analysis as an invaluable method to accurately estimate the treatment efficacy of psychotherapy (Coopers & Hedges, 2009; Wilkinson, 1999). In their preeminent work regarding psychotherapy efficacy, Smith and Glass (1977; Smith et al., 1980) developed meta-analytic methods to compare clients who received psychotherapy with clients who did not receive treatment. Treatment outcomes were better by .80 standard deviation units for those who received psychotherapy. This research not only established psychotherapy as an effective treatment, but it also provided evidence for the uniform efficacy among various psychotherapies after accounting for confounding variables. The finding of uniform efficacy was also supported in subsequent meta-analyses (e.g., Berman et al., 1985; Shapiro & Shapiro, 1982). The consistent finding that one treatment is not demonstrably more effective than another treatment countered the medical model of psychotherapy and provided further evidence for the contextual model.

Despite subsequent replications of the finding for uniform efficacy among psychotherapies, several methodological limitations hampered the research. Wampold et al. (1997) identified several noteworthy limitations from the previous meta-analyses. Specifically, they employed study methodologies that lacked the inclusion of direct comparisons, unduly

classified treatments into categories, and failed to solely include treatments intended to be therapeutic (i.e., bona fide treatments). The following section will further discuss these limitations. After addressing these limitations, Wampold et al. (1997) found that the distribution of treatment effect sizes was not statistically different from zero, which again substantiated previous meta-analytic claims of uniform efficacy and provided considerable empirical evidence for the contextual model of psychotherapy.

However, the Wampold et al. (1997) finding was subsequently critiqued for a number of various reasons. The most legitimate critique of the meta-analysis was that the meta-analytic method did not account for specific psychological disorder (e.g., Crits-Christoph, 1997; DeRubeis et al., 2006). Notably, it critiqued that uniform efficacy may be present within specific disorders but cannot be assumed across an array of different psychopathologies. Regardless of this argument's validity, subsequent meta-analytic research addressed this particular critique and provided evidence that further supports the conclusion that treatments intended to be therapeutic are equally efficacious for specific disorders (e.g., Benish et al., 2008; Imel et al., 2008; Miller et al., 2008). Despite the accumulation of meta-analytic evidence suggesting uniform efficacy among treatments intended to be therapeutic, meta-analysts continues to investigate and assert the superiority of one treatment intended to be therapeutic over another. This is most notable for CBT treatments – the privileged treatment for anxiety disorders. In fact, meta-analysis is the primary method through which psychotherapy researchers have synthesized results from multiple clinical trials that examined the efficacy of CBT in the treatment of adult anxiety (Olatunji, Cisler, & Deacon, 2010). The methodological limitations that affected the aforementioned meta-analytic research have also emerged in meta-analyses of CBT for adult anxiety disorder. Consequently, the limitations found within the meta-analytic research on CBT treatment for

adult anxiety weakens the claims for superiority of CBT treatment for adult anxiety.

**Meta-analyses of treatment efficacy for adult anxiety disorders.** A large number of meta-analyses have examined the efficacy of CBT treatments for adult anxiety disorders and many of these investigations conclude that CBT is an efficacious treatment for anxiety. For example, a multitude of meta-analyses proclaim significant treatment efficacy for CBT with adult anxiety disorders including PTSD (Bisson & Andrew., 2007; Bradley, Greene, Russ, Dutra, & Westen, 2005; Taylor, 1998; van Etten & Taylor, 1998), GAD (Covin, Ouimet, Seeds, & Dozois, 2008; Gould, Safren, O'Neill, & Otto, 2004; Hunot, Churchill, Silva de Lima, & Texeira, 2007; Mitte, 2005a; Siev & Chambless, 2007), social anxiety disorder (Acartuk, Cuijpers, van Straten, & de Graaf, 2009; Feske & Chambless, 1995; Taylor, 1996), OCD (Abramowitz, 1997; Eddy, Dutra, Bradley, & Westen, 2004; Kobak, Greist, Jefferson, Katzelnick, & Henk, 1998), and panic disorder (Bakker et al., 1998; Gould, Otto, & Pollack, 1995; Siev & Chambless, 2007). (See Olatunji, Cisler, & Deacon, 2010 for an exhaustive review of anxiety meta-analyses of CBT treatments). Although the aforementioned meta-analytic evidence provides support for CBT efficacy, assertions of CBT superiority based on these findings are premature. Significant methodological limitations, such as the degree to which a treatment is intended to be therapeutic and the method of treatment comparison, have impacted the inferences that can be deduced from the studies. A brief overview and discussion of several noteworthy studies is necessary to understand the methodological issues that impact CBT treatment efficacy for adult anxiety disorders based on meta-analysis.

A recent meta-analysis by Norton and Price (2007) included 108 clinical trials and investigated the efficacy of CBT across all adult anxiety disorders. The efficacy of CBT was supported in their meta-analysis, yet the comparative conditions included in this meta-analysis

were largely heterogeneous. For example, trials included attention and pill placebo, supportive psychotherapy, and no treatment controls. Although the efficacy of CBT was supported, the heterogeneous nature of these comparative conditions limits inferences that can be made, and does not provide data on the relative efficacy of CBT with other active psychotherapies.

In another recent study, Hofmann and Smits (2008) systematically reviewed 27 randomized clinical trials that compared the treatment efficacy of CBT to placebo control across all adult anxiety disorders, and within the anxiety disorders. CBT garnered significantly greater improvements than psychological placebo with medium to large treatment effect sizes for outcome measures of anxiety disorder severity. The results also indicated that OCD and acute stress disorder held the strongest effect sizes relative to all other anxiety disorders. Although the findings provide support for the efficacy of CBT across anxiety disorders, the placebo control conditions varied widely. The control conditions included supportive counseling, nondirective therapy, discussion group, relaxation training, and pill placebo. Similar to Norton and Price (2007), the heterogeneity of the comparison conditions greatly limits the conclusion and does not provide evidence on the relative efficacy between CBT and other psychological treatments intended to be therapeutic. More importantly, Hofmann and Smits' study selection criteria limited the fair comparison between CBT and a treatment intended to be therapeutic. Included studies had to contain a psychological placebo that controlled for nonspecific factors. The authors state, "Placebo interventions that included active treatment ingredients for the target problem (e.g., an intervention that specifically instructs participants to engage in exposure exercises to test certain predictions or to challenge a maladaptive thinking style) were not included" (Hofmann & Smits, 2008, p.3).

Both of these meta-analyses (Norton & Price, 2007; Hofmann & Smits, 2008) introduced

a treatment comparison problem that influenced the relative efficacy of CBT for anxiety. The control conditions (i.e., supportive counseling, nondirective counseling) that were compared to the active treatment, CBT, include a variety of treatments that were not intended to be therapeutic (i.e., psychotherapies that were not bona fide). As in the Hofmann and Smit meta-analysis, one of the more frequently used therapies in anxiety studies is supportive counseling. Comparison controls, such as supportive counseling, often forbid clinicians from using specific therapeutic techniques. Thus, the techniques lack a theoretically cogent rationale, are not modified to the individual client needs, are provided by clinicians who are aware that the condition is not intended to be therapeutic, and would not be applied clinically as viable psychotherapies by practicing clinicians (Baskin, Tierney, Minami, & Wampold, 2003; Wampold, 2001; Westen, Novotny, & Thompson-Brenner, 2004). These comparison controls also fail to provide the most important therapeutic factors – that they provide clients with a practical explanation for their problems and actions that can be followed to attain their goals, which are provided by a clinician who believes in the treatment and delivers it with the belief that it will be effective (Wampold, 2007). Comparisons of psychotherapies intended to be therapeutic (i.e., bona fide), which are distinguished from intent-to-fail treatments, such as supportive counseling, provide a more true analysis of relative efficacy. Therefore meta-analyses with comparison controls that closely resemble treatments intended to be therapeutic provide a more clear understanding of the relative efficacy of treatments for adult anxiety disorders.

Yet several meta-analyses reveal mixed findings when investigating the relative efficacy of CBT treatments against treatments seemingly intended to be therapeutic for adult anxiety disorders. For example, Mitte (2005b) conducted a comprehensive meta-analysis of CBT for

panic disorder. The study specifically identified a CBT treatment as including a cognitive component. The study found that CBT was superior to behavior therapy on measures of anxiety, depression and quality of life. Utilizing the Mitte operational definition of CBT that requires a cognitive component, the meta-analytic research remains increasingly mixed. Chambless and Gillis (1993) meta-analyzed a variety of anxiety disorders and concluded that CBT treatments were equally efficacious, and occasionally more effective, when compared to behavioral treatments. Similarly, Tarrier et al. (1999) found no significant differences between cognitive therapy and imaginal exposure treatment for the treatment of chronic PTSD. On the contrary, van Balkom, Anton, van Oppen, and van Dyk (1994) and Borkovec and Whisman (1996) found that behavioral therapy outperformed cognitive therapy in the treatment of OCD and GAD, respectively. In an effort to examine efficacy across anxiety treatments, Sherman (1998) investigated all psychotherapy clinical trials for PTSD, which addressed mainly cognitive and behavioral treatments, yet also included a variety of treatments such as CBT, behavioral, psychodynamic, hypnotherapy, anger management, and EMDR. The meta-analysis demonstrated homogenous effects. The findings suggested equivalent performance across the different psychotherapy treatments. Although the comparison treatments in these meta-analyses resemble treatments intended to be therapeutic, the findings remain significantly mixed. Moreover, the conclusions are hampered by a significant methodological confound present in these studies — lack of direct comparisons between the treatments.

The meta-analytic evidence from these studies, albeit contradictory and mixed, are limited due to this treatment comparison method. Meta-analytic research frequently tests relative efficacy through comparisons to wait-list/no-treatment, or treatment controls. Consequently, the overall estimation of relative efficacy is aggregated across all included studies within the meta-



analysis. Unfortunately this particular approach introduces considerable threats to validity. Notably, this method inserts potentially confounding variables such as measurement characteristics, sample severity, treatment site, and treatment team (Shadish & Sweeney, 1991; Wampold, 1997). Potentially erroneous deductions about the relative efficacy of treatments can result from the aggregation across studies. Thus, an alternative meta-analytic method that mitigates these threats of validity involves the analysis of studies that contain direct comparisons among treatments (Shadish et al., 1993). Specifically, the utilization of within-study treatment-treatment comparisons holds the confounding aspects constant within each study which helps to rule out study level confounds (Shadish & Sweeney, 1991).

Consequently, several meta-analyses have examined the efficacy of CBT treatments for adult anxiety using the more sound methodological approach of direct comparisons. Utilizing the direct comparison methodology, Clum, Clum, and Surls (1993) found that a psychological coping treatment, mainly containing a cognitive restructuring element, was more effective than in vivo exposure for the treatment of panic disorder. In contrast to findings of differential efficacy, other meta-analyses using direct comparison have found CBT equally efficacious to treatments intended to be therapeutic. Siedler and Wagner (2006) directly compared RCTs comparing CBT treatment to EMDR for the treatment of PTSD. The authors found that neither CBT nor EMDR was superior to the other. In a meta-analysis on social phobia, Fedoroff and Taylor (2001) similarly revealed no significant differences between cognitive therapy and behavioral therapy. A more recent meta-analysis by Powers, Halpern, Ferenschak, Gillihan, and Foa (2010) investigated the relative efficacy of exposure therapy for PTSD using active control conditions. Although the CBT comparison was a behaviorally oriented treatment, the subsequent analysis found no treatment differences between exposure therapy and the active control

conditions, which consisted mainly of cognitive processing therapy (CPT), cognitive therapy, and stress inoculation therapy. From these meta-analyses, it appears that examination of direct comparisons also provides mixed evidence about the relative efficacy of various CBT treatments for adult anxiety.

Although a number of meta-analyses utilize the direct comparison method, few anxiety meta-analyses also incorporate a concrete methodological framework to ensure that the directly compared treatments are truly intended to be therapeutic. It remains difficult to make substantial claims about relative treatment efficacy without a concrete framework such as the Wampold et al. (1997) bona fide treatment criteria. Yet Benish et al. (2008) utilized the Wampold et al. (1997) criteria to examine the differential treatment efficacy among treatments intended to be therapeutic for the treatment of PTSD. Although the study purpose did not specifically address the differential efficacy between CBT treatments and non-CBT treatments, the study incorporated the direct comparison method and examined the comparisons of at least two bona fide treatments within each clinical trial. The results found no difference between bona fide psychotherapies for the treatment of PTSD. Thus, it provided further evidence for the treatment equivalence within a specific anxiety disorder. The results suggest treatment equivalence regardless of theoretical orientation and provide additional evidence for the support of the contextual model and a common factors approach. Although relatively few studies have utilized the aforementioned methodological approach with adult anxiety disorders, a recent meta-analysis by Tolin (2010) attempted to examine the relative efficacy of psychotherapy for anxiety disorders. The Tolin meta-analysis attempted to adopt the methodological approach as Wampold et al. (1997) by utilizing both the direct comparison method and the bona fide treatment condition. Using this methodology, it is the only recent meta-analysis to specifically investigate

whether CBT treatments were more effective than bona fide non-CBT treatments for adult anxiety disorders.

**Meta-analysis of CBT and bona fide non-CBT treatment for adult anxiety.** The recent meta-analysis by Tolin (2010) utilized the aforementioned methodological issues to extend the research addressing the claims of CBT superiority. This study attempted to determine whether CBT yields superior treatment outcomes to other forms of psychotherapy across various psychological disorders. The general findings suggested that CBT was equivalent to interpersonal or supportive therapies, but superior to psychodynamic therapy across all of the disorders (e.g., depressive, anxiety, eating, personality, psychotic, and substance). However, Tolin's disorder specific analysis found CBT treatments superior to other therapies among the anxiety disorders. The author concludes that the results dispute previous claims of treatment equivalence (e.g., Wampold et al., 1997) and he consequently advocates for superiority of CBT treatment.

Despite attempts to ensure an appropriate and sound meta-analytic approach, the Tolin (2010) meta-analysis is plagued by a multitude of methodological limitations that hamper the validity of its claim for CBT superiority among anxiety disorders. Foremost, the psychotherapy field has not yet agreed upon a precise operational definition of a CBT treatment. Despite the growing concern and disagreement over the precise definition of CBT, the Tolin (2010) meta-analysis failed to implement a sound method to decisively explain how CBT treatment criteria was met. In fact, Tolin utilized an ambiguous operational definition (i.e., "some variant of CBT," p.712 ) to identify the treatments as CBT. The failure to clarify the operational definition of CBT treatments not only weakens the study's primary assertions about CBT treatment efficacy but also prevents further examination of this conundrum for the field of CBT treatment.

Another methodological limitation of the Tolin (2010) meta-analysis involved the coding procedures for study data by trained individuals. The study sought to include psychotherapy treatment comparisons that were intended to be therapeutic (i.e., bona fide psychotherapies) in deference to the problem of psychological placebo controls in meta-analysis (Wampold et al., 1997; Westen et al., 2004). Despite utilizing the established Wampold et al. (1997) bona fide treatment criteria to identify treatments intended to be therapeutic, the author and his four Ph.D.-level researchers had actively examined the results of the initial pool of clinical trials during the selection process. Specifically, the co-raters initially extracted study data (including the treatment titles and statistical information from the results), and subsequently, the same co-raters made “a second pass” to rate the bona fide status of the treatments among the potential clinical trials. The study did not implement a methodological procedure to prevent the co-raters from viewing the results from each potential study during the coding process. The lack of blinding procedures introduces a significant threat to validity.

One of more egregious limitations of the Tolin (2005) involved the lack of methodological rigor regarding the initial study selection process. The meta-analysis’ study selection process for the anxiety analysis garnered a total of only four clinical trials that compared a CBT treatment to a bona fide non-CBT treatment across all anxiety disorders. For the purposes of contrast, the Benish et al. (2008) meta-analysis utilized identical methodological procedures to identify direct comparison of bona fide treatments specifically for one anxiety disorder – PTSD. Seventeen clinical trials fulfilled the bona fide criteria for the Benish study. Utilizing a cursory application of Tolin’s aforementioned criteria for CBT inclusion (i.e., “some variant of CBT”), eight of the 17 studies included in the Benish, Imel, and Wampold (2008) would likely meet final inclusion in the Tolin meta-analysis as a clinical trial that directly

compares a CBT treatment to a bona fide non-CBT treatment. However, none of these eight studies were included in the Tolin meta-analysis. Furthermore, this brief critique only involves the studies from one particular anxiety disorder – PTSD – and does not address the possibility of clinical trials involving other anxiety disorders. It is evident that the Tolin meta-analysis did not conduct a thorough and exhaustive literature search.

Several concerning limitations also emerge from the final pool of included studies in the Tolin (2010) meta-analysis. Two of the four studies in the Tolin study were published around 40 years ago (e.g., Gelder, Marks, & Wolff, 1967; Miller, Barrett, Hampe, & Noble, 1972). Tolin's inclusion of distantly published clinical trials is concerning for both treatment and diagnostic reasons. As previously reviewed, CBT treatments evolved considerably over the past 40 years with a tremendous amount of shifting occurring in the last couple of decades. Similarly, the evolution of CBT treatment over the past few decades coincided with monumental diagnostic shifts in the conceptualization of psychopathology and identification of anxiety disorders (see Norton & Philipp, 2008). Consequently, the distantly published studies included in the Tolin meta-analysis do not accurately reflect either the existing state of CBT treatment or the current conceptualization of anxiety disorders. For comparative purposes again, all of the included clinical trials in the Benish et al. (2008) study were published within the past 20 years.

The assertions put forth by Tolin are also limited by the parameters of the included studies. The author concludes that “CBT outperforms other forms of psychotherapy at post-treatment” (p.718), despite the finding that CBT was not found to be superior to both interpersonal and supportive therapies (Tolin, 2010). The findings suggested that CBT was more effective than non-CBT treatments among anxiety disorders. However, most of the non-CBT treatments for the analysis of anxiety disorders were based upon psychodynamic treatment.

Little comparative treatment variability existed in the non-CBT comparison condition for anxiety disorders. In addition to the limited treatment variability, the Tolin meta-analysis failed to provide strict selection criteria regarding the patient population of the clinical trials. Notably, the meta-analysis included clinical trials that treated both adult and child patient populations. Both the uniformity of the non-CBT treatments and the variability in patient population hampers both the study's assertion of CBT superiority and its generalizability to specific patient populations, which interestingly was the primary critique of Wampold et al. 1997 (see Crits-Christoph, 1997; DeRubeis et al., 2006).

Leading to another significant limitation, the Tolin meta-analysis appropriately attempted to account for heterogeneity by confounding variables in the analysis by investigating the impact of researcher allegiance. Tolin's inclusion of researcher allegiance into the study's methodology highlights the influence of this confound in comparative outcome research. As previously discussed, certain confounds among clinical trials can be accounted for through methodological considerations such as the direct comparison method utilized in the Tolin study. Although the direct comparison method cannot control for certain confounds such as researcher allegiance (Wampold, 2001), meta-analysis remains an effective method to uncover the role of previously hidden variables such as researcher allegiance. However, the flawed method to evaluate researcher allegiance in the Tolin meta-analysis may have prevented the unmasking of researcher allegiance's true role between CBT and bona fide non-CBT treatments. In fact, a more in-depth review of the factors involved in heterogeneity, such as researcher allegiance, and their role in psychotherapy outcome research provides a more thorough understanding of this particular limitation in the Tolin meta-analysis.

### **Factors Involved in Heterogeneity**

Meta-analysis utilizes a research methodology that synthesizes the results from a pool of differing studies. The synthesis across a collection of studies would be uncomplicated if such studies were exact replicates. However, studies consistently differ from each other methodologically and substantively (Cooper & Hedges, 2009). Consequently, the variation among studies can result in heterogeneity among the effect sizes. Heterogeneity can result from different sources of variability which mainly include either within-study variability, also known as sampling error, or between-study variability. Given that sampling error is a consistent presence in meta-analysis due to population variation across studies, the identification of sources of between-study variability is paramount. Notably, the meta-analytic review of clinical trials reveals various sources of between-study heterogeneity from both clinical and methodological differences (Higgins, Thompson, Deeks, & Altman, 2002). Consequently, a brief review of common sources of heterogeneity that emerge during meta-analytic reviews of clinical trials will provide a more clear understanding of psychotherapy outcomes.

Although between-study variability may be due to a multitude of study variables and factors (Field, 2003), psychotherapy clinical trials possess several common clinical and methodological sources of variability. The clinical nature of psychotherapy reveals a host of distinct clinical features that may unduly influence the outcomes during randomized clinical trials. Given the clear emphasis of treatment in psychotherapy clinical trials, the differences in treatment approaches is frequently identified as a potential confound in psychotherapy meta-analyses. Other readily identifiable clinical characteristics that may explain heterogeneity amongst psychotherapy clinical trials include psychological diagnosis (e.g., anxiety, depression, etc.), psychotherapy treatment modality (e.g., individual, group, internet-based), patient population (e.g., child, adolescent, adult, geriatric), and clinical settings (e.g., hospital,

community health center, home-based). Clearly the clinical sources contributing to heterogeneity are not limited to the aforementioned examples, but these offer an sample of potentially clinically-oriented confounds.

In addition to clinical sources of heterogeneity, differences can also be attributed to characteristics and factors related to methodology. Specifically, heterogeneity resulting from methodological issues may be attributable to study design issues or varying degrees of bias control (Higgins, Thompson, Deeks, & Altman, 2002). The methodological quality of studies is often identified as a potential methodological confound. In fact, methodologically strong study designs are assumed to generate weaker effect sizes than study designs characterized as weak (Staines & Cleland, 2007). Similar to clinical sources of heterogeneity, there are countless methodological confounds that may account for variability such as sample bias, outcome measure, and outcome evaluation. Another prominent methodological source of heterogeneity is researcher allegiance which involves the research investigator's preference for a treatment. Given the growing attention of the role of researcher allegiance in accounting for heterogeneity, a more in-depth discussion of this methodological confound is necessary.

### **The Role of Researcher Allegiance in Meta-Analysis**

Variability of treatment outcomes within the research on relative efficacy has previously led researchers to the identification of factors accounting for these differences. Researcher allegiance is one of the most notable confounding factors to impact treatment outcome findings (Staines & Cleland, 2007). In fact, researcher allegiance is frequently described as the researcher's involvement in the treatment development or the researcher's dedication and identification with a specific theoretical orientation, and often entails the researcher's role in the training and supervision of therapists within a clinical trial (Miller et al., 2008). Research reveals



substantial evidence that the presence of allegiance impacts psychotherapy outcomes. In fact, the investigation into the role of researcher allegiance in psychotherapy outcome research has primarily utilized meta-analytic methods. In their seminal review of psychotherapy outcome research, Luborsky, Singer, and Luborsky (1975) uncovered the allegiance effect as a prominent factor explaining apparent treatment differences. Luborsky et al. observed that the superior treatment in relative efficacy studies corresponded to researcher's allegiance, or belief in a specific treatment. More recent research has found a strong statistical relationship between allegiance effects and differential treatment outcomes (e.g., Berman et al., 1985; Luborsky et al., 1975, 1999, 2002; Robinson, Berman, & Neimeyer, 1990; Smith et al., 1980; Wampold, 2001). Moreover, meta-analyses have observed a significant decrease in the strength of the effect size when statistically controlling for allegiance effects, thus, providing further evidence that allegiance can differentially favor one treatment over the other (Leykin & DeRubeis, 2009). In fact, researcher allegiance has accounted for the outcome differences in meta-analyses investigating treatments for childhood disorders (Miller et al., 2008), and treatments for alcohol abuse (Imel et al., 2008) with the treatment effect size decreasing from 22% to 0% in the latter study after controlling for researcher allegiance.

One of the primary methods for evaluating researcher allegiance involves the use of a rating methodology by the meta-analyst. Tsaousis (1993) devised a rating procedure that quantified researcher allegiance for each particular treatment through the review of a study's introduction section. Gaffan, Tsaousis, and Kemp-Wheeler (1995) improved upon the Tsaousis (1993) procedure through a more exhaustive examination of study bibliographies, study hypotheses, descriptions of treatment procedures, and author-developed treatments. Although these rating procedures effectively evaluated researcher allegiance, subsequent studies improved

the existing procedures to enhance the objectivity and accuracy of the evaluation of researcher allegiance. Concerned about the potential for bias, Miller et al. (2008) developed a rating procedure that masked the raters from the results of the studies to be evaluated for researcher allegiance. Specifically, only the introduction and method sections were available for coding of the allegiance.

This brief review clearly reveals the important role of researcher allegiance in the psychotherapy outcome research and provides sufficient context to address the final methodological limitation of the Tolin (2010) meta-analysis. Tolin appropriately attempted to account for the confounding variables in the analysis by investigating the impact of researcher allegiance. Tolin concluded that researcher allegiance is positively correlated to the strength of CBT treatment's superiority and that the superiority of CBT remained even after controlling for the researcher allegiance. However, Tolin constructed a methodology that was based on self-reported allegiance ratings collected directly from the principal investigators of each clinical trial. This methodological approach increased researcher subjectivity and bias in the ratings of allegiance. In fact, the author deliberately avoided assessing researcher allegiance through the more objective criteria suggested by Gaffan, Tsaousis, and Kemp-Wheeler (1995). Specifically, Gaffan et al. recommended quantifying researcher allegiance through other methods including examination of study bibliographies, study hypotheses, descriptions of treatment procedures, and author-developed treatments. Surprisingly, Tolin (2010) stated, "These criteria seem inadequate to assess a researcher's personal allegiances, as many of them may simply reflect good science" (p.711). It is evident that the methodological approach introduced by Tolin to evaluate the level of researcher allegiance introduces a level of subjectivity and bias that significantly weakens the claims put forth regarding this important confounding variable.

Despite the Tolin study, much of the current research reveals substantial evidence that the presence of allegiance impacts psychotherapy outcomes. The current empirical research on allegiance provides multifaceted support for its influential role in treatment outcomes. Treatments appear to be uniformly efficacious when controlling for researcher allegiance. Consequently, the examination of the researcher allegiance is necessary to understand the relative efficacy of the various treatments prescribed across the spectrum of adult anxiety disorders.

### **Study Rationale and Hypotheses**

Despite recent evidence that all treatments intended to be therapeutic are equally efficacious across psychology disorders and within specific disorders (e.g., Benish et al., 2008; Imel et al., 2008; Miller et al., 2008; Wampold et al., 1997), the question of relative efficacy persists. In fact, the dominant status of CBT treatments has led to an assumption that CBT treatments are superior to other psychotherapies (Eysenck, 1994; Hunsley & Di Giulio, 2002), and particularly for treatment of anxiety disorders (Arch & Craske, 2008). However, CBT's favorable status and the assertions of CBT treatment's superiority are premature due to significant conceptual and methodological issues within CBT research. Foremost, the evolution and emergence of CBT has resulted in an expansive range of similar, yet undifferentiated, treatments that are plagued by a lack of clarity. Additionally, much of the meta-analytic research on the relative efficacy of CBT treatments for adult anxiety disorders provides mixed evidence and is beset by methodological shortcomings. Clearly, few meta-analyses have attempted to take the methodological steps necessary to accurately examine the relative efficacy of bona fide CBT treatments and bona fide non-CBT treatments for anxiety disorders. Most recently, Tolin (2010) adopted the Wampold et al. (1997) method in an effort to examine the hypothesis of whether

CBT treatments were more effective than non-CBT treatments for anxiety disorders.

Unfortunately, severe methodological issues (e.g., ambiguous operational definition of CBT, non-exhaustive study inclusion, limited treatment variability, patient population, and subjective researcher allegiance rating methods) attenuate Tolin's conclusion that CBT treatments were superior to bona fide non-CBT treatments. These limitations restrict the inferences that can be made, and do not accurately evaluate the true relative efficacy of bona fide CBT and non-CBT treatments for adult anxiety disorders.

Accordingly, the current meta-analysis addresses the aforementioned limitations and provides a more accurate test of the relative efficacy of CBT and bona fide non-CBT treatments. Thus, this meta-analysis seeks to answer the following questions: (1) Are bona fide CBT treatments more effective than bona fide non-CBT treatments for adult anxiety disorders? (2) If so, does researcher allegiance moderate any observed differences?

This study addresses several limitations of previous meta-analyses of adult anxiety disorders. First, CBT experts were surveyed and asked to identify whether a treatment qualifies as a CBT treatment or a non-CBT treatment. This attempts to provide clarity to the currently ambiguous state of CBT treatment identification. Second, only direct comparisons of bona fide CBT treatments to bona fide non-CBT treatments for adult anxiety disorders were compared, providing a more accurate test of the superiority of CBT treatment over non-CBT treatments (Shadish & Sweeney, 1991). Third, targeted and non-targeted outcome measures were analyzed independently, increasing sensitivity to uncover frequently masked treatment differences (Spielmans et al., 2007) and addressing previous criticisms that uniform efficacy may not be revealed in the treatment of particular disorders (e.g., Crits-Cristoph, 1997; DeRubeis et al., 2006). Fourth, researcher allegiance was included as a moderating variable in order to

investigate the impact on any observed differences. Consequently, the present meta-analytic study proposes the following hypotheses:

Hypothesis 1: Bona fide non-CBT treatments and bona fide CBT treatments will be equally efficacious across all targeted outcome measures for adult anxiety disorders.

Hypothesis 2: Bona fide non-CBT treatments and bona fide CBT treatments will be equally efficacious across all non-targeted outcome measures for adult anxiety disorders.

Hypothesis 3: Researcher allegiance will moderate any differential treatment effects found between bona fide CBT treatments and bona fide non-CBT treatments.

## Chapter III: Methods

### Methodological Overview

The main purpose of this study was to evaluate the relative efficacy of bona fide CBT treatments to bona fide non-CBT treatments. Several methodological steps were performed in order to conduct the final meta-analyses. First, published studies from randomized clinical trials were selected through a pre-identified set of inclusion criteria. Second, trained raters evaluated the bona fide status of psychotherapies from the initial pool of relevant randomized clinical trials. Third, the treatment titles were extracted from clinical trials that included at least two bona fide psychotherapies, and an online survey was provided to CBT experts to determine the CBT status of each bona fide treatment. Fourth, the studies comparing a CBT treatment and a non-CBT treatment were selected from the original pool of bona fide studies based on the results of the CBT survey. Fifth, trained raters coded allegiance ratings and extracted the relevant statistics for each included study. Sixth, unbiased mean difference effect sizes (Hedges'  $g$ ) and their variance were calculated to determine the overall omnibus effect size. Seventh, the hypothesized moderator of any detectable treatment differences—allegiance—was analyzed, as the  $H$  statistic for the unconditional model was significant (indicating significant between-study heterogeneity).

**Inclusion criteria.** In order to meet the inclusion criteria for this meta-analysis, the studies needed to meet the following criteria: (a) utilized experimental and randomized clinical design, (b) published in a peer-reviewed journal, (c) examined adults diagnosed with an anxiety disorder, (d) contained direct comparisons of at least two bona fide psychological treatments, (e) contained sufficient statistics to calculate effect sizes, (f) utilized a group or individual format, (g) published between the years 1991 and 2011, and (h) provided a comparison between a CBT treatment and a non-CBT treatment. Studies that were excluded were those that examined non-

adult patient populations (i.e., children, adolescents, families), provided psycho-pharmaceuticals as a primary or adjunct treatment comparison, utilized non-therapist modalities (i.e., internet-based, self-administered), or used treatment designs that were not used to test relative efficacy (i.e., dismantling, additive, pilot studies).

**Literature search.** The final literature search for this meta-analysis occurred on May 17, 2011. The study implemented an exhaustive literature search of several major databases including Medline, PsychINFO, PsycARTICLES, PsycCRITIQUE, CINAHL, HealthSource, PubMed, Social Sciences Fulltext, Academic Search Elite, ERIC, and SocIndex. Five doctoral students identified potential studies by pairing each primary search term (i.e., various anxiety disorder labels) with each secondary search term (i.e., various general psychotherapy and clinical trial terms) listed in Appendix A. Additionally, reference lists of recent and previous meta-analyses addressing psychotherapeutic interventions for anxiety disorders were examined to identify additional studies.

The initial review identified a total 24,332 search results from both the database search and review of meta-analyses (see Figure 1). Each search result was reviewed for potential inclusion, which resulted in a 352 potential studies. These results were screened in further detail utilizing all the previously identified exclusion criteria (see Figure 1) with the exception of assessing for the classification of treatments (e.g., bona fide criteria, CBT/non-CBT status). This final screen identified 79 randomized clinical trials of adult anxiety disorders to be independently evaluated for meeting the eligibility as a bona fide treatment.

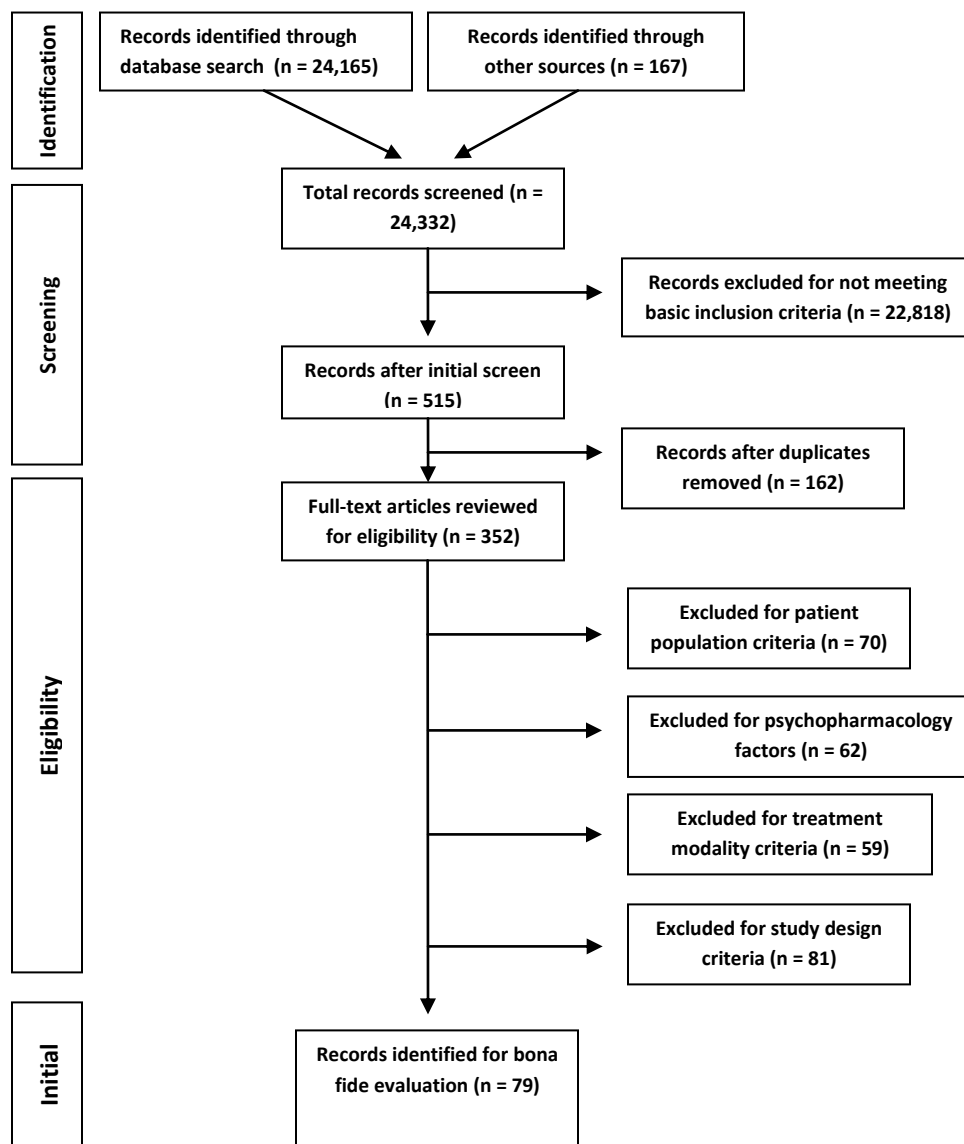


Figure 1. Flow diagram of study selection process for the current meta-analysis.

**Bona fide treatment criteria.** The treatments from the 79 studies that met the inclusion criteria at this point were evaluated based on the criteria used by Wampold et al. (1997) to identify bona fide treatments (i.e., intended to be therapeutic). Bona fide treatments are conceptualized as "those that were delivered by trained therapists and were based on



psychological principles, were offered to the psychotherapy community as viable treatments (e.g., through professional books or manuals), or contained specified components" (Wampold et al., 1997, p.205). First, the treatment had to be delivered by a trained therapist who held at least a master's degree or was enrolled in a graduate program in a relevant field (e.g., counseling psychology, clinical psychology, social work). Second, the therapist developed a relationship based on face-to-face meetings with the patient and the treatment was individualized (i.e., did not deliver a standard protocol rigidly to each client). Third, the treatment must contain psychologically valid elements as evidenced by at least two of the following four criteria: (a) a citation was made to an established approach to psychotherapy (e.g., a reference to Clark's panic treatment), (b) a description of the therapy was contained in the article and the description contained a reference to a psychological process, (c) a treatment manual existed and was used to guide the delivery of the treatment, and (d) the active ingredients of the treatment were identified and citations provided for those ingredients.

To identify bona fide psychotherapies, two doctoral graduate students independently evaluated the potential studies for their subsequent inclusion. The graduate student raters were trained to evaluate the psychological treatments utilizing the aforementioned bona fide criteria (see Appendix B), while also being blind to the results of each study. Studies were included for further analysis if both independent raters agreed that a study contained a minimum of two bona fide treatments. If the independent raters disagreed on the bona fide status of a treatment, then the raters discussed the disagreement in order to come to a consensus. If the raters did not agree upon a consensus after discussion, Bruce E. Wampold evaluated the treatment. Consequently, the classification of a bona fide treatment required agreement of at least two of the three raters, and inclusion of a study necessitated at least two bona fide treatments. The 79 identified studies

resulted in a total of 163 treatments, which the independent raters subsequently coded.

Seventeen of the 163 treatments resulted in initial disagreements between the raters. Only one of these 17 treatments necessitated evaluation by the third rater, Bruce E. Wampold. The kappa coefficient was  $p = .80$ , suggesting the existence of strong coder agreement for the categorical variable of bona fide status. Out of the 79 studies, 41 studies failed to contain at least two bona fide treatments. Consequently, 38 studies contained at least 2 bona fide treatments and therefore met initial inclusion (see Figure 2).

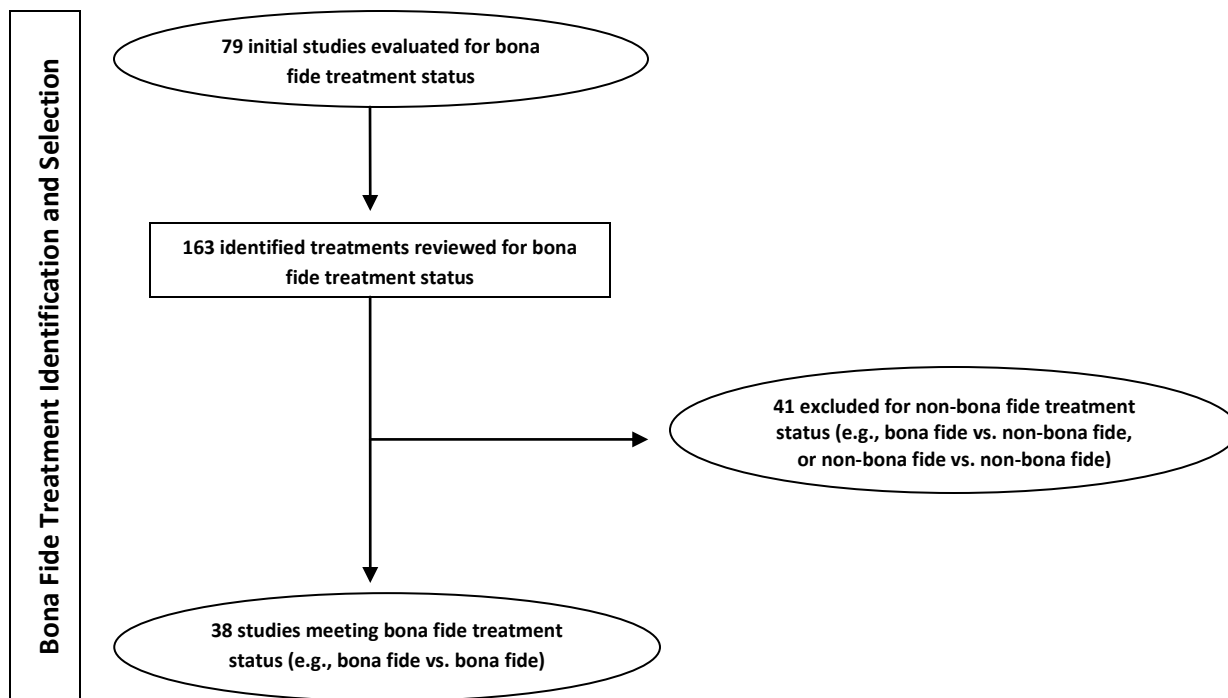


Figure 2. Flow diagram of bona fide treatment identification and bona fide study selection.

**CBT and non-CBT categorization.** The 38 studies included 86 identified treatments. After 20 duplicate treatments were removed, the final total included 66 different bona fide treatments. To determine whether a bona fide treatment was CBT, experts in CBT were

identified and surveyed to specify if the treatment was considered to be a CBT treatment.

Participants were recruited through the *Find-A-Therapist Service* provided by the Association of Behavioral and Cognitive Therapies (ABCT). This publicly accessible service provides consumers with a directory of licensed professionals trained in cognitive and behavioral techniques and who simultaneously maintain a membership with the ABCT. A sample of 310 licensed, mental health practitioners was generated from the ABCT directory. All members of the sample identified their primary specialization with adult populations and expertise in one or more of the anxiety disorders (e.g., post-traumatic stress disorder, generalized anxiety disorder, panic disorder, social phobia, and obsessive-compulsive disorder).

The labeling of the 66 different bona fide treatments paralleled the specific title of the treatment from the original study source and the specific anxiety targeted in the clinical trial (e.g., Cognitive Therapy for OCD). In addition to the specific treatment label, the citation of the established approach for each treatment was extracted from the methods section of the original study (e.g. Beck, Emery, & Greenberg, 1985). Participants were presented with each bona fide treatment title and citation (e.g., Cognitive Therapy for OCD; Beck, Emery, & Greenberg, 1985), and instructed, *Based on your background knowledge and using your own definitions of cognitive-behavioral treatments (CBT), please indicate whether you consider the treatments listed below as CBT for the various anxiety disorders*. Identification of a treatment as CBT required a majority of affirmative responses (i.e., yes) against non-affirmative responses (i.e., no).

**Researcher allegiance coding.** To rule out researcher allegiance as a potential contributor to treatment differences, researcher allegiance was coded for each particular study. The coding procedure to evaluate allegiance was based on the allegiance rating protocol

developed by Miller et al. (2008). See Appendix C for further details. Three coders, blind to the results and different than those who coded effect sizes or bona fide treatment status, inspected only the introduction and methods sections of each study and then rated each treatment on a 5-point rating scale. If there was no evidence of allegiance toward a treatment, that treatment was given a rating of 0. If there was strong evidence of allegiance, the treatment was assigned a rating of 5. Coding disagreements were resolved by discussion among raters to reach a consensus. Adequate coder reliability was met (ICC = .81)

**Analytic Unit and Effect Size Calculation.** The unit of analysis for this study was the direct comparison of a bona fide CBT treatment and a bona fide non-CBT treatment. No study in this meta-analysis had more than one direct comparison. Two Hedges'  $g$  effect sizes and variances were computed for each comparison. Specifically, an effect size was calculated for targeted outcome measures (e.g., disorder-specific measures) and another for non-targeted outcome measures (e.g., general anxiety and psychological functioning measures).

Differentiating between outcome measures may reveal additional information on treatment differences since targeted outcome measures often are the focus of treatment researchers.

For each outcome measure, the effect size  $g$  was calculated by analyzing the differences between the post-treatment means of the CBT treatment and of the bona fide non-CBT treatment by dividing by the pooled standard deviation, which is,

$$g = \frac{M_A - M_B}{s}$$

where  $M_A$  and  $M_B$  are the means for Treatments A (bona fide CBT) and Treatment B (bona fide non-CBT), and  $s$  is the pooled standard deviation. Regardless of the scaling of outcome variables, the sign of  $g$  was fixed to maintain consistency of outcomes for the measures. Thus,

positive values of  $g$  indicated superiority of Treatment A (CBT – the referent treatment), even though lower scores on some outcomes indicated improved psychological functioning.

To obtain an unbiased estimate of the population effect size,  $d$  was calculated to correct for the bias in  $g$  (Hedges & Olkin, 1985),

$$d = \left[ 1 - \frac{3}{4N-9} \right] g$$

where,  $N = n_A + n_B$ , is the sum of participants in both treatment conditions. Additionally, the variance of  $d$  was estimated by,

$$\sigma^2 = \left[ N / (n_A n_B) \right] + \left[ d^2 / 2N \right]$$

In order to derive a more accurate estimation of  $d$ , the effect sizes for dependent measures was calculated under the assumption that correlations among dependent variables are .50, which is a reasonable application for the psychotherapeutic context (see Hedges & Olkin, 1985, pp.212-213 for the method, Del Re & Hoyt (2010) for the program, and Wampold et al. 1997 for justification). This procedure more accurately estimates the standard error of the effect size. Lastly, intent-to-treat data was utilized to reduce potential bias in the estimates resulting from high dropout rates.

**Statistical analyses.** The main purpose of this meta-analysis was to examine the effect size when bona fide CBT and bona fide non-CBT treatments are directly compared in the treatment of adult anxiety disorders. All analyses were conducted under a random effects restricted maximum-likelihood estimator (Viechtbauer, 2005; 2011) which assumes that the included studies were sampled from a population of studies. This subsequently allows generalizations to the population of studies instead of only to the specific studies utilized within

this particular meta-analysis. The analyses employed the R statistical software package for meta-analysis ‘MAJ’ (Del Re & Hoyt, 2010). The primary analyses, that evaluated whether bona fide CBT is superior to bona fide non-CBT, involved an unconditional model in which the effect sizes are not conditioned on study level variables (i.e., moderators). Thus, the formula is as follows:

$$\theta_j = \mu + v_j^*$$

where  $\theta_j$  refers to an estimation of the differences between bona fide CBT and bona fide non-CBT treatments for an individual study,  $j$ ,  $\mu$  is the true effect size for an individual study  $j$ , and  $v_j^* = v_j + \tau^2$  is the variance of the within-study errors  $v_j$  is known and the between-study errors  $\tau^2$  are unknown and the estimation is based on the included studies for this meta-analysis.

Homogeneity was assessed with the  $H$  statistic which estimates the degree that sampled effects deviate from the grand mean (Hedges & Olkin, 1985; Hox, 2002; Raudenbush & Bryk, 2002). The  $H$  statistic is compared to a chi-square distribution with  $k - 1$  degrees of freedom, where  $k$  is the number of effect sizes in the analysis (Hedges & Olkin, 1985). Whereas the  $H$  statistic addressed the significance of heterogeneity, the  $I^2$  index was calculated to gauge the extent of heterogeneity (Huedo-Medina, Sanchez-Meca, Marin-Martinez, & Botella, 2006). The  $I^2$  index provides information on the extent of heterogeneity by subtracting the degrees of freedom ( $k-1$ ) from  $H$  statistic, dividing by  $H$  statistic, and then multiplying by 100. The  $I^2$  index ranges between 0% and 100% and can be interpreted as the percentage of variability due to true differences among the treatments. Higgins and Thompson (2002) respectively put forth the percentages of 25%, 50%, and 75% which can be understood as low, medium, and high heterogeneity.

Additionally, a conditional model was utilized to examine the effect of researcher allegiance on the differences between the treatments. Researcher allegiance was entered in a meta-regression model as a study level variable, as follows:

$$\theta_j = \gamma_0 + \gamma_1(\textit{Allegiance}) + v_j^*$$

where  $\gamma_0$  is the grand mean for studies with balanced allegiances (i.e., allegiance is zero), and  $\gamma_1$  is the expected difference between treatments per unit change of the moderator. Should the moderator variable – researcher allegiance – have a discernable impact on treatment differences, then the fixed effect  $\gamma_1$  will be statistically significant (p-values < .05) and the variance,  $v_j^*$ , will decrease.

## Chapter IV: Results

### CBT Survey

A total of 310 ABCT members were contacted through email and approximately twenty-nine percent (29.4%, n = 91) responded to the online survey. Eighty-five percent (n = 77) of the survey participants held a Ph.D. degree, 7% held a Psy.D. degree (n = 6), 2% held a medical degree (n = 2), and 6% held a masters degree (n = 6). The survey participants in this sample indicated a substantial amount of clinical experience. Nearly fifty percent of respondents (49%, n = 45) indicated private practice as the primary setting of their professional practice. Other primary professional settings included college and university department (30%, n = 27), medical hospital (19%, n = 17), outpatient psychiatric clinic (7%, n = 6), Veterans Health Administration hospital (4%, n = 4), community mental health center (2%, n = 2), university counseling center (1%, n = 1), and other (11%, n = 10).

Of the 66 different bona fide treatments from the 38 studies, the respondents of the survey identified 55 treatments as CBT and 11 treatments as non-CBT, which was based on the majority decision rule described in the methods section. The identification of a bona fide treatment as either CBT or non-CBT is presented in Table 1. The table also includes the response percentage for each particular treatment.

Table 1

#### *Survey of Bona Fide Treatments for Adult Anxiety Disorders as CBT or Non-CBT Treatments*

Treatment label in survey	CBT- Yes	CBT- No	CBT- Uncertain
Cognitive therapy for social phobia (Clark, 1997)	X (96)	(0)	(4)
Interpersonal psychotherapy for social phobia (Lipsitz, Markowitz, & Cherry, 1997)	(7)	X (75)	(18)
Prolonged Exposure for PTSD (Foa & Rothbaum, 1998)	X (96)	(3)	(1)



Eye movement desensitization and reprocessing (EMDR) for PTSD (Shapiro, 1995)	(24)	X (63)	(13)
Stress inoculation prolonged exposure treatment for PTSD (Foa, Rothbaum, Riggs, & Murdock, 1991)	X (94)	(2)	(4)
Short-term psychodynamic psychotherapy for GAD (Luborsky, 1984)	(1)	X (91)	(8)
Cognitive-behavioral therapy for GAD (Leibing et al., 2003)	X (87)	(1)	(12)
Present-centered therapy for PTSD (McDonagh et al., 1999)	(3)	X (46)	(51)
Cognitive-behavioral therapy for PTSD (Foa et al., 1999)	X (96)	(0)	(4)
Cognitive-behavioral therapy for panic (Barlow & Craske, 1994)	X (99)	(0)	(1)
Emotion-focused therapy for panic (Shear et al., 2001)	(8)	X (62)	(30)
Exposure and response prevention for OCD (Van Noppen, Steketee, McCorkle, & Pato, 1997)	X (92)	(0)	(8)
Cognitive-behavioral therapy for OCD (Salkovskis, 1996; Freeston et al., 1996; Van Oppen & Arntz, 1994)	X (96)	(1)	(3)
Cognitive-behavior trauma treatment protocol for PTSD (Devilley & Spence, 1999)	X (68)	(4)	(28)
Cognitive therapy for GAD (Beck & Emory, 1985)	X (99)	(0)	(1)
Anxiety management training for GAD (Clark, 1989)	X (77)	(5)	(18)
Psychoanalytic therapy for GAD (Durham, 1994)	(0)	X (94)	(6)
Cognitive therapy for OCD (Beck, Emery, & Greenberg, 1985; Salkovskis, 1985)	X (94)	(2)	(4)
Intensive behavior therapy for OCD (Mark, 1987; Foa & Wilson, 1991)	X (77)	(0)	(23)
Exposure therapy for panic (Barlow & Cerney, 1988; Marks, 1987; Wolpe, 1990)	X (94)	(3)	(3)
Cognitive restructuring therapy for panic (Beck & Emery, 1985; Clark & Salkovskis, 1987; Barlow & Cerney, 1988)	X (91)	(3)	(6)
Prolonged exposure for PTSD (Foa et al., 1999)	X (96)	(3)	(1)
Stress Inoculation Therapy for PTSD (Veronen & Kilpatrick, 1983)	X (67)	(5)	(28)
Prolonged exposure stress inoculation for PTSD (Foa et al., 1999)	X (87)	(3)	(10)
Exposure therapy for PTSD (Marks et al., 1998)	X (88)	(3)	(9)
Cognitive restructuring for PTSD (Beck et al., 1979; Beck, Emery, & Greenberg, 1985)	X (91)	(3)	(6)
Exposure with cognitive restructuring for PTSD (Foa et al. 1991; Marks et al., 1998)	X (98)	(0)	(2)
Exposure therapy for PTSD (Paunovic & Ost, 2001)	X (91)	(2)	(7)
Cognitive-behavioral for PTSD (Paunovic & Ost, 2001)	X (89)	(0)	(11)
Cognitive-processing therapy for PTSD (Resick & Schnicke, 1993)	X		

	(78)	(4)	(18)
Prolonged exposure for PTSD (Foa et al., 1994)	X (96)	(3)	(1)
Interpersonal therapy for social anxiety (Klerman et al., 1984; Weissman et al., 2000)	(1)	X (88)	(10)
Supportive therapy for social anxiety (Lipsitz et al., 2006)	(1)	X (84)	(15)
Exposure and cognitive restructuring for PTSD (Foa et al. 1991; Lovell, 2002; Marks et al. 1998)	X (98)	(0)	(2)
Cognitive therapy for PTSD (Beck & Emery, 1985; Resick & Schnicke, 1993)	X (93)	(1)	(6)
Imaginal exposure for PTSD (Foa et al. 1991)	X (94)	(3)	(3)
Trauma-focused group therapy for PTSD (Schnurr et al., 2003)	X (26)	(18)	(56)
Present-centered group therapy for PTSD (Schnurr et al., 2003)	(5)	X (38)	(57)
Exposure and applied relaxation for social phobia (Butler, 1985; Ost, 1987)	X (86)	(5)	(9)
Prolonged exposure for PTSD (Foa & Rothbaum, 1998; Foa et al., 1991)	X (96)	(3)	(1)
Exposure and response prevention for OCD (Anholt et al., 2007)	X (97)	(3)	(0)
Group cognitive-behavioral therapy for social phobia (Heimberg & Becker, 2002; Clark & Wells, 1995)	X (98)	(0)	(2)
Mindfulness-based cognitive therapy for social phobia (Segal et al., 2002)	X (75)	(9)	(16)
Cognitive therapy for panic (Clark & Salkovskis, 1986)	X (95)	(2)	(3)
Interoceptive exposure for panic (Margraf & Schneider, 1989; Craske, Rapee, & Barlow, 1988)	X (94)	(3)	(3)
Behavior therapy for GAD (Butler et al., 1991)	X (83)	(3)	(14)
Cognitive behavior therapy for GAD (Beck et al., 1985)	X (87)	(1)	(12)
Exposure therapy for panic (Ost et al., 1993)	X (95)	(3)	(2)
Cognitive treatment for panic (Beck & Emery, 1985; Meichenbaum, 1977)	X (95)	(0)	(5)
Exposure in vivo for panic (Ost, Thulin, & Ramnero, 2004)	X (88)	(3)	(9)
Cognitive-behavioral therapy for panic (Beck, Emery, & Greenberg, 1985; Clark, 1986)	X (97)	(0)	(3)
Exposure group therapy for social phobia (Hofmann, 1999)	X (88)	(2)	(10)
Cognitive-behavioral group therapy for social phobia (Heimberg, 1991)	X (98)	(0)	(2)
Exposure and response prevention for OCD (Steketee 1993; 1999)	X (97)	(3)	(0)
Cognitive appraisal model for OCD (Van Oppen & Arntz, 1994; Salkovskis, 1999)	X (77)	(3)	(20)
Cognitive therapy for OCD (Van Oppen & Arntz, 1994)	X (85)	(1)	(14)

Exposure and response prevention for OCD (Hoogduin & Hoogduin, 1984)	X (86)	(3)	(11)
Exposure in vivo for OCD (Emmelkamp, 1982)	X (90)	(4)	(6)
Cognitive therapy for panic (Barlow & Cerny, 1988; Beck, Emery, & Greenberg, 1985)	X (100)	(0)	(0)
Performance-based exposure therapy for panic (Williams, 1990)	X (15)	(8)	(77)
Cognitive therapy for OCD (Clark, 1994; Salkovskis, 1985; 1989; 1996)	X (94)	(2)	(4)
Exposure and response prevention for OCD (Steketee, 1999)	X (97)	(3)	(0)
Interpersonal psychotherapy treatment for social phobia (Lipsitz & Markowitz, 1996)	(7)	X (75)	(18)
Cognitive therapy for OCD (Beck, 1976; Salkovskis, 1985)	X (85)	(1)	(14)
Exposure therapy for PTSD (Foa et al., 1999; Foa & Rothbaum, 1998)	X (96)	(3)	(1)
Present-centered therapy for PTSD (Schnurr et al., 2005)	(6)	X (36)	(58)

The survey also offered respondents to provide optional comments about their experience taking the survey or their general opinions about the content of the survey. The comments are presented in Table 2.

Table 2

*Comments from Participating CBT Experts on the CBT Survey*

Respondent	Optional Survey Comments
A	“You needed to define cognitive-behavioral treatment in advance of completing the survey.”
B	“I am considering anything using only behavioral interventions (e.g., exposure) or only what they call “cognitive therapy” as part of “CBT,” along with treatments that combine both cognitive and behavioral interventions.”
C	“Cognitive-behavior therapy subsumes behavior therapy. Mindfulness- and acceptance-based therapies are said to be “third wave” therapies that are the newer CBT therapies. That may be stretching the definition of CBT a bit as there are important differences, e.g., cognitive restructuring is rejected by ACT.”
D	“If you are very well-versed in the literature, you might be able to use the citations included after each therapy name, but I think that’s unreasonable to expect from the average clinician.”
E	“The task demonstrated how complex decision-making is in the field!”
F	“I used to be full-time psychotherapy outcome researcher, now private practice, and I wouldn’t know all the specific names as authors or validators of treatment.”
G	“Those in private practice are not likely to be so familiar with research to know exactly if a certain author’s work is CBT.”

---

H	“Not sure why you asked about the same treatment half a dozen times or more, but I see where you’re going with this, and it is important.”
I	“You ask about the same treatments several times under different names and sometimes you include different articles under each treatment. Therefore I have not been able to answer consistently to related types of treatment.”
J	“A fairly confusing survey. Did you mean to have the respondent know each specific reference?”

---

Based on the CBT experts’ responses to the survey, 24 of the 38 studies were excluded due to a direct comparison of one bona fide CBT treatment with another bona fide CBT treatment. Another study was excluded due to direct comparison of a bona fide non-CBT treatment with another bona fide non-CBT treatment. Accordingly, 13 of the 38 studies met inclusion criteria of a study that directly compared a bona fide CBT treatment with a bona fide non-CBT treatment (see Figure 3 below).

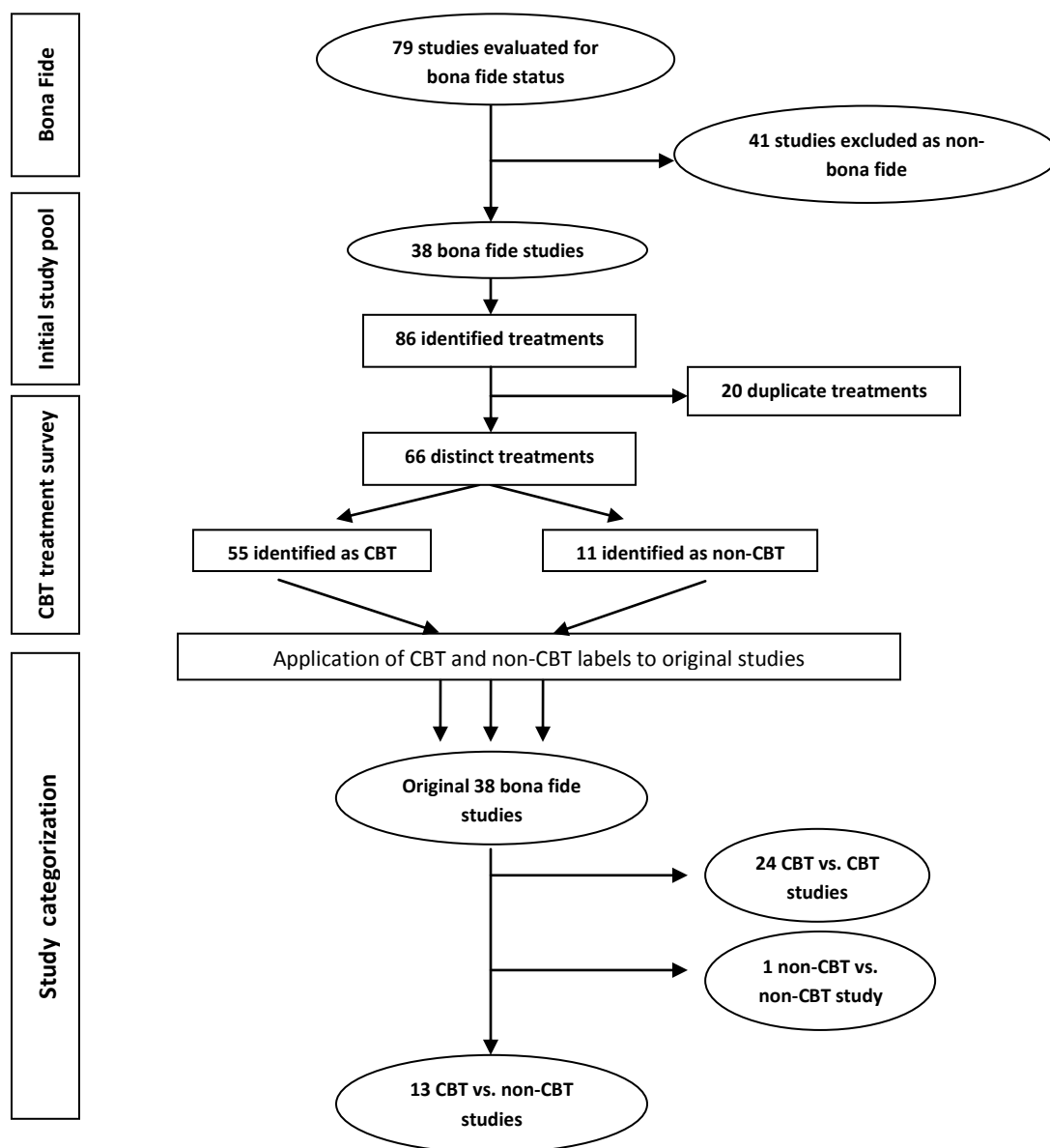


Figure 3. Flow diagram of CBT treatment identification and selection process of CBT vs. non-CBT clinical trials.

## Meta-Analyses

Table 3

### *Included Studies in the Current Meta-Analysis*

Clinical trial	N	Disorder	CBT treatment	Non-CBT treatment
Borge et al. (2008)	73	Social Anxiety	Cognitive therapy	Interpersonal psychotherapy

Devilley & Spence (1999)	23	PTSD	Cognitive-behavior trauma treatment	EMDR
Durham et al. (1994)	64	GAD	Cognitive therapy	Psychoanalytic therapy
Ironson et al. (2002)	19	PTSD	Prolonged exposure	EMDR
Lee et al. (2002)	24	PTSD	Stress inoculation prolonged exposure	EMDR
Leichsenring et al. (2008)	57	GAD	Cognitive-behavioral therapy	Short-term psychodynamic therapy
McDonagh et al. (2005)	51	PTSD	Cognitive-behavioral therapy	Present-centered therapy
Power et al. (2002)	48	PTSD	Exposure with cognitive restructuring	EMDR
Rothbaum, Astin, & Marsteller (2005)	40	PTSD	Prolonged exposure	EMDR
Schnurr et al. (2003)	325	PTSD	Trauma-focused group therapy	Present-centered group therapy
Schnurr et al. (2007)	284	PTSD	Prolonged exposure	Present-centered therapy
Shear, Houck, Greeno, & Masters (2001)	66	Panic	Cognitive-behavioral therapy	Emotion-focused therapy
Taylor et al. (2003)	41	PTSD	Exposure therapy	EMDR

Thirteen clinical trials with 13 direct comparisons between bona fide CBT and bona fide non-CBT treatments met the final inclusion criteria for this meta-analysis. A total of 1,115 patients participated in these clinical trials resulting in a per-study mean and median of 86 and 51. Nine clinical trials focused on PTSD (Devilley & Spence, 1999; Ironson, Freund, Strauss, & Williams, 2002; Lee, Gavriel, Drummond, Richards, & Greenwald, 2002; McDonagh et al., 2005; Power et al., 2002; Rothbaum, Astin, & Marsteller, 2005; Schnurr et al., 2003; Schnurr et al., 2007; Taylor et al., 2003) two clinical trials focused on GAD (Durham et al., 1994; Leichsenring et al., 2008), one clinical trial focused on social anxiety (Borge et al., 2008), and one clinical trial focused on panic disorder (Shear et al., 2001). A brief overview of the included

studies is presented in Table 3.

As discussed in the methods section, the relative efficacy of bona fide CBT treatments and bona fide non-CBT treatments was tested with unconditional (see Table 4) and conditional models (see Table 5).

Table 4

*Omnibus Effect Sizes for Targeted and Non-Targeted Outcomes*

	<i>k</i>	<i>d</i>	95% <i>CI</i>	<i>H</i>	<i>Hp</i>	<i>I</i> <sup>2</sup>
CBT-nonCBT (Targeted)	13	0.14	[-0.08, 0.35]	35.73	.004	69%
CBT-nonCBT (Non-targeted)	12	-0.03	[-0.31, 0.24]	54.64	< .0001	83%

*Note.* Studies were modeled as random effects, *k* = number of studies, *d* = effect size (standardized mean change at post-treatment); *H* = homogeneity test; *Hp* = probability value for *H* statistic under  $H_0$  ( $df = k - 1$ ); *I*<sup>2</sup> = percentage of variance in effect sizes that is attributable to systematic variation.

The omnibus effect sizes for the comparison between bona fide CBT and bona fide non-CBT treatments were not significantly different from zero for both targeted outcomes and non-targeted outcomes, as the 95% confidence interval contained zero. Consequently, the null hypotheses that bona fide CBT and bona fide non-CBT produced equivalent outcomes for both targeted and non-targeted measures were supported. Notably, the effect sizes for targeted measures ( $d = .14$ ) and non-targeted measures ( $d = -0.03$ ) are considered small effects as put forth by Cohen (1988). The studies and their effects on targeted outcome measures and non-targeted outcome measures are displayed in Figures 4 and 5 as forest plots. The analyses of heterogeneity revealed that these effects were not homogeneously distributed around zero. For the targeted measures, the *H* statistic of 35.73 indicated there was significant between-study heterogeneity ( $p < .01$ ). The *I*<sup>2</sup> value for targeted measures indicated that roughly 69 percent of the variability in the observed effect was due to true between-study variability. Similarly for non-

targeted measures, the  $H$  statistic of 54.64 was significantly large ( $p < .0001$ ) to indicate heterogeneity when compared to a chi-square distribution with  $I^2$  degrees of freedom. The  $I^2$  value for non-targeted measures indicated that 83 percent of the variability in the observed effect was due to true between-study variability.

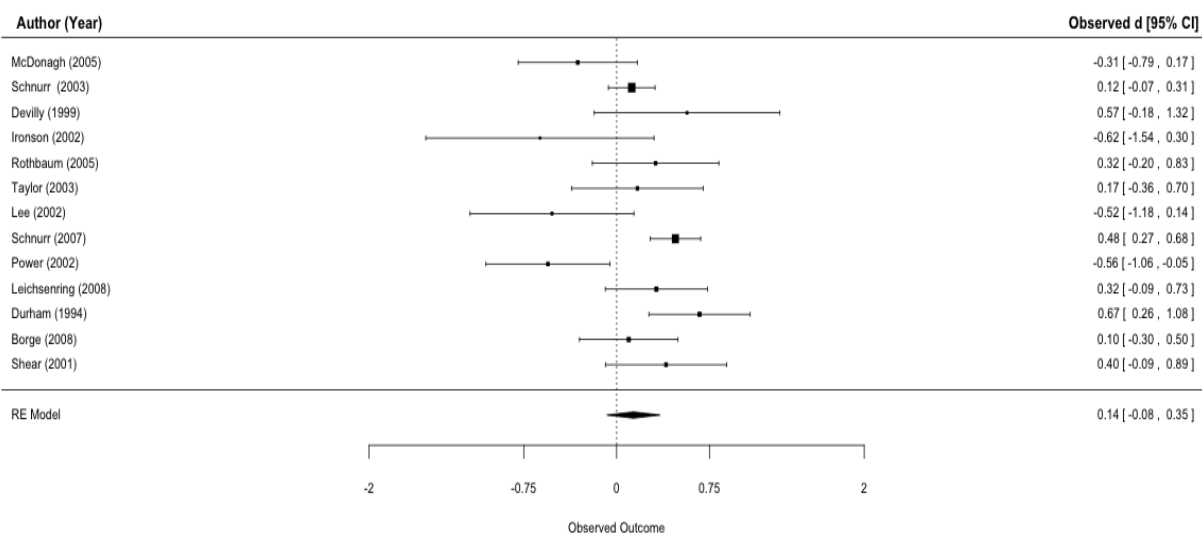
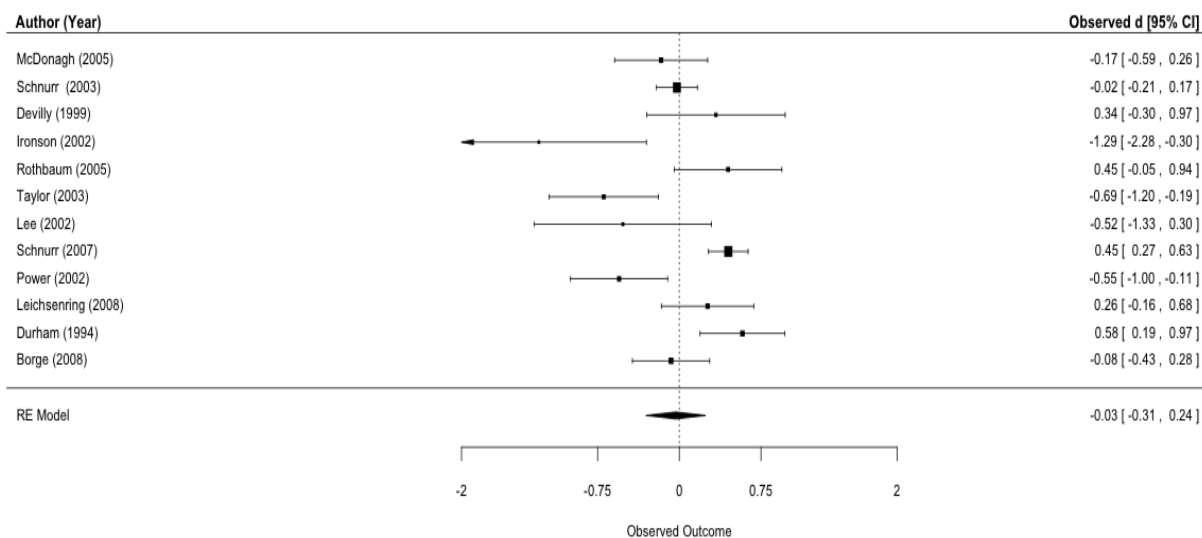


Figure 4. Forest plot of effects for targeted outcome measures.

*Note.* This figure provides the value of the omnibus effect size and the effect size for each treatment comparison regarding targeted outcome measures. The squares represent the actual effect sizes for each study, and the error bars indicate a 95% confidence interval.





*Figure 5.* Forest plot of effects for non-targeted outcome measures.

*Note.* This figure provides the value of the omnibus effect size and the effect size for each treatment comparison regarding non-targeted outcome measures. The squares represent the actual effect sizes for each study, and the error bars indicate a 95% confidence interval.

The presence of significant heterogeneity raised the possibility that that these overall effect sizes may be moderated by study-level characteristics. Thus, a conditional model, which provided an examination of the effect of researcher allegiance on treatment differences, was also tested. Particularly, allegiance was examined as a potential moderator variable to account for the significant heterogeneity (see Table 4 below). Moderator analyses of allegiance for both the targeted outcomes ( $p = .226$ ) and non-targeted outcomes ( $p = .160$ ) were in the expected direction (as CBT allegiance increases so do the CBT effect sizes) but they were not significant. Consequently, the finding suggested that allegiance as a moderator did not account for such heterogeneity.

Table 5

*Moderator Analyses—Allegiance*

	<i>k</i>	$y_0$	$y_1$	95% <i>CI</i> ( $y_1$ )	$z(y_1)$	<i>p</i>
				CBT-nonCBT (Targeted measures)		
Allegiance	13	0.06	0.132	[-0.081, 0.344]	1.21	.226
				CBT-nonCBT (Non-targeted measures)		
Allegiance	12	-0.14	0.189	[-0.075, 0.453]	1.40	.160

*Note.* Univariate analyses used a mixed model (studies random, levels of moderator variables fixed); *k* = number of studies,  $y_0$  = intercept;  $y_1$  = slope;  $z(y_1)$  = *z* statistic for  $y_1$ . *p* = probability value for moderator significance.

## Chapter V: Discussion

The primary purpose of this study was to examine the relative efficacy between bona fide CBT treatments and bona fide non-CBT treatments. The results of this meta-analysis revealed that bona fide CBT treatments and bona fide non-CBT treatments are equally efficacious across adult anxiety disorders. No significant differences were found between bona fide CBT and bona fide non-CBT treatments on both targeted and non-targeted outcome measures. These findings are striking because aggregating results across all outcomes may mask potential treatment differences between categories of outcome measures (Spielmanns et al., 2007). Despite the increased sensitivity to detect frequently masked treatment differences, this methodological accommodation failed to uncover any significance between CBT and non-CBT for either targeted outcomes or non-targeted outcomes. The present study's finding of no treatment differences for targeted outcome measures is particularly noteworthy given that proponents of CBT treatment advocate for the disorder-specific application of CBT and its subsequent disorder-specific effectiveness. Specifically, targeted outcomes (i.e., disorder-specific measures) are innately more likely to detect disorder-specific treatment differences for the disorder-specific CBT treatments included in this meta-analysis. Consequently, the results strongly suggest a lack of treatment outcome differences between bona fide CBT and bona fide non-CBT treatments. Therefore there was no indication from the analyses of direct comparisons to propose that CBT treatments are superior to bona fide non-CBT treatments for the treatment of adult anxiety disorders.

Although this meta-analysis revealed no significant differences between CBT and non-CBT treatments, between-study heterogeneity among the effect sizes was significantly greater than that which is due to sampling error. The  $I^2$  values quantified the excessive heterogeneity —

variability attributable to systematic study differences — among the effect sizes between 69% (targeted outcomes) and 89% (non-targeted outcomes). Contrary to the a priori hypothesis, the subsequent moderator analyses determined that researcher allegiance did not account for the between-studies variability in the effect sizes. Therefore the analyses did not identify moderator variables that could explain the systematic variability that remained, indicating the presence of undetermined factors related to the heterogeneity among effects.

The general findings of this meta-analysis stand in contrast with the findings garnered from the Tolin (2010) meta-analysis, which asserted that the superiority of CBT treatments over bona fide non-CBT treatments was evident in the treatment of adult anxiety disorders. Whereas the previous study improperly applied the bona fide criteria and included only four studies (2 of which were published in 1967 and 1972), this meta-analysis identified 13 studies and all were published within the past 20 years. Moreover, the present analysis included studies that treated only adult patients, which stands in contrast to the previous study's inclusion of both adults and children. Tolin (2010) also utilized an unclear operational definition (i.e., "some variant of CBT") to classify treatments as CBT. In contrast, the present meta-analysis surveyed a sample of licensed psychologists who specifically specialize in the treatment of adult anxiety disorders, and remain actively involved within a national professional organization that focuses on the popularization and advancement of CBT treatments. In regard to the non-CBT treatment, most of the treatments in Tolin (2010) were based upon psychodynamic theory. Conversely the present meta-analysis displayed a wider representation of non-CBT treatment comparisons, which included present-centered therapy, EMDR, psychodynamic therapy, analytic psychotherapy, emotion-focused therapy, and interpersonal therapy. Additionally, whereas Tolin (2010) failed to analyze both targeted and non-targeted outcomes specifically for anxiety disorders, the current

study conducted two distinct analyses for targeted and non-targeted outcomes thus ensuring to unmask potential differences between the significantly different types of measures. The methodological approach used by Tolin (2010) clearly possessed limitations regarding the exhaustiveness of the literature search, quality of the included studies, patient population, operationalization of CBT treatment, variability of the non-CBT treatments, and differentiation of outcome measures. Given that the current meta-analysis was able to effectively address these limitations through an exhaustive search, strict study criteria, accurate CBT identification, and detailed data extraction, it appears that the claim put forth by Tolin (2010) for the superiority of CBT treatment over non-CBT treatments for adult anxiety is notably unfounded.

The results of this study do not support previous claims of superiority of CBT treatments over non-CBT treatments (e.g., Eysenck, 1994; Hunsley & Di Giulio, 2002), but instead confirm the uniform efficacy between bona fide CBT treatments and bona fide non-CBT treatments. The findings of this meta-analysis are consistent with and expand the growing body of research that suggests uniform efficacy among psychotherapy treatments intended to be therapeutic. The conclusion that bona fide CBT and non-CBT treatments are uniformly efficacious for adult anxiety disorders is consistent with the collective evidence for treatment equivalence across disorders (e.g., Wampold et al., 1997). Although the Wampold et al. meta-analysis found no evidence for the superiority of one type of psychotherapy over another, one of the primary criticisms of the study was the possibility that important treatment differences were masked due to the heterogeneity of included disorders (e.g., Crits-Christoph, 1997; DeRubeis et al., 2006). In response to this disorder-specific argument, several studies have addressed this concern and found no evidence of treatment differences between bona fide treatments for particular disorders (e.g., Benish et al., 2008; Imel et al., 2008; Miller et al., 2008). The present meta-analysis also

addressed the disorder-specific critique by focusing on treatment efficacy within a specific diagnostic category. Consequently, this study lends further support for the findings of Wampold et al. (1997) within a specific patient population – adult anxiety disorders.

The lack of treatment differences between CBT and non-CBT treatments in this meta-analysis renders additional consideration about the explanation of psychotherapeutic change in psychological treatments. Notably, this study's finding of uniform efficacy between CBT and non-CBT provided no evidence that treatment specificity exists for CBT in the treatment of adult anxiety disorders. Had significant treatment differences between CBT and non-CBT treatments emerged from the analysis, support would be garnered for the superiority of CBT treatments and the specific mechanisms unique to CBT treatments. However, the finding that CBT and non-CBT treatments are uniformly efficacious implies that the specific ingredients of CBT treatments are not necessary for the effective treatment of adult anxiety disorders. These findings provide additional support for the common factor model of psychotherapy (Wampold, 2001), which assumes that elements common to all treatments, intended to be therapeutic, are solely responsible for treatment efficacy instead of the specific ingredients of a particular approach. When the non-CBT treatments resembled treatments intended to be therapeutic by fulfilling the bona fide criteria: manual-based treatment, legitimate psychological elements, and trained professional therapists, they attained equally effective outcomes as the gold standard of treatments for anxiety — CBT treatments. Consequently, this study's support for the common factor model provides ample critique of the overarching medical model of psychotherapy. The requirement of specificity is the crucial component for the medical model of psychotherapy. Given that this meta-analysis found no evidence for the essential element underlying the medical model — treatment specificity, the findings provide significant support for the contextual model

of psychotherapy. Thus, common factors appear responsible for the psychological change in adult anxiety disorders, which accordingly supports the contextual model of psychotherapy.

The present study reveals several important clinical implications for the treatment of adults with anxiety disorders. As previously reported, anxiety disorders represent the most common and pervasive psychiatric illness in America with yearly and lifelong prevalence rates of 18.1% and 28.8% of the American adult population (Kessler et al., 2005a). Therefore adequate and effective psychological treatments are increasingly needed to treat this common mental health condition. However, estimates indicate that the adult patient population does not have adequate access to suitable treatment for their complaints. Diverging from professional guidelines that espouse CBT as the main evidence-based treatment for anxiety disorders in the general population (e.g., American Psychiatric Association, 2006), the findings from this meta-analysis yielded no evidence to support the claim that CBT treatments remain the sole evidence-based treatment for adult anxiety disorders. Notably, non-CBT treatments intended to be therapeutic are equally efficacious for adult anxiety disorders and it remains questionable for the psychotherapy field to solely endorse CBT treatment for anxiety disorders. Therefore bona fide non-CBT treatments, which represent a diversity of theoretical approaches, ought to be as equally advocated, promoted, and delivered as their CBT counterparts with the broad intent to improve access and availability to effective treatments.

In addition to the unmerited endorsement of CBT treatments over non-CBT treatments, the sheer amount of professional and financial support allotted to the proliferation of CBT treatments in clinical settings does not proportionately reflect the few quality clinical trials identified in the current meta-analysis. The strong representation of CBT is apparent when simply observing the focus of recent clinical trials. In fact, CBT was the primary focus of 120

clinical trials between the short span between 1986 and 1993 (Hollon & Beck, 1994), and this trend has continued (Dobson, 2001). Not only have CBT treatments been the primary focus of clinical trials, but the targeted psychological disorder of these clinical trials consists mainly of anxiety disorders (Ost, 2008). Considering the decades-long focus on CBT treatments and its apparent prominence among anxiety disorders, it is disconcerting that this meta-analysis only identified 13 clinical trials. Moreover, it is even more concerning that so few clinical trials in this meta-analysis met minimal inclusion for a disorder – anxiety – that receives a disproportionate amount of “success.” Despite growing evidence that CBT treatment may not deserve its privileged status as the favored psychotherapy, the proponents of CBT become increasingly more adherent to the claim of CBT superiority. This is unfortunate for a number of reasons. Methodologically sound analyses clearly counter claims of CBT superiority. More importantly, CBT treatments have received an exorbitant amount of the research attention over the past decades. The immense amount of attention on CBT treatments has largely prevented clinical and research resources from investigating the non-CBT treatments. Consequently, it is premature and unfair to label non-CBT treatments as inferior due to the lack of opportunity for fair outcome comparisons with their more popular CBT counterparts.

Clearly anxiety disorders represent one of the most prevalent and common psychological diagnoses in mental health. Thus, the results of this meta-analysis directly impact the psychological treatment of anxiety disorders among an adult population. However, the clinical implications resulting from this meta-analysis are not solely limited to the spectrum of anxiety disorders represented within this study. There remains a growing body of literature and research that supports a high level of psychopathological overlap among anxiety disorders and other related mood disorders. Notably, much of the attention has focused on the shared underlying



pathology between anxiety and depressive disorders (Norton & Philipp, 2008). Consequently, the findings from this meta-analysis are likely generalizable to other mood disorders such as adult depression. In fact, meta-analyses mirroring this study's design and hypotheses have revealed similar results between CBT and non-CBT treatments for the treatment of mild to moderate depression among adults (e.g., Cuijpers, van Straten, Andersson, & van Oppen, 2008).

Considering the immense representation of mental health issues between anxiety and depression, the results of this meta-analysis impact a vast array of the problems encountered by mental health professionals. Additionally, the presumption that the results of this meta-analysis may generalize to other psychological disorders is further buttressed by the clinical reality of co-morbidity of psychological disorders. The focus of this meta-analysis was on strictly designed and highly controlled randomized clinical trials. Mental health professionals are confronted by the high co-morbidity of various psychological disorders amongst their patient population. Although no research has addressed the relative efficacy of CBT and non-CBT treatments in naturalistic settings with highly co-morbid patient population, the results of this meta-analysis combined with similar studies focused on other psychiatric disorders strongly suggest this meta-analysis' results would be replicated in a naturalistic setting with high co-morbidity.

The results of this study reveal that CBT and non-CBT treatments ought to be equally advocated. In fact, proper access and availability to effective CBT treatments may be hampered by the ambiguous operational definition of CBT treatment. Although the CBT experts were instructed to base their decisions on *your background knowledge and using your own definition of cognitive-behavioral treatments*, several of the survey respondents noted their difficulty in determining a steadfast rubric to determine CBT eligibility of the bona fide treatments in the survey (see Respondents A,B, and C in Table 2). Given that highly trained CBT experts, who are

promoted by a well-respected CBT professional organization, cannot accurately and consistently determine how to define CBT treatment, it is unlikely that the majority of generalist clinicians could specifically identify a *true* CBT treatment. Adding further confusion, CBT proponents advocate for disorder-specific CBT treatment, which results in a multitude of specific CBT treatment protocols for various anxiety disorders by different treatment developers. Hence, many of the surveyed CBT experts reported unfamiliarity with each unique and highly specific CBT treatment (see Respondents D – J in Table 2). It is unrealistic to expect that the general population of trained mental health professionals could abide by CBT proponents' disorder-specific treatment protocol if said CBT proponents are not themselves familiar with the various disorder-specific CBT treatments. Consequently, the results of this study suggest that the accurate operationalization of CBT treatment continues to evade the psychotherapeutic field. Therefore this complicates clinician ability to deliver an effective psychotherapeutic intervention to an adult suffering from anxiety.

The finding that CBT proponents displayed significant difficulty when attempting to simply identify which psychotherapies are CBT also reveals a longstanding and overarching problem with the CBT movement. There is no clear answer to the fundamental question of “What is CBT?” Professional organizations, researchers, and clinicians alike cannot put forth a definitive explanation that accurately and consistently characterizes the true definition of CBT. This is noteworthy problem for the psychotherapy community in general, as the lack of a clear consensus of what CBT truly entails does impact all aspects of psychotherapy including education and training, psychotherapy research, treatment delivery, and dissemination and implementation policy. Through the literature and the results of this study, it becomes

increasingly clear that the answer to the aforementioned question largely depends on one's approach toward CBT treatment.

In particular, the definition and characterization of CBT is largely a function of more external entities. A scientific explanation of CBT treatment would identify the specific psychotherapeutic ingredients necessary to fulfill the CBT treatment criteria. For example, a scientific approach would necessitate that traditionally recognized cognitive and behavioral ingredients are essential to a true CBT treatment. However, this perspective relies on a common understanding as to what psychological ingredients are "cognitive" and/or "behavioral." The scientific perspective of CBT treatment, and its relative reliance on ingredients to identify a CBT treatment, clearly reflects, and similarly reveals, the historical approach to CBT treatment identification. As previously described, the evolution of CBT treatment involved the nexus of various psychological traditions beginning with behaviorism and followed by cognitivism. Following a strictly historical perspective, this approach to identifying CBT treatments would employ a lens that shows a logical and linear historical development of CBT such as the merging of cognitive and behaviorism. However, delineating the distinct historical aspects involved in a complex movement and tradition, such as CBT, is challenging considering the dynamic nature of its past, current, and continuing development. In addition to the divergent scientific and historical perspectives of CBT identification, the political perspective is a frequently overlooked force that also provides a unique perspective on the conceptual aspect of CBT. Strict adherents and proponents of either cognitive or behaviorist perspectives often define CBT through their particular biased lens. Whereas the behaviorist's CBT treatment must include a behavioral element, the cognitivist's CBT treatment must clearly possess a cognitive element. Moreover, the political aspects involved in CBT identification have become increasingly complicated in

recent years. This may be attributable to the noteworthy financial incentives associated with a growing emphasis on expensive randomized clinical trials, along with a recent expansion of dissemination and implementation efforts. Unfortunately the political perspective has a tendency to define CBT by those treatments that best promote and popularize the CBT movement, while neglecting the overarching problem of how to best answer the difficult question of “What is CBT?”

Despite decades of clinical trials and accumulating evidence of uniform efficacy among bona fide psychotherapies, psychotherapy research continues to invest precious time and resources into the scientific determination of differential efficacy. Clearly, the research increasingly reveals uniform efficacy among specific psychological treatments for specific disorders, and across disorders. The narrow focus of current psychotherapy outcome research on disorder-specific treatment efficacy has clearly neglected research that looks beyond a specific theoretical explanation. Alternatively, the findings of this meta-analysis support a common factors explanation of psychological change in psychotherapy. This meta-analysis strengthens the importance to further investigate the elements universal to all treatments intended to be therapeutic. It may be increasingly more productive and beneficial to focus clinical research efforts on such universal elements such as the process of the therapeutic relationship, formation of the therapeutic alliance, characteristics of effective psychotherapists, and mechanisms of positive psychological change. Shifting the focus of clinical research away from disorder-specific treatment efficacy and toward more universal factors will likely enhance the psychotherapy field’s understanding of psychological change and improve the effectiveness of psychotherapy. The suggestion of shifting the focus from disorder-specific treatment implementation to the aforementioned clinical areas also would highlight another important

clinical reality – cost effectiveness. As previously discussed, dissemination and implementation policies have garnered significant professional and financial resources (e.g., IAPT and VHA treatment rollouts). Although these large-scale initiatives have significantly promoted CBT treatments, the implementation and dissemination have resulted in high financial costs. The high financial burden of treatment-specific policies stands in contrast to the growing assertion that health policy should become more concerned about cost-effective methods of improving mental health treatment (Lazar, 2010). Thus, this study's suggestion that it may be more beneficial to focus clinical research and efforts on more universal elements may provide important cost-effective measures.

### **Limitations**

Despite the exhaustive search, the primary limitation of this meta-analysis was the comparatively small number of studies included in the final analyses. There were relatively few studies and effect sizes available for the analysis focused on targeted outcome measures (13 studies, 13 effect sizes) and the analysis for non-targeted outcome measures (12 studies, 12 effect sizes). The low number of included studies may attenuate the conclusions drawn from the omnibus meta-analyses. Additionally, the low number of studies potentially reduces the ability to detect noteworthy associations between study variables and the effect sizes. Although researcher allegiance was not found to statistically account for the significant heterogeneity in this meta-analysis, inclusion of relatively few studies likely restricted the detection of the moderating role of researcher allegiance.

The small number of studies included in this meta-analysis also limits the representation of different adult anxiety disorders. The omnibus analysis of targeted outcome measures included nine PTSD studies, two GAD studies, one social anxiety study, and one panic disorder

study. Furthermore, the omnibus analysis of non-targeted outcome measures included the aforementioned studies with the exclusion of the panic disorder study due to its failure to provide data for non-targeted outcomes. The PTSD diagnosis represented the majority of the included studies for both the targeted outcome analysis (9 of 13 studies) and non-targeted outcome analysis (9 of 12 studies). Because the majority of the studies were limited to a diagnosis of PTSD, the findings may best generalize to PTSD patients. Although a growing body of literature suggests the existence of an underlying anxiety disorder pathology (e.g., Barlow, Allen, & Choate, 2004) across the anxiety disorder spectrum, the high number of PTSD studies in this meta-analysis could potentially mask treatment differences among the various anxiety disorders. Nevertheless, this meta-analysis underscored the uniform efficacy of bona fide CBT and bona fide non-CBT treatments for the general population suffering from anxiety.

Paralleling the continued professional debate on the conceptualization and identification of CBT treatments, another limitation involved the selection criteria of CBT and non-CBT treatments. Identification of a particular bona fide treatment as CBT or non-CBT was based upon the decision rule of a majority of the *yes* or *no* responses. Although the survey results mainly provided strong and discernable indication about CBT identification, a narrow majority identified some of the treatments as either CBT or non-CBT. Consequently, the inclusion of the direct comparisons from such studies could potentially be perceived as arbitrary. In addition to the issues of a weak majority decision rule, the identification of bona fide treatments as CBT or non-CBT did not account for whether survey respondents were *uncertain* about the CBT identification.

The various treatments compared in this meta-analysis were categorized as CBT and non-CBT. By nature of the treatment categorization, the diversity of treatments within each category

differed considerably. Specifically, the comparison treatments in the non-CBT category appear to vary significantly more than the referent treatments in the CBT category. Whereas the CBT category included treatments only from the cognitive-behavioral theoretical orientation (mainly exposure- and cognitive-based), the treatments in the non-CBT category included a more theoretically diverse sample of psychotherapies (see Table 2). As previously mentioned, non-CBT treatments included present-centered therapy, EMDR, psychodynamic therapy, analytic psychotherapy, emotion-focused therapy, and interpersonal therapy. Consequently, it may be premature to assert that any bona fide non-CBT treatment is equally efficacious to bona fide CBT treatment as such a conclusion may primarily apply only to treatments that closely resemble the relatively few treatments included in this meta-analysis. Furthermore, EMDR accounted for a considerable number of the non-CBT treatments in the analysis for targeted outcome measures (6 of 13 treatments) and non-targeted outcome measures (6 of 12 treatments). Although EMDR accounted for several of the non-CBT treatments, all non-CBT treatments fulfilled the bona fide criteria so the findings do provide ample support for the common factors approach which underscores elements common to all treatments intended to be therapeutic. Yet, the significant representation of EMDR as a bona fide non-CBT treatment in this meta-analysis may obfuscate the strength of the finding that that bona fide CBT and non-CBT treatments are uniformly efficacious.

Lastly, this meta-analysis only included published studies in peer-reviewed journals. Publication bias, often referred to as the file drawer effect (Rosenthal, 1979), can arise in meta-analysis because studies with significant findings are increasingly likely to be published than studies with non-significant findings (Lipsey & Wilson, 1993). An analysis that includes a disproportionate number of published findings may provide an excessively high estimate of the

true effect. However, the exclusion of unpublished studies may be more problematic for narrative reviews than meta-analytic studies due to methodological issues (Quintana & Minami, 2006). Because unpublished studies are increasingly likely to find no treatment differences in comparison to published studies (Rotton, Foos, Van Meek, & LeVitt, 1995), it is unlikely that the inclusion of unpublished studies would have significantly altered this meta-analysis' finding of no difference between the treatment comparisons.

### **Conclusion**

Despite the aforementioned limitations, the meta-analysis utilized a methodologically sound approach to specifically identify CBT treatments and the results strongly suggest that there are no significant differences in efficacy between bona fide CBT and bona fide non-CBT treatments for adult anxiety disorders. The uniform treatment efficacy revealed in this meta-analysis fails to support the superiority of CBT treatments for adult anxiety. On the contrary, the results provide additional evidence that bona fide psychological treatments are equally efficacious for the treatment of adult anxiety. This study contributes to the growing body of empirical support that a particular therapeutic approach is not more privileged over another among psychotherapies that are legitimately intended to be therapeutic. These findings highlight the importance that future research ought to shift attention away from the efficacy of specific treatment packages and place more focus on the universal factors that contribute to improving treatment outcomes for adults with anxiety disorders.



## References

- Abramowitz, J. S. (1997). Effectiveness of psychological and pharmacological treatments for obsessive-compulsive disorder: A quantitative review. *Journal of Consulting and Clinical Psychology, 65*(1), 44-52. doi:10.1037//0022-006X.65.1.44
- Acarturk, C., Cuijpers, P., van Straten, A., & de Graaf, R. (2009). Psychological treatment of social anxiety disorder: A meta-analysis. *Psychological Medicine, 39*(2), 241-254. doi:10.1017/S0033291708003590
- American Psychiatric Association. (2006). American Psychiatric Association practice guidelines for the treatment of psychiatric disorders. Compendium 2006. Arlington, VA: Author.
- Arch, J. J., & Craske, M. G. (2008). Acceptance and commitment therapy and cognitive behavioral therapy for anxiety disorders: Different treatments, similar mechanisms? *Clinical Psychology: Science and Practice, 15*(4), 263-279. doi:10.1111/j.1468-2850.2008.00137.x
- Association of Behavioral and Cognitive Therapies. (2012, April 16). What is Cognitive Behavior Therapy? Retrieved March 22, 2012, from: <http://www.abct.org/Public/?m=Public&fa=WhatIsCBTpublic>
- Arntz, A. (2003). Cognitive therapy versus applied relaxation as treatment of generalized anxiety disorder. *Behaviour Research and Therapy, 41*(6), 633-646. doi:10.1016/S0005-7967(02)00045-1
- Bakker, A., van Balkom, Anton J. L., Spinhoven, P., Blaauw, B. M., & van Dyck, R. (1998). Follow-up on the treatment of panic disorder with or without agoraphobia: A quantitative

- review. *Journal of Nervous and Mental Disease*, 186(7), 414-419.  
doi:10.1097/00005053-199807000-00005
- Bankart, C.P. (1997). *Talking cures: A history of western and eastern psychotherapies*. Pacific Grove, CA: Brooks/Cole.
- Barlow, D.H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic*. New York: Guilford.
- Barlow, D. H., Allen, L. B., & Basden, S. L. (2007). Psychological treatments for panic disorders, phobias, and generalized anxiety disorder. In J. M. Gorman (Ed.), *A guide to treatments that work* (3rd ed., pp. 351-394). New York, NY US: Oxford University Press.
- Barlow, D.H., Allen, L.B., & Choate, M.L. (2004). Toward a unified treatment for emotional disorders. *Behavior Therapy*, 35(2), 205-230. doi: 10.1016/S0005-7894(04)80036-4
- Baskin, T. W., Tierney, S. C., Minami, T., & Wampold, B. E. (2003). Establishing specificity in psychotherapy: A meta-analysis of structural equivalence of placebo controls. *Journal of Consulting and Clinical Psychology*, 71(6), 973-979. doi:10.1037/0022-006X.71.6.973
- Beck, A.T. (1976). *Cognitive therapy and the emotional disorders*. New York: International University Press.
- Beck, A.T. (2005). The current state of cognitive therapy. *Archives of General Psychiatry*, 62, 953-960.
- Beck, A. T., Emery, G., & Greenberg, R. L. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York: Basic Books.
- Beck, A. T. & Greenberg, R. L. (1988). Cognitive therapy of panic disorders. In R. E. Hales & A. J. Frances (Eds.), *Review of psychiatry: Vol. 7* (pp. 571-583). Washington, DC: American Psychiatric Press.

- Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford Press.
- Benish, S. G., Imel, Z. E., & Wampold, B. E. (2008). The relative efficacy of bona fide psychotherapies for treating post-traumatic stress disorder: A meta-analysis of direct comparisons. *Clinical Psychology Review, 28*(5), 746-758. doi:10.1016/j.cpr.2007.10.005
- Berman, J. S., Miller, R. C., & Massman, P. J. (1985). Cognitive therapy versus systematic desensitization: Is one treatment superior? *Psychological Bulletin, 97*(3), 451-461. doi:10.1037//0033-2909.97.3.451
- Bisson, J., & Andrew, M. (2007). Psychological treatment of post-traumatic stress disorder (PTSD). *Cochrane Database of Systematic Reviews (Online), 3*, CD003388-CD003388. doi:10.1192/bjp.bp.106.021402
- \*Borge, F., Hoffart, A., Sexton, H., Clark, D. M., Markowitz, J. C., & McManus, F. (2008). Residential cognitive therapy versus residential interpersonal therapy for social phobia: A randomized clinical trial. *Journal of Anxiety Disorders, 22*(6), 991-1010. doi:10.1016/j.janxdis.2007.10.002
- Borkovec, T. D., & Whisman, M. A. (1996). Psychosocial treatment for generalized anxiety disorder. In R. F. Prien (Ed.), *Long-term treatments of anxiety disorders*. (pp. 171-199). Washington, DC US: American Psychiatric Association.
- Bradley, R., Greene, J., Russ, E., Dutra, L., & Westen, D. (2005). A multidimensional meta-analysis of psychotherapy for PTSD. *The American Journal of Psychiatry, 162*(2), 214-227.

- Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review, 26*(1), 17-31.
- Chambless, D. L. & Gillis, M.M. (1993). Cognitive therapy of anxiety disorders. *Journal of Consulting and Clinical Psychology, 61*, 248-248-260. doi: 10.1037//0022-006X.61.2.248
- Chambless, D. L., & Hollon, S. D. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology, 66*, 7-18. doi:10.1037//0022-006X.66.1.7
- Chambless, D. L. & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology, 52*, 685-716. doi:10.1146/annurev.psych.52.1.685
- Clark, D.M. (1986). A cognitive approach to panic. *Behaviour Research and Therapy, 24* (4), 461-470. doi:10.1016/0005-7967(86)90011-2
- Clark, D.M. (2004). *Cognitive behavioral therapy for obsessive-compulsive disorders*. New York: Guilford.
- Clark, D.M., Layard, R., Smithies, R., Richards, D.A., Suckling, R., Wright, B. (2009). Improving access to psychological therapy: Initial evaluation of two UK demonstration sites. *Behavior Research and Therapy, 47*(11), 910-920 doi:10.1016/j.brat.2009.07.010
- Clark, D.M. & Wells, A. (1995). A cognitive model of social phobia. In R.G. Heimberg, M.R. Liebowitz, D.A. Hope, & F.R. Schneider, *Social phobia: Diagnosis, assessment, and treatment* (pp.69-93). New York: Guilford Press.

- Clum, G. A., Clum, G. A., & Surls, R. (1993). A meta-analysis of treatments for panic disorder. *Journal of Consulting and Clinical Psychology, 61*(2), 317-326. doi:10.1037//0022-006X.61.2.317
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2<sup>nd</sup> ed.). Hillsdale, NJ: Erlbaum.
- Cooper, H., & Hedges, L. V. (2009). Research synthesis as a scientific process. In H. Cooper, L.V. Hedges, & J.C. Valentine. (Eds.), *The handbook of research synthesis and meta-analysis 2nd ed.* (pp. 3-18). New York, NY US: Russell Sage Foundation.
- Corsini, R. J. & Wedding, D. (2005). *Current psychotherapies* (7th ed). Belmont, CA: Thomson Brooks/Cole Publishing Co.
- Covin, R., Ouimet, A.J., Seeds, P.M., & Dozois, D.J. (2008). A meta-analysis of CBT for pathological worry among clients with GAD. *Journal of Anxiety Disorders, 22*, 108–16. doi:10.1016/j.janxdis.2007.01.002
- Craighead, L.W., Craighead, W.E., Kazdin, A.E., & Mahoney, M.J. (1994). *Cognitive and behavioral interventions: An empirical approach to mental health problems*. Boston: Allyn Bacon.
- Craske, M.G. (2010). *Cognitive-behavioral therapy*. Washington D.C.: American Psychological Association.
- Crits-Christoph, P. (1997). Limitations of the dodo bird verdict and the role of clinical trials in psychotherapy research: Comment on Wampold et al. (1997). *Psychological Bulletin, 122*, 216-220. doi:10.1037//0033-2909.122.3.216

- Del Re, A.C. (2011). RcmdrPlugin.MAd: Meta-Analysis with Mean Differences (MAd) Rcmdr Plug-in.R package version 1.0.9.  
<http://cran.rproject.org/web/packages/RcmdrPlugin.MAd>
- DeRubeis, R.J., Brotman, M.A., & Gibbons, C.J. (2006). A conceptual and methodological analysis of the nonspecifics argument. *Clinical Psychology: Science and Practice*, 12(2), 174-183. doi: 10.1093.clipsy/bpi022
- \*Devilley, G. J., & Spence, S. H. (1999). The relative efficacy and treatment distress of EMDR and a cognitive-behavior trauma treatment protocol in the amelioration of posttraumatic stress disorder. *Journal of Anxiety Disorders*, 13, 131-157. doi:10.1016/S0887-6185(98)00044-9
- Dobson, K., & Dobson, D. (2006). Empirically supported treatments: Recent developments in the cognitive-behavioural therapies, and implications for evidence-based psychotherapy. In D. Winter (Ed.), *What is psychotherapeutic research?* (pp. 259-276). London England: Karnac Books.
- Dobson, K. S., & Dozois, D. J. A. (2001). Historical and philosophical bases of the cognitive-behavioral therapies. In K. S. Dobson (Ed.), *Handbook of cognitive-behavioral therapies* (2nd ed.). (pp. 3-39). New York, NY US: Guilford Press.
- DuPont, R. L., Rice, D. P., Miller, L. S., Shiraki, S. S., Rowland, C. R., & Harwood, H. J. (1996). Economic costs of anxiety disorders. *Anxiety*, 2(4), 167-172.  
doi:10.1002/(SICI)1522-7154(1996)2:4<167::AID-ANXI2>3.0.CO;2-L
- \*Durham, R. C., Murphy, T., Allan, T., & Richard, K. (1994). Cognitive therapy, analytic psychotherapy and anxiety management training for generalised anxiety disorder. *British Journal of Psychiatry*, 165(3), 315-323. doi:10.1192/bjp.165.3.315

- Eaton, W. W., Kessler, R. C., Wittchen, H. U., & Magee, W. J. (1994). Panic and panic disorder in the united states. *The American Journal of Psychiatry*, *151*(3), 413-420.
- Eddy, K. T., Dutra, L., Bradley, R., & Westen, D. (2004). A multidimensional meta-analysis of psychotherapy and pharmacotherapy for obsessive-compulsive disorder. *Clinical Psychology Review*, *24*(8), 1011-1030. doi:10.1016/j.cpr.2004.08.004
- Ehlers, A. & Clark, D.M. (2000). A cognitive model of PTSD. *Behaviour Research and Therapy*, *38*, 319-45. doi:10.1016/S0005-7967(99)00123-0
- Ellis, A. (1958). Rational psychotherapy. *Journal of General Psychology*, *59*, 35-49. doi:10.1080/00221309.1958.9710170
- Ellis, A. (1962). Reason and emotion in psychotherapy, New York: Lyle Stuart.
- Eysenck, H.J. (1994). The outcome problem in psychotherapy: What have we learned? *Behaviour Research and Therapy*, *32*(5), 477-495. doi:10.1016/0005-7967(94)90135-X
- Fancher, R.E. (1990). *Pioneers of psychology* (2<sup>nd</sup> ed.). New York, NY: W.W. Norton Company
- Fedoroff, I. C., & Taylor, S. (2001). Psychological and pharmacological treatments of social phobia: A meta-analysis. *Journal of Clinical Psychopharmacology*, *21*(3), 311-324. doi:10.1097/00004714-200106000-00011
- Feske, U., & Chambless, D. L. (1995). Cognitive behavioral versus exposure only treatment for social phobia: A meta-analysis. *Behavior Therapy*, *26*(4), 695-720. doi:10.1016/S0005-7894(05)80040-1
- Fishman, D.B., Rotgers, F. & Franks, C.M. (1988). *Paradigms in behavior therapy: Present and promise*. New York: Springer Publishing.
- Foa, E. B., Franklin, M. E., & Kozak, M. J. (1998). Psychosocial treatments for obsessive-compulsive disorder: Literature review. In M. A. Richter (Ed.), *Obsessive-compulsive*

- disorder: Theory, research, and treatment.* (pp. 258-276). New York, NY US: Guilford Press.
- Foa, E. B., Hembree, E. A., & Rothbaum, B. O. (2007). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences: Therapist guide.* New York, NY US: Oxford University Press.
- Frank, J. D., & Frank, J. B. (1991). *Persuasion and healing: A comparative study of psychotherapy (3rd ed.)*. Baltimore: Johns Hopkins University Press.
- Franks, C. M., & Barbrack, C. R. (1991). Behavior therapy with adults: An integrative perspective for the nineties. In A. S. Bellack (Ed.), *The clinical psychology handbook (2nd ed.)*. (pp. 551-566). Elmsford, NY US: Pergamon Press.
- Frost, R. & Hartl, T. (1996). A cognitive-behavioral model of compulsive hoarding. *Behaviour Research and Therapy*, 34, 341-350.
- Gaffan, E. A., Tsaousis, J., & Kemp-Wheeler, S. (1995). Researcher allegiance and meta-analysis: The case of cognitive therapy for depression. *Journal of Consulting and Clinical Psychology*, 63(6), 966-980. doi:10.1037//0022-006X.63.6.966
- Gelder, M. G., Marks, I. M., & Wolff, H. H. (1967). Desensitization and psychotherapy in the treatment of phobic states: A controlled inquiry. *British Journal of Psychiatry*, 113(494), 53-73. doi:10.1192/bjp.113.494.53
- Glassman, W.E. & Hadad, M. (2004). *Approaches to psychology (4<sup>th</sup> ed.)*. Berkshire, England: Open University Press.
- Goldfried, M. R., & Davison, G. C. (1994). *Clinical behavior therapy (exp. ed.)*. Oxford England: John Wiley & Sons.



- Goldfried, M. R., & Wolfe, B. E. (1996). Psychotherapy practice and research: Repairing a strained alliance. *The American Psychologist, 51*, 1007-1016. doi:10.1037//0003-066X.51.10.1007
- Gould, R. A., Otto, M. W., & Pollack, M. H. (1995). A meta-analysis of treatment outcome for panic disorder. *Clinical Psychology Review, 15*(8), 819-844. doi:10.1016/0272-7358(95)00048-8
- Gould, R.A., Otto, M.W., Pollack, M.H., & Yap, L. (1997). Cognitive behavioral and pharmacological treatment of generalized anxiety disorder: A preliminary meta-analysis. *Behavior Therapy, 28*, 285–305. doi:10.1111/j.1468-2850.1997.tb00123.x
- Gould, R.A., Safren, S.A., O’Neill W.D, & Otto, M.W. (2004). Cognitive-behavioral treatments: A meta analytic review. In: Heimberg, R.G., Turk, C.L., & Mennin, D.S. (Eds.). *Generalized anxiety disorder: advances in research and practice* (pp.248-264). New York: Guilford Press.
- Greenberg, P. E., Sisitsky, T., Kessler, R. C., Finkelstein, S. N., Berndt, E. R., Davidson, J. R. T. ... Fyer, A.J. (1999). The economic burden of anxiety disorders in the 1990s. *Journal of Clinical Psychiatry, 60*(7), 427-435. doi:10.4088/JCP.v60n0702
- Hedges, L. V., & Olkin, I. (1984). Nonparametric estimators of effect size in meta-analysis. *Psychological Bulletin, 96*(3), 573-580. doi:10.1037//0033-2909.96.3.573
- Herbert, J. D. & Forman, E. M. (2011). The evolution of cognitive behavior therapy: The rise of psychological acceptance and mindfulness. In J. D. Herbert & E. M. (Eds.), *Acceptance and mindfulness in cognitive behavior therapy: Understanding and applying the new therapies* (pp. 3-25). Hoboken, NJ: Wiley
- Higgins, J. P. T., & Thompson, S. G. (2002). Quantifying heterogeneity in a meta-analysis.

- Statistics in Medicine*, 21, 1539–1558. doi:10.1002/sim.1186
- Hofmann, S. G., & Smits, J. A. (2008). Cognitive-behavioral therapy for adult anxiety disorders: A meta-analysis of randomized placebo-controlled trials. *Journal of Clinical Psychiatry*, 69(4), 621-632.
- Hothersall, D. (2004). *History of psychology (4<sup>th</sup> ed.)*. Boston: McGraw Hill.
- Howard, K. I., Krause, M. S., Saunders, S. M., & Kopta, S. M. (1997). Trials and tribulations in the meta-analysis of treatment differences: Comment on Wampold et al. (1997). *Psychological Bulletin*, 122, 221-225. doi:10.1037//0033-2909.122.3.221
- Hox, J. (2002). *Multilevel analysis*, Mahwah, NJ: Lawrence Erlbaum.
- Huedo-Medina, T., Sánchez-Meca, J., Marín-Martínez, F., & Botella, J. (2006). Assessing heterogeneity in meta-analysis: Q statistic or I<sup>2</sup> index? *Psychological Methods*, 11(2), 193-206. doi:10.1037/1082-989X.11.2.193
- Hunot, V., Churchill, R., Silva de Lima, M., & Texeira, V. (2007). Psychological therapies for generalized anxiety disorder. *Cochrane Database Systematic Reviews*, 1, CD001848.
- Hunsley, J., & Di Giulio, G. (2002). Dodo bird, phoenix, or urban legend? The question of psychotherapy equivalence. *The Scientific Review of Mental Health Practice*, 1(1), 11-22.
- Imel, Z. E., Wampold, B. E., Miller, S. D., & Fleming, R. R. (2008). Distinctions without a difference: Direct comparisons of psychotherapies for alcohol use disorders. *Psychology of Addictive Behaviors*, 22(4), 533-543. doi:10.1037/a0013171
- \*Ironson, G., Freund, B., Strauss, J. I., & Williams, J. (2002). Comparison of two treatments for traumatic stress: A community-based study of EMDR and prolonged exposure. *Journal of Clinical Psychology*, 58, 113–128. doi:10.1002/jclp.1132

- Jensen, B.J. & Van Buren, D.J. (1987). Cognitive behavior therapy: Conceptual and historical overview. *The Southern Psychologist*, 3(1), 4-8
- Karno, M., & Golding, J. (1991). Obsessive-compulsive disorder. In L. Robins & Regier D.A., *Psychiatric Disorders in America: The epidemiological catchment area study* (pp 204-219). New York, NY: Free Press.
- Kazdin, A. (1978). *History of behavior modification*. Baltimore, MD: University Park Press.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005a). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry*, 62(6), 593-602.  
doi:10.1001/archpsyc.62.6.593
- Kessler, R. C., Chiu, W. T., Demler, O., & Walters, E. E. (2005b). Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry*, 62(6), 617-627.  
doi:10.1001/archpsyc.62.6.617
- Kimble, G.A. (1991). The spirit of Ivan Petrovich Pavlov. In G.A. Kimble, M. Wertheimer, & C.L. White (Eds.), *Portraits of Pioneers in Psychology* (pp.27-42). Hillsdale, New Jersey: Lawrence Erlbaum.
- Kobak, K.A., Greist, J.H., Jefferson, J.W., Katzelnick, D.J., & Henk, H.J. (1998). Behavioral versus pharmacological treatments of obsessive compulsive disorder. *Psychopharmacology*, 136, 205–216. doi:10.1007/s002130050558
- Koerner, N., Dugas, M.J., Gaudet, A., Marchand, A., Savard, P., & Turcotte, J. (2004). The economic burden of anxiety disorders in Canada. *The Cost of Anxiety Disorders, Special Edition*, 43, 191-201. doi:10.1037/h0088236

- Leahy, T.H. (1992). *A history of psychology (3<sup>rd</sup> ed.)*. New Jersey: Prentice Hall.
- \*Lee, C., Gavriel, H., Drummond, P., Richards, J., & Greenwald, R. (2002). Treatment of PTSD: Stress inoculation training with prolonged exposure compared to EMDR. *Journal of Clinical Psychology, 58*, 1071–1089.
- \*Leichsenring, F., Salzer, S., Jaeger, U., Kächele, H., Kreische, R., Leweke, F. ... Leibing, E. (2009). Short-term psychodynamic psychotherapy and cognitive-behavioral therapy in generalized anxiety disorder: A randomized, controlled trial. *The American Journal of Psychiatry, 166*(8), 875-881. doi:10.1176/appi.ajp.2009.09030441
- Leykin, Y. and DeRubeis, R. (2009). Allegiance in Psychotherapy Outcome Research: Separating Association from Bias. *Clinical Psychology: Science and Practice, 16*(1), 54-65. doi:10.1111/j.1468-2850.2009.01143.x
- Lipsey, M. W., & Wilson, D. B. (1993). The efficacy of psychological, educational, and behavioral treatment: Confirmation from meta-analysis. *Journal of American Psychology, 48*(12), 1181–1209. doi:10.1037//0003-066X.48.12.1181
- Luborsky, L., Diguier, L., Seligman, D. A., Rosenthal, R., Krause, E. D., & Johnson, S. ... Schweizer, E. (1999). The researcher's own therapy allegiances: A 'wild card' in comparisons of treatment efficacy. *Clinical Psychology: Science and Practice, 6*, 95-106. doi: 10.1093/clipsy.6.1.95
- Luborsky L., Rosenthal R., Diguier L., Andrusyna T. P., Berman J. S., Levitt J. T., Seligman D. A. ... Krause E. D. (2002). The Dodo bird verdict is alive and well – mostly. *Clinical Psychology: Science and Practice, 9*(1), 2-12. doi: 10.1093/clipsy/9.1.2
- Luborsky, L., Singer, B., & Luborsky, L. (1975). Comparative studies of psychotherapies: Is it true that 'everyone has won and all must have prizes'? *Archives of General Psychiatry, 32*,

995-1008. doi:10.1001/archpsyc.1975.01760260059004

Mahoney, M. J. (1974). *Cognition and behavior modification*. Oxford, England: Ballinger.

Mahoney, M. J. (1991). *Human change processes: The scientific foundations of psychotherapy*. New York, NY US: Basic Books.

Mansell, W. (2008). The Seven C's of CBT: A consideration of the future challenges for cognitive behaviour therapy, *Behavioural and Cognitive Psychotherapy*, 36, 641-649. doi:10.1017/S1352465808004700

\*McDonagh, A., Friedman, M., McHugo, G., Ford, J., Sengupta, A., Mueser, K., ... Descamps, M. (2005). Randomized trial of cognitive-behavioral therapy for chronic posttraumatic stress disorder in adult female survivors of childhood sexual abuse. *Journal of Consulting and Clinical Psychology*, 73(3), 515-524. doi:10.1037/0022-006X.73.3.515

McHugh, R. K., & Barlow, D. H. (2010). The dissemination and implementation of evidence-based psychological treatments: A review of current efforts. *American Psychologist*, 65(2), 73-84. doi:10.1037/a0018121

Meichenbaum, D. (1992). Evolution of cognitive behavior therapy: Origins, tenets, and clinical examples. In J.K. Zeig (ed.), *The Evolution of Psychotherapy: The second conference* (pp.114-128). New York: Brunner Mazel.

Miller, L. C., Barrett, C. L., Hampe, E., & Noble, H. (1972). Comparison of reciprocal inhibition, psychotherapy, and waiting list control for phobic children. *Journal of Abnormal Psychology*, 79(3), 269-279. doi:10.1037/h0033224

Miller, S., Wampold, B., & Varhely, K. (2008). Direct comparisons of treatment modalities for youth disorders: A meta-analysis. *Psychotherapy Research*, 18(1), 5-14. doi:10.1080/10503300701472131

- Mineka, S. (1985). *Animal models of anxiety-based disorders*. Hillsdale, NJ: Erlbaum.
- Mineka, S. (1987). *A primate model of phobic fears*. New York: Plenum.
- Mitte, K. (2005a). Meta-analysis of cognitive-behavioral treatments for generalized anxiety disorder: A comparison with pharmacotherapy. *Psychological Bulletin*, *131*(5), 785-795.  
doi:10.1037/0033-2909.131.5.785
- Mitte, K. (2005b). A meta-analysis of the efficacy of psycho- and pharmacotherapy in panic disorder with and without agoraphobia. *Journal of Affective Disorders*, *88*(1), 27-45.  
doi:10.1016/j.jad.2005.05.003
- Montgomery, E.B. & Turkstra, L.S. (2003). Evidence-based practice: Let's be reasonable. *Journal of Medical Speech-Language Pathology*, *11*(2), ix-xii
- Murdock, N. (2004). *Theories of counseling and psychotherapy: A case approach*. New Jersey: Prentice Hall.
- National Association of Cognitive-Behavioral Therapists. (2012, January 12). What is Cognitive-Behavioral Therapy? Retrieved February 13, 2012, from:  
<http://www.nacbt.org/whatiscbt.htm>
- Norcross, J. C. (2002). Empirically supported therapy relationships. In J. C. Norcross (Ed.), *Psychotherapy relationships that work: Therapist contributions and responsiveness to patients*. (pp. 3-16). New York, NY US: Oxford University Press.
- Norton, P. J., & Philipp, L. M. (2008). Transdiagnostic approaches to the treatment of anxiety disorders: A quantitative review. *Psychotherapy: Theory, Research, Practice, Training*, *45*(2), 214-226. doi:10.1037/0033-3204.45.2.214

- Norton, P. J., & Price, E. C. (2007). A meta-analytic review of adult cognitive-behavioral treatment outcome across the anxiety disorders. *Journal of Nervous and Mental Disease*, 195(6), 521-531. doi:10.1097/01.nmd.0000253843.70149.9a
- Olatunji, B. O., Cisler, J. M., & Deacon, B. J. (2010). Efficacy of cognitive behavioral therapy for anxiety disorders: A review of meta-analytic findings. *Psychiatric Clinics of North America*, 33(3), 557-577. doi:10.1016/j.psc.2010.04.002
- Poppen, R. (1995). *Joseph Wolpe*. London: Sage Publications.
- \*Power, K., McGoldrick, T., Brown, K., Buchanan, R., Sharp, D., Swanson, V., & Karatzias, A. (2002). A controlled comparison of eye movement desensitization and reprocessing versus exposure plus cognitive restructuring versus waiting list in the treatment of post-traumatic stress disorder. *Clinical Psychology & Psychotherapy*, 9(5), 299-318. doi:10.1002/cpp.341
- Powers, M. B., Halpern, J. M., Ferenschak, M. P., Gillihan, S. J., & Foa, E. B. (2010). A meta-analytic review of prolonged exposure for posttraumatic stress disorder. *Clinical Psychology Review*, 30(6), 635-641. doi:10.1016/j.cpr.2010.04.007
- Prochaska, J.P., & Norcross, J.C. (2007). *Systems of psychotherapy: A transtheoretical approach (6<sup>th</sup> ed.)*. Belmont, CA: Brooks/Cole, Thompson Learning.
- Quintana, S. M., & Minami, T. (2006). Guidelines for meta-analyses of counseling psychology research. *The Counseling Psychologist*, 34(6), 839-877. doi:10.1177/0011000006286991
- Rachman, S. (2003). *The treatment of obsessions*. Oxford, United Kingdom: Oxford University Press.
- Rachmann, S. & Wilson, G.T. (2008). Expansion in the provision of psychological treatment in the United Kingdom. *Behaviour Research and Therapy*, 46, 293-95.

- Raudenbush, S.W., & Bryk, A.S. (2002). *Hierarchical linear models: Applications and data analysis methods*. Newbury Park, CA: Sage.
- Reinecke, M. A., & Freeman, A. (2003). Cognitive therapy. In S. B. Messer (Ed.), *Essential psychotherapies: Theory and practice (2nd ed.)*. (pp. 224-271). New York, NY US: Guilford Press.
- Rice, D. P., & Miller, L. S. (1993). The economic burden of affective disorders. *Advances in Health Economics and Health Services Research, 14*, 37-53.
- Robinson, L. A., Berman, J. S., & Neimeyer, R. A. (1990). Psychotherapy for the treatment of depression: A comprehensive review of controlled outcome research. *Psychological Bulletin, 108*(1), 30-49. doi:10.1037//0033-2909.108.1.30
- Rosenblatt, A. (2010). Psychotherapy in the treatment of anxiety disorders. In S. G. Lazar (Ed.), *Psychotherapy is worth it: A comprehensive review of its cost-effectiveness* (pp. 103-134). Arlington, VA US: American Psychiatric Publishing, Inc.
- Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin, 86*, 638–641. doi:10.1037//0033-2909.86.3.638
- Rosenthal, D. & Frank, J.D. (1956). Psychotherapy and the placebo effect. *Psychological Bulletin, 53*, 294-302. doi:10.1037/h0044068
- Rosenzweig, S. (1936). Some implicit common factors in diverse methods of psychotherapy. *American Journal of Orthopsychiatry, 6*, 412-415.
- Roth, A., & Fonagy, P. (1996). *What works for whom? A critical review of psychotherapy research*. London: Guilford Press.



- \*Rothbaum, B. O., Astin, M. C., & Marsteller, F. (2005). Prolonged exposure versus eye movement desensitization and reprocessing (EMDR) for PTSD rape victims. *Journal of Traumatic Stress, 18*, 607–616. doi:10.1002/jts.20069
- Rotton, L., Foos, P. W., Van Meek, L., & Levitt, M. (1995). Publication practices and the file drawer problem: A survey of published authors. *Journal of Social Behavior and Personality, 10*, 1–13.
- Salkovskis, P. (1985). Obsessional compulsive problems: A cognitive behavioral analysis. *Behaviour Research and Therapy, 25*, 571-83. doi:10.1016/0005-7967(85)90105-6
- Salkovskis, P. (1996). *Frontiers of cognitive therapy*. New York: Guilford Publications.
- Salkovskis, P. & Clark, D.M. (1993). Panic disorder and hypochondriasis. *Advances in Behaviour Research and Therapy, 15*, 23-48. doi:10.1016/0146-6402(93)90002-J
- \*Schnurr, P. P., Friedman, M. J., Engel, C.C., Foa, E.B., Shea, M.T., Chow, B.K., ... Bernardy, N. (2007). Cognitive behavioral therapy for posttraumatic stress disorder in women: A randomized controlled trial. *Journal of the American Medical Association, 297*(8), 820-830. doi:10.1001/jama.297.8.820
- \*Schnurr, P. P., Friedman, M. J., Foy, D. W., Shea, M. T., Heish, F. Y., Lavori, P. W., ... Bernardy, N. (2003). Randomized trial of trauma-focused group therapy for post-traumatic stress disorder. *Archives of General Psychiatry, 60*, 481–489. doi:10.1001/archpsyc.60.5.481
- Schultz, D.P. & Schultz, S.E. (2004). *A history of modern psychology (8<sup>th</sup> ed.)*. Belmont, CA: Wadsworth-Thomson.

- Seidler, G. H., & Wagner, F. E. (2006). Comparing the efficacy of EMDR and trauma-focused cognitive-behavioral therapy in the treatment of PTSD: A meta-analytic study. *Psychological Medicine, 36*(11), 1515-1522. doi:10.1017/S0033291706007963
- Shapiro, D. A., & Shapiro, D. (1982). Meta-analysis of comparative therapy outcome studies: A replication and refinement. *Psychological Bulletin, 92*, 581-604. doi:10.1037//0033-2909.92.3.581
- Shadish, W. R., Montgomery, L. M., Wilson, P., Wilson, M. R., Bright, I., & Okwumabua, T. (1993). Effects of family and marital psychotherapies: A meta-analysis. *Journal of Consulting and Clinical Psychology, 61*, 992–1002. doi:10.1037//0022-006X.61.6.992
- Shadish, W. R., & Sweeney, R. B. (1991). Mediators and moderators in meta-analysis: There's a reason we don't let dodo birds tell us which psychotherapies should have prizes. *Journal of Consulting and Clinical Psychology, 59*, 883-893.
- \*Shear, M. K., Houck, P., Greeno, C., & Masters, S. (2001). Emotion-focused psychotherapy for patients with panic disorder. *The American Journal of Psychiatry, 158*(12), 1993-1998. doi:10.1176/appi.ajp.158.12.1993
- Sherman, J. J. (1998). Effects of psychotherapeutic treatments for PTSD: A meta-analysis of controlled clinical trials. *Journal of Traumatic Stress, 11*(3), 413-435. doi:10.1023/A:1024444410595
- Siev, J., Chambless, D.L. (2007). Specificity of treatment effects: cognitive therapy and relaxation for generalized anxiety and panic disorders. *Journal of Consulting and Clinical Psychology, 75*, 513–22. doi:10.1037/0022-006X.75.4.513
- Smith, M. L., & Glass, G. V. (1977). Meta-analysis of psychotherapy outcome studies. *The American Psychologist, 32*, 752—760. doi:10.1037//0003-066X.32.9.752

- Smith, M. L., Glass, G. V., & Miller, T. I. (1980). *The benefits of psychotherapy*. Baltimore: Johns Hopkins University Press. doi:10.1017/S0022216X00022835
- Society of Clinical Psychology. (2009, January 19). A Guide to Beneficial Psychotherapy. Retrieved March 13, 2012, from: <http://www.apa.org/divisions/div12/cppi.html>
- Spiegler, M. D., & Guevremont, D. C. (1998). *Contemporary behavior therapy (3rd ed.)*. Belmont, CA US: Thomson Brooks/Cole Publishing Co.
- Spielmanns, G. I., Pasek, L. F., & Mcfall, J. P. (2007). What are the active ingredients in cognitive and behavioral psychotherapy for anxious and depressed children? A meta-analytic review. *Clinical Psychology Review, 27*(5), 642-654. doi:10.1016/j.cpr.2006.06.001
- Staines, G.L. & Cleland, C.M. (2007). Bias in meta-analytic estimates of the absolute efficacy of psychotherapy. *Review of General Psychology, 11*(4), 329-347. doi: 10.1037/1089-2680.11.4.329
- Steketee, G. & Frost, R. (2003). Compulsive hoarding. *Clinical Psychology Review, 23*(5), 905-927. doi:10.1016/j.cpr.2003.08.002
- Stewart, R.E., & Chambless, D.L. (2007). Does psychotherapy research inform treatment decisions in private practice? *Journal of Clinical Psychology, 63*(3), 267-281. doi: 10.1002/jclp.20347
- Tarrier, N., Pilgrim, H., Sommerfield, C., Faragher, B., Reynolds, M., Graham, E., & Barrowclough, C. (1999). A randomized trial of cognitive therapy and imaginal exposure in the treatment of chronic posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 67*, 13-18. doi:

- Task Force on Promotion and Dissemination of Psychological Procedures. (1995). Training in and dissemination of empirically-validated psychological treatment: Report and recommendations. *The Clinical Psychologist*, 48, 2-23.
- Taylor, S. (1996). Meta-analysis of cognitive-behavioral treatment for social phobia. *Journal of Behavior Therapy and Experimental Psychiatry*, 27(1), 1-9. doi:10.1016/0005-7916(95)00058-5
- \*Taylor, S., Thordarson, D. S., Maxfield, L., Fedoroff, I. C., Lovell, K., & Ogradniczuk, J. (2003). Comparative efficacy, speed, and adverse effects of three PTSD treatments: Exposure therapy, EMDR, and relaxation training. *Journal of Consulting and Clinical Psychology*, 71(2), 330–338. doi:10.1037/0022-006X.71.2.330
- Tolin, D. F. (2010). Is cognitive–behavioral therapy more effective than other therapies? A meta-analytic review. *Clinical Psychology Review*, 30(6), 710-720. doi:10.1016/j.cpr.2010.05.003
- Tsaousis, I. (1993) *The efficacy of cognitive therapy of depression: A meta-analytic approach*. (Unpublished master's dissertation), University of Reading, England.
- van Balkom, Anton J. L. M., van Oppen, P., Vermeulen, A. W. A., & van Dyck, R. (1994). A meta-analysis on the treatment of obsessive compulsive disorder: A comparison of antidepressants, behavior, and cognitive therapy. *Clinical Psychology Review*, 14(5), 359-381. doi:10.1016/0272-7358(94)90033-7
- van Etten, M. L., & Taylor, S. (1998). Comparative efficacy of treatments for post-traumatic stress disorder: A meta-analysis. *Clinical Psychology & Psychotherapy*, 5(3), 126-144. doi:10.1002/(SICI)1099-0879(199809)5:3<126::AID-CPP153>3.0.CO;2-H

- Viechtbauer, W. (2005). Bias and efficiency of meta-analytic variance estimators in the random-effects model. *Journal of Educational and Behavioral Statistics, 30*(3), 261–293, doi:10.3102/10769986030003261.
- Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software, 36*, 1-48. Retrieved from <http://www.jstatsoft.org/v36/i03/>. doi:10.1002/jrsm.11
- Wampold, B.E. (1997). Methodological problems in identifying efficacious psychotherapies. *Psychotherapy Research, 7*, 21-43. doi:10.1080/10503309712331331853
- Wampold, B. E. (2001). *The great psychotherapy debate: Model, methods and findings*. Mahwah, NJ: Lawrence Erlbaum.
- Wampold, B. E. (2007). Psychotherapy: The humanistic (and effective) treatment. *The American Psychologist, 62*(8), 855-873. doi:10.1037/0003-066X.62.8.857
- Wampold, B. E., Ahn, H., & Coleman, H. L. K. (2001). Medical model as metaphor: Old habits die hard. *Journal of Counseling Psychology, 48*(3), 268-273. doi:10.1037//0022-0167.48.3.268
- Wampold, B.E., Mondin, G.W., Moody, M., Stich, F., Benson, K., & Ahn, H. (1997). A meta-analysis of outcome studies comparing bona fide psychotherapies: Empirically, “All must have prizes”. *Psychological Bulletin, 122*, 203-215. doi:10.1037//0033-2909.122.3.203
- Westen, D., Novotny, C. M., & Thompson-Brenner, H. (2004). The next generation of psychotherapy research: Reply to Ablon and Marci (2004), Goldfried and Eubanks-Carter (2004), and Haaga (2004). *Psychological Bulletin, 130*(4), 677-683. doi:10.1037/0033-2909.130.4.677

Wilkinson, L. (1999). Statistical methods in psychology journals: Guidelines and explanations.

*American Psychologist*, 54, 594-604. doi:10.1037//0003-066X.54.8.594

Zinbarg, R. E., & Griffith, J. W. (2008). Behavior therapy. In J. L. Lebow (Ed.), *Twenty-first century psychotherapies: Contemporary approaches to theory and practice*. (pp. 8-42).

Hoboken, NJ US: John Wiley & Sons Inc.

## Appendix A

### Search Terms

#### Primary:

Anxiety

Anxiety disorder

Panic

Panic Disorder

PD

Social phobia

Social phobia disorder

Social anxiety

Social anxiety disorder

Posttraumatic stress

Posttraumatic stress disorder

Post-traumatic stress

Post-traumatic stress disorder

PTSD

Generalized anxiety

Generalized anxiety disorder

GAD

Obsessive-compulsive

Obsessive-compulsive disorder

OCD

Acute stress

Acute stress disorder

ASD

#### Secondary:

Psychotherapy

Controlled trial

Clinical trials

Randomized clinical trial

RCT

## Appendix B

### Bona Fide Criteria Form

Study author: \_\_\_\_\_

Study year: \_\_\_\_\_

Treatment name: \_\_\_\_\_

#### Criteria 1 (Required)

- Treatment delivered by a trained therapist who held at least a masters degree or was enrolled in a graduate program of relevant field [yes] [no]

#### Criteria 2 (Required)

- Therapist developed a relationship based on face-to-face meetings with the patient and treatment was individualized [yes] [no]

#### Criteria 3 (Meets 2 of 4)

- A citation made to an established approach to psychotherapy [yes] [no]
- A description of the therapy contained in the article and the description contained a reference to a psychological process [yes] [no]
- A manual for the treatment existed and was used to guide the delivery of the treatment [yes] [no]
- The active ingredients of the treatment were identified and citations provided [yes] [no]



### Appendix C

Tx A: \_\_\_\_\_

Intended to be therapeutic: yes no

Allegiance of authors (circle highest applicable)

- 4 = Treatment developed by one of the authors, author supervised or trained therapists
- 3 = Treatment developed by one of the authors, no therapist allegiance (i.e., not trained or supervised by authors, not author students, etc.)
- 3 = Treatment advocated by one of the authors and author supervised and trained therapists.
- 2 = Treatment advocated by one of the authors, no therapist allegiance (i.e., not trained or supervised by authors, not author students, etc.)
- 2 = Treatment used more experienced or better trained therapists than alternatives (no apparent author advocacy)
- 1 = Treatment more fully explained in intro or method section than alternatives
- 1 = Sufficient training of therapists (no apparent author advocacy)
- 0 = No evidence of allegiance to treatment available

Tx B: \_\_\_\_\_

Intended to be therapeutic: yes no

Allegiance of authors (circle highest applicable)

- 4 = Treatment developed by one of the authors, author supervised or trained therapists
- 3 = Treatment developed by one of the authors, no therapist allegiance (i.e., not trained or supervised by authors, not author students, etc.)
- 3 = Treatment advocated by one of the authors and author supervised and trained therapists.
- 2 = Treatment advocated by one of the authors, no therapist allegiance (i.e., not trained or supervised by authors, not author students, etc.)
- 2 = Treatment used more experienced or better trained therapists than alternatives (no apparent author advocacy)
- 1 = Treatment more fully explained in intro or method section than alternatives
- 1 = Sufficient training of therapists (no apparent author advocacy)
- 0 = No evidence of allegiance to treatment available