

The Pennsylvania State University

The Graduate School

College of the Liberal Arts

**CATEGORICAL VERSUS DIMENSIONAL DIAGNOSIS
OF GENERALIZED ANXIETY DISORDER:
HOW WELL DO THEY PREDICT RESPONSE TO TREATMENT?**

A Thesis in

Psychology

by

Ayelet Meron Ruscio

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Doctor of Philosophy

August 2004

The thesis of Ayelet Meron Ruscio was reviewed and approved* by the following:

Thomas D. Borkovec
Distinguished Professor of Psychology
Thesis Advisor
Chair of Committee

Louis G. Castonguay
Associate Professor of Psychology

Michelle G. Newman
Associate Professor of Psychology

Craig Edelbrock
Professor of Human Development and Family Studies

Kevin R. Murphy
Professor of Psychology
Head of the Department of Psychology

*Signatures are on file in the Graduate School.

ABSTRACT

The present investigation examined three questions related to the diagnosis and treatment of generalized anxiety disorder (GAD). First, is a continuous GAD diagnosis better able to predict the treatment response of worried individuals than a categorical GAD diagnosis? Second, can the known benefits of stimulus control and problem solving interventions for worry be improved by the addition of relaxation training and cognitive restructuring commonly used in the treatment of GAD? Third, does the GAD status of a worried individual interact with the number of therapy components that are received to predict treatment outcome? To address these questions, 72 highly worried individuals were diagnosed under both a categorical (*DSM-IV*) and a dimensional (severity) GAD model and then provided with one of two brief cognitive-behavioral interventions for severe worry. The two interventions were compared using an additive methodological design and involved a single, group-administered treatment session followed by approximately four weeks of self-guided skills rehearsal and application using a therapy workbook. Participants were assessed for GAD, worry, anxiety, depression, global functioning, and quality of life before and after treatment. Results revealed the dimensional GAD diagnosis to predict some important treatment outcomes more powerfully than the categorical GAD diagnosis, particularly the symptoms and functioning observed at the end of treatment. Results also showed both of the inexpensive, stimulus-control-based anxiety treatments to yield substantial improvement in worrying and associated pathology, with relaxation training and cognitive restructuring providing a small but consistent increment in treatment benefit that appeared especially helpful for non-GAD worriers. Finally, results revealed that while GAD-diagnosed and nondiagnosed high worriers benefited considerably from these worry-focused treatments, GAD worriers generally evidenced greater improvement—but poorer endstate

functioning—than non-GAD worriers. These preliminary findings contribute to ongoing discourse over the relative utility of categorical versus continuous classification models of psychopathology. In addition, they advance efforts to better understand, more usefully diagnose, and more effectively and efficiently treat the symptoms of generalized anxiety.

TABLE OF CONTENTS

List of Tables.....	viii
Acknowledgments.....	ix
Chapter 1: INTRODUCTION.....	1
The Diagnosis and Classification of Mental Disorders.....	1
The importance of classification.....	1
The question of predictive validity.....	2
The predictive validity of <i>DSM</i> diagnoses.....	5
The Classification and Diagnosis of Generalized Anxiety Disorder.....	9
The problem of generalized anxiety.....	9
Differences between individuals with and without GAD.....	11
Explicating the boundary between GAD and normal anxiety.....	14
Diagnostic implications of the dimensionality of GAD.....	16
Predicting Treatment Outcomes in GAD.....	17
Refining classification systems through treatment studies.....	17
Psychosocial treatment of GAD.....	18
Addressing basic science and applied questions using SC applications.....	21
Potential benefits of a brief, inexpensive intervention for worry and GAD.....	23
The Present Investigation.....	27
Design.....	27
Hypotheses.....	29
Chapter 2: METHOD.....	32
Participants.....	32
Procedure.....	35
Assessment.....	35
Assessor outcome ratings.....	38
Self-report outcome measures.....	39
Assignment to therapy conditions and therapists.....	41

Therapy conditions.....	42
Treatment credibility.....	45
Skills implementation and rehearsal.....	46
Learning and retention of skills.....	49
Therapy manuals and protocol adherence.....	50
Chapter 3: RESULTS.....	51
Preliminary Analyses.....	51
Determining the Main Effect of Classification.....	54
Examining and comparing change scores.....	56
Follow-up reliability analyses.....	57
Examining and comparing posttherapy scores.....	59
Determining the Main Effect of Treatment.....	60
Within-group effects.....	61
Between-group effects.....	66
Determining the Interaction of Classification and Treatment.....	70
Analysis of change scores.....	71
Analysis of posttherapy scores.....	72
Chapter 4: DISCUSSION.....	85
The Question of Predictive Validity.....	85
The Question of Treatment Efficacy.....	92
Within-group effects.....	92
Between-group effects.....	95
The Question of an Interaction Between GAD Status and Number of Treatment Elements.....	102
The Potential Role of the Present Interventions in the Treatment of Worry and GAD....	107
Strengths and Limitations of the Present Study.....	113
Conclusions.....	119
References.....	120

Appendix A: Measures.....	136
Screening measures.....	137
Assessor outcome measures.....	139
Self-report outcome measures.....	144
Treatment credibility and expectancy measures.....	153
Manipulation check measure and scoring guide.....	154
Appendix B: Consent and Debriefing Forms.....	159
Consent form.....	160
Debriefing form.....	162
Appendix C: Therapy Manuals and Overheads.....	163
Basic intervention manual.....	164
Augmented intervention manual.....	176
Basic treatment session overheads.....	188
Augmented treatment session overheads.....	196
Appendix D: Workbook Materials.....	206
Treatment summaries.....	207
Worksheets.....	215
Rating sheets.....	218
Appendix E: Rehearsal Period Materials.....	224
Reminder e-mails.....	225
Phone contact scripts.....	232
Appendix F: Pilot Study.....	239

LIST OF TABLES

TABLE 1: Means (SD) of Outcome Measures at Pretherapy and Posttherapy for GAD Worriers, Non-GAD Worriers, and the Total Sample	74
TABLE 2: Internal consistency (Cronbach's Alphas) for Outcome Measures at Pretherapy and Posttherapy	76
TABLE 3: Means (SD) of Outcome Measures at Pretherapy and Posttherapy for the Two Treatment Conditions	78
TABLE 4: Proportion of Variance (r^2) Explained in Change Scores and Posttherapy Scores by the Categorical (<i>DSM-IV</i>) and Dimensional (Severity) GAD Diagnoses	80
TABLE 5: Within- and Between-Group Treatment Effect Sizes for the Full Sample, Diagnostic Subsamples, and Conditions from 11 Prior GAD Treatment Studies	82
TABLE 6: Number (%) of Cases Meeting Criteria for High Endstate Functioning on Each Outcome Measure Across the Two Treatment Conditions	83

ACKNOWLEDGMENTS

The conduct of even a relatively modest treatment outcome study as a doctoral dissertation was a challenge that I could not have tackled without the support of many individuals. I must begin by thanking my mentor, teacher, and friend, Tom Borkovec, for his invaluable guidance on this project and throughout my years of graduate training. Tom's theoretical and methodological acumen, rapid and insightful feedback, and unflagging patience as I worked through the many details of this study helped to make this an invaluable learning experience as well as a project of which I could be proud. I feel immensely grateful to have had the opportunity and the pleasure to be mentored by him. I would also like to express my sincere appreciation to the other members of my dissertation committee: Louis Castonguay, Craig Edelbrock, and Michelle Newman. Their excellent feedback sharpened my thinking and improved this project in significant ways, and their knowledge and interest in the subject matter made my dissertation defense an enjoyable scholarly exchange.

I owe much to those individuals and institutions whose support made this study possible. I was extremely fortunate to enlist the help of seven highly talented, enthusiastic, and dependable research assistants in collecting and managing the data produced by this study: Gwen Altman, Kristin Bennett, Jennifer Bookwalter, Katie Mead, Celia Sucheski, Tomais Weinstock-Blair, and Heather Woodward. Their hard work and dedication made it possible to complete data collection over the course of a single year, and their commitment to the study turned a potentially complex enterprise into a smoothly-run team operation. Special thanks go especially to Heather Woodward, my truly priceless study coordinator, whose meticulous attention to detail ensured that no participant fell through the cracks and that all work was of the highest quality. I extend my deep appreciation to Ellen Dzus, whose willingness to serve as the second therapist in the

study gave me great confidence that the treatment protocol was in excellent hands. I asked Ellen to join the project because of her considerable therapeutic skill, but was richly rewarded when, during the course of the study, she also became a valued friend. Finally, I would like to thank the National Institute of Mental Health for its generous support of my training and research during the last four years, as well as the Penn State College of the Liberal Arts and Department of Psychology for their valuable support of this dissertation work. A project of this scope would not have been feasible without the time and resources that these funds provided.

I am privileged to have many people in my personal life who give me the energy and balance that I need to be effective in my professional life. I particularly wish to thank my parents, Tova and Mati Meron, who have nurtured, encouraged, and supported me for three decades of life. Their absolute integrity, passion for their work, and constant striving to meaningfully contribute to knowledge and to the lives of others provide a powerful example of what a career should be. Their pride and belief in me give me the confidence to pursue my dreams. And finally, my very deepest thanks go to my husband John, my collaborator in research and in life. With you, everything is possible.

CHAPTER 1: INTRODUCTION

The Diagnosis and Classification of Mental Disorders

The importance of classification. A fundamental goal of the scientific enterprise is to observe regularities in the world and to organize them in a manner that deepens understanding, facilitates prediction, and enhances control over natural phenomena. Guided both by theory and research, scientists create and refine classification systems that increasingly approximate the reality that they aspire to reflect. The value of classification has been repeatedly demonstrated within a variety of scientific disciplines, including biology (biological species), chemistry (chemical elements), physics (subatomic particles), astronomy (astral bodies), and medicine (disease entities). In these and other disciplines, classification yields invaluable information about each entity in the system and the ways in which these entities relate to one another within the broader universe. Such information provides a common language for conceptualizing known entities and a common framework within which new entities can be explored, described, and understood. Thus, the assignment of a case to its rightful place within the classification system generates new conclusions about the case which, in turn, provides accurate and useful predictions about its development, properties, and function.

Within the young science of psychopathology, the observation that certain psychological and behavioral symptoms tend to cluster together has led to the classification of mental disorders within formalized systems, most recently the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*; American Psychiatric Association, 1994). The diagnosis of mental disorders according to this classification system has had a significant impact on the major clinical, research, and administrative activities of the field. Mental health professionals from a variety of disciplines use the *DSM-IV* as a framework for conceptualizing and

documenting the disturbances of individuals who seek treatment for psychological problems. The system provides a shared language of psychopathology that facilitates communication among professionals and between practitioners and their clients. It promotes research by narrowing an enormous number of clinical features to a far smaller number of symptom clusters or syndromes for investigation and by organizing research literatures in meaningful ways that enhance the accumulation of knowledge. Moreover, it permits estimation of the incidence and prevalence of psychological syndromes within the broader population, informing policy decisions and directing the distribution of resources to the individuals who need them most.

The question of predictive validity. Although these benefits of diagnosis are noteworthy, perhaps the most important function of diagnosis is to yield accurate predictions about the client's likely response to particular treatments (Blashfield & Draguns, 1976; Helmchen, 1991; Pruyser & Menninger, 1976). In other words, the assignment of a diagnosis should provide the mental health professional with new and useful prognostic information about the client's condition that will aid in the selection of an appropriate and effective clinical intervention. However, despite the critical importance of such information, the predictive validity of psychiatric diagnoses has rarely been empirically tested. There are several possible explanations for this paucity of research.

First, many clinicians have traditionally employed the same treatment approach with virtually all of their clients, regardless of diagnosis (Hayes, Nelson, & Jarrett, 1987). Under such conditions, the predictive validity of diagnosis is largely irrelevant; the quality of diagnostic information is immaterial if that information has little bearing on practical decisions. Second, many psychological treatments, both pharmacological and psychosocial, appear to be broadly effective for a variety of disorders. For example, selective serotonin reuptake inhibitors (SSRIs)

have been shown to ameliorate a wide range of mood, anxiety, eating, and personality disorders (Gitlin, 1996), and cognitive-behavioral strategies have been found to be efficacious in treating a large number of psychological disorders and behavioral and health problems (cf. Chambless et al., 1998). Third, many mental disorders can be effectively treated by multiple therapeutic approaches. For example, research has shown that major depression can be successfully treated using behavior therapy (e.g., Jacobson et al., 1996), cognitive therapy (cf. Dobson, 1989), interpersonal therapy (e.g., Elkin et al., 1989), a variety of psychotropic medications (e.g., SSRIs, tricyclic antidepressants, monoamine oxidase inhibitors, newer agents such as Bupropion and Nefazodone), and electroconvulsive therapy (Gitlin, 1996). With a few notable exceptions wherein diagnosis has specific and virtually undisputed treatment implications (e.g., Lithium for bipolar disorder, exposure-based behavior therapy for specific phobias), theory and research have identified several core therapeutic principles that can be used to treat a wide variety of clinical problems, regardless of diagnosis. If treatments are broadly effective and a particular disorder can be successfully treated in a variety of ways, the predictive validity of diagnosis—indeed, the very act of diagnosis itself—recedes from the forefront of clinical concern (Helmchen, 1991).

Within the last few decades, however, an upsurge in psychotherapy outcome research has produced a growing list of psychosocial treatments whose efficacy has been demonstrated largely in relation to specific mental disorders (Chambless et al., 1998). There now appears to be increasing consensus within the mental health community that an undifferentiated approach to treatment is less appropriate than one involving the selection of an intervention that has been procedurally tailored and empirically illustrated to treat the specific syndrome with which a client has been diagnosed (e.g., Chambless & Ollendick, 2001; Klerman, 1990; Myers & Thyer,

1997). By developing, investigating, and organizing treatments in connection to particular disorders, the burgeoning therapy outcome literature has reaffirmed the value of diagnosis in treatment planning and has brought the issue of predictive validity back into the spotlight. Thus, intentionally or not, this literature has rekindled debates about the role of diagnosis in treatment (Bohart, O'Hara, & Leitner, 1998; Raw, 1998; Thyer & Myers, 1998).

At the same time, the psychotherapy outcome literature has not, by and large, provided as strong evidence for the predictive validity of *DSM-IV* diagnoses as the above paragraph might imply. Because all participants in a typical therapy outcome investigation are diagnosed with the same target disorder, such studies cannot assess whether this particular diagnosis predicts prognosis and treatment outcome better than any alternative diagnosis, nor whether individuals who are assigned a diagnosis respond better to the treatment than those whose symptoms fall below the diagnostic threshold. Furthermore, the criteria used to establish empirical support for a given treatment require only that individuals in the treatment group fare better, on average, than those who receive placebo or nonspecific treatment (for “well established” treatments) or no treatment at all (for “probably efficacious” treatments; Chambless et al., 1998). While these criteria do ensure that individuals who are diagnosed with a particular disorder evidence some positive response to the investigated treatment, the sole emphasis on the statistical significance of the effect implies that the treatment response need not—and may not—be clinically significant (cf. Borkovec & Castonguay, 1998). Consequently, the treatment implications of this diagnosis, and thus its predictive validity, may be somewhat limited. Finally, studies comparing one treatment to no treatment are unable to determine whether the diagnosed group evidences a specific therapeutic response to this particular treatment or merely a general response to any intervention. For these reasons, most therapy outcome studies provide only weak support for the

predictive validity of specific diagnoses.

The predictive validity of *DSM* diagnoses. It might be thought that the present dearth of research on the predictive validity of psychiatric diagnoses signals a widespread presumption that the *DSM* diagnoses are valid. On the contrary, many mental health professionals—particularly psychologists—have long argued that the *DSM* approach to classification is fundamentally flawed in ways that are likely to suppress the predictive validity and clinical utility of its diagnostic categories (e.g., Carson, 1997; Poland, Von Eckardt, & Spaulding, 1994). While criticisms have been leveled against many aspects of this classification system (see Beutler & Malik, 2002), the most significant and oft-mentioned concern is that the *DSM* system may not accurately reflect the true nature of psychopathology and that attempts to impose this system upon reality results in murky, heterogeneous diagnostic categories that have virtually no clinical utility. This broad concern may be broken down into several core criticisms.

First, the *DSM* categories are organized and identified by fallible, surface-level clinical features—the manifest behaviors, cognitions, and emotions exhibited by the individual—which are regarded as symptoms of an underlying pathology. Because these symptoms do not define the latent disorder but are instead viewed as manifestations of its presence within the individual (Malmgren & Lindqvist, 1993; Spitzer & Endicott, 1978), the criteria sets of the *DSM* were designed to be largely polythetic in nature: they specify jointly sufficient, but not individually necessary, conditions for diagnosis. These criteria sets further indicate the number and type of symptoms that must be present to warrant the assignment of a diagnosis in any particular case. Thus, similarity to the diagnostic prototype—measured by the number, rather than the severity, of symptoms—ultimately determines diagnostic status.

What are the implications of these classification features for the predictive validity of

DSM diagnoses? As numerous individuals have noted (e.g., Helmchen, 1991; Millon, 1986; Poland et al., 1994), the polythetic nature of the *DSM* criteria leads very different symptom profiles to be classified under the same diagnostic label. Thus, individuals diagnosed with a given disorder need not share many of the same symptoms, and in some cases may actually exhibit completely nonoverlapping symptom presentations. From a classification perspective, this high level of intracategory heterogeneity might seem to significantly lower the odds that the diagnosis shared by all members of a *DSM* category will predict, with a high and equal level of accuracy, the prognosis and treatment response of these individuals. However, it may be argued that the problems posed by such feature (or criterial) heterogeneity depend largely on whether these variable symptom presentations arise from similar or different underlying pathologies. If these manifest features are in fact symptoms of the same latent disorder, one with a consistent course and a predictable response to specific treatments, then correct diagnosis of this disorder should powerfully predict important outcomes regardless of the disparity of its surface features across individual cases. For example, individuals suffering from mononucleosis sometimes present with severe sore throat and at other times present with gastrointestinal distress in the early phases of the illness. However, a diagnosis of mononucleosis in either case is a strong predictor of the duration of illness, the types of symptoms that will appear in later phases of the illness, and the lack of a response to treatments that are usually effective for sore throat and upset stomach. In other words, heterogeneity at the manifest, or symptom, level may not pose much of a threat to the predictive validity of a diagnosis.

What may be far more problematic, however, is process (or etiological) heterogeneity—the possibility that similar observable symptoms may be manifested by very different underlying psychological conditions. Because the *DSM-IV* aspires to be essentially atheoretical, it classifies

cases according to their surface features rather than to the etiological processes that are believed to have caused these features. While this relatively atheoretical classification approach is necessitated by limitations in current understanding of the etiology and pathogenesis of most mental disorders and by theoretical disagreements over the processes involved in psychopathology (Widiger & Clark, 2000), it raises the troublesome possibility that individuals who share superficial similarities—but who suffer from different disorders—may receive the same diagnosis (Corning, 1986; Tucker, 1998). Unlike feature heterogeneity, process heterogeneity would be expected to severely undermine the predictive validity of a diagnosis by introducing considerable measurement error through the conflation of divergent conditions within the diagnostic category (Poland et al., 1994).

The problems of process heterogeneity may be demonstrated using the earlier example of mononucleosis. A classification system emphasizing surface symptoms rather than causal factors would likely classify cases of mononucleosis evidencing prominent sore throat together with cases of strep throat under a common rubric of “sore throat.” Although these conditions appear superficially similar, their course, prognosis, and treatment implications are quite different. Thus, predictions made on the basis of this sore throat diagnosis—for example, the expectation of a positive response to strep medications—would result in inaccuracies (as well as needless discomfort and expense) for many of the patients who are given this diagnosis. As this example illustrates, homogeneity at the manifest level may be far less important than homogeneity at the latent level in determining the predictive validity of a diagnosis. To the extent that *DSM* diagnoses are plagued with latent heterogeneity, their predictive validity—and, in turn, their clinical utility—may be significantly diminished.

Perhaps the most frequent criticism of the *DSM* by psychologists, however, is that this

system is premised on a view of mental disorders as discrete, tightly bounded categories that are qualitatively distinct from normal psychological functioning. This “medical model” approach to classification is argued by many to be less plausible than a dimensional model in which normal and abnormal behavior lie along a single continuum and differ only quantitatively in their severity (e.g., Carson, 1997; H. J. Eysenck, 1986; Krueger & Piasecki, 2002). If these claims are correct, the *DSM*'s forced demarcation between normality and psychopathology through diagnosis introduces an arbitrary threshold (Blatt & Levy, 1998) that will likely reduce the predictive validity of its diagnoses. The process by which such a reduction would take place was illustrated by Cohen's (1983) classic paper on statistical power, which revealed that when a correlation is computed between two continuous variables, the dichotomization of one of these variables effectively eliminates 36% of the systematic variance, whereas dichotomization of both variables eliminates nearly 60% of this variance.

It is important to note, however, that this loss of information—and the resulting loss of power—is likely to occur only when the variables in question are truly continuous at the latent level. If, however, the variables are indicators of meaningful underlying groups, accurate classification of these groups into categories may actually result in stronger associations and better predictions of important outcomes (Meehl, 1992; J. Ruscio & Ruscio, 2002). This is because, in the case of pure latent categories, any variability around a true score merely increases measurement error. Although several studies have demonstrated greater predictive power resulting from categorical rather than dimensional measurement of truly discrete variables (Gangestad & Snyder, 1985; Strube, 1989), the general conditions under which categorical classification outpredicts dimensional assessment for discrete conditions are largely unknown (cf. Grove, 1991).

These arguments suggest that blanket assertions about the underlying structure of mental disorders, particularly those based on ideological preferences or biases, are unlikely to rapidly advance our understanding of psychopathology or to lead to improved classification systems. Indeed, although psychologists often criticize psychiatrists for presuming that all disorders are categorical in nature (e.g., H. J. Eysenck, 1986), we ourselves too often presume that all disorders are dimensional in nature (Meehl, 1992, 1995). Furthermore, although the *DSM* is often dismissed out of hand as a flawed and almost certainly invalid classification system, it is important to note that the usefulness of syndromal diagnosis has yet to be rigorously tested (Salzinger, 1986), and that a workable dimensional alternative to the present system has not yet been convincingly proposed (Nathan, 1998). The most defensible approach may therefore be to determine empirically, on a disorder-by-disorder basis, which forms of mental disorder are most accurately conceptualized as types versus dimensions (Meehl, 1986; J. Ruscio & Ruscio, 2000); to assess whether predictive validity and clinical utility can be improved by matching the form of the diagnosis—categorical or dimensional—to the true latent structure of the corresponding mental disorder; and to modify the present classification system in those instances where significant improvements in validity and utility can be demonstrated by the alternative approach.

The Classification and Diagnosis of Generalized Anxiety Disorder

The problem of generalized anxiety. Among the mental disorders classified within the *DSM*, generalized anxiety disorder (GAD) stands out as a particularly appropriate condition with which to commence a structure-based approach to classification. Although generalized, chronic, free-floating anxiety has been recognized as a significant and pervasive clinical phenomenon for over a century (see Rickels & Rynn, 2001, for a review), the fact that anxiety—even intense anxiety—is periodically experienced by almost all individuals raises an important classification

question: What clinical features, in what combination, most accurately distinguish normal from pathological anxiety? This boundary or threshold problem is by no means unique to GAD; indeed, it may be regarded as the fundamental problem facing all categorical classification systems. However, the ubiquitousness of fear and anxiety in the human experience, the enormous variability characterizing normal expressions of anxiety, and the absence of distinctive features that clearly set GAD apart from normal expressions of anxiety make the diagnostic boundary of this disorder particularly difficult to draw.

Given these challenges, it is perhaps not surprising that the criteria used to diagnose GAD, as well as the status of this disorder as a legitimate and important diagnostic entity, have changed considerably over time (Brown, Barlow, & Liebowitz, 1994; Roemer, Orsillo, & Barlow, 2002). In *DSM-I* (American Psychiatric Association, 1952) and *DSM-II* (American Psychiatric Association, 1968), the symptoms of generalized anxiety were bundled with those of panic attacks within a single diagnostic category. This category, labeled “anxiety reaction” in the first *DSM* and “anxiety neurosis” in its second edition, was distinguished from “phobic neurosis” that referred to anxiety involving specific fears. Following indications that generalized anxiety and panic attacks appear to constitute different forms of anxiety, these conditions were separated by *DSM-III* (American Psychiatric Association, 1980) into two diagnostic categories, GAD and panic disorder. Under this system, GAD was diagnosed when persistent anxiety was experienced for at least one month and was accompanied by symptoms from three of four domains: apprehensive expectation, motor tension, autonomic symptoms, and vigilance. The disorder was believed to be associated with only mild levels of functional impairment and was frequently used as a residual or “wastebasket” diagnosis for anxious individuals who did not present with frequent panic attacks or clear phobic fears (Rickels & Rynn, 2001).

With the advent of *DSM-III-R* (American Psychiatric Association, 1987), however, the psychological symptoms of GAD—psychic anxiety and worry—were elevated to cardinal status within the diagnostic category. These features of anxiety were regarded as pathological when they concerned at least two life circumstances; were associated with at least 6 of 18 tension, autonomic, or vigilance symptoms; and lasted at least six months. *DSM-IV* (American Psychiatric Association, 1994) further narrowed the GAD criterion set and underscored the importance of psychological characteristics in this disorder. This most recent revision of the diagnostic nomenclature (a) established excessive, uncontrollable worry as the defining feature of GAD, (b) removed all autonomic symptoms from the diagnostic criteria, (c) required that three of six specific associated symptoms be reported, and (d) required that worry and its associated symptoms be experienced for a minimum of six months. Moreover, for the first time, GAD could only be diagnosed if its constituent symptoms caused clinically significant distress or functional impairment in important life domains. It is noteworthy that although the GAD diagnosis continues to have somewhat low interrater reliability relative to the other anxiety disorders, its reliability in the *DSM-IV* ($\kappa = .65$) is higher than in earlier versions of the manual (Brown, Di Nardo, Lehman, & Campbell, 2001).

Differences between individuals with and without GAD. These changes in the diagnostic criteria of GAD reflect ongoing efforts to isolate, with increasing accuracy, a group of individuals believed to experience a pathological form of worry and anxiety that is qualitatively distinct from normal worry and anxiety. As indicated earlier, the primary objective of any categorical classification system is to identify the combination of symptoms evident at the manifest level that will optimally separate disordered and nondisordered cases into homogeneous groups at the latent level. How successful, then, are the current GAD diagnostic criteria in

achieving this desired separation? A growing body of research has compared GAD-diagnosed individuals with nondiagnosed individuals and revealed a host of symptomatic, cognitive, and physiological differences between these groups (e.g., M. W. Eysenck, Mogg, May, Richards, & Mathews, 1990; MacLeod, Mathews, & Tata, 1986; Roemer, Molina, & Borkovec, 1997; Thayer, Friedman, & Borkovec, 1996). At first glance, these differences appear to suggest that the *DSM* diagnostic criteria have established a meaningful boundary between normal and pathological experiences of anxiety (Brown et al., 1994). However, it is important to note that the vast majority of these studies compared GAD-diagnosed individuals with well-adjusted controls reporting minimal levels of worry and anxiety. Thus, group differences uncovered by these investigations may reflect a somewhat artificial gap in symptom severity introduced by sampling from the extremes of the anxiety distribution rather than a meaningful threshold provided by the GAD diagnosis itself.¹

More recently, several investigations have sought to provide a more conservative test of the GAD diagnostic boundary by comparing GAD-diagnosed individuals with a different and largely unstudied comparison group: individuals who do not meet the diagnostic criteria for GAD, yet who report high levels of worry severity similar to those of individuals diagnosed with

¹ It is noteworthy that questions about the boundary between GAD and normal worry have been joined by questions about the boundary between GAD and other disorders, particularly the other anxiety disorders and the depressive disorders. Symptomatic overlap (Roemer et al., 2002) and genetic overlap (Kendler, Neale, Kessler, Heath, & Eaves, 1992; Roy, Neale, Pedersen, Mathé, & Kendler, 1995) between GAD and other emotional disorders, high rates of worry among emotional disorders other than GAD (Barlow, Blanchard, Vermilyea, Vermilyea, & DiNardo, 1986; Brown, Antony, & Barlow, 1992; Starcevic, 1995), and extensive comorbidity between GAD and these disorders (Brawman-Mintzer et al., 1993; Brown & Barlow, 1992; Brown et al., 2001) has caused some to question the meaningfulness of the boundary separating GAD from other experiences of anxiety and depression (see Brown, 1997; Brown et al., 1994; and Roemer et al., 2002 for reviews). However, because the present study was concerned with the boundary between GAD and normality, this boundary was the focus of discussion for the remainder of the paper.

GAD. These studies have converged upon two central conclusions. First, they suggest that, with the exception of the diagnostic characteristics that distinguish them, anxious individuals falling on either side of the GAD diagnostic boundary may be very similar to one another. Relative to their GAD-diagnosed counterparts, nondiagnosed high worriers report many of the same psychological symptoms (A. M. Ruscio, 2002), experience similar levels of distress and anxiety during worry (A. M. Ruscio & Borkovec, 2001), report similar cognitive, physiological, and emotional consequences following worry (A. M. Ruscio & Borkovec, 2001), and identify similar benefits and problems associated with worrying in daily life (A. M. Ruscio, Bedard, & Gianvito, 2001). These findings indicate that at least some of the qualities formerly believed to distinguish individuals with and without GAD may be more a function of worry severity than of diagnostic status per se.

At the same time, these studies have also identified several characteristics that cannot be fully explained by worry severity and that may therefore be distinctive of GAD. For example, although high worriers with and without GAD report very similar symptoms of anxiety, those diagnosed with the disorder rate their symptoms as more severe, report that they worry more frequently, and are more likely to view worry as a source of significant distress and impairment than those without the diagnosis (A. M. Ruscio, 2002). These differences between the groups remain even after worry severity is statistically controlled. GAD-diagnosed individuals have also been shown to report greater hyperarousal and somewhat less control over worry intrusions than similarly worried, nondiagnosed individuals after a brief worry period (A. M. Ruscio & Borkovec, 2001). Finally, GAD-diagnosed individuals are more likely to view worry as a liability than a benefit, and more often report worry-induced interpersonal problems, feelings of depression and low self-esteem, and diminished enjoyment of activities than nondiagnosed high

worriers (A. M. Ruscio, Bedard, & Gianvito, 2001). Thus, a second conclusion yielded by this research is that GAD is more than just severe worry and may be distinguished from normal experiences of anxiety in a number of ways.

Explicating the boundary between GAD and normal anxiety. Although these findings provide important clues into the nature of GAD, they do not directly address the primary questions confronting efforts to classify this disorder: Does the GAD diagnosis correspond to a meaningful latent boundary that truly exists in nature, separating two groups of individuals who experience qualitatively different forms of anxiety? Or does generalized anxiety exist along a single latent continuum, such that individuals differ only quantitatively in the degree of anxious symptomatology that they experience? While the aforementioned research suggests that GAD-diagnosed individuals do differ in several ways from those without the diagnosis, it is less clear whether these differences reflect a qualitative shift between latent classes or “an excess of the same process found in normals” (Borkovec, Shadick, & Hopkins, 1991, p. 42). As the predictive validity of the GAD diagnosis hinges largely on the match between its diagnostic algorithm and the true latent structure of the disorder, research evaluating the precise nature of the boundary between GAD and normal anxiety is critical.

Although a variety of statistical procedures have been developed to resolve problems in classification, one family of procedures—the taxometric method—was specifically designed to determine whether a particular psychological construct is categorical or dimensional at the latent level (e.g., Meehl, 1973, 1995; Meehl & Yonce, 1994, 1996; Waller & Meehl, 1998). The method relies on a bootstrapping model which uses the relationships among manifest signs and symptoms of a disorder to determine the underlying structure of that disorder (see J. Ruscio & Ruscio, in press, for a review). Two investigations to date have used the taxometric method to

answer questions related to the structure of GAD. The first of these studies examined the boundary between normal and pathological worry in a large college sample (A. M. Ruscio, Borkovec, & Ruscio, 2001). Here, pathological worry referred to the chronic, excessive, uncontrollable worry that has been recognized by *DSM-IV* as the cardinal feature of GAD. Taxometric analyses provided compelling evidence for the dimensionality of worry, indicating that pathological worry represents one extreme of a single worry continuum rather than a qualitatively distinct type of worry. Because pathological worry is the defining feature of GAD, its apparent continuity with normal experiences of worry seemed to challenge the categorical model of GAD espoused by the *DSM* system. However, the additional cognitive/somatic and distress/impairment criteria required for a GAD diagnosis, as well as the differences discovered between GAD-diagnosed and nondiagnosed individuals with identical levels of worry severity, precluded definitive conclusions from this investigation about the categorical versus dimensional nature of GAD.

For these reasons, another taxometric investigation was conducted to directly assess the latent structure of GAD (A. M. Ruscio, Ruscio, & Borkovec, 2002). Analyses were performed using all core and associated symptoms of GAD, including those pertaining to the frequency, intensity, and controllability of worry as well as those assessing the six cognitive and somatic concomitants of worry and the distress and impairment with which they are associated. Taxometric analyses were unable to detect a qualitative boundary underlying these anxiety symptoms, providing preliminary support for the dimensionality of GAD. It is important to note that these analyses were performed on questionnaire data in an analogue (college student) sample, and that replication of these results in clinical samples—where the base rate of severe generalized anxiety is considerably higher—is essential before definitive conclusions are drawn

about the structural nature of GAD. However, these results, though tentative, have potentially significant implications for classification that warrant careful consideration.

Diagnostic implications of the dimensionality of GAD. Earlier it was argued that the most important property of a diagnosis is its predictive validity, and that a major determinant of predictive validity is the precision with which a given classification model matches the true latent properties of the target disorder. If, as current research suggests, generalized anxiety and normal anxiety lie along a single latent continuum, the diagnostic threshold imposed onto this continuum by the *DSM* categorical classification model represents an arbitrary boundary that forces cases into artificial groups. As a result, meaningful differences between cases classified within each group are obscured, as are meaningful similarities between cases falling near each other on different sides of the diagnostic boundary. This loss of information and corresponding increase in measurement error is likely to substantially reduce the statistical power—and hence, the predictive validity—of the GAD diagnosis.

In contrast, a dimensional classification model, one which classifies cases according to the severity of their GAD symptoms rather than their membership in diagnostic groups, would more closely approximate the true organization of anxious cases at the latent level. This improved representation of latent pathology would, in turn, be expected to increase the predictive validity of the GAD diagnosis and perhaps even its clinical utility. However, at present, this claim can be made on logical grounds alone. Given the many ideological, sociopolitical, and scientific factors that influence the classification of psychopathology, and given the long-standing commitment by the psychiatric community to a medical model of mental disorders, major changes to the current classification system are unlikely to be made without persuasive empirical evidence for the advantages of a new model over the existing system. As a primary

purpose of diagnosis is to inform treatment, perhaps the most persuasive argument for shifting to a dimensional model of GAD would be to demonstrate that individuals' overall GAD severity surpasses their *DSM-IV* GAD diagnostic status in predicting important treatment outcomes.

Predicting Treatment Outcomes in GAD

Refining classification systems through treatment studies. It has been argued that carefully designed therapy outcome studies may serve as a valuable tool for advancing basic knowledge of mental disorders (Borkovec, 1994; Borkovec & Castonguay, 1998). Nevertheless, with the exception of studies using differential treatment response as a marker for subtypes of specific disorders (e.g., Öst, Jerremalm, & Johansson, 1981; Prusoff, Weissman, Klerman, & Rounsaville, 1980), therapy outcome methodologies have generally been underutilized by classification researchers. Nearly two decades ago, Hayes et al. (1987) described a variety of methodological designs that could be used to evaluate the “treatment utility” (or impact on treatment outcome) of a given assessment approach. They advocated that researchers perform planned comparisons of treatment outcomes as a function of (a) different assessment information, (b) differential use of the same assessment information, and/or (c) preexisting individual differences assessed prior to treatment. Because diagnostic information is a specific type of assessment information, many of these designs may prove useful for comparing the relative predictive validity and clinical utility of competing diagnostic approaches.

At the same time, it may be the case that preexisting anxiety differences between individuals *within* a given classification model might lead them to respond differently to different treatments. For example, within the dimensional model, individuals whose GAD symptoms are more severe may require a different treatment or more intensive treatment than less anxious individuals to reach comparable levels of endstate functioning. Similarly, within the

categorical *DSM* model, those who qualify for a diagnosis of GAD may benefit more (or less) from one treatment than another relative to anxious individuals who do not meet the diagnostic criteria for GAD. By comparing two treatments for GAD that differ in their expected potency, and by examining the interaction of these treatments with preexisting GAD symptom presentations, the potential for improving our understanding of GAD may be considerably enhanced.

Psychosocial treatment of GAD. Psychotherapy for GAD typically involves one or more elements of cognitive-behavioral therapy (CBT), with the total CBT package generally regarded as the current best-available treatment for GAD (Borkovec & Ruscio, 2001; Roemer et al., 2002). The most commonly employed elements of this treatment package include: (a) *self-monitoring and early detection of anxiety*, wherein clients increase their awareness of internal and situational cues associated with the onset of anxiety with the goal of detecting and then reducing worry and anxiety as soon as they begin; (b) *relaxation training*, wherein clients are trained to relax themselves using one or more somatic or imagery-based relaxation techniques; (c) *cognitive restructuring*, wherein clients identify specific predictions that they make which contribute to anxiety, evaluate the accuracy and likely probability of these predictions, and replace improbable predictions with alternatives that are more realistic and less anxiety-provoking; and (d) *exposure to feared situations paired with rehearsal of coping skills*, wherein clients are exposed to feared situations (either imaginally or *in vivo*) and apply learned cognitive and/or behavioral techniques to reduce anxious thoughts and sensations provoked by this exposure.

In addition to these most common treatment elements, CBT packages often include other behavioral and cognitive interventions that are applied as needed to address the specific

symptoms or concerns of particular clients. One such behavioral intervention is the stimulus-control (SC) paradigm for worry reduction (Borkovec, Wilkinson, Folensbee, & Lerman, 1983). This paradigm is based on the theory that, through the process of conditioning, worry becomes associated with specific environmental cues that are present at the time of worrying. When worry occurs frequently and uncontrollably, it is likely to be experienced in (and therefore to become associated with) a large number and variety of environmental circumstances (cf. Thayer, Friedman, Borkovec, Johnsen, & Molina, 2000). Consequently, exposure to any of these circumstances increases the likelihood of a worry response, which, in turn, further increases the frequency and uncontrollability of worry (Borkovec et al., 1983).

If worry increases in frequency as it becomes associated with more and more environmental stimuli, one way to decrease the frequency of worry may be to reduce the number and strength of its associations with these stimuli. The SC paradigm accomplishes this by restricting the occurrence of worry to a single circumscribed environment. Whenever clients notice themselves worrying, they are asked to postpone the worry to a predetermined time that they have designated as their “worry period.” This worry period is held in the same location each day, preferably a unique location that is not used for any other activity. By limiting the time and location of worry in this way, associations between worry and formerly conditioned or discriminative stimuli are weakened and eventually extinguished, thereby reducing the frequency of worry in daily life.

Although SC paradigms were first developed in the 1960s and have been applied to a variety of problematic behaviors ranging from insomnia (Bootzin & Nicassio, 1978) to overeating (Stuart, 1967) to poor study habits (Goldiamond, 1965), only one published paper has evaluated the efficacy of the SC paradigm as a worry intervention (Borkovec et al., 1983). This

paper reported the results of two experiments, both comparing a single session of SC instructions to a no-treatment condition. In the first experiment, participants in the SC condition were asked to postpone worries to a half-hour worry period as previously described; however, rather than merely worrying during this period, they were encouraged to engage in problem solving to help resolve worry-related concerns. In the second experiment, participants receiving the SC intervention were assigned to one of two conditions: a Written Worry condition, wherein participants were instructed to write down thoughts as they came to mind during the worry period; and a Mental Worry condition, wherein participants were asked to worry mentally during the worry period. Neither group of participants was asked to problem solve during the worry period.

In both experiments, participants who underwent SC reported significantly greater reductions in quantity of worry than participants who received no treatment. In the second experiment, participants experienced similar reductions in worry irrespective of whether they were assigned to the Written Worry or Mental Worry conditions. Although the experiments did not directly compare the efficacy of SC alone with the efficacy of SC supplemented by problem solving, the analysis of variance results presented in the paper provided sufficient information for the computation and comparison of treatment effect sizes. Whereas the effect size for SC plus problem solving was $\eta^2 = 0.15$, the effect size for SC alone (averaged over Written and Mental Worry) was $\eta^2 = 0.10$, indicating that the combined treatment explained 50% more variance in worry reduction than SC alone. Taken together, these results suggest that SC may be an effective worry-reduction strategy, particularly when combined with basic instruction in problem solving.

More recently, Brosschot and van der Doef (2002) completed a study examining the efficacy of a brief SC manipulation in a sample of Dutch high school students unselected for

worry or anxiety. All participants completed self-report measures of worry, anxiety, and subjective health complaints before and after a six-day period. During the six-day period, half of the participants were instructed to postpone worry every time that it occurred to a daily 30-minute period reserved for worrying, whereas half received no intervention. Results revealed a significantly greater reduction in worry duration (though not worry frequency) among participants in the SC condition than those in the control condition. Moreover, participants in the SC condition evidenced a greater decline in subjective health complaints across a large number of somatic and psychological domains than participants in the control condition, and this decline was fully mediated by the reduction in worry duration produced by the SC paradigm. These results indicate that even a very simple and brief SC intervention can produce substantial changes in worry—and, in turn, in other symptom domains—within normal populations.

Addressing basic science and applied questions using SC applications. While these findings appear promising, there is still very little known about the specific conditions under which SC is effective. For example, participants in the Borkovec et al. (1983) experiments were students who reported (a) that they worried at least 50% of the day and (b) that worry was a problem for them, whereas participants in the Brosschot and van der Doef (2002) experiment were normal students whose PSWQ scores fell largely in the low to moderate range. It is unclear how many participants in either investigation experienced symptoms of generalized anxiety *other* than worry, nor how many would have qualified for a *DSM-IV* diagnosis of GAD. Given the relatively circumscribed nature of the SC intervention, it is possible that its benefits are limited to individuals whose worry and anxiety symptoms are mild or moderate rather than severe in nature, or that its benefits are limited to non-GAD worry. Thus, there is a need to assess whether SC is capable of producing clinically significant improvement in GAD and in worry

ranging from moderate to severe. Such research would not only ascertain whether SC does in fact contain an active ingredient that justifies its inclusion in CBT packages for GAD, but may also indirectly provide support for the contribution of simple conditioning principles to the maintenance and modification of worry behavior, either in its moderate form or as it is represented in GAD.

Secondly, SC has never been studied in relation to therapy elements that are more commonly included in the CBT package for GAD. Although the effects of SC appear superior to no treatment, these effects might be significantly enhanced if SC were combined with other therapeutic interventions that provide additional skills for managing and reducing the symptoms of generalized anxiety. In particular, interventions targeting symptoms that are not directly addressed by the SC paradigm—such as physiological concomitants of worry (e.g., muscle tension, hyperarousal) or catastrophic worries with no immediate or concrete solutions—may improve upon the significant therapeutic effects associated with SC. Several psychotherapy trials have found a combination of cognitive and behavioral approaches to outperform purely behavioral or cognitive interventions in the treatment of GAD (Borkovec & Ruscio, 2001), particularly when the duration of treatment is relatively brief (cf. Borkovec, Newman, Pincus, & Lytle, 2002). However, because combined treatments do not always produce better outcomes than their component therapy elements (e.g., Barlow, Rapee, & Brown, 1992; Borkovec & Mathews, 1988), this remains an important empirical question that merits further investigation.

The comparison of SC with an augmented SC treatment package would provide two major opportunities to advance current scientific understanding of GAD and worry. First, the additive component design would permit the isolation of any contribution made by non-SC treatment elements to therapeutic change, over and above improvement attributed to the SC

component. This methodological design would allow conclusions to be drawn about the basic nature of GAD and worry and about the factors that maintain and alleviate the symptoms of this disorder and its cardinal worry process. Second, because the augmented treatment package is expected to contain more active ingredients of change (and thus to be a more potent intervention) than SC alone, these treatments could be used to examine Treatment-by-Diagnosis interactions within both the dimensional and categorical classification models. Such analyses would determine whether individuals with a GAD diagnosis/greater GAD severity require more active treatment than those without a diagnosis/lesser GAD severity to achieve significant clinical improvement. Results would further enhance the classification of GAD and improve the prediction of treatment response using the GAD diagnosis.

Potential benefits of a brief, inexpensive intervention for worry and GAD. Finally, in addition to these basic science objectives, there may be significant applied benefits associated with the development of a brief CBT treatment package for worry and GAD requiring minimal therapist involvement. Research has revealed that 28% to 40% of college samples report very high levels of worry that fall within a standard deviation of those reported by GAD-diagnosed therapy clients (A. M. Ruscio, 2002). This suggests that a sizable proportion of college students could benefit from learning demonstrably effective worry-reduction and anxiety-management strategies. Unfortunately, the considerable expense—in money and time—of multisession individual psychotherapy precludes the dissemination of these strategies to the vast majority of worried and anxious individuals for whom they may be valuable. However, if a brief, low-cost treatment package could be developed, evaluated, and widely distributed, the potential benefits of this treatment could be considerable.

Mental health professionals have long recognized the potential value of brief, inexpensive

interventions for anxiety, leading to the development of a sizable number of self-administered intervention programs for anxious individuals (see Gould & Clum, 1993; Marrs, 1995; Newman, Erickson, Przeworski, & Dzus, 2003; Scogin, Bynum, Stephens, & Calhoun, 1990 for reviews). These programs are typically behavioral in nature and range from treatments that are fully self-administered (most often in the form of bibliotherapy) to primarily self-administered treatments supplemented by minimal therapist contact (e.g., weekly phone calls, brief “check-in” sessions at regular intervals).² Such programs have most often been tested with nonclinical populations suffering from circumscribed problems such as test anxiety (Allen, 1973; Register, Beckham, May, & Gustafson, 1991), public speaking anxiety (Hopf, Ayres, Ayres, & Baker, 1995; Kirsch & Henry, 1979), and specific phobias (Baker, Cohen, & Saunders, 1973), though other forms of anxiety have also been targeted (e.g., panic disorder; Hecker, Losee, Fritzler, & Fink, 1996; Wright, Clum, Roodman, & Febraro, 2000). In general, randomized controlled trials support the efficacy of these interventions, revealing effect sizes comparable to those obtained by therapist-administered, multisession, individual psychotherapy for the same problem (Marrs, 1995; Scogin et al., 1990). Indeed, self-administered interventions for anxiety achieve some of the highest effect sizes within the self-help literature and exhibit minimal erosion of therapeutic gains at follow-up (Marrs, 1995), suggesting that at least some forms of anxiety may be highly amenable

² Although other variants of minimal-contact therapy exist, these arguably involve too much therapist contact to really be considered self-administered. For example, therapies in which clients receive multiple treatment sessions that are fewer in number than those traditionally used to treat the target problem may be more appropriately conceptualized as “reduced-contact” therapy than self-administered therapy. Similarly, multisession, therapist-led treatments that use self-help materials as a supplementary therapy aid (e.g., Jannoun, Oppenheimer, & Gelder, 1982) or that encourage clients to take an active role in setting therapy goals and planning homework assignments (e.g., Butler, Cullington, Hibbert, Klimes, & Gelder, 1987) cannot accurately be described as self-administered. Because the present study was concerned with predominantly self-administered treatments involving truly minimal therapist contact, the present review will focus on investigations of such treatments.

to self-modification. Moreover, there is some evidence that treatment gains are further enhanced when the client has even minimal contact with a therapist during the course of treatment, with greater contact associated with better outcome (Marrs, 1995; Wright et al., 2000).

To date, one investigation has evaluated the efficacy of a self-administered treatment for GAD (Bowman, Scogin, Floyd, Patton, & Gist, 1997). This treatment (self-examination therapy, or SET) espouses problem solving for important worries and acceptance of worries that cannot be solved. GAD-diagnosed participants were randomly assigned to the SET bibliotherapy condition or to a delayed-treatment control condition, with both groups receiving 5-minute weekly phone calls. The SET group evidenced significantly greater declines in anxiety symptoms after 4 weeks of bibliotherapy than the delayed-treatment group. Effect sizes were similar to those of self-administered treatments for the more circumscribed forms of anxiety listed above, and therapeutic gains were maintained at 3 months post-treatment. These results suggest that self-administered interventions may be helpful in reducing the worry and anxiety experienced by individuals with GAD.

Other investigators have sought to increase the efficiency and reduce the costs of cognitive-behavioral treatment for GAD by providing this treatment in a group format, using either small groups (e.g., 4 to 6 members; Stanley, Beck, & Glassco, 1996) or large groups (e.g., 20 or more members; White, Keenan, & Brooks, 1992; White, 1998). Participants in these studies exhibited a significantly greater decline in worry and anxiety symptoms than wait-list controls (though not a greater decline than participants receiving nonspecific/placebo therapy), and these symptom changes were maintained at follow-up. An uncontrolled pilot study of small-group therapy for GAD using palmtop computers as a therapy aid (Newman, Consoli, & Taylor, 1999) also revealed promising improvement in symptoms. Thus, there is at least preliminary

evidence that cognitive-behavioral interventions for GAD can be successfully implemented within the context of multisession group therapy. Moreover, group-based treatment may provide the added benefit of reducing the stigmatization and isolation that is sometimes experienced by anxious individuals by exposing them to others who share their concerns.

Although advances have been made in the development of self-administered and group-based treatments for GAD, there remain numerous opportunities for refinement and investigation in these areas. First, because extant investigations have restricted their samples to GAD-diagnosed participants, little is known about the potential of existing self-administered or group-based treatments to help nondiagnosed individuals who nevertheless suffer from high levels of worry and anxiety. Second, because investigations have tended to compare existing treatments to wait-list or delayed-treatment controls, it is unclear which of the elements traditionally included in cognitive-behavioral GAD treatments are active ingredients of change and which elements are inactive or unnecessary, a distinction that is critical if we wish to develop treatments that are as brief as possible while containing all of the elements that actively promote change. Finally, self-administered and group-based approaches to GAD treatment have heretofore been developed along parallel but independent lines, despite the similarity of their goals. It is conceivable that a program which combines these two approaches may be more effective than fully self-administered programs, more cost-effective than multisession group-based programs, and more efficient than either approach alone. Thus, if the present research were to identify an effective combined approach that could be inexpensively provided to worried and generally anxious individuals, particularly those who would not otherwise have access to such treatment, it may have important applied value as well as scientific merit.

The Present Investigation

In sum, the present investigation sought to answer three central questions. First, does the way in which GAD is diagnosed affect the ability of this diagnosis to predict response to worry-focused treatment? Second, does the augmentation of SC and problem solving with the additional elements of relaxation training and cognitive restructuring yield better treatment outcomes than those associated with basic SC and problem solving alone? Third, does GAD diagnostic status (under either the categorical or dimensional classification models) interact with the amount of potentially active treatment to predict treatment response, such that the two treatments are differentially effective for individuals with differing diagnostic status?

Design. These questions were addressed within two separate factorial designs, one under each classification model. The categorical model was tested by a 2 x 2 design containing two between-subjects factors: GAD diagnostic status (GAD/no GAD under *DSM-IV*) and treatment condition (basic/augmented treatment). The dimensional model was tested by a 1 x 2 design with two between-subjects factors: GAD diagnostic status (dimensional GAD severity score) and treatment condition (basic/augmented treatment).

Within this broader experimental framework, an additive treatment design was chosen for several methodological, ethical, and theoretical reasons. Methodologically, additive designs provide a high level of experimental control (and thus a high level of internal validity) by minimizing all differences between conditions other than the treatment elements whose additive value is under investigation (Borkovec, 1994). As the proposed treatment conditions contained identical SC and problem solving (PS) components, any differences in outcome between the two conditions would be attributable to the two additional treatment components (i.e., relaxation training [RT] and cognitive restructuring [CR]) that distinguished them.

Because holding the SC and PS elements constant across conditions while adding further therapy elements to only one condition raises the potential confound of differential length of treatment, total treatment time and amount of exposure to SC and PS were equated across conditions by adding a nonspecific psychoeducation (PE) element to the SC–PS condition. Thus, the proposed study compared the combination of SC + PS + PE (hereafter referred to as the *basic intervention*) with the combination of SC + PS + RT + CR (hereafter referred to as the *augmented intervention*). These conditions afforded a methodologically rigorous evaluation of the specific benefits of relaxation training and cognitive restructuring in the treatment of GAD, beyond the specific benefits of stimulus control and problem solving and beyond the benefits of factors common to all psychotherapies.

Additive designs are also ethically advantageous. By providing all participants with a treatment containing active ingredients of change, these designs obviate many of the ethical dilemmas associated with no-treatment and placebo-control conditions. Given the demonstrated efficacy of SC plus PS in treating individuals with problematic worry, the most ethically defensible course of action seemed to be to provide this treatment to all participants in the proposed investigation. However, because the absence of a placebo control condition would make it impossible to rule out the effects of expectancy and therapeutic demand characteristics, a counterdemand manipulation was included in both treatment conditions to reduce the potential effects of these factors (cf. Steinmark & Borkovec, 1974). In this manipulation, participants were informed that they would begin to notice improvement in their worrying only after 5 to 6 weeks of consistent rehearsal and application of the therapeutic skills. They were further informed that the purpose of the second assessment after Week 4 was to monitor their progress up to that point. Thus, conditions present at the posttherapy assessment session were expected to minimize

reports of improvement that might be due to demand characteristics, and any improvement reported at this time was regarded as a conservative estimate of actual improvement.

Finally, additive designs have important theoretical benefits. Because they are able to isolate and compare treatment components of theoretical interest, such designs hold great promise for generating basic knowledge about the nature of the target pathology and the nature of the mechanisms responsible for its maintenance and change (Borkovec, 1994). Thus, the proposed design was selected for its potential to advance basic knowledge of worry and GAD as well as its potential to yield pragmatic advances in their treatment.

Hypotheses. Although the previously unexplored questions posed by the present investigation make its results somewhat uncertain, several hypotheses were proposed for these three central questions on the basis of theory and related prior research. First, given initial evidence that GAD is dimensional rather than categorical at the latent level, it was hypothesized that the dimensional GAD severity diagnosis would explain more variance in participants' posttherapy symptoms and functioning than the dichotomous *DSM-IV* GAD diagnosis.

Second, it was hypothesized that both the basic intervention and the augmented intervention would produce statistically significant improvement in symptoms, with some participants even evidencing clinically significant improvement in symptoms. At the same time, the within-group effect sizes of both interventions were expected to be lower than those for the longer, more intensive, individually-tailored treatments that predominate in the GAD therapy outcome literature. The proposed treatments were also hypothesized to yield different therapy outcomes, with the augmented intervention (containing more potentially active ingredients of change) expected to produce statistically greater improvement than the basic intervention. Once again, however, although it seemed possible that the augmented intervention would yield higher

rates of clinically significant change than the basic intervention, the likelihood of this outcome was uncertain given the limited scope of the proposed interventions.

Third, while it was feasible that categorical diagnostic status would interact with (or moderate the effects of) the number of active treatment elements provided, two alternative hypotheses were raised concerning the nature of this interaction. These competing hypotheses arose from equivocal and occasionally contradictory findings about the ability of individuals with differing anxiety levels to benefit from different treatments (e.g., Safran, Alden, & Davidson, 1980; Kanter & Goldfried, 1979). On the one hand, GAD-diagnosed individuals—by virtue of the intensity and chronicity of their symptoms—might be expected to experience less improvement in therapy than nondiagnosed individuals, or to require a greater number (or different variety) of treatment elements to experience significant improvement. In the proposed study, this may suggest that participants who qualify for a GAD diagnosis will evidence worse overall treatment outcome than those without a diagnosis. Conversely, this perspective may hypothesize a sizable difference in treatment outcome between diagnosed and nondiagnosed cases in the basic treatment condition, but a much smaller difference (or even no difference) in the augmented treatment condition, where exposure to additional treatment—and acquisition of skills directly targeting the cognitive and physiological aspects of GAD—could be expected to benefit those with higher anxiety levels as much as those with lower anxiety levels.

On the other hand, GAD-diagnosed individuals might be expected to evidence *more* improvement in therapy than their nondiagnosed counterparts. Greater improvement may result from the fact that such individuals have more room to improve, or may appear to occur simply because these individuals' extreme scores at pretherapy are susceptible to greater change due to regression toward the mean. In the proposed study, this would suggest that participants with a

GAD diagnosis will evidence greater positive change in both treatment conditions than participants without a diagnosis. Analyses tested these competing hypotheses against one another and against the null hypothesis that *DSM-IV* GAD status does not moderate the effectiveness of treatment.

A similar set of competing hypotheses were raised with respect to dimensional diagnostic status. On the one hand, individuals with more severe symptom presentations may improve less in therapy than those whose symptoms are less severe, or may require more or different treatment to evidence significant improvement. In the proposed study, this might suggest that participants with greater GAD severity will benefit less from either intervention than those with lesser GAD severity. Conversely, there may be larger posttherapy differences between more and less severe cases in the basic treatment condition than in the augmented treatment condition, as the greater number of potentially active elements in the augmented treatment may confer comparable benefits to individuals across the full severity spectrum. On the other hand, individuals with more severe GAD presentations may experience *more* therapeutic improvement than those with less severe presentations due to their greater room for improvement or potentially greater regression toward the mean. In the proposed study, this would suggest that participants with greater GAD severity will evidence greater positive change in both treatment conditions than participants with lesser GAD severity. Analyses compared these competing hypotheses with one another and with the null hypothesis that dimensional GAD severity does not moderate the effectiveness of treatment.

CHAPTER 2: METHOD

Participants

Participants for the proposed investigation were undergraduate and graduate students enrolled at the Pennsylvania State University. Of the 76 students who were admitted into the study and who attended a treatment workshop, 4 (5%) dropped out before their posttherapy assessment, leaving 72 treatment completers.³ There was not a significant difference between the number of individuals who dropped out of the basic ($n = 3$) versus augmented ($n = 1$) treatment conditions, nor did dropouts differ significantly from completers on demographic characteristics or on any of the dependent variables included in the study.

The 72 participants who completed the interventions included 59 females (82%) and averaged 19.29 years of age ($SD = 2.03$, Range = 18 to 30 years). The ethnic composition of the sample included 63 Caucasian participants (88%), 8 Hispanic participants (11%), and 1 participant from another ethnic group (1%). Duration of the problematic worry averaged 3.58 years ($SD = 3.75$, Range = 2 months to 19 years). Sixteen participants (23%) reported that they

³ A target sample size of 60 participants was originally proposed after examining previous studies comparing individually-administered psychotherapies for GAD. As Borkovec et al. (2002) observed, studies that have detected differences between CBT and one of its components have included 14 to 20 participants ($M = 17.25$) per treatment condition, whereas those that have not detected such differences have included 9 to 13 participants ($M = 10.50$) per condition. It could be argued that these sample size guidelines were overly liberal estimates for the proposed study, as the treatments provided in these studies consisted of individually-tailored, multisession interventions that were considerably more intensive and comprehensive than the far briefer and less personalized treatments provided in the present study. Conversely, it could be argued that these guidelines were overly conservative estimates for the proposed study, given indications that briefer treatments are associated with larger between-group differences in GAD component control therapy investigations (Borkovec et al., 2002). In light of these opposing arguments, as well as the scarcity of studies comparing brief, largely self-guided GAD treatments to serve as a more appropriate guide, a sample of 60 participants (30 per condition)—somewhat larger than the samples of prior investigations that detected differences between CBT and its components—was proposed for the study. The final sample of 72 participants exceeded this goal.

had received psychotherapy or pharmacotherapy for worry or anxiety at some time in their lives; these participants were equally balanced across treatment conditions. Eight participants (11%) were taking psychotropic medication for anxiety at the outset of the study; they agreed to maintain a constant dosage and frequency during the study and were evenly balanced across conditions. To enhance the representativeness of the sample (and thus the external validity of the study), participants were not excluded on the basis of any comorbid conditions, which were expected to occur rarely in this analogue sample and, if present, to be randomly distributed across conditions.

To be admitted into the study, students were required to report high levels of worry corresponding to a score of 56 or greater on the *Penn State Worry Questionnaire (PSWQ)* (Meyer, Miller, Metzger, & Borkovec, 1990), a self-report measure of the chronic, uncontrollable worry characteristic of GAD. This score of 56 has been found to fall 1 *SD* below the mean score of GAD-diagnosed individuals (Molina & Borkovec, 1994) and has been found to predict GAD diagnostic status with maximal sensitivity and specificity in Receiver Operating Characteristic (ROC) analysis (Mennin, Fresco, Heimberg, & Turk, 1999). Therefore, all participants in the present study were regarded as “high worriers” whose worry severity was significant and who might therefore benefit from worry-focused treatment. To directly assess how many of these individuals viewed their worry as problematic and as something that they would like to change, participants were asked during general screening whether they would be interested in attending a free workshop to learn ways to reduce worry, anxiety, and stress. A substantial majority of participants ($n = 51$, or 71%) said yes. Participants who expressed interest in the worry-reduction workshop during screening were balanced across treatment conditions.

In order to allow tests of the predictive validity of diagnostic status under the competing

classification models, participants were further selected so that approximately half of this highly worried sample would qualify for a diagnosis of GAD. This was achieved using a second screening measure: the *Generalized Anxiety Disorder Questionnaire (GAD-Q-IV)*; Newman et al., 2002), a self-report measure yielding *DSM-IV* diagnoses of GAD. The GAD-Q-IV has been shown to have good reliability and validity in college samples (e.g., Newman et al., 2002; Roemer, Borkovec, Posa, & Borkovec, 1995) and shares a high level of diagnostic agreement ($\kappa = .67$) with the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown, Di Nardo & Barlow, 1994). This measure provided an initial indication of *DSM-IV* diagnostic status; final diagnostic status was independently determined at the pretherapy assessment using the ADIS-IV.

The final sample included 39 worriers (54%) who received a *DSM-IV* diagnosis of GAD and 33 worriers (46%) who did not qualify for a diagnosis. Individuals with each diagnostic status were evenly distributed across treatment conditions. Prior to treatment, GAD-diagnosed participants differed in several ways from their nondiagnosed counterparts: they had more severe scores on all of the dependent measures (see Table 1); they were more likely to have previously received anxiety treatment ($\chi^2(1, N = 70) = 5.48, p = .02$) and to be taking anxiety medication when the study began ($\chi^2(1, N = 72) = 4.03, p = .04$); and, at the time of screening, they were more likely to express an interest in attending a free worry-reduction workshop than were nondiagnosed high worriers ($\chi^2(1, N = 71) = 12.58, p < .001$). Thus, as might be expected, individuals diagnosed with *DSM-IV* GAD presented with a more severe initial symptom picture than did high worriers without GAD.

The final sample consisted primarily of participants recruited from the Introductory Psychology subject pool ($n = 58$; 78%); the remaining participants were recruited from other psychology courses ($n = 9$; 13%), were self-referred in response to flyers or campus newspaper

announcements ($n = 6$; 8%), or were referred by the university's Center for Counseling and Psychological Services ($n = 1$; 1%). Participants drawn from sources outside of Introductory Psychology (IP) tended to be older than IP participants ($t(16) = -5.02, p < .001$) and, prior to therapy, were more likely to be diagnosed with GAD ($\chi^2(1, N = 72) = 9.21, p < .01$) and to be taking medication for anxiety ($\chi^2(1, N = 72) = 4.02, p = .04$).⁴ Participants recruited from these different sources were balanced across conditions.

IP students completed the PSWQ and GAD-Q-IV as part of the psychology department's mass screening packet, whereas individuals recruited from other sources were administered these measures over the phone. Individuals who expressed a desire for psychological treatment but who were not eligible for the study were given referrals for the Center for Counseling and Psychological Services (CAPS) and for community practitioners with expertise in the treatment of anxiety. IP students received research credits in exchange for their participation, whereas participants drawn from other sources received \$15.

Procedure

Assessment. Participants completed two assessment sessions during the course of the study: (1) one to two weeks before attending the treatment session, to establish a baseline measure of functioning and to provide instructions for baseline diary assessment of daily experiences of worry and anxiety; and (2) four to five weeks after the treatment session, to assess functioning after the provision of a single-session, group-based intervention and several subsequent weeks of skills rehearsal and implementation. Participants completed the same set of

⁴ At pretherapy, non-IP participants had more severe scores on all but one (satisfaction with school/course work) of the dependent variables. By contrast, comparisons of IP and non-IP participants at posttherapy—controlling for pretherapy scores—revealed only a single significant difference: non-IP students were more likely than IP students to remain diagnosed with GAD (by *DSM-IV* criteria, but not by the dimensional severity criterion) at the end of treatment.

interview and self-report measures at both assessment sessions. However, to increase sensitivity to changes produced by these very brief interventions, all posttherapy measures focused on participants' experiences during the week prior to the posttherapy assessment.

Participants were assessed by one of five clinical assessors, all of whom were advanced undergraduate students majoring in psychology. Assessors were balanced over diagnostic status and treatment conditions and remained blind to condition at both evaluations. Assessors were kept unaware of condition status by preventing their access to the participant or to records concerning the participant between pretherapy and posttherapy evaluations. Whenever possible, participants were evaluated by the same assessor before and after treatment; this was achieved for 61 participants (85%). Although this procedure has the benefit of reducing error variance in interview ratings (Borkovec, 1994), it runs the risk of inflating post-treatment ratings due to assessors' expectations of treatment-related improvement. To minimize this risk, assessors were informed that the study design included a no-treatment control condition, and that some of those whom they assessed for the second time will not have received therapy.

Assessors were fully trained in all interview-based assessment measures at the outset of the study by engaging in role plays and by making ratings and diagnoses based on audio-recorded interviews conducted by interviewers in a previous study. The five assessors achieved an interrater reliability (Cronbach's alpha) of .96 for the Assessor Severity rating of GAD symptoms and perfect diagnostic agreement ($\kappa = 1.00$) for GAD status on 10 prerecorded interviews before they began interviewing participants for the present study. To ensure that interrater agreement remained high throughout the study and that rater drift was negligible, all interviews conducted during the study were audiotaped, and a random subset of 22 pretherapy interviews (30% of the total sample, including 11 interviews that originally yielded a GAD

diagnosis and 11 that did not) was drawn from across the full year of data collection and from all five interviewers and independently rated by an assessor who had not conducted the original interview. Interrater reliability (Cronbach's alpha) was .91 for the Assessor Severity rating and .98 for the Hamilton Anxiety Rating Scale (excluding the behavioral observations item), and agreement was perfect ($\kappa = 1.00$) for GAD diagnostic status.

Pretherapy and posttherapy assessment sessions began in a group setting, with multiple participants scheduled for each assessment session. Participants worked independently on the self-report questionnaires within this group setting. During this time, the assessor removed participants from the room one by one, took them to a separate room for interviewing, and returned them to the questionnaires after their interviews were complete. The procedures followed in the pre- and post-treatment assessment sessions were identical, with only the following exceptions. At the beginning of the pretherapy assessment session, the assessor described the nature of the study, provided participants with a consent form, and gave participants a *Bedtime Rating Scale* with which to monitor their daily experiences of worry and anxiety during the 1-2 weeks prior to the treatment session (see Appendix D). This scale was designed to serve as a diary measure of the duration, intensity, and consequences of worry that could be completed rapidly and easily at the end of each day for the duration of the study. By contrast, at the beginning of the posttherapy assessment session, the assessor provided each participant with a large envelope in which to seal his or her workbook (enabling the assessor to remain blind to condition) and then collected these workbooks. At the end of the posttherapy assessment session, assessors provided participants with a debriefing form (see Appendix B for consent and debriefing forms). In all other ways, the two assessment sessions were equivalent.

Measures were selected for the study with consideration for both the depth and breadth of

assessment, particularly with respect to treatment outcome. Depth of assessment was achieved by assessing all major domains of anxiety (cognitive, somatic, affective, and behavioral) using multiple methods of assessment (interviewer ratings, global self-reports, and daily diary ratings of anxious experience). Breadth of assessment was achieved by supplementing measures of GAD and closely related constructs of worry and trait anxiety with assessment of depression, global functioning, and quality of life. Together, these measures were expected to yield comprehensive, valid indices of treatment response and to assess the degree of convergence obtained across results (see Appendix A for assessment measures). Internal consistency (Cronbach's alphas) for all outcome measures appear in Table 2.

Assessor outcome ratings. GAD diagnoses were made at pretherapy and posttherapy assessment sessions using the *ADIS-IV* GAD module, modified to supplement those (primarily dichotomous) items that directly contribute to a *DSM-IV* diagnosis with continuously-scaled items that were used to compute a dimensional GAD severity score for all participants.⁵ This

⁵ The goal in creating the dimensional GAD severity diagnosis was to produce a score that was face-valid, conceptually meaningful, and based on a simple computational algorithm that could be easily calculated by practitioners or researchers for any worried individual. The score that was ultimately employed in the study is a linear composite of several continuously-scaled items that were added to the *ADIS-IV* GAD module. These items are combined according to the following computational algorithm: (1) divide the participant's response to each item by the maximum possible value for that item, (2) average the item-level responses into four composites representing the substantive diagnostic criteria of GAD (see below); and (3) average the four criterion composites into a final dimensional severity score. Thus, the final dimensional score describes the participant's GAD symptom severity as a *proportion of the maximum possible severity* that can be obtained on the set of continuous GAD items.

In Step 2 of the aforementioned algorithm, items are combined into criterion composites as follows (all item numbers correspond to items of the *ADIS-IV* GAD module appearing in Appendix A): items 6, 8 (frequency), and 8 (severity) form Criterion A; item 7 forms Criterion B, items 9a through 9f form Criterion C (with frequency and severity ratings averaged for each item prior to its inclusion in the composite), and items 5a through 5f form Criterion E. Although worrying about multiple topics is a symptom of Criterion A in *DSM-IV*, item 3b (number of worry topics) was *not* included in the Criterion A composite because (a) this item shared considerably lower correlations with the other Criterion A items than the latter did with one

allowed each participant to be diagnosed under both the categorical and the dimensional classification models so that their relative predictive validities could be compared. The ADIS-IV is a structured interview whose frequent inclusion in GAD therapy trials (Borkovec & Ruscio, 2001) make it the current “gold standard” in the assessment of GAD.

Participants’ anxiety symptoms were further assessed by a global *Assessor Severity* rating of GAD symptoms made on a 9-point Likert scale and by the *Hamilton Anxiety Rating Scale* (*Hamilton Anxiety*; Hamilton, 1959). Both interview-based measures are widely used in GAD therapy trials (Borkovec & Ruscio, 2001) and allowed comparisons to be drawn between the results of the proposed investigation and those of other studies in the GAD therapy outcome literature.

Self-report outcome measures. Participants completed a variety of self-report questionnaires before and after treatment to provide additional appraisals of therapy outcome. The first set of questionnaires evaluated participants’ experiences of worry and anxiety. The *PSWQ*, used first as a screening measure, was readministered at the pretherapy and posttherapy assessments to assess participants’ worry severity. This measure of trait worry has excellent psychometric properties in student, community, and clinical samples (cf. Molina & Borkovec, 1994; van Rijsoort, Emmelkamp, & Vervaeke, 1999). The Trait form of the *State-Trait Anxiety Inventory* (*STAI-T*; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), a widely-used measure of anxiety in clinical and research settings (Gotlib & Cane, 1989), provided a measure of the degree of anxiety generally experienced in daily life. In addition, participants completed the Trait form of the *Comprehensive Assessment of Anxiety States* (*CAAS-T*; Ruscio, Borkovec, & Clements, 2003), a recently-developed measure of the somatic, cognitive, affective, and

another, and (b) virtually all participants in the sample reported the minimum of two worry topics that is required to meet Criterion A.

behavioral symptoms of anxiety experienced during a typical day. The CAAS-T contains 30 symptoms of anxiety that are rated on a 9-point intensity scale. The measure has been shown to have high internal consistency and good convergent, discriminant, and factorial validity in college samples (Ruscio et al., 2003) and was included to yield a more comprehensive assessment of anxiety domains than that provided by the PSWQ and STAI-T alone.

A second set of questionnaires evaluated the impact of treatment on symptoms and functioning beyond those directly pertaining to worry and anxiety. Depression was assessed by the *Beck Depression Inventory (BDI)*; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), a widely-used self-report measure of depression (Katz, Shaw, Vallis, & Kaiser, 1995) with strong psychometric properties in clinical and nonclinical samples (e.g., Beck, Steer, & Garbin, 1988; Lips & Ng, 1985). Global functioning was assessed by the *Sheehan Disability Scale (Sheehan scale)*; Sheehan, 1983), a 3-item measure of impairment in work, social, and family domains resulting from emotional symptoms. The Sheehan scale was expressly designed to assess functional impairment associated with anxiety and has been found to be reliable, valid, and sensitive to therapeutic change in clinical and primary care samples (e.g., Leon, Olfson, Portera, Farber, & Sheehan, 1997; Leon, Shear, Portera, & Klerman, 1992). Finally, quality of life was assessed by the *Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q)*; Endicott, Nee, Harrison, & Blumenthal, 1993), a measure evaluating life satisfaction and role function across the domains of Physical Health, Subjective Well-being, Social Relationships, Leisure Activities, Work, Household Duties, and School/Course Work. The Q-LES-Q has excellent psychometric properties and has been widely used in therapy outcome studies with a variety of clinical populations, including those with anxiety disorders (e.g., Pollack, Otto, Worthington, Manfro, & Wolkow, 1998; Rapaport, Endicott, & Clary, 2002). Its items are rated on a 5-point

Likert scale, with higher scores reflecting higher levels of life satisfaction. Because the domains of Work and Household Duties were considered less applicable to college students than to working adults, and because these domains are scored only when they are applicable to the subject population (Endicott et al., 1993), questions pertaining to these domains were dropped from the measure, leaving five domain-specific subscales for analysis.

The self-report measures completed during the assessment sessions were supplemented by daily diary ratings of worry made on the Bedtime Rating Scale, which participants continued to fill out during the four or more weeks of skills rehearsal following the treatment session. Bedtime ratings made during the seven days prior to treatment and the seven days prior to posttherapy assessment were used to construct two measures of treatment outcome: (a) an average of the percent of the day spent engaged in worry and (b) a composite of the average intensity, distress, and interference associated with worry across the seven days.

Assignment to therapy conditions and therapists. Following the pretherapy assessment, participants were randomly assigned to the basic or the augmented treatment condition within weekly temporal assessment waves. Participants' *DSM-IV* GAD diagnostic status served as a blocking factor in the random assignment process to ensure its equivalency across conditions. More specifically, random assignment was undertaken with the constraint that equal numbers of GAD-diagnosed and nondiagnosed participants be distributed across treatment conditions. This resulted in the assignment of 35 participants (19 GAD, 16 non-GAD) to the basic condition and 37 participants (20 GAD, 17 non-GAD) to the augmented condition.

Once they were assigned to a condition, participants were scheduled for a treatment session in groups of up to six participants. This group size was selected because it was large enough to allow for efficient dissemination of behavioral skills but small enough to encourage

participants to become engaged in the session and feel comfortable asking questions. A pilot study evaluating the clarity and feasibility of the treatment protocols revealed a group of six participants to work well for these reasons (see Appendix F for a description of the pilot study). Participants with and without a *DSM-IV* GAD diagnosis were mixed within therapy groups.

Two advanced graduate students in clinical psychology, one of them the investigator, served as therapists in the study. Both therapists had previously received extensive training in cognitive-behavioral techniques and had conducted therapy with anxious clients. The non-investigator therapist underwent comprehensive protocol training with the investigator before the beginning of the study; both therapists read and memorized a detailed therapy manual for each condition (see Appendix C), role played the two treatment sessions with each other, and led two practice treatment workshops (one in each condition) with pilot participants before holding their first workshop for study participants. Each treatment session was led by one of these two therapists, and each therapist was randomly assigned to a different therapy condition in each wave. As a result, both therapists saw a roughly equal number of participants in each condition, with one therapist seeing 37 participants (18 in the basic condition, 19 in the augmented condition) and the other seeing 35 participants (17 in the basic condition, 18 in the augmented condition). Both therapists also saw a roughly equal number of GAD-diagnosed (21 and 18, respectively) and nondiagnosed (16 and 17, respectively) participants.

Therapy conditions. Each therapy group met for a single, one-hour treatment session. All sessions took place during the same two evenings each week, with the treatments offered on each of the two days alternating weekly between conditions to avoid systematic differences between conditions. Sessions led by both therapists were held in the same small classroom, with chairs set up in a half-circle before the therapist to promote engagement and interaction. Based

on feedback from pilot participants, therapists utilized overhead transparencies in both conditions to emphasize key points and to facilitate participants' attention to, and recall of, presented material (see Appendix C). Shared elements between the two workshops were presented using precisely the same overhead transparencies, and therapists used the overheads in their role plays with one another to ensure that these materials were used in the same way by both therapists.

As described earlier, both treatment sessions included identical SC and PS elements. In addition, several other features were shared by the two conditions, including: (a) the presentation of a behavioral model of worry and a rationale for behavioral intervention; (b) the counterdemand manipulation described earlier; and (c) a discussion of the strategies that participants intended to use to remain motivated to practice the worry-reduction skills over the ensuing four weeks, paired with motivating statements about the potential benefits of these skills, to increase treatment compliance. All three of these common features, as well as the SC and PS elements, were presented using precisely the same words in the two conditions.

The basic treatment condition included the SC and PS therapy elements as well as the nonspecific PE element (see Appendix C for therapy manual). In the SC portion of the treatment, participants were educated about how worry becomes associated with a wide variety of situations and is then automatically triggered by these situations. Participants were taught to: (a) use self-monitoring to increase awareness of worry and catch worry soon after it begins, (b) increase the stimulus control of worry by limiting its occurrence to a half-hour Worry Management Period held at the same time and unique location each day, (c) postpone any worry experienced during the day to the Worry Management Period and turn attention back to the present moment, and (d) make use of the Worry Management Period to deal effectively with worry. Participants were engaged in an exercise during the treatment session in which they worried for a brief period of

time, then focused their attention on their breathing with the goal of detecting ensuing worry as soon as it began.

In the PS portion of the treatment, participants were told that the Worry Management Period was their designated time to deal with their worries, and that although they could spend this time worrying if they wished, they were instead encouraged to devote this time to the more constructive process of problem solving. Participants were taught to: (a) distinguish worries that are within their control from worries that are outside of their control, and focus their problem-solving efforts on the former; (b) identify several possible actions for solving each problem over which they have some control; and (c) choose one of these courses of action and establish a concrete plan for carrying it out. Participants were given a *Problem Solving Worksheet* (see Appendix D) to guide them through the problem-solving process and practiced applying this process to a current worry during the treatment session using the worksheet.

The PE element took advantage of the common perception that insight into the origins and consequences of anxiety can lead to its reduction in daily life. In the PE portion of the session, participants were provided with empirically-based information about worry and anxiety that did not offer clues about how worry can be reduced and was therefore not expected to have a specific impact on worry. This information included descriptions of: (a) the genetic and environmental factors that confer a vulnerability to anxiety, (b) the cognitive nature of worry, and (c) the effects of worry on attention and physiology.

The augmented treatment condition included the abovementioned SC and PS therapy elements as well as the RT and CR elements (see Appendix C for therapy manual). In the RT portion of the treatment, participants were trained to use slowed diaphragmatic breathing along with focused attention on a calming word to produce bodily sensations of deep relaxation.

Participants were encouraged to make diaphragmatic breathing a constant habit and to apply it whenever incipient tension, anxiety, or worry were experienced throughout the day. Participants were also instructed to practice diaphragmatic breathing during the last five minutes of every Worry Management Period to: (a) strengthen the relaxation response through regular practice, (b) strengthen the association between relaxation and the other therapeutic techniques, and (c) reduce any worry or anxiety elicited during the Worry Management Period.

In the CR portion of the treatment, participants were encouraged to use cognitive restructuring during the Worry Management Period when they find themselves worrying about a problem that is outside of their control and thus cannot be readily addressed by problem solving. Participants were taught to: (a) specify each negative prediction underlying experiences of worry and anxiety; (b) consider the evidence for and against this prediction, as well as its likely probability; (c) decatastrophize the outcomes that may occur if the prediction came true, and realistically appraise their own ability to handle these outcomes; and (d) generate alternative predictions about likely outcomes that were more realistic and less anxiety-provoking (see Beck & Emery, 1985). In the event that this worry was experienced again in daily life, participants were instructed to replace the worry with their more realistic alternative prediction and to vividly imagine this most likely outcome for several seconds. Participants were provided with a *Cognitive Restructuring Worksheet* (see Appendix D) to guide them through this process and practiced applying the CR technique to a current worry during the session with the help of the worksheet.

Treatment credibility. Participants completed a 3-item scale assessing the perceived credibility of the proffered treatment as well as a single-item, 0%–100% scale assessing their expectancy for improvement resulting from the treatment (Borkovec & Mathews, 1988; see

Appendix A). Both measures were completed at the end of the treatment session, after participants were provided with a therapy rationale, presented with the therapeutic skills, and given the opportunity to apply these skills to worries that presently concern them. Participants were given an unmarked envelope in which to seal their ratings before turning them in.

Skills implementation and rehearsal. Participants practiced their newly acquired worry-reduction skills for a minimum of four weeks following the treatment session. After the four weeks were over, participants were scheduled for the first assessment session for which they were available, with the added attempt to match them with their pretherapy assessor. The rehearsal period averaged 35 days ($SD = 4.27$, Range = 28 to 50 days, $Mode = 33$ days). The number of rehearsal days did not differ significantly across treatment conditions. The majority of participants (69%) completed the posttherapy assessment in fewer than 5 weeks; an additional 26% were assessed 5 to 6 weeks after the session, and the final 5% were assessed more than 6 weeks after the treatment session. Analyses comparing the posttherapy scores of participants who were assessed less than 5 weeks after the treatment session (while the counterdemand manipulation was in effect) with those of participants who were assessed 5 or more weeks after the treatment session (after the counterdemand period had ended) revealed no significant differences on the dependent variables included in the study.

Each participant was contacted by e-mail twice per week during the rehearsal period to: (a) provide opportunities to ask any questions that may have arisen about the therapeutic skills, (b) serve as reminders to practice the skills, (c) provide encouragement to increase motivation to practice, and (d) reduce the likelihood of attrition from the study. Pilot testing revealed that evenly spaced, twice-per-week e-mails were perceived as the ideal rate of contact by participants and were helpful in meeting the four aforementioned goals. E-mails were fully standardized (see

Appendix E) and were sent by the study coordinator in order to keep assessors blind to therapy condition. Any participant questions pertaining to the therapeutic skills that were sent in response to these e-mails were immediately forwarded to the investigator for reply.

To further increase treatment compliance and to provide additional clarification about the appropriate application of therapeutic skills, each participant was also contacted by phone approximately halfway through the rehearsal period (i.e., after two weeks of skills rehearsal) and engaged in a brief conversation about their use of the worry-reduction strategies. Phone contacts lasted roughly 5 to 10 minutes and were conducted by the participant's therapist. They followed a structured script (see Appendix E) that began by reviewing each therapeutic technique (including its basic rationale, appropriate context of use, and correct application), then asking about the participant's success in applying that technique. The primary aims of the phone contacts were to: (a) identify any questions or difficulties encountered in applying each technique, (b) discuss strategies for resolving problems or surmounting obstacles to successful skills implementation, (c) encourage the continued practice of techniques that the participant was not actively using, (d) encourage the completion of daily diary measures and measures of treatment compliance (see below), and (e) reduce the likelihood of attrition from the study. Phone contacts were completed with 100% of participants in both treatment conditions.

To facilitate the rehearsal and application of learned skills, participants received a workbook tailored to the information presented in their treatment condition (see Appendix D for all workbook materials). Workbooks for both conditions contained: (a) *summaries* of information covered in the relevant treatment session, including a review of the major treatment elements and a highly visible "cheat sheet" reviewing the steps to be followed when worry is experienced during the day and when the Worry Management Period is held; (b) *worksheets* to aid rehearsal

of therapeutic skills, including the Problem Solving Worksheet in the basic treatment condition and both the Problem Solving and Cognitive Restructuring Worksheets in the augmented treatment condition; and (c) *rating sheets*, including the Bedtime Rating Scale and the Worry Management Period Log (described below), to gather data on participants' daily experiences of worry and their daily rehearsal and application of each therapeutic skill. Participants were given a workbook at the beginning of the treatment session, introduced to each section of the workbook, and given the chance to try out each worksheet during the session to increase their comfort with the workbook. Workbooks were returned at the posttherapy assessment session following the skills rehearsal period. (Participants were given the opportunity to keep the treatment summaries and a copy of each worksheet if they wished to continue using them after the study.)

Participants' compliance with the treatment protocol—including the degree to which they followed the treatment recommendations, rehearsed their newly acquired therapeutic skills, and applied these skills to experiences of worry in daily life—were assessed by two rating sheets developed by the investigator. Participants completed the *Worry Management Period Log* daily during the weeks between the treatment session and the posttherapy assessment session (see Appendix D). This measure asked participants to indicate whether or not they held a Worry Management Period on each given day, the duration of this period, their level of anxiety at the beginning and end of the period, and the activities in which they engaged during the period. The number of days on which a Worry Management Period was held, the average duration of this period, and the allocation of time among the therapeutic skills and alternate activities (e.g., worrying, daydreaming) during this period provided estimates of treatment compliance. In addition, following the treatment session, participants received a new version of the Bedtime

Rating Scale that included a section asking them to record the extent to which they used each therapeutic skill in response to naturally occurring worries (those occurring outside the Worry Management Period) throughout the day, thereby assessing skills rehearsal and treatment compliance at the times not covered by the Worry Management Period Log.

Learning and retention of skills. Participants' knowledge and understanding of the therapeutic skills imparted during the treatment session and practiced throughout the subsequent rehearsal period was assessed by the *Checking Your Knowledge* questionnaire (see Appendix A). This four-item questionnaire contained two items addressing basic skills taught in both of the treatment conditions (SC and PS) and two items addressing skills taught only in the augmented treatment condition (RT and CR). It was included in the study for several reasons: (a) to serve as a manipulation check, assessing whether participants who received the augmented treatment actually learned more worry-reduction skills than participants who received the basic treatment; (b) to rule out the possibility that participants in the basic condition were already familiar with the skills that were imparted in the augmented condition, thereby undermining the experimental manipulation; and (c) to evaluate whether worry-reduction skills can be successfully learned and retained when they are taught in a very brief, group-delivered format. Because participants in both conditions were asked to respond to all four questions, this questionnaire was completed at the very end of the posttherapy assessment session to avoid suggesting to participants in the basic treatment condition that additional (augmented) skills can or should be applied to reduce worry.

A detailed scoring guide was developed to convert participants' open-ended responses to numerical accuracy scores (see Appendix A). Two coders (the investigator and an advanced undergraduate) trained together in the use of this scoring guide, then independently scored a

subset of 20 questionnaires. A high level of interrater agreement was achieved, with Cronbach's alphas ranging from .85 to 1.00 for the four individual items. Therefore, the undergraduate coder went on to score all of the remaining questionnaires. For data analytic purposes, responses to each of the four questions were scored as correct or incorrect, and these item-level scores were summed into a total basic skills score (ranging from 0 to 2), a total augmented skills score (ranging from 0 to 2), and a total scale score (ranging from 0 to 4).

Therapy manuals and protocol adherence. Therapists were trained to administer the basic and augmented treatment packages using detailed therapy manuals (see Appendix C). Because resources were not available to support formal integrity checks of adherence to the treatment protocols, manuals were written in the form of scripts to reduce variability in their administration by the therapists. Therapists memorized these manuals and had access to them during treatment sessions to maximize adherence. This script-like manual format seemed quite appropriate for the proposed interventions, which involved a workshop-style presentation of information and skills by the therapist and included only minimal exchanges with participants. These standardized features of the manuals and interventions were expected to facilitate close and consistent implementation of the treatment protocols and to minimize the occurrence of protocol breaks in the study. The two therapists met regularly throughout the study to discuss procedural issues and to determine whether any unusual circumstances arose during treatment sessions that needed to be handled in similar ways by both therapists. However, at no point during the study was an unusual circumstance or a break in protocol adherence reported by either therapist.

CHAPTER 3: RESULTS

Preliminary Analyses

Before beginning hypothesis testing, exploratory data analyses were performed to examine the distributional properties of the measures, identify any problematic characteristics of the data (e.g., multivariate outliers, pronounced skew), and calculate descriptive statistics for the full sample, the two diagnostic groups, and the two treatment conditions. Table 1 presents means and standard deviations on the outcome measures for GAD, non-GAD, and all participants at pretherapy and posttherapy assessments. Table 3 displays means and standard deviations on the outcome measures for each treatment condition at pretherapy and posttherapy. Despite some variability in the distributional characteristics of the measures, all appeared to meet the basic assumptions of the intended analyses, and all were submitted to analyses as planned.

A series of analyses was conducted to rule out several possible rival explanations for subsequent experimental findings. To provide a conservative test of the viability of these alternative explanations, an uncorrected significance level of .05 was used for these analyses. First, a multivariate analysis of variance (MANOVA) was performed to compare the pretherapy characteristics of participants assigned to the basic and augmented treatment conditions. Results revealed no significant group differences on any of the demographic or outcome measures before therapy, Pillai's trace = 0.28, $F(23, 38) = 0.64$, $p > .80$, indicating that the two conditions were equivalent prior to the experimental manipulation.

Second, analyses were performed to determine whether treatment expectancy or credibility differed by treatment condition, diagnostic status, or the interaction of condition and diagnosis. Analyses of variance (ANOVA) tested for differences using the categorical (*DSM*) GAD diagnosis, whereas hierarchical multiple regressions tested for differences using the

dimensional (severity) GAD diagnosis. None of the main or interaction effects were statistically significant, all F s < 2.80, all p s > .10. Thus, the two treatments were perceived as equally credible and engendered equivalent expectancy of change in the full sample and among participants with differing GAD status and severity. The total sample reported moderately high levels of expectancy ($M = 60.76\%$, $SD = 18.57$) and credibility ($M = 6.63$, $SD = 1.30$ on the 9-point scales) that were similar to the expectancy ($M = 67.54\%$) and credibility ($M = 7.58$) ratings reported in a recent investigation of cognitive, behavioral, and cognitive-behavioral individual psychotherapy for GAD (Borkovec et al., 2002).

Third, hierarchical multiple regression analyses were performed on posttherapy scores (with pretherapy scores as covariates) to test for reliable differences in treatment outcome across the two therapists. Results revealed no significant main effect of therapist and no significant interaction of therapist by condition in predicting posttherapy functioning, all F s < 2.45, all p s > .12, allowing participants to be appropriately combined across therapists for subsequent analyses.

Fourth, t tests were performed on scores from the Checking Your Knowledge questionnaire administered at the posttherapy assessment to examine whether participants' knowledge of therapeutic skills differed by treatment condition. An initial t test performed on the total scale score revealed a significant difference in knowledge between participants in the basic ($M = 1.71$, $SD = 1.02$) and augmented ($M = 3.22$, $SD = 0.79$) treatment conditions, $t(70) = -7.03$, $p < .001$. Follow-up analyses revealed that participants who received the augmented treatment had greater knowledge of the augmented (diaphragmatic breathing, cognitive restructuring) skills than participants who received the basic treatment, $t(70) = -11.69$, $p < .001$, whereas the two groups did not differ in their knowledge of the basic (stimulus control, problem solving) skills that were taught in both treatments, $t(70) = -0.20$, $p = .84$. These results suggested that the

experimental manipulation was successfully implemented and indicated that any lack of differences between conditions could not be attributed to equal familiarity with the therapeutic techniques by the two groups.

A final series of analyses examined whether the symptom severity of the present sample was comparable to that of the treatment-seeking GAD clinical samples in prior therapy outcome studies. These analyses sought to provide a context for subsequent findings and to determine whether a significant response to the present brief treatments could simply be attributed to mild symptom levels in this college sample. Comparisons were made on the four assessment instruments most frequently administered in GAD therapy studies, including three measures of anxiety (Assessor Severity, Hamilton Anxiety, STAI-T) and one measure of depression (BDI). An average mean and standard deviation were calculated for each measure from all prior studies in which it was administered (see Borkovec & Ruscio, 2001), and these means were compared with those of the present sample using a pooled standard deviation weighted by the differential sizes of the two samples.

Relative to the mean pretherapy scores for the total sample appearing in Table 1, prior GAD therapy samples had higher Assessor Severity scores ($M = 5.24$, $SD = 0.87$), $t(416) = 5.33$, $p < .001$, and higher STAI-T scores ($M = 54.63$, $SD = 9.04$), $t(525) = 1.97$, $p = .05$. In contrast, the Hamilton Anxiety ($M = 21.88$, $SD = 4.70$) and BDI ($M = 16.45$, $SD = 7.78$) scores of prior samples did not differ from those of the present sample, both $ts < 1.40$, both $ps > .17$. Because prior samples consisted exclusively of GAD-diagnosed worriers while the present sample included nondiagnosed as well as diagnosed high worriers, the most appropriate comparison may not be that with the total present sample, however, but with the GAD-diagnosed portion of the sample. Hence, a second set of t tests compared the pretherapy symptoms of prior samples with

those of the present GAD subsample (see Table 1). Results revealed statistically significant differences on Assessor Severity, Hamilton Anxiety, and the BDI, all $t_s > 2.10$, all $p_s < .04$, and a marginally significant difference on the STAI-T, $t(492) = 1.80$, $p = .07$. In all analyses, the GAD participants in the present sample reported more severe pretherapy symptoms than the GAD participants in prior samples. Thus, while the full sample of high worriers appeared somewhat less anxious than the samples of past GAD therapy studies, the subset of individuals diagnosed with GAD in the present study appeared *more* anxious and depressed than the GAD clients in prior studies.

Determining the Main Effect of Classification

The first research question examined in the present study concerned the relative ability of categorical and dimensional GAD classification models to predict treatment response. The question of predictive validity is concerned with within-subject change—rather than between-group differences—resulting from treatment. Specifically, the diagnostician wishes to know whether the diagnosis assigned to an individual before treatment is associated with her response to treatment. However, because the individual's diagnosis is based on (and therefore highly redundant with) her symptoms before treatment, the use of such symptoms as covariates in tests of the association between diagnosis and treatment outcome would leave little variance for the diagnosis to predict, making analyses of covariance inappropriate for addressing the question of predictive validity.

For these reasons, the predictive validity of the two classification models was compared using change scores, computed by subtracting pretherapy scores from posttherapy scores on each outcome measure for each participant. These change scores were correlated one at a time with pretherapy GAD diagnostic status, and each correlation was squared to represent the proportion

of variance in treatment-related change explained by pretherapy diagnosis. Two sets of analyses were performed, one using the *DSM-IV* GAD diagnosis as the predictor, the other using the dimensional GAD diagnosis as the predictor⁶. The resulting coefficients were tested individually for statistical significance, then compared with one another to determine whether the two diagnostic models accounted for differing proportions of variance in therapeutic change.

Given the large number of outcome measures included in the study, two steps were taken to summarize the results of these analyses in a concise and conservative manner. First, tests of statistical significance comparing each squared correlation to zero used a significance threshold adjusted by Simes' Bonferroni correction (1986) to control the familywise error rate. Simes' correction (based on the ordered p values of individual statistical tests) yields a probability of type I error equal to α for independent statistical tests and is more powerful than the traditional Bonferroni correction for correlated statistical tests; its actual significance level is much closer to α than the very conservative level used by the original Bonferroni method, thereby conferring a lower probability of type II error without exceeding α .

Second, the 14 outcome measures were grouped into 4 dependent variable (DV) blocks to

⁶ It could be argued that the PSWQ total score could serve as an equally appropriate continuous measure of GAD for these analyses. However, although worry is conceptually the primary feature of GAD (and may therefore represent a more theoretically-based measure of the construct than the *DSM*-based dimensional diagnosis), two reasons argued against the use of the PSWQ score as a dimensional GAD score. First, research reviewed in the Introduction to this paper strongly suggests that GAD is more than just worry. Indeed, studies have found that, within college samples, nondiagnosed individuals far outnumber GAD-diagnosed individuals at even the highest score levels of the PSWQ and present a somewhat different symptom picture than their diagnosed counterparts (e.g., A. M. Ruscio, 2002). Second, because participants were selected for the present study on the basis of their PSWQ scores (with all participants meeting or exceeding a high threshold of 56 on this measure), the PSWQ score distribution evidenced considerable restriction of range. Not surprisingly, when the PSWQ was submitted to the present correlational analyses in place of the dimensional GAD diagnosis, it yielded r^2 values that followed the same overall pattern of the dimensional GAD diagnosis but were systematically smaller in size, consistent with the expected effects of restricted range. For these reasons, the PSWQ was not used as a dimensional measure of GAD in subsequent analyses.

distill the large number of coefficients into a smaller number for easier interpretation and to limit the number of statistical tests comparing predictive validity across the diagnostic models. The four DV blocks included: (1) an Anxiety block, including the five measures of Assessor Severity, Hamilton Anxiety, PSWQ, STAI-T, and CAAS-T; (2) a Depression block, including the single BDI measure; (3) a Global Functioning block, including the Sheehan scale and the five Q-LES-Q subscales (i.e., Physical Health, Subjective Well-being, School/Course Work, Leisure Activities, Social Relationships), and (4) a Daily Diary block, including the two Bedtime Rating Scale worry measures (percent of the day spent worrying; combined intensity, distress, and interference associated with worry). Thus, although results will be presented for the individual outcome measures as well as the four DV blocks for maximal comprehensiveness, statistical comparisons will be performed and interpreted at the level of the DV blocks to provide a succinct and conservative—yet also meaningful—summary of results.

Examining and comparing change scores. The squared correlations between the DV change scores and the two GAD diagnostic models appear in the two leftmost columns of Table 4. Inspection of the size of these effect size coefficients and their statistical departure from zero revealed that, on the whole, participants' GAD status prior to treatment—regardless of the classification model used—predicted the degree of positive change that they experienced in treatment. However, while pretherapy diagnostic status strongly predicted the amount of improvement evidenced in anxiety and depression symptoms, it was a less powerful predictor of changes in global functioning (with the notable exceptions of improvement in general disability and relationship quality) and a relatively poor predictor of changes in daily experiences of worry.

The predictive validity of the categorical and dimensional diagnostic models was compared through *t* tests examining the significance of the difference between dependent

correlations (Cohen & Cohen, 1983) performed on the four DV blocks. The r values compared in these analyses were obtained by computing an average r^2 for the measures in each block, then taking the square root of the resulting mean coefficient. Although visual inspection of the r^2 values seemed to suggest potential differences between the two diagnostic models, formal tests of these differences were not statistically significant, all t s < 1.20, all p s > .25. Thus, contrary to predictions, the dimensional GAD diagnosis was not a more powerful predictor of treatment response in any of the assessed domains than the categorical GAD diagnosis.

Follow-up reliability analyses. Additional analyses were undertaken to further explore this surprising finding and to try to identify the mechanisms underlying it. One seemingly plausible explanation was that the reliability of the change scores was problematically low, leading to a high level of measurement error around the correlations that masked any true differences between them. Psychometricians have long noted that the reliability of a change score is often substantially lower than the reliability of the variables that are used to compute it, and that low reliability sharply attenuates a variable's correlation with other variables (see Cohen & Cohen, 1983). If low reliability was a problem in the present study, it could have deflated the association between the outcome measures and the diagnostic models and hence reduced the ability of correlational analyses to powerfully differentiate these models.

There are at least two ways in which change-score reliability can be estimated. One approach is to examine the test-retest reliability of the outcome measures as an approximation of the likely reliability of change scores derived from these measures. Although the present study introduced an intervention between the first (pretherapy) and second (posttherapy) assessments and could not therefore provide a pure estimate of measurement stability, test-retest reliabilities obtained by *other* studies for the outcome measures could be used for this purpose. To this end,

test-retest reliabilities were culled from the research literature and averaged across DV blocks. The average test-retest reliabilities were .84 for the Anxiety block (based on 4 of the 5 variables)⁷, .72 for the Depression block, and .76 for the Global Functioning block (based on 5 of the 6 variables); test-retest coefficients were not available for the Daily Diary block, whose variables were created for use in the present study. Though these reliability estimates were lower than the reliability of scores at pre- and posttherapy (see Table 2), they were not so low as to suggest that the previous null results were due solely to low reliability. However, as these test-retest coefficients were drawn from studies of widely varying quality with different populations and different intervals between assessments, this conclusion should be regarded as tentative.

A second, more direct approach to assessing change-score reliability is to estimate the reliability of these scores in the present study using a formula provided by Cohen and Cohen (1983, p. 414, equation 10.6.2) expressly for this purpose. The average change-score reliabilities were .82 for the Anxiety block (based on 4 of the 5 scales)⁸, .68 for the Depression block, .68 for the Global Functioning block, and .82 for the Daily Diary block. Once again, though these reliabilities were lower than those computed for the pre- and posttherapy scores, they did not appear problematically low. Thus, while the lower reliability of change scores may have contributed to their inability to differentiate the categorical and dimensional classification models, neither set of reliability estimates presented above supported poor reliability as the sole

⁷ Test-retest reliability coefficients could not be obtained for the CAAS-T (in the Anxiety block) or the Sheehan scale (in the Global Functioning block), so these measures did not contribute to the mean test-retest reliability calculated for their respective blocks.

⁸ Because the Assessor Severity scale consists of a single item, internal consistency could not be calculated for this scale (see Table 2), and hence change-score reliability (which requires an estimate of internal consistency or another reliability estimate computed at a single point in time) could not be calculated. Therefore, Assessor Severity did not contribute to the mean change-score reliability estimate for the Anxiety block.

or even primary explanation for the present findings.

Examining and comparing posttherapy scores. Although the lower reliability of change scores in the present study did not seem to significantly undermine their analysis, this and other unique (and potentially problematic) features of change scores raised questions about the likely generalizability of their results to non-change-score data.⁹ Unfortunately, as was noted earlier, the other analytic approach that is typically employed to yield base-free measures of change (i.e., predicting posttherapy scores using pretherapy scores as covariates) could not feasibly be used to evaluate the predictive validity of pretherapy diagnostic status, which was so highly correlated with pretherapy scores on the outcome measures (Range = .32 to .82; mean $r = .53$) that it could not hope to explain much of the variance above and beyond the proportion captured by these scores.

However, an alternative to both of these approaches was to use diagnostic status to predict not the degree to which participants changed during treatment (which inherently requires the adjustment of posttherapy scores by pretherapy scores) but participants' endstate functioning following treatment. Although endstate analysis does not take into consideration participants' symptoms at the start of therapy, it does provide diagnosticians with a clinically useful answer to

⁹ Cronbach and Furby (1970) underscored the problematic features of simple change scores and recommended against their use in behavioral research. Instead, for researchers wishing to correlate true gains with other variables of interest, they provided a formula that calculates this correlation directly using the reliability, variance, and covariance of Time 1 (pretherapy) and Time 2 (posttherapy) observations with one another and with the external variable (diagnosis), thereby circumventing the estimation of difference scores for individual cases. Correlations derived from this formula in the present sample were somewhat larger than those based on change scores; however, their relative size across the four DV blocks and across the categorical and dimensional GAD diagnoses revealed the same overall pattern that was obtained with change scores. Once again, none of the correlations differed significantly across the two diagnostic models. This suggests that the failure to detect a predictive validity difference between models may not be attributed solely to properties of simple change scores, but may instead reflect a more general challenge associated with the differential prediction of change.

an important prognostic question: Given this worrier's current diagnostic status, how well is she likely to be functioning after a course of worry-focused treatment?

To address this question, the correlational analyses previously performed using change scores were repeated in an identical fashion, this time using the unadjusted posttherapy score on each outcome measure as the dependent variable in analyses. The squared correlations between posttherapy scores and the categorical and dimensional GAD models appear in the rightmost columns of Table 4. Inspection of the size and statistical significance of these coefficients revealed a considerably different pattern than that previously obtained for the change score variables, with the dimensional pretherapy GAD diagnosis more often predicting a significant proportion of variance in posttherapy scores than the categorical diagnosis. Moreover, formal statistical comparisons of the predictive validity of the two classification models revealed differences on three of the four DV blocks that approached or exceeded the threshold for statistical significance. Tests of the difference between dependent correlations were significant for the Anxiety ($t(69) = -1.99, p = .05$) and Daily Diary ($t(69) = -2.38, p = .02$) blocks and marginally significant for the Depression ($t(69) = -1.90, p = .06$) block; the two models did not differ in their prediction of Global Functioning, $t(69) = -0.40, p = .69$. Thus, in contrast to the change score results and in keeping with prior expectations, the dimensional GAD diagnosis was a consistently more powerful predictor of worriers' endstate functioning than the *DSM-IV* GAD diagnosis.

Determining the Main Effect of Treatment

The second question investigated in the present study concerned the efficacy of the two provided treatments as well as their relative impact on the symptoms and functioning of highly worried individuals. More specifically, this question asked whether the augmentation of two

basic worry-focused treatment elements (SC and PS) with two additional anxiety-focused elements (RT and CR) would yield better therapeutic outcomes than those associated with the basic elements alone. This question was addressed by evaluating the within-group and between-group effects of the two treatments with consideration for both statistically significant and clinically significant therapeutic change.

Within-group effects. The first set of analyses was performed within treatment conditions to determine whether each treatment led to *statistically significant* improvements in participants' anxiety, depression, global functioning, and daily experiences of worry. It was hypothesized that both treatments would produce significant improvement in these domains. This hypothesis was tested via repeated-measures *t* tests comparing participants' pretherapy and posttherapy scores on all 14 interview and self-report outcome measures as well as on the dimensional GAD diagnosis. Analyses revealed statistically significant improvement on each of the 15 measures in the full sample (all *ts* > 4.20, all *ps* < .001) and in each treatment condition (all *ts* > 2.80, all *ps* < .01). All differences remained statistically significant after Simes' Bonferroni correction was applied, providing a relatively conservative test of treatment efficacy that supported the hypothesis.

A second series of analyses performed within treatment conditions examined the degree of *clinically significant* change produced by these treatments. It was hypothesized that while some participants would evidence clinically significant improvement as a result of treatment, the within-group effect sizes of both interventions would be lower than those produced by individual behavioral therapy for GAD. Effect sizes (Cohen's *d*) were calculated for the three anxiety measures most often included in GAD treatment studies—Assessor Severity, Hamilton Anxiety, and STAI-T—by subtracting the posttherapy mean of each measure by its pretherapy mean and

dividing their difference by the pretherapy standard deviation. These effect sizes were computed not only to illuminate the efficacy of the two treatments, but to provide a common metric by which they may be compared with the individually-tailored, multisession therapies that presently constitute the best available treatments for GAD.

The average of these three effect sizes for each treatment, as well as the average within-group effect size across both treatments, appear in the first three columns of Table 5. The lower portion of the table presents the average effect size—computed in the same manner using the same three measures—for cognitive-behavioral therapy (CBT), behavior or cognitive therapy (BT, CT), placebo or nonbehavioral therapy, and wait-list/no-treatment conditions in 11 prior GAD treatment studies summarized in a recent meta-analysis (Borkovec & Ruscio, 2001). Several conclusions may be drawn from these data. First, the effect sizes obtained for the basic and augmented treatments in the full sample (1.35 and 1.42, respectively) were substantially smaller than those obtained for CBT and somewhat smaller than those obtained for BT and CT, consistent with predictions that the brief, group-administered, minimal-contact interventions provided in the present study would produce less improvement than the individually-administered, lengthier interventions provided in other GAD therapy studies. Nevertheless, results indicate that the basic and augmented treatments were highly effective. Both treatments yielded effect sizes that were very large according to Cohen's criteria, which designate a d of 0.80 as a large effect (Cohen, 1992). Moreover, the effect sizes of both treatments were considerably larger than those of wait-list or no treatment conditions included in other studies, suggesting that the two treatments were likely more effective than no treatment at all. In sum, the present findings were indicative of substantial levels of clinically significant change that were at least as high as initially hypothesized.

It is important to note, however, that unlike other GAD therapy studies, the present study included high worriers who were not diagnosed with GAD, individuals whose milder levels of anxiety might be expected to be more readily ameliorated by a brief, self-guided treatment than the more severely impaired GAD-diagnosed worriers. Thus, the fairest and most meaningful comparison between the effect sizes garnered in the present study and those obtained in prior studies may be one restricted only to GAD-diagnosed cases. To this end, the within-group effect sizes were recomputed (using the same formula and measures) solely for the 39 participants in the present study who were diagnosed with GAD prior to treatment. The resultant effect sizes (2.32 and 2.18 for the basic and augmented interventions, respectively) were sharply higher than those for the total sample and somewhat higher than those for BT or CT alone in past treatment studies, more closely approaching the average effect size for CBT (see Table 5).

This substantial and unexpected increase in effect size that exceeded the corresponding effect sizes of individually-administered, component behavioral therapies raised questions about the severity of the GAD cases in the present study. Might the GAD-diagnosed individuals in this presumably high-functioning student sample simply be less severely impaired than the GAD cases included in other treatment studies, enabling them to more rapidly and readily benefit from anxiety treatment? To test this possibility, the subset of GAD-diagnosed participants in the present study was further restricted to those cases whose Hamilton Anxiety scores fell within one standard deviation of the mean score reported for the 11 GAD treatment studies (Borkovec & Ruscio, 2001). Averaging the Hamilton Anxiety scores across these studies yielded a mean of 21.07 and a standard deviation of 4.83. Thus, the within-group effect sizes for the present study were recomputed on the subset of cases who both (a) met *DSM-IV* criteria for GAD and (b) had a Hamilton Anxiety score greater than or equal to 16.24 at pretherapy. All but 3 of the GAD-

diagnosed participants surpassed this Hamilton severity threshold, leaving a subsample of 36 for the analysis. Given the almost complete overlap between this subsample and the full set of GAD worriers, the resulting effect sizes were expected to be virtually identical to those obtained in the previous analysis. Contrary to these expectations, the effect sizes once again rose substantially (to 2.66 and 2.36 for the basic and augmented treatments, respectively), resulting in an overall treatment effect size that was essentially equivalent to the average effect size obtained for individually-administered CBT, the gold standard in GAD treatment (Borkovec & Ruscio, 2001; Roemer et al., 2002).

The very high within-group effect sizes obtained for GAD cases relative to the total sample suggested that the effect sizes for nondiagnosed high worriers may be considerably smaller than those for diagnosed worriers. To examine this directly, the within-group effect sizes were computed one final time in the subsample of 33 participants who did not meet *DSM-IV* criteria for GAD at pretherapy. As was suspected, effect sizes were considerably smaller for this subsample (1.07 and 1.42 for the basic and augmented treatments, respectively) relative to the GAD subsample (see Table 5). Inspection of pretherapy and posttherapy means on the three measures from which effect sizes were calculated revealed that while GAD worriers scored considerably higher than non-GAD worriers on all three measures prior to treatment, both groups scored at similarly low levels at the end of treatment. Thus, the apparent difference in clinically significant change across diagnostic groups may reflect a floor effect for the non-GAD worriers (who had less room to change from pretherapy to posttherapy), a regression-toward-the-mean effect for the GAD worriers (who were farther from the mean at pretherapy), greater efficacy of the basic and augmented treatments for GAD than for non-GAD worriers, or some combination of these effects.

A somewhat different way to evaluate and contextualize the efficacy of the present interventions was to compare the endstate functioning achieved by participants in the present study with that of clients receiving individually-administered, multisession behavioral therapy for GAD. To this end, posttherapy scores were drawn from the three most widely-used anxiety (Assessor Severity, Hamilton Anxiety, STAI-T) and depression (BDI) measures in GAD treatment studies. Because the abovementioned results suggested that GAD and non-GAD worriers respond differently to treatment, and because prior therapy outcome studies were conducted only with GAD worriers, cross-study comparability was maximized by restricting the present sample to the 39 participants who were diagnosed with GAD before treatment. To conserve statistical power, endstate functioning was averaged across the basic and augmented conditions, and the outcomes engendered by these brief, largely self-administered interventions were compared with the outcomes produced by multisession, therapist-administered behavioral therapies in 11 previous studies (Borkovec & Ruscio, 2001).

Relative to GAD clients receiving BT or CT in prior studies ($M = 2.75$, $SD = 1.58$), GAD participants receiving the basic or augmented intervention obtained significantly lower Assessor Severity ratings at posttherapy ($M = 2.10$, $SD = 1.60$), $t(145) = 2.20$, $p = .03$. GAD worriers who received one of the present interventions ($M = 42.85$, $SD = 9.55$) also reported lower posttherapy anxiety on the STAI-T than GAD worriers receiving BT or CT ($M = 47.36$, $SD = 9.52$), $t(207) = 2.67$, $p < .01$. The two groups attained comparable Hamilton Anxiety and BDI scores at the end of therapy, both $ts < 1.55$, both $ps > .12$. In a second set of analyses, GAD clients receiving CBT in prior studies ($M = 9.07$, $SD = 5.48$) obtained significantly lower posttherapy Hamilton Anxiety scores than GAD participants receiving one of the present interventions ($M = 13.50$, $SD = 7.08$), $t(214) = -4.32$, $p < .001$. However, the two groups did not differ on any of the other three

measures at posttherapy, all $t_s < 1.30$, all $p_s > .20$. Thus, the basic and augmented interventions yielded a level of endstate functioning for GAD worriers that was intermediate to CBT and its components, yielding superior outcomes to BT/CT on 2 of the 4 measures and inferior outcomes to CBT on 1 of the 4 measures.

A final analysis examined clinically significant change in a different way. Following the premise that an effective treatment for GAD should reduce symptoms below the diagnostic threshold, this approach compared the proportion of participants who met GAD criteria at the pretherapy and posttherapy assessments. Prior to treatment, 39 participants (19 in the basic condition, 20 in the augmented condition) were diagnosed with GAD. After treatment, only 4 participants (2 in the basic condition, 2 in the augmented condition) were diagnosed with GAD. This dramatic decline in the GAD diagnostic rate from pre- to posttherapy (down to 6% and 5%, respectively, in the two treatment conditions) was comparable to the 9% rate of GAD remaining in each of three conditions (CBT, BT, and CT) at posttherapy in a recent treatment investigation (Borkovec et al., 2002). These results, along with the other within-group effects presented earlier, underscore the substantial clinically (as well as statistically) significant improvement produced by the two treatments evaluated in the present study.

Between-group effects. A third series of analyses was performed to compare the relative efficacy of the basic and augmented treatments using the criterion of *statistical significance*. It was hypothesized that the augmented intervention, which contained additional elements that were thought to represent active ingredients of change, would produce greater improvement in outcome measures than the pared-down basic intervention. Statistically significant differences in the change produced by the two treatments were assessed by multivariate (MANCOVA) and univariate (ANCOVA) analyses of covariance performed separately on the four DV blocks. In

each analysis, pretherapy scores on all of the measures included in the block were used as covariates to statistically control for variation among participants that existed prior to treatment. MANCOVAs performed on the Anxiety, Global Functioning, and Daily Diary blocks yielded nonsignificant effects for treatment condition over and above the full covariate set, all Pillai's Trace < 0.07, all F s < 1.50, all p s > .20. An ANCOVA performed on the Depression block also yielded nonsignificant results for treatment condition, $F(1, 69) = 0.08, p = .78$.

A fourth series of treatment-related analyses was conducted to examine differences in the *clinically significant* change produced by the two interventions. Prior to the study, it was hypothesized that the augmented treatment might produce higher rates of clinically significant improvement in symptoms and functioning than the basic treatment. This hypothesis was tested in two ways. First, between-group effect sizes (d) were computed using the same three anxiety measures as those used for the within-group effect size calculations; this time, the computational formula calculated the difference between posttherapy means for the two treatment conditions, divided by their pooled posttherapy standard deviation. Once again, effect sizes were computed for the total sample, for all GAD-diagnosed cases, for GAD-diagnosed cases with Hamilton Anxiety scores exceeding the previously-established threshold of 16.24, and for all non-GAD cases. The resultant between-group effect sizes appear in the final column of Table 5. The effect size comparing CBT to its component treatments of BT and CT in prior studies (similar to the comparison between the cognitive-behavioral augmented treatment with its behavioral basic component) appears in the lower portion of the table.

As can be seen in the table, the augmented intervention yielded slightly greater improvement than the basic intervention in the total sample ($d = 0.19$), corresponding to Cohen's (1992) threshold for a small effect ($d = 0.20$) and coming close to the effect size obtained for

CBT versus its components in prior GAD treatment studies ($d = 0.26$). Interestingly, this effect size drops down to zero among GAD-diagnosed cases, but swells to 0.47 (a medium effect) among nondiagnosed cases. This finding hinted at a possible interaction between GAD status and treatment condition in predicting response to treatment, with non-GAD high worriers benefiting more from augmented than basic treatment and GAD high worriers benefiting about equally from both treatments.

A second test of the hypothesis of differences in clinically significant change across treatments was performed by comparing participants in the two conditions on endstate functioning. Each of the 14 outcome measures was dichotomized into low versus high endstate functioning at posttherapy through the use of a clinically meaningful cut score. Several measures were dichotomized at the score falling within one standard deviation of the mean of nonanxious normative samples; these included the Hamilton Anxiety scale (score ≤ 10), the PSWQ (score ≤ 52), the STAI-T (score ≤ 47), and the BDI (score ≤ 13). As appropriate norms were not available for the remaining measures, a cut score was selected for each measure based on a face-valid level of meaningful change along its response scale. These included a score ≤ 2 (“Mild”) on the Assessor Severity scale, an average score ≤ 6 (middle of “Mild” scale) on the Sheehan scale, an average score ≤ 2 (“Mild”) on the CAAS-T, an average score ≥ 4 (“Often or most of the time”) on each of the Q-LES-Q subscales, a score $\leq 20\%$ of the day spent worrying (most closely approximating a score of 20 out of 100 on other daily diary measures; cf. Borkovec et al., 2002) on the Bedtime Rating Scale, and an average score ≤ 2 (“Mild”) of the intensity, distress, and interference of worry on the Bedtime Rating Scale.

Table 6 displays the proportion of participants in each treatment condition who reached high endstate functioning on each of the outcome measures and DV blocks. For 13 of the 14

outcome variables, a higher percentage of cases in the augmented condition than in the basic condition achieved high endstate functioning. However, none of these differences yielded statistically significant results in chi-square tests. Thus, while the notable consistency with which the augmented condition exceeded the basic condition on this measure of clinically significant change supported a differential efficacy favoring the augmented treatment, the absence of statistically significant differences between the groups suggested that this difference was relatively small.

The foregoing dichotomized outcome measures were used to construct two continuous variables reflecting the number of measures on which high endstate (HES) functioning was achieved by participants at the posttherapy assessment. The first variable—HES-Anxiety—reflected the number of anxiety-related outcome measures (out of 7, including the 5 Anxiety block measures and the 2 Daily Diary block measures) on which high endstate scores were obtained. The second variable—HES-total—reflected the total number of measures (out of all 14 outcome measures) on which high endstate scores were obtained. A *t* test comparing HES-Anxiety across the basic ($M = 3.69$, $SD = 2.11$) and augmented ($M = 4.59$, $SD = 2.19$) treatments revealed a marginally significant difference between conditions, $t(70) = -1.79$, $p = .08$. Similarly, a *t* test comparing HES-total across the basic ($M = 7.11$, $SD = 3.69$) and augmented ($M = 8.65$, $SD = 4.07$) conditions also yielded a marginally significant effect, $t(70) = -1.67$, $p = .09$. Follow-up analyses revealed that a score of 5 or higher on HES-Anxiety best differentiated the two treatments, with participants in the augmented condition (21, or 57%) marginally more likely than participants in the basic condition (12, or 34%) to reach this high threshold of endstate functioning, $\chi^2(1, N = 72) = 3.66$, $p = .06$. Analyses further revealed a score of 10 or higher on HES-total to best differentiate these interventions, with participants in the augmented condition

(19, or 51%) significantly more likely than participants in the basic condition (7, or 20%) to achieve this level of functioning by the end of treatment, $\chi^2(1, N = 72) = 7.66, p < .01$.

Finally, a series of correlational analyses was performed to determine whether therapeutic gains—measured either by change scores on the outcome measures or by the two continuous measures of endstate functioning calculated above—could be predicted by (a) expectancy or credibility of treatment, (b) understanding of worry-reduction skills (assessed by the Checking Your Knowledge questionnaire, or (c) consistency of skills application in response to naturally occurring daily worries (assessed by the Bedtime Rating Scale). Although there were a few significant correlations among these numerous analyses, the correlations were generally small (Range = .00 to .32, mean $r = .14$) and no clear pattern of results emerged across the variable set, suggesting that none of these appraisal or compliance factors was a powerful correlate of treatment outcomes.

Determining the Interaction of Classification and Treatment

A final question of the present study concerned whether GAD diagnostic status (measured either categorically or dimensionally) moderated the effectiveness of treatment. In other words, does GAD status under either model interact with the number of potentially active treatment elements to predict treatment response? Three competing hypotheses were simultaneously tested by these analyses: (1) participants with diagnosed (severe) GAD before treatment will evidence *worse* outcomes in both conditions than nondiagnosed (less severe) cases, due to their more pronounced and protracted symptoms; (2) participants with a GAD diagnosis (or more severe GAD) before treatment will evidence *better* outcomes in both conditions than nondiagnosed (less severe) cases, due to their greater potential room for improvement or to regression toward the mean; or (3) differences in outcome between GAD

(more severe) and non-GAD (less severe) cases will be greater within the basic than the augmented treatment condition, due to broader skills exposure in the latter condition that may equally benefit differentially anxious individuals.

Analysis of change scores. These hypotheses were tested using a similar analytic approach to that used earlier to compare the predictive validity of the two GAD diagnostic models. Separate series of analyses were undertaken for the two (categorical and dimensional) models, with change scores on each of the 14 outcome measures serving as dependent variables in turn. Hierarchical multiple regression analyses were performed to test for moderation under each model, with pretherapy GAD diagnostic status entered on the first step, treatment condition entered on the second step, and the interaction of diagnosis and treatment entered on the final step. Hence, the first step of each analysis (and its corresponding r^2) was identical to the results presented for the predictive validity analysis (see Table 4), with subsequent steps examining the main and moderating effects of treatment condition over and above this main effect of diagnosis. The proportion of variance explained by the Diagnosis-by-Treatment interaction term in each analysis was used to determine whether individuals of different diagnostic status responded differently to treatments varying in the number of potentially active treatment elements, as well as whether the moderating effects of the GAD diagnosis were greater under one classification model than the other.

Analyses under the categorical (*DSM-IV*) GAD model supported the second of the three abovementioned hypotheses: GAD-diagnosed worriers evidenced greater improvement during treatment than nondiagnosed worriers, regardless of their treatment condition. Averaged β s for the 4 DV blocks (in absolute values) ranged from .20 (for the Daily Diary block) to .47 (for the Depression block). Neither the main effect of treatment condition, nor the interaction of

diagnosis with treatment condition, were statistically significant for any of the outcome measures, all $\Delta R^2 < .04$, all $ps > .10$. A very similar pattern of results was yielded by analyses under the dimensional GAD model: Participants whose GAD symptoms were more severe prior to therapy evidenced more improvement during treatment than less severe cases, regardless of treatment condition. Averaged β s for the 4 DV blocks in these analyses ranged from .23 (for Daily Diary) to .48 (for Depression). Once again, neither the main effect of treatment condition nor the interaction of diagnosis with treatment was statistically significant for any outcome measure, all $\Delta R^2 < .04$, all $ps > .15$. Results for both sets of analyses were consistent with those of previous analyses that revealed larger within-group treatment effect sizes for GAD- than non-GAD participants.

Analysis of posttherapy scores. Earlier tests comparing the predictive validity of the categorical and dimensional GAD models found a different pattern of results when posttherapy scores (reflecting endstate functioning) were used in place of change scores (reflecting change due to treatment) as the dependent variables. As the concerns raised earlier about change scores applied equally to the present analyses, and as the question of endstate functioning was viewed as complementary to—but not redundant with—the question of treatment response, these analyses were performed a second time using unadjusted posttherapy scores in the dependent variable role. All other aspects of the analyses remained the same.

Results under both of the classification models revealed a pattern of results that paralleled those of the foregoing analyses. Once again, GAD diagnosis was the sole significant predictor of the dependent variables; neither the main effect of treatment nor the interaction of diagnosis with treatment were statistically significant under the categorical (all $\Delta R^2 < .06$, all $ps > .08$) or the dimensional ($\Delta R^2 < .04$, all $ps > .16$) models. The β s for the dimensional model (Range = .27 to

.40) appeared higher than those for the categorical model (Range = .11 to .23), consistent with earlier findings that the dimensional GAD diagnosis was a more powerful predictor of endstate functioning than the *DSM-IV* diagnosis (see Table 4). However, across both models, β s were consistently positive, indicating that participants with more severe GAD symptoms (or a GAD diagnosis) prior to therapy evidenced worse posttherapy scores than participants with less severe GAD symptoms (or no diagnosis). Taken together with the change score results, these findings indicate that although GAD participants displayed greater improvement in treatment than non-GAD participants, they were still more symptomatic and more impaired than non-GAD participants at the end of treatment. This again underscores the considerable severity difference between GAD worriers and non-GAD worriers at the start of therapy, a difference that was reduced—but not completely eliminated—by the greater gains of GAD worriers in both treatment conditions in the present study.

Table 1

Means (SD) of Outcome Measures at Pretherapy and Posttherapy for GAD Worriers, Non-GAD Worriers, and the Total Sample

Measure	Pretherapy			Posttherapy		
	GAD ^a	Non-GAD ^b	Total ^c	GAD ^d	Non-GAD ^e	Total ^c
GAD Dimension	.68 (.10)	.50 (.12)	.60 (.14)	.72 (.11)	.29 (.14)	.31 (.17)
Assessor Severity	5.56 (1.05)	3.33 (1.05)	4.54 (1.53)	5.75 (1.26)	1.74 (1.13)	1.96 (1.46)
Hamilton Anxiety	24.17 (6.47)	17.27 (5.15)	21.01 (6.80)	25.75 (4.19)	11.81 (5.71)	12.58 (6.47)
PSWQ	67.10 (7.84)	61.81 (7.52)	64.72 (8.09)	64.75 (5.85)	48.58 (10.53)	49.49 (10.96)
STAI-T	57.33 (8.33)	46.48 (7.10)	52.36 (9.46)	56.00 (6.27)	39.72 (8.86)	40.62 (9.48)
CAAS-T	102.74 (42.33)	60.81 (29.63)	83.57 (42.40)	135.75 (25.67)	55.62 (33.75)	60.26 (38.17)
BDI	19.38 (7.61)	9.93 (5.96)	15.15 (8.34)	17.75 (4.50)	6.58 (5.79)	7.21 (6.26)
Sheehan	17.42 (5.06)	11.33 (4.07)	14.59 (5.52)	15.50 (5.80)	6.10 (5.30)	6.62 (5.71)
Physical	47.37 (15.33)	57.91 (15.88)	52.27 (16.36)	43.25 (5.74)	64.46 (15.79)	63.28 (16.15)
Well-Being	52.92 (12.51)	67.52 (12.18)	59.70 (14.29)	50.25 (12.09)	73.40 (14.46)	72.11 (15.23)
School	46.51 (15.14)	57.85 (16.48)	51.71 (16.66)	41.50 (17.41)	62.76 (17.96)	61.58 (18.47)
Leisure	62.02 (19.17)	73.45 (11.40)	67.26 (16.98)	60.75 (15.97)	78.16 (15.57)	77.19 (15.99)
Relationships	65.82 (18.17)	81.42 (11.42)	72.97 (17.23)	67.00 (16.08)	80.24 (14.32)	79.49 (14.62)
BRS % worry	45.02 (19.92)	31.88 (14.66)	38.85 (18.72)	46.82 (17.55)	24.54 (14.16)	25.59 (14.94)
BRS severity	3.83 (1.39)	2.68 (1.00)	3.29 (1.34)	4.33 (1.71)	2.13 (1.18)	2.23 (1.28)

Note. At pretherapy, GAD and non-GAD worriers differed on all outcome measures at $p < .01$; at posttherapy, GAD and non-GAD worriers differed on the Relationships variable at $p = .07$ and on all other outcome measures at $p < .05$. GAD = generalized anxiety disorder; GAD Dimension = dimensional (severity) GAD score; PSWQ = Penn State Worry Questionnaire; STAI-T = State-Trait Anxiety Inventory–Trait form; CAAS-T = Comprehensive Assessment of Anxiety States–Trait form; BDI = Beck Depression Inventory; Sheehan = Sheehan Disability Scale; Physical, Well-Being, School, Leisure, Relationships = Quality of Life Enjoyment and Satisfaction Questionnaire subscales, scaled as percentile scores; BRS % worry = Bedtime Rating Scale—percent of the day engaged in worry; BRS severity = Bedtime Rating Scale—intensity, distress, and interference of worry.

^a $n = 39$. ^b $n = 33$. ^c $N = 72$. ^d $n = 4$. ^e $n = 68$.

Table 2

Internal Consistency (Cronbach's Alphas) for Outcome Measures at Pretherapy and Posttherapy

Measure/DV block	Pretherapy	Posttherapy
<i>DSM-IV</i> GAD diagnosis	.62	.73
GAD Dimension	.86	.91
Anxiety block	.89	.92
Assessor Severity ^a	---	---
Hamilton Anxiety	.89	.91
PSWQ	.83	.90
STAI-T	.89	.90
CAAS-T	.95	.95
Depression block (BDI)	.86	.86
Global Functioning block	.84	.87
Sheehan	.79	.85
Physical	.88	.88
Well-Being	.86	.91
School	.86	.90
Leisure	.80	.81
Relationships	.88	.88
Daily Diary DV block	.92	.90
BRS % worry	.88	.86
BRS severity	.95	.95

Note. Alphas for the four DV blocks were computed by averaging the alphas of the measures in each block. GAD = generalized anxiety disorder; GAD Dimension = dimensional (severity) GAD score; DV = dependent variable; PSWQ = Penn State Worry Questionnaire; STAI-T = State-Trait Anxiety Inventory–Trait form; CAAS-T = Comprehensive Assessment of Anxiety States–Trait form; BDI = Beck Depression Inventory; Sheehan = Sheehan Disability Scale; Physical, Well-Being, School, Leisure, Relationships = Quality of Life Enjoyment and Satisfaction Questionnaire subscales; BRS % worry = Bedtime Rating Scale—percent of the day engaged in worry; BRS severity = Bedtime Rating Scale—intensity, distress, and interference of worry.

^aAlpha could not be computed because the measure consists of a single item.

Table 3

Means (SD) of Outcome Measures at Pretherapy and Posttherapy for the Two Treatment Conditions

Measure	Pretherapy		Posttherapy	
	Basic ^a	Augmented ^b	Basic ^a	Augmented ^b
GAD Dimension	.60 (.13)	.59 (.15)	.32 (.16)	.30 (.18)
Assessor Severity	4.74 (1.56)	4.35 (1.50)	2.09 (1.46)	1.84 (1.46)
Hamilton Anxiety	20.80 (6.62)	21.20 (7.05)	13.23 (6.37)	11.97 (6.59)
PSWQ	64.82 (8.43)	64.62 (7.88)	50.51 (11.18)	48.50 (10.82)
STAI-T	52.97 (10.36)	51.78 (8.62)	41.60 (9.57)	39.70 (9.42)
CAAS-T	88.59 (45.88)	78.83 (38.88)	59.62 (34.14)	60.89 (42.22)
BDI	15.00 (8.60)	15.29 (8.21)	7.03 (5.34)	7.38 (7.08)
Sheehan	14.76 (5.56)	14.43 (5.56)	7.43 (5.96)	5.86 (5.44)
Physical	51.82 (14.57)	52.68 (18.04)	62.94 (14.14)	63.59 (18.03)
Well-Being	60.14 (13.74)	59.28 (15.00)	72.97 (13.23)	71.30 (17.04)
School	50.69 (17.39)	52.68 (16.11)	61.00 (18.46)	62.14 (18.71)
Leisure	65.66 (18.50)	68.78 (15.50)	75.37 (15.98)	78.92 (16.03)
Relationships	70.94 (16.86)	74.89 (17.58)	77.88 (13.79)	80.97 (15.39)
BRS % worry	41.61 (18.61)	35.92 (18.68)	28.14 (16.23)	23.19 (13.42)
BRS severity	3.51 (1.26)	3.08 (1.40)	2.32 (1.25)	2.15 (1.32)

Note. GAD = generalized anxiety disorder; GAD Dimension = dimensional (severity) GAD score;

PSWQ = Penn State Worry Questionnaire; STAI-T = State-Trait Anxiety Inventory–Trait form;

CAAS-T = Comprehensive Assessment of Anxiety States–Trait form; BDI = Beck Depression

Inventory; Sheehan = Sheehan Disability Scale; Physical, Well-Being, School, Leisure, Relationships

= Quality of Life Enjoyment and Satisfaction Questionnaire subscales, scaled as percentile scores;
BRS % worry = Bedtime Rating Scale—percent of the day engaged in worry; BRS severity =
Bedtime Rating Scale—intensity, distress, and interference of worry.

^a $n = 35$. ^b $n = 37$.

Table 4

Proportion of Variance (r^2) Explained in Change Scores and Posttherapy Scores by the Categorical (DSM-IV) and Dimensional (Severity) GAD Diagnoses

Measure/DV block	Change scores		Posttherapy scores	
	Categorical	Dimensional	Categorical	Dimensional
Anxiety block	.15 _a	.08 _a	.04 _a	.15 _c
Assessor Severity	.32**	.14*	.01	.19**
Hamilton Anxiety	.14*	.09*	.02	.18**
PSWQ	.12*	.06+	.02	.04
STAI-T	.10*	.08*	.07+	.13*
CAAS-T	.08*	.03	.08*	.23**
Depression block (BDI)	.22 _a **	.22 _a **	.05 _a +	.16 _b **
Global Functioning block	.05 _a	.08 _a	.06 _a	.08 _a
Sheehan	.12*	.17**	.03	.10*
Physical	.03	.09*	.04	.08*
Well-Being	.02	.03	.12*	.12*
School	.03	.04	.02	.03
Leisure	.01	.02	.06+	.05+
Relationships	.08*	.10*	.08*	.08*
Daily Diary block	.04 _a	.05 _a	.01 _a	.11 _c
BRS % worry	.04	.05	.01	.10*
BRS severity	.04	.05	.02	.11*

Note. Values represent the squared correlation between the diagnosis variable and the dependent variable (DV), with tests of statistical significance reflecting its difference from zero. Values for the four DV blocks were computed by averaging the r^2 for the measures in each block; values whose subscripts differ by one letter (e.g., *a* vs. *b*) differ at $p < .10$; values whose subscripts differ by two letters (e.g., *a* vs. *c*) differ at $p < .05$. Categorical = categorical GAD diagnosis; Dimensional = dimensional GAD diagnosis; PSWQ = Penn State Worry Questionnaire; STAI-T = State-Trait Anxiety Inventory–Trait form; CAAS-T = Comprehensive Assessment of Anxiety States–Trait form; BDI = Beck Depression Inventory; Sheehan = Sheehan Disability Scale; Physical, Well-Being, School, Leisure, Relationships = Quality of Life Enjoyment and Satisfaction Questionnaire subscales; BRS % worry = Bedtime Rating Scale—percent of the day engaged in worry; BRS severity = Bedtime Rating Scale—intensity, distress, and interference of worry.

+ $p < .10$. * $p < .05$. ** $p < .01$. All represent p values *after* Sime's Bonferroni correction.

Table 5

Within- and Between-Group Treatment Effect Sizes for the Full Sample, Diagnostic Subsamples, and Conditions from 11 Prior GAD Treatment Studies

Sample(s)	Within-Group			Between-Group
	Basic	Augmented	Overall	
	Present Study			
Total sample ^a	1.35	1.42	1.38	0.19
GAD-diagnosed cases ^b	2.32	2.18	2.25	0.01
GAD with Hamilton \geq 16.24 ^c	2.66	2.36	2.51	0.09
Non-GAD cases ^d	1.07	1.42	1.24	0.47
	Prior Studies			
CBT ^e			2.48	0.26 ⁱ
BT or CT ^f			1.72	
Placebo or non-BT therapy ^g			2.09	
Wait list or no treatment ^h			0.01	

Note. Effect sizes (d) are averaged over the Assessor Severity scale, the Hamilton Anxiety Rating Scale, and the State-Trait Anxiety Inventory–Trait form. GAD = generalized anxiety disorder; Hamilton = Hamilton Anxiety; CBT = cognitive-behavioral therapy; BT = behavior therapy; CT = cognitive therapy.

^a $N = 72$. ^b $n = 39$. ^c $n = 36$. A Hamilton Anxiety score of 16.24 falls one standard deviation below the mean score reported in the 11 prior GAD treatment studies. ^d $n = 33$. ^eBased on 13 subsamples (conditions). ^fBased on 10 subsamples (conditions). ^gBased on 8 subsamples (conditions). ^hBased on 4 subsamples (conditions). ⁱReflects the posttherapy effect size of CBT versus BT or CT alone.

Table 6

Number (%) of Cases Meeting Criteria for High Endstate Functioning on Each Outcome

Measure Across the Two Treatment Conditions

Measure/DV block	Basic ^a		Augmented ^b	
	<i>n</i>	%	<i>n</i>	%
Anxiety block	---	61	---	74
Assessor Severity	25	71	32	86
Hamilton Anxiety	13	37	21	57
PSWQ	23	66	29	78
STAI-T	26	74	31	84
CAAS-T	20	57	25	67
Depression block (BDI)	30	86	30	81
Global Functioning block	---	43	---	54
Sheehan	18	51	25	68
Physical	7	20	12	32
Well-Being	15	43	20	54
School	9	26	11	30
Leisure	20	57	24	65
Relationships	21	60	28	76
Daily Diary block	---	36	---	48
BRS % worry	11	35	14	42
BRS severity	11	37	18	53

Note. The percentage value for a DV block (with the exception of the Depression block, which is based on a single measure) represents the average percent across all measures in that block rather than an *n*-based estimate. PSWQ = Penn State Worry Questionnaire; STAI-T = State-Trait Anxiety Inventory–Trait form; CAAS-T = Comprehensive Assessment of Anxiety States–Trait form; BDI = Beck Depression Inventory; Sheehan = Sheehan Disability Scale; Physical, Well-Being, School, Leisure, Relationships = Quality of Life Enjoyment and Satisfaction Questionnaire subscales; BRS % worry = Bedtime Rating Scale—percent of the day engaged in worry; BRS severity = Bedtime Rating Scale—intensity, distress, and interference of worry.

^a*n* = 35. ^b*n* = 37.

CHAPTER 4: DISCUSSION

The present investigation addressed three central questions pertaining to the diagnosis and treatment of GAD. First, does the way in which GAD is diagnosed affect the ability of the diagnosis to predict worriers' response to treatment? Second, can a brief intervention grounded in stimulus control principles yield significant improvement in worry, and does supplementing this intervention with relaxation training and cognitive restructuring lead to better therapeutic outcomes than the basic intervention alone? Third, does worriers' GAD status interact with the treatment that they receive to predict their subsequent improvement in therapy? Analyses examining these questions yielded intriguing insights into the relationship between worry and GAD and the nature of their decline during brief worry-focused interventions. Results further illuminated the ability of the GAD diagnosis to predict which worriers will benefit from treatment, how much they will improve, and how well they will be functioning when treatment is over. At the same time, the study revealed a host of new questions requiring further elaboration and investigation. Given the scope of the study and the large number of analyses performed, the discussion of results will proceed along the three central questions addressed by the study. As the findings bearing on each question are reviewed and interpreted, emphasis will be placed on considering alternative explanations for the present findings and on highlighting what is known—and what has yet to be discovered—about the predictive value and successful modification of GAD.

The Question of Predictive Validity

The categorical classification model underlying the *DSM* has been argued by many psychologists to inappropriately impose qualitative boundaries onto disorders that are actually continuous in nature. The implication of these claims is that placing individuals into “disordered”

and “nondisordered” groups restricts the predictive validity (and hence the clinical utility) of psychiatric diagnoses by discarding meaningful information about symptom variation. The added implication is that a dimensional classification model, in which individuals are classified according to the severity of their symptoms rather than their putative group membership, should more closely represent the true pathological status of the individual and thus increase the predictive validity of diagnosis. Surprisingly, despite the enormous influence of diagnosis on the activities of our profession and the lives of our clients, claims asserting the advantages of dimensional over categorical diagnostic models have largely escaped scientific scrutiny. However, it is precisely because diagnosis holds such vast sway that efforts to refine it require careful evaluation to ensure that proposed changes—particularly fundamental changes to the conceptualization and representation of disorders—represent a significant step in the right direction.

For this reason, the present investigation sought to determine whether the classification of GAD as a category versus a dimension influences its power to predict important outcomes. Because the most important quality of a diagnosis is arguably its ability to predict treatment response (and hence its ability to inform the selection of an appropriate treatment), the present study used therapeutic improvement as the predicted outcome. Given initial evidence that GAD is continuous at the latent level, it was hypothesized that a dimensional GAD diagnosis reflecting the severity of worry and associated symptoms would account for more variance in therapeutic gains than the dichotomous *DSM-IV* GAD diagnosis. Contrary to expectations, the two classification models did not differ in their ability to predict worriers’ change in functioning from pretherapy to posttherapy. However, the models *did* differ in their ability to foretell participants’ functioning at the end of therapy, with pretherapy GAD severity more powerfully predicting

endstate functioning than dichotomous GAD diagnostic status.

These results raised two critical questions, each of which will be addressed in turn. First, why was the dimensional diagnostic model not superior to the categorical model in predicting therapeutic change? This finding seemed antithetical to the long-held psychometric maxim that dichotomizing a dimensional variable substantially reduces statistical power and thereby limits the variance that this variable can explain. Several explanations for this finding were considered. One possibility was that the dimensional GAD diagnosis *was* somewhat more powerful than its categorical counterpart, but that the costs of dichotomization were not large enough to produce a statistically significant advantage for the dimensional over the categorical diagnosis. Cohen (1983) observed that dichotomizing one continuous variable at the median throws away 36% of the systematic variance in its correlation with another continuous variable, with more variance being lost as the cutting score is moved farther from the median. Thus, a conservative estimate would expect the squared correlations between the *DSM-IV* diagnosis and the change scores to be roughly .64 the size of those between the dimensional diagnosis and the change scores, within the margin of sampling error. Comparison of the relevant r^2 values appearing in Table 4 did not reveal the hypothesized results: Whereas the change score coefficients for the Global Functioning and Daily Diary blocks were quite consistent with the anticipated pattern, those for the Anxiety and Depression blocks were not, with the Anxiety block actually showing the reverse pattern of what would be expected under this hypothesis. However, it is entirely possible that the expected effect sizes were obfuscated by sampling error, and this possibility can only be ruled out by replicating the present analyses in larger samples.

A second possibility was that this unique sample of highly worried student participants may have restricted the range of the dimensional GAD diagnosis, limiting scores on the low end

of the severity scale (because mild worriers were excluded from the sample), on the high end of the scale (because college students were expected to report less severe symptoms than treatment-seeking clients), or both. Range restriction, in turn, would be expected to curb the association between the dimensional diagnosis and the outcome variables of interest, reducing its predictive validity. Contrary to this hypothesis, examination of participants' dimensional diagnostic scores revealed a broad range of symptom severity prior to therapy, with scores extending from .22 to .89 on this 0 to 1 proportion scale. Thus, restriction of range is unlikely to account for the present change score results.

A third possibility was that the tentative dimensional conclusion of early taxometric research into the latent structure of GAD was incorrect, and that subsequent research using more severe samples and more valid measures will indicate that GAD is actually taxonic (categorical) in nature. If GAD is taxonic, one might expect results favoring the categorical diagnosis, but only to the extent that the *DSM-IV* algorithm on which this diagnosis is based closely corresponds to the true boundary between GAD and normal functioning at the latent level. Thus, the present failure to detect a significant benefit in favor of the categorical model could be attributed to discrepancies between the *DSM-IV* GAD criteria and the true properties of GAD; to measurement error caused by assessing latent GAD status using fallible, manifest GAD symptoms; or to normal sampling error. Such errors would presumably be corrected as the GAD criteria are evaluated and refined over time, eventually allowing the predictive validity of the categorical diagnosis to surpass that of the dimensional diagnosis. This hypothesis can be definitively ruled out only with additional study, and forthcoming taxometric analyses planned for a clinical GAD sample (A. M. Ruscio, Ruscio, & Borkovec, 2004) should shed further light on the present findings. Unlike earlier analyses performed in college samples, the new analyses

will utilize clinical interview data (ADIS, Hamilton Anxiety) with high anticipated validity in a sample containing a far higher rate of cases with severe GAD, enhancing the likelihood of detecting a putative GAD taxon if one actually exists. However, it should be noted that the categorical structure hypothesis was contradicted by results revealing the dimensional GAD diagnosis to be a more powerful predictor of endstate functioning than the categorical diagnosis.

A final possibility—perhaps the most plausible in light of subsequent endstate results—was that unique properties of change scores may have reduced correlations with the dimensional and categorical diagnoses alike, leading to a reduction or even elimination of any existing differences between these correlations. Notably, test-retest and change score reliability evidence presented earlier suggested that the poorer reliability of change scores may not be sufficient to explain their null results. However, simple change scores possess a number of limitations other than reduced reliability, not the least of which is that they almost always retain unwanted variance due to pretherapy values even after such values have been subtracted (Cohen & Cohen, 1983). This suggests that the present results may reflect an artifact of change scores that would disappear if alternative approaches were used to measure therapeutic change.

This final explanation provides a context in which to consider the second question raised by these results—namely, why did the two diagnostic models differ in their prediction of endstate functioning, but not in their prediction of therapeutic change? One obvious difference between these two sets of scores is that while endstate scores solely represent participants' functioning at posttherapy, change scores are bounded by participants' functioning at pretherapy as well as at posttherapy. As a result, those participants whose pretherapy symptoms were relatively severe had more room to improve (and less room to worsen) than participants whose symptoms were relatively mild. For example, a worrier who was assigned an Assessor Severity

rating of 3 prior to therapy could not achieve a change score greater than -3, even if she was completely free of GAD symptoms after therapy; by contrast, a worrier with a pretherapy Assessor Severity rating of 5 would match the change score of the previous worrier if his GAD symptoms dropped to the Mild level at posttherapy, and would exceed her change score with any additional reduction in symptoms. This effect is compounded by the greater impact of regression toward the mean on the change scores of more severe worriers. Because change scores are attenuated in this fashion by pretherapy functioning, it is perhaps not surprising that they produced a different pattern of correlations with the GAD diagnosis variables than uncorrected endstate scores. This again suggests that the unique properties of change scores may be responsible for this unexpected pattern of results.

Another possibility, however, may also explain these discrepant findings across change and endstate analyses. As was noted previously, change scores are by definition less reliable than raw scores. Although lower reliability did not seem to fully account for the present results, poor reliability compounded by sampling error may have been sufficient to produce the apparent inconsistency. In other words, the higher reliability of the posttherapy scores may have afforded them closer proximity to the threshold of statistical significance than could be achieved by the less reliable change scores operating under similar amounts of sampling error. Additional research with larger samples is needed to rule out this hypothesis.

In sum, although a number of rival explanations may be advanced to explain the present findings, the bottom line evident within the mire is that change scores (which are known to be problematic) did not reveal differences in the validity of the diagnostic models, whereas endstate scores (which do not have these problems) did reveal the hypothesized differences. In light of all of the available evidence, the present results seem to suggest a tentative advantage of

dimensional over categorical GAD diagnosis in predicting treatment outcomes. However, more confident statements about the relative validities of these diagnostic models await further research to unambiguously rule out alternative explanations for these findings and to explore more powerful methods of calculating change that will allow a more compelling prediction of treatment response to be performed.

There is one final point related to these results that deserves close attention. This is the fact that a major challenge of shifting to a dimensional diagnostic model is the need to determine which symptoms should be included in the dimensional diagnosis and how these symptoms should be combined to form the diagnostic score. The *DSM-IV* criteria for GAD were selected primarily for their ability to differentiate pathological from normal cases. In contrast, a dimensional diagnosis is less concerned with the symptoms that optimally distinguish groups than it is with the symptoms that most accurately locate a case along the latent severity dimension (A. M. Ruscio & Ruscio, 2002; J. Ruscio & Ruscio, 2002). Hence, it stands to reason that a dimensional diagnosis for any disorder might require a somewhat different set of symptoms to optimally differentiate cases of differing severity. Moreover, once appropriate symptoms are selected, it will be necessary to identify the computational approach whose output most closely corresponds to cases' true scores at the latent level. Finally, because categorical decisions may be unavoidable in certain clinical and public health contexts, it will be important to identify defensible thresholds along the latent dimension that possess maximum utility for different purposes in different populations (A. M. Ruscio, Ruscio, & Keane, 2002; J. Ruscio & Ruscio, 2004). Informed decisions at each of these stages would require considerable new research, and it is unknown how similar or different the resulting diagnostic criteria would be from the current criterion set for GAD.

This provides an important caveat for interpreting the predictive validity results of the present study. For reasons that were described earlier (see Footnotes 4 and 5 in particular), the present dimensional GAD diagnosis was calculated to reflect the severity with which the *DSM-IV* symptoms of GAD were experienced by each participant. However, it is important to acknowledge that different results might have been obtained had the dimensional GAD diagnosis been computed using different symptoms and/or a different computational algorithm. In particular, to the extent that the dimensional diagnosis misestimated participants' true location along the latent severity continuum, its predictive validity was likely diminished. Of course, similar concerns may be raised about discrepancies between the categorical GAD diagnosis and the true nature of GAD at the latent level. Both diagnoses, then, were limited by the present state of the field and by current knowledge about the features that characterize this disorder. As conceptions of GAD continue to change over time, leading to further revisions of the *DSM* criteria, the predictive validity of the diagnosis is likely to change in turn. By basing revisions on the best available research, we will maximize the ability of the diagnosis to predict important outcomes, and hence increase our control over GAD itself.

The Question of Treatment Efficacy

Within-group effects. A second goal of the present study was to develop, evaluate, and compare two brief and inexpensive interventions for worry and GAD. Thus, the second central question of the study concerned the absolute and relative abilities of these interventions to reduce worry and associated symptoms and to improve functioning in important life domains. To address this question, a first series of analyses examined whether a basic stimulus control (SC) with problem solving (PS) paradigm, either alone or in combination with the traditional CBT elements of relaxation training (RT) and cognitive restructuring (CR), would produce statistically

significant or even clinically significant improvement in the symptoms of highly worried individuals. Although past research has demonstrated the efficacy of the SC paradigm in reducing worry among high worriers, this therapy element has never been directly evaluated with GAD-diagnosed individuals, nor has it been evaluated in relation to more popular behavioral and cognitive strategies for treating GAD. As a result, this technique is rarely used by clinicians who offer behavioral treatment for GAD.

To help remedy this state of affairs, the present study evaluated the potential value of SC with PS in treating the worry and concurrent symptomatology of GAD-diagnosed individuals and of nondiagnosed individuals whose worry is moderate or severe in scope. The two worry-focused interventions—both relying heavily on SC principles—were clearly efficacious, yielding statistically significant improvement on all outcome measures and within-group effect sizes that were large, though somewhat smaller than those for individual, multisession behavioral and cognitive-behavioral therapy for GAD. Perhaps more notable is that the treatments yielded a surprising degree of clinically significant improvement, with particularly impressive gains evidenced by GAD-diagnosed worriers and still more impressive gains revealed by GAD worriers whose anxiety prior to therapy was comparable to that of GAD clients in past therapy studies. At posttherapy, almost none of the participants who had previously qualified for a GAD diagnosis continued to meet the diagnostic criteria for the disorder. Moreover, GAD worriers in the present study reported endstate levels of anxiety and depression that were about as low as those produced by individually-administered CBT—the current state-of-the-art in the treatment of generalized anxiety.

These findings are consistent with research indicating that self-directed treatments for anxiety generally yield effect sizes that are as large as those associated with individual

psychotherapy (see Marrs, 1995; Scogin et al., 1990). Furthermore, because SC was a central component of both of the present treatments (especially the predominantly SC-based basic intervention), these findings support the contention that SC contains active ingredients of change for the reduction of severe worry, including the worry found in diagnosable GAD. The present results thus not only support the inclusion of SC in treatment packages for GAD, but also hint at the potentially important role of simple conditioning principles in the maintenance of worry, both within and outside of GAD.

However, while these treatments appear quite promising, a few cautionary notes are in order. First, although the large effect sizes and dramatic decline in GAD diagnoses from pretherapy to posttherapy speaks to the considerable efficacy of the present interventions, it is important to reiterate that posttherapy measures inquired only about participants' experiences during the week prior to the posttherapy assessment, to increase sensitivity to any changes produced by these very brief interventions. As a GAD diagnosis is typically based on the symptoms experienced over a period of six months, the actual rate of GAD at posttherapy may have been higher than that suggested by the one-week assessment time frame; a more conclusive test would be provided by conducting a 6-month follow-up assessment inquiring about the symptoms experienced since the posttherapy assessment.

Second, although the present sample was quite similar to the samples of previous GAD therapy investigations with respect to anxiety and depression severity, the fact remains that the majority of this sample was not treatment-seeking in the traditional sense and may have differed from worried clients in any number of ways (e.g., fewer comorbid conditions, less chronic symptoms, less pronounced disability) that would make them better able to benefit from these very brief, largely self-guided interventions. Thus, although the present treatments appear to

have considerable promise in college settings, it will be important to evaluate their efficacy in other nonclinical settings (e.g., community and primary care settings) and in traditional clinical settings before they may be confidently provided to individuals in these settings.

Between-group effects. Having evaluated the within-group efficacy of the two interventions, a second series of analyses examined whether the apparent benefits of SC with PS could be substantially enhanced by combining these therapy elements with other anxiety-focused techniques, particularly those targeting symptoms of GAD (i.e., physiological concomitants of worry, catastrophic worries without clear solutions) that are not directly addressed by SC or PS. The additive component design employed by the study effectively isolated the contribution made by RT and CR to therapeutic change, over and above the improvement attributed to basic SC and PS alone. It was hypothesized that the augmented intervention, which contained more suspected active ingredients of change, would produce greater improvement than the basic intervention. However, analyses did not reveal a statistically significant difference between these interventions after the variance due to pretherapy scores was partialled out.

Why did the present study fail to detect a significant difference between the basic and augmented interventions? Results of early analyses indicated that the absence of treatment differences could not be attributed to differential effects of credibility, expectancy for improvement, successful learning and retention of therapeutic skills, or duration of skills rehearsal across conditions. However, one possibility that could not be ruled out was that the minimalist format in which these interventions were presented—including only a single, hour-long treatment session and subsequent self-guided rehearsal involving minimal therapist contact—may have contributed to the failure to find a significant added benefit of RT and CR. More specifically, these elements may have been presented too rapidly or superficially for their

potential benefits to be fully realized, and lengthier or otherwise different formats may have yielded greater improvement and hence greater differences between the basic and augmented interventions. This may have been especially true for the CR component; given its greater complexity and perhaps less intuitively obvious benefits, this element may have had more of an impact if additional time had been devoted to explaining its value and to modeling its appropriate application to daily worries. This may have also been true for the RT component, as exposure to a variety of applied relaxation skills may have resulted in greater benefits for a larger number of participants than instruction solely in diaphragmatic breathing.

A second possible explanation for the absence of between-group differences was that the psychoeducational (PE) element—the presumed inactive component that was used to equate the duration of the two interventions—was not inactive after all. In other words, perhaps hearing about the origins of worry or learning about the effects of worry on attention and physiology had a beneficial impact on worry, either alone or in interaction with SC and PS. Although this is a viable hypothesis, there is no theoretical basis for suggesting that the PE element contained any active ingredients of change; indeed, this “filler” element was selected based on decades of finding that simple insight into one’s anxiety rarely translates into a significant reduction in anxiety symptoms. More significantly, the size of the difference between the cognitive-behavioral augmented intervention and the behavioral basic intervention (.19) was similar to the mean difference found between CBT and its behavioral and cognitive components in previous research (.26), suggesting that the PE element was no more active than other nonspecific elements (e.g., nondirective listening) that have been used to equate treatment time between BT and CBT in other GAD therapy studies. However, unambiguous refutation of this hypothesis will require additional research in which the presence or absence of PE is manipulated as an adjunct

to the basic intervention elements.

The third (and most parsimonious) possibility was that there was simply no real difference in efficacy between the two interventions—that RT and CR provided no measurable benefit beyond that yielded by SC and PS. While this hypothesis cannot be entirely ruled out by the available data, it was not supported by analyses performed after the initial omnibus MANCOVA tests. These follow-up analyses revealed a small effect size for the difference between treatments in the total sample that was similar to the difference between CBT and its component treatments in prior research, and small but consistent differences in endstate functioning produced by the two treatments that clearly favored the augmented intervention.

Thus, the bulk of the evidence seemed to support a fourth possibility: That some consistent benefit may be gained by augmenting SC and PS with RT and CR, but that this added benefit is very small—so small that the sample of 72 participants was not sufficiently large to detect a statistically significant difference in dozens of between-treatment comparisons. This final hypothesis is consistent with the broader GAD treatment outcome literature, in which the benefits of cognitive-behavioral therapies do not always exceed those of purely behavioral or cognitive therapies (e.g., Barlow, Rapee, & Brown, 1992; Borkovec & Mathews, 1988) and in which the difference between CBT and its components is often about as small as that observed between the two interventions in the present study (see Borkovec & Ruscio, 2001).

Additional research is needed to more definitively rule out the first three aforementioned possibilities before the implications of the fourth possibility can be confidently considered. However, it may be appropriate to highlight the most important of these implications to underscore their potential contribution to the understanding of GAD. Although relaxation and cognitive restructuring strategies are the most widely used components of cognitive-behavioral

therapy for GAD, the present findings suggest that they may not be necessary to produce statistically or even clinically significant changes in the symptoms and functioning of worriers with this disorder. Instead, the simple containment of worry to a particular time and place each day, along with instructions to actively address worries rather than merely dwelling on them, appears sufficient to produce dramatic reductions in worry, anxiety, and depression and to result in a level of endstate functioning comparable to that produced by much more elaborate and time-consuming treatments. This suggests that conditioning principles may be involved in maintaining worry and related symptoms of GAD, and that disassociating worry from regularly-encountered stimuli may be critical for the successful reduction of worrying. It also suggests that a simple shift from a passive, ruminative approach to life events (e.g., “bad things might happen, and there is not much that I can do about them”) to a more coping-oriented stance (e.g., “worries represent problems that I have the ability to prevent or solve”) may help to reduce the frequency and intensity of worry, even without the acquisition of an elaborate skill set for combating worry. Future basic and applied research might fruitfully examine the relative contributions of SC and PS to the reduction of worry, further isolating the mechanisms by which such reduction takes place in high worriers with and without GAD.

It must be noted, however, that the absence of significant between-treatment differences, while theoretically intriguing, may be problematic from a methodological perspective. This is because the efficacy of a treatment is generally established by demonstrating its superiority to no treatment or, more persuasively, by its superiority to a nonspecific/placebo treatment or active treatment or its equivalence to an already-established therapy (Chambless et al., 1998). Without significant differences between the two novel interventions in the present study, it becomes difficult to determine whether the apparent efficacy of these interventions is caused by active

ingredients of change conferred by the specific therapy elements or by the nonspecific factors that are present in all therapies. It is perhaps this very risk that has led many GAD therapy studies to compare a single active treatment with a no-treatment (e.g. wait-list or delayed-treatment) or placebo control. However, such lower-risk designs are also less informative, leaving investigators unable to determine which of the elements included in their treatments are active ingredients of change and which elements are inactive and thus unnecessary. As was argued earlier, this determination is critical if we hope to better understand processes of maintenance and change in psychopathology and if we wish to develop more efficient treatments that also contain all therapeutic elements that significantly promote change. The much higher level of experimental control afforded by component control designs allows such distinctions to be made while ethically providing all participants with (presumably) active treatment. However, this greater control comes at a price: Holding all but a few elements constant between conditions makes statistically significant differences less likely, and the absence of a placebo therapy condition in the face of nonsignificant results makes it difficult to rule out nonspecific effects as alternative explanations for the observed improvement in symptoms from pre- to posttherapy.

That being said, although these alternative explanations could not be definitively ruled out in the present study, there is reason to suspect that they were not the sole sources of improvement. The first piece of evidence comes from a prior experiment (Borkovec et al., 1983) that compared a stimulus control intervention to no treatment in a sample of highly worried individuals. The experiment revealed significantly greater reductions in worrying among participants who received SC with PS than among participants who received no treatment. One of the dependent measures included in that study—a daily diary measure of the percent of the day spent worrying—was also included in the present study, allowing direct comparisons to be

made between the two investigations. Thus, for each condition, the average reduction in daily percentage of worry from pretherapy to posttherapy was computed. In the Borkovec et al. study, participants who did not receive treatment reported a decline of only 3 points in the percent of the day that they spent worrying. By contrast, participants in the same study that received SC plus PS declined by 14 percentage points from pre- to posttherapy, a value that was remarkably consistent with the decline reported by participants in the basic (13 points) and augmented (13 points) conditions in the present study. These results at least tentatively suggest that if a no-treatment condition had been included in the present study, participants in both treatment conditions would likely have evidenced greater improvement in worry than untreated participants. Therefore, it seems unlikely that factors related to the passage of time (e.g., history, maturation, spontaneous remission) or to measurement artifacts (e.g., instrumentation, repeated testing, regression toward the mean) can fully account for the improvement observed in the present study.

A second piece of evidence comes from the meta-analysis of GAD treatment studies recently performed by Borkovec and Ruscio (2001), which calculated the average within-group effect size for placebo or nonbehavioral treatments for GAD. Because these treatments embody the nonspecific factors present in all therapies (e.g., expectancy, demand characteristics, attention, therapeutic alliance, personal investment), comparison of their effect sizes with those obtained in the present study can help to gauge whether the basic and augmented interventions had any specific benefits over and above the nonspecific benefits of therapy. Because the effect sizes obtained in all prior studies were based purely on GAD-diagnosed samples, the most meaningful comparison appeared to be between these coefficients and those obtained for the GAD-diagnosed subsample in the present study. As can be seen in Table 5, the within-group

effect sizes for GAD worriers in both the basic (2.32) and augmented (2.18) conditions exceeded the average effect size of the placebo and nonbehavioral conditions (2.09) included in past GAD treatment studies. The effect size of nonspecific treatment was still further exceeded when the GAD subsample was restricted to participants whose Hamilton Anxiety scores fell within one standard deviation of the mean of prior GAD treatment studies. It is noteworthy that the nonspecific effect size from past treatment studies poses a particularly conservative point of comparison for the present interventions, as it is based on potentially active alternative treatments in addition to placebos, and as it is generally based on greater and more individualized contact with a therapist over a longer period of time than the current interventions (and hence may reflect higher levels of such nonspecific factors as attention, therapeutic alliance, and personal investment than were present in the brief and predominantly self-directed interventions evaluated in the present study). These findings offer support for the hypothesis that the basic and augmented treatments possessed some specific ingredients of change in addition to the usual nonspecific features present in all psychotherapies for GAD.

The third piece of evidence in support of treatment efficacy relates to the counterdemand manipulation included in the study. This manipulation, which informed participants that it would take 5 to 6 weeks of persistent application of the treatment regimen before they would begin to notice improvement in their worrying, was included in both conditions in lieu of a placebo control condition to minimize the potential effects of expectancy and demand characteristics on posttherapy scores. Due to scheduling conflicts, not all participants completed the posttherapy assessment during the counterdemand period (i.e., less than 5 weeks after their treatment session). However, over two-thirds of participants did so, and those who were assessed while the counterdemand manipulation was in effect did not differ significantly from those who were

assessed under positive demand conditions on any of the four DV blocks or on GAD status. The latter results are consistent with past research evaluating the efficacy of SC plus PS for worry, which obtained virtually identical posttherapy scores during a counterdemand period and during a subsequent positive-demand period (see Borkovec et al., 1983, Experiment 1). Taken together, these findings suggest that demand and expectancy factors were unlikely to fully account for the observed improvement in the present interventions.

The Question of an Interaction Between GAD Status and Number of Treatment Elements

Unlike the typical samples of therapy outcome investigations, the present sample was not restricted to individuals who met all of the diagnostic criteria for the target disorder, but also included individuals whose symptoms—though elevated and potentially severe—fell below the diagnostic threshold for this disorder. As a result, the present study was able to assess whether receiving a diagnosis has implications for prognosis and treatment outcome—that is, whether worriers who do not qualify for a GAD diagnosis respond differently to treatment than those who are assigned a diagnosis. The study further assessed whether the number of potentially active treatment elements that is received differentially influences the response of diagnosed and nondiagnosed worriers to treatment.

The first observation bearing on these questions is that the average within-group effect size for nondiagnosed worriers was substantial for both treatments, surpassing Cohen's criteria for a large effect. This finding suggests that non-GAD high worriers may benefit considerably from interventions that target the worry and anxiety symptoms of GAD. Indeed, not only was a GAD diagnosis unnecessary for gains to be achieved in the basic and augmented interventions, but multiple regression analyses predicting posttherapy scores revealed that non-GAD worriers appeared to reach higher levels of endstate functioning than GAD worriers when provided with

the same interventions.

At the same time, results of multiple regression analyses revealed that GAD status does moderate the efficacy of treatment. More precisely, GAD-diagnosed individuals achieved greater positive change in treatment than worriers without the diagnosis. Although the more severe symptoms reported by GAD worriers may at first seem more intractable or less receptive to brief intervention than the milder symptoms of nondiagnosed worriers, it is precisely *because* GAD worriers began with more severe symptoms—and therefore had more room to improve—that they exhibited a greater decline in symptoms than non-GAD worriers. Together, these results facilitate clinical prediction by indicating that individuals with a GAD diagnosis (or with more severe GAD symptoms) are likely to evidence greater improvement during treatment, but a lower level of functioning after treatment, than worriers without the diagnosis (or with less severe symptoms). Thus, it appears that the GAD diagnosis does not so much predict *who* will improve in anxiety treatment as it does *how much* improvement will take place and *how high* a level of endstate functioning will be achieved.

The present study was concerned not only with the differential efficacy of anxiety treatment for diagnosed and nondiagnosed worriers, however, but also with the possibility that those who are diagnosed with GAD (or who suffer from more severe GAD) may require more active treatment than those without GAD (or with lower symptom severity) to exhibit a comparable treatment response. Because the present interventions were expected to differ in potency, given the larger number of potentially active therapeutic elements in the augmented relative to the basic treatment, their interaction with pretherapy GAD symptoms was used to predict treatment gains. Analyses failed to reveal a significant interaction of GAD status and number of therapeutic elements under the categorical or the dimensional diagnostic models in

predicting either change scores or endstate functioning. Although these results suggested that GAD and non-GAD worriers benefited equally from the two treatments, two more indirect lines of evidence appeared to support a different conclusion.

The first line of evidence comes from regression analyses in which GAD status was used to predict endstate functioning. As was noted earlier, GAD worriers exhibited considerable improvement in both treatment conditions but did not reach the same low posttherapy symptom levels as their non-GAD counterparts; identical results were obtained for participants whose GAD symptoms were more severe prior to therapy. This differential outcome for GAD and non-GAD worriers may suggest that the former require more intensive treatment than the latter to reach a comparable level of endstate functioning.

Unfortunately, because the basic and augmented treatments did not differ significantly in potency, it is unclear whether a more intensive treatment would have brought the posttherapy symptoms of GAD worriers in line with those of non-GAD worriers. Future research might examine whether treatment modifications such as increasing therapist contact, providing extra time to rehearse and apply worry-reduction skills, learning a greater variety of skills, or receiving a treatment package that is more individually tailored would enable those with GAD to reach an endstate comparable to that reached by non-GAD participants in the present study. In particular, it would be valuable to examine whether individual psychotherapy is required to help individuals with GAD reach this level of functioning, or whether the same outcome can be achieved with a treatment that is more intensive or personalized than the present interventions but is still group-administered, primarily self-directed, or otherwise more cost-effective than many sessions of individual therapy with a doctoral-level practitioner. Parallel research into the factors that are associated with treatment response among GAD-diagnosed individuals may reveal that some

diagnosed individuals require more intensive treatment than others, helping to identify the features (e.g., comorbid depression, more significant life stressors, certain personality characteristics) that predict whether a diagnosed individual is likely to respond well to a relatively brief and inexpensive treatment or will probably require more intensive, individualized treatment to reach a high level of endstate functioning.

A second line of evidence for differential treatment efficacy comes from the between-group effect size estimates at posttherapy for worriers with and without GAD. Although the basic and augmented interventions yielded essentially identical outcomes for GAD-diagnosed worriers ($d = .01$), the augmented intervention appeared considerably more helpful than the basic intervention for non-GAD worriers ($d = .47$). Inspection of means revealed that on two of the three anxiety measures from which effect sizes were derived, non-GAD worriers in the basic condition reported posttherapy symptoms that were essentially equivalent to those of GAD worriers in both treatment conditions, whereas non-GAD worriers in the augmented condition reported substantially lower posttherapy symptom levels.

Why was differential treatment efficacy found for non-GAD high worriers, but not for worriers diagnosed with GAD? One possibility is that the worry and anxiety symptoms of diagnosed worriers were so overwhelming that these participants were less successful in consistently applying each of the four techniques that they learned at the appropriate time and in the appropriate manner. The less severe nature of the symptoms experienced by nondiagnosed worriers, in contrast, may have been easier to manage through the systematic application of all four techniques. A second, related possibility is that RT and CR were simply more effective for individuals whose symptoms were less severe. Indeed, some prior research has suggested that cognitive therapy may be more likely to make a unique contribution to anxiety reduction when

the anxiety experienced is not severe or chronic in nature (see Borkovec & Mathews, 1988). A third possibility is that GAD worriers were simply unable to improve beyond a certain point given the relatively limited scope of the present interventions, resulting in a ceiling effect across conditions at the posttherapy assessment. The non-GAD worriers, whose symptoms were milder and hence potentially easier to propel into the normal realm of anxiety, may have possessed a higher ceiling (or no ceiling at all) that enabled a differential efficacy to emerge between the basic and augmented interventions.

Further research is needed to replicate this intriguing finding and to explore the mechanisms that underlie it. If any of the three abovementioned possibilities is correct, we may find that the relatively small differences between CBT and its components that have hitherto been obtained in the GAD treatment literature may be considerably greater for non-GAD high worriers and for worriers with less severe GAD symptoms. This would suggest that the choice between treatments may have greater implications for clients with subthreshold or mild GAD relative to those with more severe presentations, and that treatment selection for such clients should be made with particular care, preferably on the basis of studies testing the efficacy of available therapies for this population. It is noteworthy that few therapy studies have been performed to date with non-GAD worriers, and that GAD therapy studies have not tended to use GAD symptom severity as a predictor of treatment outcomes. The present findings underscore the potential value of such research and raise the hope that it will ultimately promote more effective matching of anxious clients with appropriate treatments.

The apparent differential efficacy of treatments for GAD and non-GAD worriers may be theoretically as well as practically important. This finding joins a growing body of evidence suggesting that GAD is more than just intense worry and that the relationship between GAD and

its cardinal feature may be more complex than was originally thought (cf. A. M. Ruscio, 2002). The finding that highly worried individuals with and without GAD exhibit a different pattern of response to worry-focused treatment reveals an additional important difference between these groups whose further investigation may provide greater insight into the association between worry and GAD. That being said, it should be reiterated that the apparent interaction hinted at by these indirect lines of evidence was not statistically significant in direct tests for this effect. The failure to detect a formal interaction suggests that this effect, like the treatment effects uncovered elsewhere in the study, was relatively small. Future investigations in this area should proceed with this in mind, recognizing the necessity of gathering sufficiently large samples to afford adequate statistical power for analysis.

The Potential Role of the Present Interventions in the Treatment of Worry and GAD

Given preliminary support for the efficacy of the basic and augmented interventions, what role might such interventions play in the treatment of worry and GAD? As was noted earlier, while the present study was primarily concerned with basic science questions, it had the added goal of developing an effective treatment package for worry and generalized anxiety that was brief, inexpensive, and easy to administer, one that could be widely disseminated to individuals who might not otherwise have access to anxiety treatment. With changes in our healthcare system placing increasing emphasis on reduced treatment costs, patient responsibility, and preventative care (Marrs, 1995), there is an ever-greater need for efficient, cost-effective psychosocial interventions that are demonstrably efficacious and ethically defensible. Such interventions may be particularly useful for treating problems that are relatively circumscribed and that are likely to benefit from training in specific symptom-management skills. If these interventions can be shown to prevent or diminish significant problems in living and to promote

emotional and physical health, they may not only be attractive to third-party payers, but may also improve the lives of many individuals.

With these goal in mind, the present interventions were designed to possess a variety of features that would maximize efficiency and minimize costs. These included: (a) restricting the intervention to a single, brief treatment session; (b) providing the intervention in a group format; (c) conveying the intervention using an explicit therapy script that could be reliably administered by non-doctoral-level clinicians; and (d) making use of self-guided rehearsal and application of therapeutic skills following the treatment session. These features set the present interventions apart from most existing treatments for GAD, which have involved an average of more than 10 sessions of individual therapy, often with a doctoral-level therapist (Borkovec & Ruscio, 2001). At the same time, the present interventions possessed several features that distinguished them from traditional self-administered treatments for anxiety, which typically expect clients to learn and apply the therapeutic skills with minimal guidance and support. These features of the present interventions included: (a) presenting the treatment in a therapist-guided session during which skills were systematically introduced and demonstrated, with clarification provided as needed; (b) meeting with participants in small (rather than large) groups so that they could actively participate in the session and feel comfortable asking questions; (c) supplying participants with a workbook that reviewed learned skills and facilitated the correct application of these skills in daily life; and (d) maintaining contact with participants through twice-weekly reminder e-mails and a mid-study phone call by the therapist. These features sought to improve treatment efficacy beyond the level of fully self-administered treatments by enhancing motivation, minimizing demoralization, and facilitating the appropriate application of therapeutic skills. The present interventions thus blended self-administered, group-based, and individual-therapy approaches to

simultaneously enhance the efficiency and effectiveness of GAD treatment.

One concern raised prior to the study was that anxiety-reduction skills might be difficult to effectively communicate in such a short period of time—or, conversely, that undergraduate students might be unwilling or unable to sustain attention for the full duration of an information-intensive presentation of this sort. To help retain students' interest and engagement, the treatment session incorporated direct questions about participants' worry experiences, demonstrations and exercises allowing participants to observe and then apply the therapeutic skills, and visual reinforcement of oral instructions through the use of overhead transparencies. Clear differences between the basic and augmented conditions on the Checking Your Knowledge questionnaire suggested that cognitive and behavioral anxiety-reduction skills can be successfully learned and retained even in the very brief, group-based format employed in the present study.

A second concern prior to the study was that the restriction of therapist contact to a single treatment session might not be sufficient to produce significant therapeutic change. To address this concern, a structured telephone conversation was initiated by the therapist midway through the rehearsal period which (a) reviewed the rationale for each therapeutic skill; (b) inquired how the application of each skill was proceeding (providing feedback, answering questions, and brainstorming solutions as needed); and (c) encouraged the continued practice of all therapeutic skills for at least the duration of the study. Additional contact providing encouragement, reminders to practice, and opportunities to ask questions was imparted in twice-weekly e-mails, beginning the day after the treatment session and continuing throughout the full rehearsal period. The frequency of these contacts with participants was supported by the results of a pilot study and by the outcome studies of self-administered treatments, which have found even minimal therapist contact to result in better outcomes than exclusively self-directed programs (Marrs,

1995; Wright et al., 2000).

It should be acknowledged, however, that although the interventions in their present form were highly efficacious, the specific benefits of therapist contact were impossible to determine. Future research might systematically vary the amount and type (e.g., in-person, phone, e-mail) of therapist contact that is provided to determine the balance of therapist guidance and self-guidance that optimizes the efficacy and efficiency of treatment for different types of clients. Similar observations can be made for the therapy workbooks utilized in the present study. These workbooks were intended to facilitate the self-guided rehearsal and application of therapeutic skills, and their contents were pilot-tested for clarity and utility prior to the study. However, it is unknown whether the workbook materials were necessary and sufficient for optimal change, nor whether the format in which these materials were presented (i.e., hard copies of worksheets organized in a loose-leaf binder) was the most appealing and useful format for student participants. Additional evaluation and refinement of the workbook materials may not only improve the efficacy of the present interventions, but may also inform the development of helpful support materials for other self-directed treatments or for adjunctive use in individual psychotherapy for GAD.

Finally, the presentation format used in the current interventions was premised on the belief that an in-person, “real time” treatment session—in which skills were orally described and visually demonstrated by a therapist—would enhance the learning, retention, and correct application of anxiety-reduction skills by participants. However, this represents an empirical question whose answer may have significant implications for how treatments are disseminated. For example, if printed materials or an instructional video are found to yield equivalent treatment outcomes to a therapist-led presentation, it will be possible to more rapidly convey these

interventions to a considerably larger audience. However, if the presence of a professional is found to be critical for treatment gains, it will be necessary to identify the minimal therapist credentials and training that are required to attain maximal therapeutic results (Hayes, Barlow, & Nelson-Gray, 1999). Future research might experiment with different presentation formats to determine which is most effective for each client population of interest. For example, a fully web-based version of the present augmented intervention is currently under development and will soon be tested with New York City residents reporting elevated levels of worry and generalized anxiety since the September 11th terrorist attacks (A. M. Ruscio, Resnick, Ruggiero, Acerno, & Galea, 2003).

If the apparent efficacy of the present interventions is replicated, these treatments may represent a valuable alternative to individual therapy for some worried individuals. By casting treatment in the form of a workshop or stress-reduction program, these interventions may be more appealing than traditional psychotherapy for individuals who do not view worry as pathological or who perceive therapy as a recourse only for the severely impaired. Similarly, the single-session format of the interventions, paired with the flexibility of subsequent self-guided skills application, may be appealing to worriers who view their time as too limited or their schedule as too erratic to commit to regular therapy sessions. The present treatments may be especially promising for individuals who are geographically isolated, who cannot afford traditional psychotherapy, or who would like to try a predominantly self-administered approach before more expensive alternatives are attempted.

At the same time, these interventions may be contraindicated for some worriers. Poor candidates may be individuals whose symptoms are so severe that they can only be managed with ongoing guidance and feedback from a therapist, or individuals who have other significant

problems (e.g., substance abuse) that are likely to interfere with regular and appropriate application of the therapeutic skills. Intellectual and personality factors may also be important: Individuals who enjoy doing things on their own, grasp new concepts relatively quickly, have the discipline to establish and maintain new habits with minimal external checks, and are highly motivated to reduce their worrying are likely to be better candidates for the present interventions than individuals who lack these qualities. Studies of other predominantly self-help therapies for anxiety have found that individuals who are older, who have comorbid personality disorders, or whose anxiety is chronic or recurring may be less able to benefit from such interventions (Newman et al., 2003). Research is needed to examine these and other contraindications for primarily self-guided treatments, and to identify the critical factors that determine whether an individual is likely to respond to such treatments.

Finally, the desire to maximize treatment efficiency naturally raises the question of whether there are any circumstances under which the augmented intervention can reasonably be preferred over the basic intervention, given the absence of significant differences between them in the present study. Newman (2000) has suggested that cost-benefit analyses be applied at the level of individual therapy elements to identify the most streamlined treatment package that will produce the greatest therapeutic gain for the lowest cost. However, she also underscored that the optimal treatment package may differ for clients with differing characteristics, symptoms, and needs. Thus, the most appropriate question may be the following: Are there individuals for whom RT and CR provide sufficient benefits to offset the extra costs involved in adding them to the basic intervention? At present, it appears that GAD-diagnosed worriers benefit about equally from the basic and augmented interventions. Thus, it may be most defensible to provide these worriers with the basic treatment while continuing to develop and test new supplements to this

treatment that may result in still higher levels of endstate functioning. On the other hand, given the moderately higher benefits of the augmented over the basic intervention for non-GAD high worriers (a benefit achieved with relatively little increase in time and costs), a cost-benefit analysis is likely to tip the scales in favor of augmented treatment for this population.

Strengths and Limitations of the Present Study

The present investigation yielded exciting new insights into the prediction and modification of symptoms associated with GAD. However, these insights were tempered by several key limitations of the study.

First, the use of a highly worried college student sample rather than a clinical sample made it difficult to determine the generalizability of the present results to clinical settings. As diagnostic decision-making and treatment selection normally take place in clinical settings, the question of generalizability is a critical one, and replication of the present findings with clinical samples is greatly needed. At the same time, several characteristics of this student sample suggest that it may have presented an unexpectedly good analogue for generally anxious clinical samples. About a quarter of the total sample had received psychotherapy or pharmacotherapy for worry or anxiety at some time in their lives, and more than a tenth of participants were taking psychotropic medication for anxiety at the time of the study. Nearly three-quarters of the sample viewed their worrying as sufficiently problematic that they felt they would benefit from learning strategies to manage it better. Finally, while the total sample of GAD and non-GAD high worriers reported lower anxiety on some measures (but not others) than the exclusively GAD samples of prior therapy outcome studies, GAD-diagnosed participants in the present study were significantly *more* anxious and depressed before treatment than the GAD samples of prior studies. These sample features enhance confidence in the present findings and hint at their

potential applicability to clinical samples. They also suggest that college students should not be dismissed out of hand as unimpaired simply by virtue of being college students. Instead, students who are carefully assessed for severe worry and GAD may not only serve as valuable participants in clinical research, but may also benefit considerably from worry-focused interventions such as those evaluated here.

Two related limitations of the present study concerned the therapists who administered the interventions. First, one of the therapists was also the study investigator, raising possible concerns about the influence of investigator allegiance effects on the results. However, as analyses found no differences in treatment outcome between the two therapists, allegiance effects did not appear to have a significant impact on the results of the study. Second, the therapists who provided treatment in this study were both Ph.D. students with Master's- rather than doctoral-level training and experience. On the one hand, this may be viewed as a limitation of the study, as many (though not all) previous GAD treatment studies employed doctoral-level psychologists as therapists. On the other hand, while such therapists represent an ideal in therapy outcome research, it may be argued that the highly structured nature of the present interventions make them more appropriately suited for application by non-doctoral than doctoral-level therapists. Rather than reflecting a mark against these interventions, this may actually constitute a mark in their favor, increasing their cost-effectiveness and enhancing their ease and breadth of dissemination.

In fact, research indicating that Master's-level therapists are generally as effective as doctoral-level therapists (at least for moderately disturbed clients) has led some to speculate that Master's-trained therapists will increasingly be enlisted to provide routine clinical services, freeing doctoral-level psychologists to design, evaluate, and disseminate new treatments;

supervise Master's-level therapists; and provide services to particularly difficult-to-treat cases with the goal of determining why routine treatment failed so that future cases with similar problems can be successfully integrated back into the system (Hayes et al., 1999). If this forecast is borne out, interventions which have been shown to be efficacious when administered by Master's level therapists— such as those evaluated in the present study—may play a valuable role in the treatment of anxiety.

These arguments aside, it should also be noted that the particular individuals who served as therapists in this study had extensive knowledge of and experience with the treatment of anxiety. Both therapists had prior clinical experience with anxious clients, served as protocol therapists in other therapy outcome studies for anxiety disorders, and actively conduct research in the area of anxiety. Both also underwent substantial training and rehearsal prior to the study, then worked closely together throughout the study to ensure consistent and appropriate administration of the interventions. Thus, although they were not doctoral-level practitioners, these individuals had considerable expertise in the two interventions and in anxiety more generally, making them highly suitable therapists for the present study.

A third limitation of the study is that it did not include formal checks of therapists' adherence to the treatment protocols. As a result, it is impossible to know for certain whether any protocol breaks occurred or whether the therapists were consistent in their presentation of the treatment material. Although this is certainly a shortcoming of the study, the absence of formal adherence checks prompted several procedural steps whose specific aim was to minimize the likelihood of protocol breaks, including: (a) writing the therapy manuals in the form of word-for-word scripts, (b) having both therapists memorize these scripts prior to the study, and (c) having the therapists repeatedly rehearse the scripts—in tandem with overhead transparencies—with one

another and with pilot participants before data collection began. Furthermore, the two therapists discussed their sessions regularly to determine whether any unusual situations or deviations from the protocol had taken place; no such deviations were reported at any point during the study. Although the absence of protocol breaks cannot be determined with complete certainty, systematic efforts to minimize such breaks made the likelihood of substantial deviations relatively small.

A fourth key limitation of the study is that it did not include a follow-up assessment of therapy outcomes beyond the posttherapy assessment session. It is therefore an open question whether the significant gains produced by these brief interventions are maintained over time, as well as whether the small difference in efficacy observed between the interventions at posttherapy remains stable in size. It is notable, however, that prior investigations of self-administered therapies have found minimal erosion of treatment effects over periods of up to two years (see Marrs, 1995), indicating that impressive maintenance of gains can be achieved by such therapies. If resources allow, future studies might profitably examine the long-term impact of the present interventions, examining whether the continued application of therapeutic skills beyond a 4- to 5-week rehearsal period leads to greater differences in outcome between the interventions, as well as testing supportive strategies (e.g., allowing participants to retain their therapy workbooks, sending occasional “booster” e-mails after the posttherapy assessment is completed) that may help sustain therapeutic gains after the formal rehearsal period has ended.

Despite these important limitations, the present study also had several significant strengths. One strength was the highly controlled nature of the experiment that compared the two worry-focused interventions. The use of an additive methodological design ensured that all factors were equated across conditions except the two therapeutic techniques whose specific,

added benefit was under investigation. Furthermore, the use of an explicit therapy script rather than a more flexible (and hence more variable) manual ensured that precisely the same words were used to convey equivalent elements across treatment conditions and that strict consistency of experiences was maintained across different therapy groups within the same condition. The result was a high level of internal validity and precise isolation of the augmented value of RT and CR over the effects of basic SC with PS, ruling out a large number of alternative explanations for the present findings and building confidence in the obtained results.

A second strength of the present study was that its sample was quite large relative to most therapy outcome studies. Whereas prior GAD therapy studies have averaged less than 16 participants per condition (Range = 10 to 22; see Borkovec & Ruscio, 2001, for the relevant studies), the present investigation contained 35 and 37 participants, respectively, in the basic and augmented conditions. This sample size was clearly an asset in analyses examining the predictive validity of the GAD diagnosis, where a sizable N yielded more reliable results in which greater confidence could be placed. However, in analyses examining differences between the two treatments, the small between-groups effect ($d = 0.19$) made even this larger-than-usual N incapable of providing a statistically powerful test. A *post hoc* power analysis revealed that the ability of analyses to detect this difference between group means using a two-tailed α of .05 corresponded to a power of approximately .13 (Cohen, 1988). A related analysis revealed that to raise the power of this analysis to .80 would require 434 participants per condition, for a total sample of 868 high worriers—a prohibitive sample size for most psychology experiments, but especially for time- and resource-intensive treatment outcome investigations. Thus, although the size of the present sample was a virtue in view of contemporary standards for studies of its kind, it was a shortcoming from the perspective of statistical power.

A third strength of the present study related to the depth and breadth of the assessment battery employed before, during, and after treatment. This extensive battery included interview, questionnaire, and daily diary measures of anxiety that tapped the major cognitive, affective, somatic, and behavioral facets of the construct, providing not only a comprehensive assessment of this central construct but an opportunity to evaluate the convergence of results across instruments. Given the particular importance of reliable and valid GAD diagnosis for the predictive validity analyses, diagnoses were made on the basis of a structured clinical interview regarded as the gold standard in the field. Although diagnostic judgments were made by advanced undergraduate assessors rather than clinicians, these assessors were highly trained and carefully supervised and achieved an impressive level of interrater reliability that was maintained throughout the course of the study. To provide breadth of assessment, measures of anxiety were supplemented by a measure of depression and by instruments measuring global impairment and quality of life, answering calls for the assessment of important outcomes beyond the realm of specific symptoms (e.g., Horowitz, Lambert, & Strupp, 1997). Thus, the full battery provided a fairly well-rounded view of participants' symptoms and functioning.

At the same time, an important limitation of the battery was its assessment of GAD without consideration of possible comorbid conditions. Interviewers did not assess for these conditions because comorbidity was not expected to be a significant problem in this student sample, which was initially anticipated to be fairly high-functioning relative to the GAD clients seen in clinical settings. However, as the GAD-diagnosed participants in this student sample were at least as anxious and depressed as those in the clinical samples of prior GAD therapy studies, these expectations may have been unwarranted. It is likely that any exclusion of participants on the basis of comorbid disorders would have resulted in a more homogeneous

sample and hence in stronger experimental effects; thus, to the extent that comorbidity was more widespread than anticipated, the present results may reflect a relatively conservative test of the hypotheses of the study. Future replications might fruitfully include a more comprehensive assessment of psychopathology to facilitate differential diagnosis and to more powerfully estimate the true efficacy of the present interventions for individuals for whom worry and generalized anxiety are the primary psychological concern.

Conclusions

The present research gave rise to several preliminary conclusions with potentially significant consequences for the conceptualization, diagnosis, and treatment of GAD. First, a dimensional diagnosis representing the severity of GAD may more powerfully predict important treatment outcomes than the *DSM-IV* GAD diagnosis, particularly the symptoms and functioning that a worried client is likely to exhibit at the end of treatment. Second, a brief, inexpensive anxiety treatment based on stimulus control principles may yield substantial improvement in worrying and associated pathology among highly worried individuals with and without GAD. Relaxation training and cognitive restructuring appear to provide a small but consistent increment in treatment benefit that may be especially helpful for non-GAD high worriers. Finally, while both GAD-diagnosed and nondiagnosed high worriers may benefit considerably from worry-focused treatment, GAD worriers generally exhibit greater improvement, but poorer endstate functioning, than non-GAD worriers. These findings represent promising new developments that, with further targeted research, may improve our ability to more effectively and efficiently ameliorate the considerable suffering caused by this disorder.

REFERENCES

- Allen, G. J. (1973). Treatment of test anxiety by group-administered and self-administered relaxation and study counseling. *Behavior Therapy, 4*, 349-360.
- American Psychiatric Association (1952). *Diagnostic and statistical manual of mental disorders*. Washington, DC: Author.
- American Psychiatric Association (1968). *Diagnostic and statistical manual of mental disorders* (2nd ed.). Washington, DC: Author.
- American Psychiatric Association (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.
- American Psychiatric Association (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., revised). Washington, DC: Author.
- American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Baker, B. L., Cohen, D. C., & Saunders, J. T. (1973). Self-directed desensitization for acrophobia. *Behaviour Research and Therapy, 11*, 79-89.
- Barlow, D. H., Blanchard, E. B., Vermilyea, J. A., Vermilyea, D. B., & DiNardo, P. A. (1986). Generalized anxiety and generalized anxiety disorder: Description and reconceptualization. *American Journal of Psychiatry, 143*, 40-44.
- Barlow, D. H., Rapee, R. M., & Brown, T. A. (1992). Behavioral treatment of generalized anxiety disorder. *Behavior Therapy, 23*, 551-570.
- Beck, A. T., & Emery, G. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York: Basic Books.
- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck

- Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, 8, 77-100.
- Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561-571.
- Beutler, L. E. & Malik, M. L. (Eds.). (2002). *Rethinking the DSM: A psychological perspective*. Washington, DC: American Psychological Association.
- Blashfield, R. K., & Draguns, J. G. (1976). Evaluative criteria for psychiatric classification. *Journal of Abnormal Psychology*, 85, 140-150.
- Blatt, S. J., & Levy, K. N. (1998). A psychodynamic approach to the diagnosis of psychopathology. In J. W. Barron (Ed.), *Making diagnosis meaningful: Enhancing evaluation and treatment of psychological disorders* (pp. 73-109). Washington, DC: American Psychological Association.
- Bohart, A. C., O'Hara, M., & Leitner, L. M. (1998). Empirically violated treatments: Disenfranchisement of humanistic and other psychotherapies. *Psychotherapy Research*, 8, 141-157.
- Bootzin, R. R., & Nicassio, P. M. (1978). Behavioral treatments for insomnia. In M. Hersen, R. M. Eisler, & P. M. Miller (Eds.), *Progress in behavior modification: Vol. 6* (pp. 1-45). New York: Academic Press.
- Borkovec, T. D. (1994). Between-group therapy outcome design: Design and methodology. In L. S. Onken & J. D. Blaine (Eds.), *NIDA Research Monograph No. 137* (pp. 249-289). Rockville, MD: National Institute on Drug Abuse.
- Borkovec, T. D., & Castonguay, L. G. (1998). What is the scientific meaning of empirically supported therapy? *Journal of Consulting and Clinical Psychology*, 66, 136-142.
- Borkovec, T. D., & Mathews, A. M. (1988). Treatment of nonphobic anxiety disorders: A

- comparison of nondirective, cognitive, and coping desensitization therapy. *Journal of Consulting and Clinical Psychology, 56*, 877-884.
- Borkovec, T. D., Newman, M. G., Pincus, A. L., & Lytle, R. (2002). A component analysis of cognitive-behavioral therapy for generalized anxiety disorder and the role of interpersonal problems. *Journal of Consulting and Clinical Psychology, 70*, 288-298.
- Borkovec, T. D., & Ruscio, A. (2001). Psychotherapy for generalized anxiety disorder. *Journal of Clinical Psychiatry, 62*(suppl. 11), 37-42.
- Borkovec, T. D., Shadick, R., & Hopkins, M. (1991). The nature of normal and pathological worry. In R. Rapee & D. H. Barlow (Eds.), *Chronic anxiety and generalized anxiety disorder* (pp. 29-51). New York: Guilford Press.
- Borkovec, T. D., Wilkinson, L., Folensbee, R., & Lerman, C. (1983). Stimulus control applications to the treatment of worry. *Behaviour Research and Therapy, 21*, 247-251.
- Bowman, D., Scogin, F., Floyd, M., Patton, E., & Gist, L. (1997). Efficacy of self-examination therapy in the treatment of generalized anxiety disorder. *Journal of Counseling Psychology, 44*, 267-273.
- Brawman-Mintzer, O., Lydiard, R. B., Emmanuel, N., Payeur, R., Johnson, M., Roberts, J., Jarrell, M. P., & Ballenger, J. C. (1993). Psychiatric comorbidity in patients with generalized anxiety disorder. *American Journal of Psychiatry, 150*, 1216-1218.
- Brosschot, J. F., & van der Doef, M. (2002). *Daily worrying increases somatic complaints; a simple worry reduction intervention helps*. Manuscript in preparation.
- Brown, T. A. (1997). The nature of generalized anxiety disorder and pathological worry: Current evidence and conceptual models. *Canadian Journal of Psychiatry, 42*, 817-824.
- Brown, T. A., Antony, M. M., & Barlow, D. H. (1992). Psychometric properties of the Penn

- State Worry Questionnaire in a clinical anxiety disorders sample. *Behaviour Research and Therapy*, 30, 33-37.
- Brown, T. A., & Barlow, D. H. (1992). Comorbidity among anxiety disorders: Implications for treatment and DSM-IV. *Journal of Consulting and Clinical Psychology*, 60, 835-844.
- Brown, T. A., Barlow, D. H., & Liebowitz, M. R. (1994). The empirical basis of generalized anxiety disorder. *American Journal of Psychiatry*, 151, 1272-1280.
- Brown, T. A., Di Nardo, P. A., & Barlow, D. H. (1994). *Anxiety Disorders Interview Schedule for DSM-IV*. San Antonio, TX: The Psychological Corporation.
- Brown, T. A., Di Nardo, P. A., Lehman, C. L., & Campbell, L. A. (2001). Reliability of DSM-IV anxiety and mood disorders: Implications for the classification of emotional disorders. *Journal of Abnormal Psychology*, 110, 49-58.
- Butler, G., Cullington, A., Hibbert, G., Klimes, I., & Gelder, M. (1987). Anxiety management for persistent generalised anxiety. *British Journal of Psychiatry*, 151, 535-542.
- Carson, R. C. (1997). Costly compromises: A critique of the Diagnostic and Statistical Manual of Mental Disorders. In S. Fisher and R. P. Greenberg (Eds.), *From placebo to panacea: Putting psychiatric drugs to the test* (pp. 98-112). New York: John Wiley & Sons.
- Chambless, D. L., Baker, M. J., Baucom, D. H., Beutler, L. E., Calhoun, K. S., Crits-Christoph, P., Daiuto, A., DeRubeis, R., Detweiler, J., Haggga, D. A., Bennett Johnson, S., McCurry, S., Mueser, K. T., Pope, K. S., Sanderson, W. C., Shoham, V., Stickle, T., Williams, D. A., & Woody, S. R. (1998). Update on empirically validated therapies. II. *The Clinical Psychologist*, 51, 3-15.
- Chambless, D. L., & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology*, 52, 685-716.

- Cohen, J. (1983). The cost of dichotomization. *Applied Psychological Measurement*, 7, 249-253.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155-159.
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Corning, W. C. (1986). Bootstrapping toward a classification system. In T. Millon and G. L. Klerman (Eds.), *Contemporary directions in psychopathology: Toward the DSM-IV* (pp. 279-303). New York: Guilford Press.
- Cronbach, L. J., & Furby, L. (1970). How should we measure “change”—or should we? *Psychological Bulletin*, 74, 68-80.
- Dobson, K. S. (1989). A meta-analysis of the efficacy of cognitive therapy for depression. *Journal of Consulting and Clinical Psychology*, 57, 414-419.
- Elkin, L., Shea, M. T., Watkins, J. T., Imber, S. D., Sotsky, S. M., Collins, J. F., Glass, D. R., Pilkonis, P. A., Leber, W. R., Docherty, J. P., Fiester, S. J., & Parloff, M. B. (1989). National Institute of Mental Health Treatment of Depression Collaborative Research Program: General effectiveness of treatments. *Archives of General Psychiatry*, 46, 971-982.
- Endicott, J., Nee, J., Harrison, W., & Blumenthal, R. (1993). Quality of Life Enjoyment and Satisfaction Questionnaire: A new measure. *Psychopharmacology Bulletin*, 29, 321-326.
- Eysenck, H. J. (1986). A critique of contemporary classification and diagnosis. In T. Millon and G. L. Klerman (Eds.), *Contemporary directions in psychopathology: Toward the DSM-IV* (pp. 73-98). New York: Guilford Press.

- Eysenck, M. W., Mogg, K., May, J., Richards, A., & Mathews, A. (1990). Bias in interpretation of ambiguous sentences related to threat in anxiety. *Journal of Abnormal Psychology, 100*, 144-151.
- Gangestad, S., & Snyder, M. (1985). "To carve nature at its joints": On the existence of discrete classes in personality. *Psychological Review, 92*, 317-349.
- Gitlin, M. J. (1996). *The psychotherapist's guide to psychopharmacology*. New York: The Free Press.
- Goldiamond, I. (1965). Self-control procedures in personal behavior problems. *Psychological Reports, 17*, 851-868.
- Gotlib, I. H., & Cane, D. B. (1989). Self-report assessment of depression and anxiety. In P. C. Kendall & D. Watson (Eds.), *Anxiety and depression: Distinctive and overlapping features* (pp. 131-169). San Diego, CA: Academic Press.
- Gould, R. A., & Clum, G. A. (1993). A meta-analysis of self-help treatment approaches. *Clinical Psychology Review, 13*, 169-186.
- Grove, W. M. (1991). When is a diagnosis worth making? A statistical comparison of two prediction strategies. *Psychological Reports, 68*, 3-17.
- Hamilton, M. (1959). The assessment of anxiety states by rating. *British Journal of Medical Psychology, 23*, 50-55.
- Hayes, S. C., Barlow, D. H., & Nelson-Gray, R. O. (1999). *The scientist practitioner: Research and accountability in the age of managed care* (2nd ed.). Needham Heights, MA: Allyn & Bacon.
- Hayes, S. C., Nelson, R. O., & Jarrett, R. B. (1987). The treatment utility of assessment: A functional approach to evaluating assessment quality. *American Psychologist, 42*, 963-974.

- Hecker, J. E., Losee, M. C., Fritzler, B. K., & Fink, C. M. (1996). Self-directed versus therapist-directed cognitive behavioral treatment for panic disorder. *Journal of Anxiety Disorders, 10*, 253-265.
- Helmchen, H. (1991). The impact of diagnostic systems on treatment planning. *Integrative Psychiatry, 7*, 16-20.
- Hopf, T., Ayres, J., Ayres, F., & Baker, B. (1995). Does self-help material work? Testing a manual designed to help trainers construct public speaking apprehension reduction workshops. *Communication Research Reports, 12*, 34-38.
- Horowitz, L. M., Lambert, M. J., & Strupp, H. H. (Eds.). (1997). *Measuring patient change in mood, anxiety, and personality disorders: Toward a core battery*. Washington, DC: American Psychological Association Press.
- Jacobson, N. S., Dobson, K. S., Truax, P. A., Addis, M. E., Koerner, K., Gollan, J. K., Gortner, E., & Prince, S. E. (1996). A component analysis of cognitive-behavioral treatment for depression. *Journal of Consulting and Clinical Psychology, 62*, 295-304.
- Jannoun, L., Oppenheimer, C., & Gelder, M. (1982). A self-help treatment program for anxiety state patients. *Behavior Therapy, 13*, 103-111.
- Kanter, N. J., & Goldfried, M. R. (1979). Relative effectiveness of rational restructuring and self-control desensitization in the reduction of interpersonal anxiety. *Behavior Therapy, 10*, 472-490.
- Katz, R., Shaw, B. F., Vallis, M. T., & Kaiser, A. S. (1995). The assessment of severity and symptom patterns in depression. In E. E. Becklam, W. R. Leber, et al. (Eds.), *Handbook of depression* (2nd ed.; pp. 61-85). New York: Guilford.
- Kendler, K. S., Neale, M. C., Kessler, R. C., Heath, A. C., & Eaves, L. J. (1992). Major

depression and generalized anxiety disorder: Same genes (partly) different environments?
Archives of General Psychiatry, 49, 716-722.

Kirsch, I., & Henry, D. (1979). Self-desensitization and meditation in the reduction of public speaking anxiety. *Journal of Consulting and Clinical Psychology*, 47, 536-541.

Klerman, G. L. (1990). The psychiatric patient's right to effective treatment: Implications of *Osheroff v. Chestnut Lodge*. *American Journal of Psychiatry*, 147, 409-418.

Krueger, R. F., & Piasecki, T. M. (2002). Toward a dimensional and psychometrically-informed approach to conceptualizing psychopathology. *Behaviour Research and Therapy*, 40, 485-499.

Leon, A. C., Olfson, M., Portera, L., Farber, L., & Sheehan, D. V. (1997). Assessing psychiatric impairment in primary care with the Sheehan Disability Scale. *International Journal of Psychiatry in Medicine*, 27, 93-105.

Leon, A. C., Shear, M. K., Portera, L., & Klerman, G. L. (1992). Assessing impairment in patients with panic disorder: The Sheehan Disability Scale. *Social Psychiatry and Psychiatric Epidemiology*, 27, 78-82.

Lips, H. M., & Ng, M. (1985). Use of the Beck Depression Inventory with three non-clinical populations. *Canadian Journal of Behavioral Science*, 18, 62-74.

MacLeod, C., Mathews, A., & Tata, P. (1986). Attentional bias in emotional disorders. *Journal of Abnormal Psychology*, 95, 15-20.

Malmgren, H., & Lindqvist, G. (1993). The semantic status of diagnostic criteria for organic mental syndromes and disorders in DSM-III and DSM-III-R. *Acta Psychiatrica Scandinavica*, 88 (373, Suppl), 33-47.

Marrs, R. W. (1995). A meta-analysis of bibliotherapy studies. *American Journal of Community Psychology*, 23, 843-870.

- Meehl, P. E. (1973). MAXCOV-HITMAX: A taxometric search method for loose genetic syndromes. In P. E. Meehl (Ed.), *Psychodiagnosis: Selected papers* (pp. 200-224). Minneapolis: University of Minnesota Press.
- Meehl, P. E. (1986). Diagnostic taxa as open concepts: Metatheoretical and statistical questions about reliability and construct validity in the grand strategy of nosological revision. In T. Millon and G. L. Klerman (Eds.), *Contemporary directions in psychopathology: Toward the DSM-IV* (pp. 215-231). New York: Guilford Press.
- Meehl, P. E. (1992). Factors and taxa, traits and types, differences of degree and differences in kind. *Journal of Personality*, *60*, 117-174.
- Meehl, P. E. (1995). Bootstraps taxometrics: Solving the classification problem in psychopathology. *American Psychologist*, *50*, 266-274.
- Meehl, P. E., & Yonce, L. J. (1994). Taxometric analysis: I. Detecting taxonicity with two quantitative indicators using means above and below a sliding cut (MAMBAC procedure). *Psychological Reports*, *74*, 1059-1274.
- Meehl, P. E., & Yonce, L. J. (1996). Taxometric analysis: II. Detecting taxonicity using covariance of two quantitative indicators in successive intervals of a third indicator (MAXCOV procedure). *Psychological Reports*, *78*, 1091-1227.
- Mennin, D. S., Fresco, D. M., Heimberg, R. G., & Turk, C. L. (1999, November). *Determining clinically significant worry: A receiver operating characteristic (ROC) analysis approach*. Poster presented at the Annual Meeting for the Association for Advancement of Behavior Therapy, Toronto, Canada.
- Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy*, *28*,

487-495.

- Millon, T. (1986). On the past and future of the DSM-III: Personal recollections and projections. In T. Millon and G. L. Klerman (Eds.), *Contemporary directions in psychopathology: Toward the DSM-IV* (pp. 29-70). New York: Guilford Press.
- Molina, S., & Borkovec, T. D. (1994). The Penn State Worry Questionnaire: Psychometric properties and associated characteristics. In G. Davey & F. Tallis (Eds.), *Worrying: Perspectives on theory, assessment and treatment* (pp. 265-283). Chichester, England: Wiley.
- Myers, L. L., & Thyer, B. A. (1997). Should social work clients have the right to effective treatment? *Social Work, 42*, 288-298.
- Nathan, P. E. (1998). The *DSM-IV* and its antecedents: Enhancing syndromal diagnosis. In J. W. Barron (Ed.), *Making diagnosis meaningful: Enhancing evaluation and treatment of psychological disorders* (pp. 3-27). Washington, DC: American Psychological Association.
- Newman, M. G. (2000). Recommendations for a cost-offset model of psychotherapy allocation using generalized anxiety disorder as an example. *Journal of Consulting and Clinical Psychology, 68*, 549-555.
- Newman, M. G., Consoli, A. J., & Taylor, C. B. (1999). A palmtop computer program for the treatment of generalized anxiety disorder. *Behavior Modification, 23*, 597-619.
- Newman, M. G., Erickson, T., Przeworski, A., & Dzus, E. (2003). Self-help and minimal-contact therapies for anxiety disorders: Is human contact necessary for therapeutic efficacy? *Journal of Clinical Psychology, 59*, 251-274.
- Newman, M. G., Zuellig, A. R., Kachin, K. E., Constantino, M. J., Przeworski, A., Erickson, T., & Cashman-McGrath, L. (2002). Preliminary reliability and validity of the Generalized

- Anxiety Disorder Questionnaire–IV: A revised self-report diagnostic measure of generalized anxiety disorder. *Behavior Therapy*, 33, 215-233.
- Öst, L.-G., Jerremalm, A., & Johansson, J. (1981). Individual response patterns and the effects of different behavioral methods in the treatment of social phobia. *Behaviour Research and Therapy*, 19, 1-16.
- Poland, J., Von Eckardt, B., & Spaulding, W. (1994). Problems with the DSM approach to classifying psychopathology. In G. Graham and G. L. Stephens (Eds.), *Philosophical psychopathology* (pp. 235-260). Cambridge, MA: MIT Press.
- Pollack, M. H., Otto, M. W., Worthington, J. J., Manfro, G. G., & Wolkow, R. (1998). Sertraline in the treatment of panic disorder: A flexible-dose multicenter trial. *Archives of General Psychiatry*, 55, 1010-1016.
- Prusoff, B. A., Weissman, M. M., Klerman, G. L., & Rounsaville, B. J. (1980). Research diagnostic criteria subtypes for depression: Their role as predictors of differential response to psychotherapy and drug treatment. *Archives of General Psychiatry*, 37, 796-801.
- Pruyser, P., & Menninger, K. (1976). Language pitfalls in diagnostic thought and work. *Bulletin of the Menninger Clinic*, 40, 417-434.
- Rapaport, M. H., Endicott, J., & Clary, C. M. (2002). PTSD and quality of life: Results across 64 weeks of sertraline treatment. *Journal of Clinical Psychiatry*, 63, 59-65.
- Raw, S. D. (1998). Who is to define effective treatment for social work clients? *Social Work*, 43, 81-86.
- Register, A. C., Beckham, J. C., May, J. G., & Gustafson, D. J. (1991). Stress inoculation bibliotherapy in the treatment of test anxiety. *Journal of Counseling Psychology*, 38, 115-119.

- Rickels, K., & Rynn, M. A. (2001). What is generalized anxiety disorder? *Journal of Clinical Psychiatry*, 62(suppl. 11), 4-12.
- Roemer, L., Borkovec, M., Posa, S., & Borkovec, T. D. (1995). A self-report diagnostic measure of generalized anxiety disorder. *Journal of Behavior Therapy & Experimental Psychiatry*, 26, 345-350.
- Roemer, L., Molina, S., & Borkovec, T. D. (1997). An investigation of worry content among generally anxious individuals. *Journal of Nervous and Mental Disease*, 185, 314-319.
- Roemer, L., Orsillo, S. M., & Barlow, D. H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic* (2nd ed., pp. 477-515). New York: Guilford Press.
- Roy, M-A., Neale, M. C., Pedersen, N. L., Mathé, A. A., & Kendler, K. S. (1995). A twin study of generalized anxiety disorder and major depression. *Psychological Medicine*, 25, 1037-1049.
- Ruscio, A. M. (2002). Delimiting the boundaries of generalized anxiety disorder: Differentiating high worriers with and without GAD. *Journal of Anxiety Disorders*, 16, 377-400.
- Ruscio, A. M., Bedard, M., & Gianvito, M. A. (2001, November). *Attitudes about worry unique to GAD: A qualitative investigation*. Paper presented at the annual meeting of the Association for Advancement of Behavior Therapy, Philadelphia, PA.
- Ruscio, A. M., & Borkovec, T. D. (2001, November). *Perceptions and consequences of worry among high worriers with and without GAD*. Paper presented at the annual meeting of the Association for Advancement of Behavior Therapy, Philadelphia, PA.
- Ruscio, A. M., Borkovec, T. D., & Clements, M. L. (2002, August). *A multidimensional measure of anxious alarm and anxious apprehension*. Paper presented at the annual meeting of the American Psychological Association, Chicago, IL.

- Ruscio, A. M., Borkovec, T. D., & Ruscio, J. (2001). A taxometric investigation of the latent structure of worry. *Journal of Abnormal Psychology, 110*, 413-422.
- Ruscio, A. M., Resnick, H., Ruggiero, K., Acierno, R., & Galea, S. (2003). *A web-based intervention for worry and generalized anxiety following the September 11 terrorist attacks*. Unpublished therapy manual.
- Ruscio, A. M., & Ruscio, J. (2002). The latent structure of analogue depression: Should the Beck Depression Inventory be used to classify groups? *Psychological Assessment, 14*, 135-145.
- Ruscio, A. M., Ruscio, J., & Borkovec, T. D. (2002, November). Latent structure of generalized anxiety disorder: I. Taxometric results in an analogue sample. In N. Amir & B. Schmidt (Chairs), *Taxometric approaches to psychopathology*. Symposium conducted at the annual meeting of the Association for Advancement of Behavior Therapy, Reno, NV.
- Ruscio, A. M., Ruscio, J., & Borkovec, T. D. (2004). *Latent structure of generalized anxiety disorder: II. Taxometric results in a clinical sample*. Research in progress.
- Ruscio, A. M., Ruscio, J., & Keane, T. M. (2002). The latent structure of posttraumatic stress disorder: A taxometric investigation of reactions to extreme stress. *Journal of Abnormal Psychology, 111*, 290-301.
- Ruscio, J., & Ruscio, A. M. (2000). Informing the continuity controversy: A taxometric analysis of depression. *Journal of Abnormal Psychology, 109*, 473-487.
- Ruscio, J., & Ruscio, A. M. (2002). A structure-based approach to psychological assessment: Matching measurement models to latent structure. *Assessment, 9*, 4-16.
- Ruscio, J., & Ruscio, A. M. (in press). A nontechnical introduction to the taxometric method. *Understanding Statistics*.
- Ruscio, J., & Ruscio, A. M. (2004). Clarifying boundary issues in psychopathology: The role of

- taxometrics in a comprehensive program of structural research. *Journal of Abnormal Psychology, 113*, 24-38.
- Safran, J. D., Alden, L. E., & Davidson, P. O. (1980). Client anxiety level as a moderator variable in assertion training. *Cognitive Therapy and Research, 4*, 189-200.
- Salzinger, K. (1986). Diagnosis: Distinguishing among behaviors. In T. Millon & G. L. Klerman (Eds.), *Contemporary directions in psychopathology: Toward the DSM-IV* (pp. 115-134). New York: Guilford Press.
- Scogin, F., Bynum, J., Stephens, G., & Calhoun, S. (1990). Efficacy of self-administered treatment programs: Meta-analytic review. *Professional Psychology: Research and Practice, 21*, 42-47.
- Sheehan, D. V. (1983). *The anxiety disease*. New York: Scribner.
- Simes, R. J. (1986). An improved Bonferroni procedure for multiple tests of significance. *Biometrika, 73*, 751-754.
- Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the State-Trait Anxiety Inventory (Form Y)*. Palo Alto, CA: Consulting Psychologists Press.
- Spitzer, R. L., & Endicott, J. (1978). Medical and mental disorder: Proposed definition and criteria. In R. L. Spitzer & D. F. Klein (Eds.), *Critical issues in psychiatric diagnosis* (pp. 15-39). New York: Raven Press.
- Stanley, M. A., Beck, J. G., & Glassco, J. D. (1996). Treatment of generalized anxiety in older adults: A preliminary comparison of cognitive-behavioral and supportive approaches. *Behavior Therapy, 27*, 565-581.
- Starcevic, V. (1995). Pathological worry in major depression: A preliminary report. *Behaviour Research and Therapy, 33*, 55-56.

- Steinmark, S. W., & Borkovec, T. D. (1974). Active and placebo treatment effects on moderate insomnia under counterdemand and positive demand instructions. *Journal of Abnormal Psychology, 83*, 157-163.
- Strube, M. J. (1989). Evidence for the *Type* in Type A behavior: A taxometric analysis. *Journal of Personality and Social Psychology, 56*, 972-987.
- Stuart, R. B. (1967). Behavioral control of overeating. *Behaviour Research and Therapy, 5*, 357-365.
- Thayer, J. F., Friedman, B. H., & Borkovec, T. D. (1996). Autonomic characteristics of generalized anxiety disorder and worry. *Biological Psychiatry, 39*, 255-266.
- Thayer, J. F., Friedman, B. H., Borkovec, T. D., Johnsen, B. H., & Molina, S. (2000). Phasic heart period reactions to cued threat and nonthreat stimuli in generalized anxiety disorder. *Psychophysiology, 37*, 361-368.
- Thyer, B. A., & Myers, L. L. (1998). Supporting the client's right to effective treatment: Touching a raw nerve? *Social Work, 43*, 87-91.
- Tucker, G. J. (1998). Putting *DSM-IV* in perspective. *American Journal of Psychiatry, 155*, 159-161.
- van Rijsoort, S., Emmelkamp, P., & Vervaeke, G. (1999). The Penn State Worry Questionnaire and the Worry Domains Questionnaire: Structure, reliability, and validity. *Clinical Psychology and Psychotherapy, 6*, 297-307.
- Waller, N. G., & Meehl, P. E. (1998). *Multivariate taxometric procedures: Distinguishing types from continua*. Thousand Oaks, CA: Sage.
- White, J. (1998). "Stress control" large group therapy for generalized anxiety disorder: Two year follow-up. *Behavioural and Cognitive Psychotherapy, 26*, 237-245.

- White, J., Keenan, M., & Brooks, N. (1992). Stress control: A controlled comparative investigation of large group therapy for generalized anxiety disorder. *Behavioural Psychotherapy, 20*, 97-114.
- Widiger, T. A., & Clark, L. A. (2000). Toward *DSM-V* and the classification of psychopathology. *Psychological Bulletin, 126*, 946-963.
- Wright, J., Clum, G. A., Roodman, A., & Febbraro, G. A. M. (2000). A bibliotherapy approach to relapse prevention in individuals with panic attacks. *Journal of Anxiety Disorders, 14*, 483-499.

APPENDIX A: MEASURES

PSWQ

Choose the number that best describes how typical or characteristic each item is of you.
PLEASE MAKE ALL RESPONSES ON THE SCANTRON FORM.

0	1	2	3	4
Not at all typical		Somewhat typical		Very typical

1. If I don't have enough time to do everything, I don't worry about it.
 2. My worries overwhelm me.
 3. I don't tend to worry about things.
 4. Many situations make me worry.
 5. I know I shouldn't worry about things, but I just can't help it.
 6. When I am under pressure I worry a lot.
 7. I am always worrying about something.
 8. I find it easy to dismiss worrisome thoughts.
 9. As soon as I finish one task, I start to worry about everything else I have to do.
 10. I never worry about anything.
 11. When there is nothing more I can do about a concern, I don't worry about it any more.
 12. I've been a worrier all my life.
 13. I notice that I have been worrying about things.
 14. Once I start worrying, I can't stop.
 15. I worry all the time.
 16. I worry about projects until they are all done.
-
17. Would you be interested in attending a free workshop to learn skills for reducing worry and stress? a. YES b. NO
-

GAD-Q-IV

1. Do you experience excessive and uncontrollable worry? a. Yes b. No
2. Is your worry excessive in intensity, frequency, or amount of distress it causes? a. Yes b. No
3. Do you find it difficult to control your worry (or stop worrying) once it starts? a. Yes b. No
4. Do you worry excessively and uncontrollably about minor things such as being late for an appointment, minor repairs, homework, etc.? a. Yes b. No

5. IN THE SPACE BELOW, please list the most frequent topics about which you worry excessively and uncontrollably:

a. _____	d. _____
b. _____	e. _____
c. _____	f. _____

6. During the last six months, have you been bothered by excessive and uncontrollable worries more days than not? a. Yes b. No

During the past six months, have you often been bothered by any of the following symptoms? For each symptom, indicate whether you have had it more days than not:

- | | | |
|---|--------|-------|
| 7. Restlessness or feeling keyed up or on edge | a. Yes | b. No |
| 8. Difficulty falling/staying asleep or restless/unsatisfying sleep | a. Yes | b. No |
| 9. Difficulty concentrating or mind going blank | a. Yes | b. No |
| 10. Irritability | a. Yes | b. No |
| 11. Being easily fatigued | a. Yes | b. No |
| 12. Muscle tension | a. Yes | b. No |

13. How much do worry and these physical symptoms interfere with your life, work, social activities, family, etc.? Choose one letter:

a	b	c	d	e	f	g	h	i
/	/	/	/	/	/	/	/	/
None	Mild		Moderate		Severe		Very Severe	

14. How much are you bothered by worry and these physical symptoms (how much distress does it cause you)? Choose one letter:

a	b	c	d	e	f	g	h	i
/	/	/	/	/	/	/	/	/
No distress	Mild distress		Moderate distress		Severe distress		Very Severe distress	

Subject #: _____

Today's Date: _____

I want to thank you again for coming in today and participating in the study. I asked you to join me here so that we could do a brief interview, which I will be audiotaping using this recorder [*point*]. I want to remind you that all of the information that you provide in this interview will be kept strictly confidential, and that my notes and this tape will be labeled with a number so that they cannot be associated with your name or identity. Do you have any questions before we begin?

ADIS GAD Module – *Pretherapy Assessment*

I am going to ask you several questions about some specific kinds of problems that may or may not apply to you.

1a. Over the last 6 months have you tended to be excessively worried or anxious about a number of situations, people, or activities in your daily life? YES ____ NO ____

1b. During the past 6 months have you been bothered by anxiety or worry more days than not (i.e., over half the days)? YES ____ NO ____

2. When you have been in the middle of worrying, do you find that it's hard to stop the worry? YES ____ NO ____

3a. Do you worry excessively and uncontrollably about minor things such as being late to an appointment, minor repairs, homework, etc.? YES ____ NO ____

3b. What are the most frequent topics about which you worry excessively and uncontrollably? (**Prompt – Are there any other topics about which you worry excessively and uncontrollably?**)

During the last 6 months, have you had symptoms of _____ more days than not (i.e., over half the days)?

- | | | |
|---|----------|---------|
| 4a. restlessness, feeling keyed up, or on edge | YES ____ | NO ____ |
| 4b. muscle tension, aches, or soreness | YES ____ | NO ____ |
| 4c. becoming tired easily | YES ____ | NO ____ |
| 4d. difficulty concentrating or noticing your mind going blank because of anxiety | YES ____ | NO ____ |
| 4e. trouble falling or staying asleep | YES ____ | NO ____ |
| 4f. irritability | YES ____ | NO ____ |

I am going to ask you a few more questions, but this time I'd like you to answer using the scale from 0 to 8 printed on this sheet (give sheet to participant), where 0 = None, 2 = Mild, 4 = Moderate, 6 = Severe, and 8 = Very Severe. You can also use any of the odd numbers in-between. Okay?

0-----1-----2-----3-----4-----5-----6-----7-----8
 None Mild Moderate Severe Very Severe

- _____ 5a. How much are you bothered about having these worries?
- _____ 5b. To what extent have these worries and the tension or anxiety associated with them interfered with your life?
- _____ 5c. To what extent have these worries and the tension or anxiety associated with them interfered with your daily routine?
- _____ 5d. To what extent have these worries and the tension or anxiety associated with them influenced your job or educational attainment?
- _____ 5e. To what extent have these worries and the tension or anxiety associated with them interfered with your social activities?
- _____ 5f. To what extent have worries and the tension or anxiety associated with them interfered with your relationships?

GAD SEVERITY RATING:

ABSENT	MILD	MODERATE	SEVERE	VERY SEVERE
0-----	1-----	2-----	3-----	4-----
5-----	6-----	7-----	8	
None	Slightly disturbing/ not really disturbing	Definitely disturbing/ disabling	Markedly disturbing/ disabling	Very severely disturbing/ disabling

I'd like to ask you a few more questions about your worry using a similar 0 to 8 scale. I will read you each question and then show you the scale. Remember, pick the value between 0 and 8 that best applies to you.

6. Over the last six months, how excessive has your worry or anxiety tended to be?

0-----1-----2-----3-----4-----5-----6-----7-----8
 Not at all Mildly Moderately Highly Severely
 excessive excessive excessive excessive excessive

7. When you have been in the middle of worrying, how hard is it to stop the worry?

0-----1-----2-----3-----4-----5-----6-----7-----8
 Not at all Slightly Moderately Very Extremely
 difficult difficult difficult difficult difficult

Now I'd like to ask you about some specific symptoms. First, I will ask you to rate how frequently you've experienced the symptom during the last six months (*put sheet on table on participant's left*). Then, I will ask you to rate how severe that symptom has been when you've experienced it (*put second sheet on participant's right*). Any questions?

[Point to the appropriate scale before each question.]

FREQUENCY SCALE:

0-----1-----2-----3-----4-----5-----6-----7
 Never Once every Once per 2-3 times Once per 2-3 times 4-5 times Daily/almost
 few months month per month week per week per week every day

SEVERITY SCALE:

0-----1-----2-----3-----4-----5-----6-----7-----8
 None Mild Moderate Severe Very Severe

During the last six months,	how often have you:	how severe has the ____ been?
8. been bothered by anxiety or worry?	_____	_____
9a. felt restless, keyed up, or on edge?	_____	_____
9b. experienced muscle tension, aches, or soreness?	_____	_____
9c. become tired easily?	_____	_____
9d. had difficulty concentrating or noticed your mind going blank because of anxiety?	_____	_____
9e. had trouble falling or staying asleep?	_____	_____
9f. felt irritable?	_____	_____

[Your goal for the following questions is to determine whether anything unusual was going on before the onset of worry and anxiety that may be responsible for this anxiety.]

10. How long has excessive, uncontrollable worry been a problem for you? _____ (months)

Just before you began having these worries and ongoing feelings of tension or anxiety,

- | | | |
|---|-----------|----------|
| 11a. Had you been taking or had you recently stopped taking any types of prescription or illegal drugs? | YES _____ | NO _____ |
| 11b. Were you drinking more alcohol or more caffeinated beverages than usual? | YES _____ | NO _____ |
| 11c. Were you aware of any medical or physical conditions that you had or may have had? | YES _____ | NO _____ |

HAMILTON ANXIETY SCALE -- Pretherapy

Now I'm going to read you a list of symptoms. (*Give scale to participant.*) Using this scale from 0–4, indicate whether each symptom has been absent, mild, moderate, severe, or very severe (grossly disabling) for you during the **PAST MONTH**. Any questions before we start?

0-----1-----2-----3-----4
None Mild Moderate Severe Very severe, grossly disabling

1. Anxious Mood: Do you worry about a lot of things, a lot of minor problems?

a. Worries..... _____
 b. Anticipation of the worst..... _____
 c. Apprehension..... _____
 d. Irritability..... _____

TOTAL

5. Intellectual, cognitive: Does the anxiety break up your concentration while at work, reading, watching TV, etc.?

a. Difficulty in concentration, mind going blank..... _____
 b. Poor memory _____

TOTAL

2. Tension

a. Feelings of tension..... _____
 b. Fatigability..... _____
 c. Inability to relax..... _____
 d. Keyed up..... _____
 e. Startle response..... _____
 f. Moved to tears easily..... _____
 g. Trembling..... _____
 h. Feelings of restlessness..... _____

6. Depressed Mood: (Do you sometimes get down, blue, sad, depressed?) How does this feeling affect your outlook on yourself, and the future?

a. Loss of interest..... _____
 b. Lack of pleasure in hobbies..... _____
 c. Depression..... _____
 d. Early waking..... _____
 e. Diurnal swing..... _____

3. Fears: Rate any specific fear on severity and frequency of exposure

7. General somatic, muscular:

a. Muscular pains and aches _____
 b. Muscular stiffness..... _____
 c. Clonic jerk _____
 d. Muscular twitchings..... _____
 e. Grinding of teeth _____
 f. Unsteady voice _____

4. Insomnia: How is your sleep?

a. Difficulty in falling asleep..... _____
 b. Broken sleep..... _____
 c. Unsatisfying sleep..... _____
 d. Fatigue on waking..... _____
 e. Dreams (*frequency, intensity*).... _____
 f. Nightmares..... _____
 g. Night terrors..... _____

All ratings are for the PAST MONTH.

0-----1-----2-----3-----4
None Mild Moderate Severe Very severe,
grossly disabling

8. General somatic, sensory:

a. Tinnitus..... _____
b. Blurring of vision _____
c. Hot and cold flushes _____
d. Feeling of weakness..... _____
e. Pricking sensations..... _____

TOTAL

12. Genito-urinary Symptoms:

a. Frequency of urination..... _____
b. Urgency of urination..... _____
c. Sexual dysfunction..... _____

TOTAL

9. Cardiovascular Symptoms:

a. Tachycardia (*rapid heart rate*)... _____
b. Palpitations..... _____
c. Pain in chest..... _____
d. Throbbing of vessels _____
e. Fainting feelings..... _____
f. Missing beat _____
g. Pulse rate..... _____

13. Autonomic Symptoms:

a. Dry mouth..... _____
b. Blushing/Pallor..... _____
c. Tendency to sweat; clammy hands _____
d. Dizziness, lightheadedness..... _____
e. Tension headache..... _____
f. Raising of hair..... _____

10. Respiratory Symptoms:

a. Pressure or constriction in chest _____
b. Choking feelings..... _____
c. Sighings..... _____
d. Dyspnea..... _____

Note: "Dyspnea" is difficulty breathing

14. Behavior at Interview (general):

Tense, not relaxed, fidgeting;
clenching hands, picking
fingers, tics, restlessness,
pacing, tremor of hands,
furrowed brow, strained face,
increased muscular tone, sighing
respirations, facial pallor.

Behavior (physiological):

Swallowing, belching, high
resting pulse rate, tremor,
respiration rate over 20/min.
brisk tendon jerks, dilated
pupils, Exophthalmos,
sweating, eye-lid twitching

*Note: Combine general and physiological
for one rating.*

11. Gastro-intestinal Symptoms:

a. Difficulty in swallowing, lump
in throat..... _____
b. Wind..... _____
c. Dyspepsia (nausea, vomiting,
sour stomach)..... _____
d. "Working" in abdomen..... _____
e. Looseness of bowels..... _____
f. Loss of weight _____
g. Constipation..... _____

STAI-T

A number of statements which people have used to describe themselves are given below. Read each statement and then bubble the appropriate number on the scantron to indicate **how you generally feel**. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

0	1	2	3
Almost never	Sometimes	Often	Almost always

1. I feel pleasant
2. I feel nervous and restless
3. I feel satisfied with myself
4. I wish I could be as happy as others seem to be
5. I feel like a failure
6. I feel rested
7. I am "calm, cool and collected"
8. I feel that difficulties are piling up so that I cannot overcome them
9. I worry too much over something that really doesn't matter
10. I am happy
11. I have disturbing thoughts
12. I lack self-confidence
13. I feel secure
14. I make decisions easily
15. I feel inadequate
16. I am content
17. Some unimportant thought runs through my mind and bothers me
18. I take disappointments so keenly that I can't put them out of my mind
19. I am a steady person
20. I get in a state of tension or turmoil as I think over my recent concerns and interests

CAAS-T

The purpose of this questionnaire is to get a sense for how much anxiety you usually experience in everyday life. Please answer the following questions based on the way you feel when you are experiencing the level of anxiety that is **typical for you**.

On the scantron, rate how **intensely** you experience each sensation, thought, feeling, or behavior *during a typical day* using the following scale:

0	1	2	3	4	5	6	7	8
None		Mild		Moderate		Fairly severe		Very severe

Focus on the sensations in your body when your anxiety is at its usual level. Indicate how intensely you experience each physical sensation during a typical day.

1. My heart races or pounds
2. I feel restless
3. My muscles feel tense, tight, or stiff
4. I feel lightheaded or dizzy
5. I can't stay still
6. I tremble or shake
7. I find it hard to breathe
8. I feel keyed up or on edge
9. I feel pressure or pain in my chest
10. I feel tingling or pricking sensations in my body
11. I feel jumpy
12. I feel unsteady, like I'm going to faint
13. I'm easily startled by movement or sounds

Now focus on the thoughts you have when your anxiety is at its usual level. Indicate how intensely you experience each thought during a typical day.

I think to myself...

14. "I'm losing control of my body"
15. "I'm worried about what will happen"
16. "I'm going crazy"

17. "I'm worried about whether I can handle what will happen"
18. "Everything seems unreal"
19. "What if I do poorly or don't react well?"
20. "It's hard to stop worrying"
21. "I need to get out of here"

Now focus on the feelings you have when your anxiety is at its usual level. Indicate how intensely you experience each feeling during a typical day.

22. I feel stressed out
23. I feel out of control
24. I feel helpless
25. I feel physically trapped

Now focus on your behavior when your anxiety is at its usual level. Indicate how intensely you engage in each behavior during a typical day.

26. I try to reduce my anxiety by saying calming things to myself
27. I try to think about something other than what is making me anxious
28. I immerse myself in another activity that is less anxiety-provoking
29. I try to think positive thoughts or imagine pleasant images to reduce my anxiety
30. I tell myself that everything will turn out okay

BDI

On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the **PAST WEEK, INCLUDING TODAY**. On the scantron, fill in the circle corresponding to the statement you picked. If several statements in the group seem to apply equally well, fill in the circle corresponding to the statement with the highest number. ***Be sure to read all the statements in each group before making your choice.***

1. 0. I do not feel sad.
 1. I feel sad.
 2. I am sad all the time and I can't snap out of it.
 3. I am so sad or unhappy that I can't stand it.

2. 0. I am not particularly discouraged about the future.
 1. I feel discouraged about the future.
 2. I feel I have nothing to look forward to.
 3. I feel that the future is hopeless and that things cannot improve.

3. 0. I do not feel like a failure.
 1. I feel I have failed more than the average person.
 2. As I look back on my life, all I can see is a lot of failures.
 3. I feel I am a complete failure as a person.

4. 0. I get as much satisfaction out of things as I used to.
 1. I don't enjoy things the way I used to.
 2. I don't get real satisfaction out of anything anymore.
 3. I am dissatisfied or bored with everything.

5. 0. I don't feel particularly guilty.
 1. I feel guilty a good part of the time.
 2. I feel quite guilty most of the time.
 3. I feel guilty all of the time.

6. 0. I don't feel I am being punished.
 1. I feel I may be punished.
 2. I expect to be punished.
 3. I feel I am being punished.

7. 0. I don't feel disappointed in myself.
 1. I am disappointed in myself.
 2. I am disgusted with myself.
 3. I hate myself.

8. 0. I don't feel I am any worse than anybody else.
 1. I am critical of myself all the time for my faults.
 2. I blame myself all the time for my faults.
 3. I blame myself for everything bad that happens.

9. 0. I don't have any thoughts of killing myself.
 1. I have thoughts of killing myself, but I would not carry them out.
 2. I would like to kill myself.
 3. I would kill myself if I had the chance.

10. 0. I don't cry any more than usual.
 1. I cry more now than I used to.
 2. I cry all the time now.
 3. I used to be able to cry, but now I can't cry even though I want to.

11. 0. I am no more irritated now than I ever am.
 1. I get annoyed or irritated more easily than I used to.
 2. I feel irritated all the time now.
 3. I don't get irritated at all by the things that used to irritate me.
12. 0. I have not lost interest in other people.
 1. I am less interested in other people than I used to be.
 2. I have lost most of my interest in other people.
 3. I have lost all of my interest in other people.
13. 0. I make decisions about as well as I ever could.
 1. I put off making decisions more than I used to.
 2. I have greater difficulty in making decisions than before.
 3. I can't make decisions at all anymore.
14. 0. I don't feel I look any worse than I used to.
 1. I am worried that I am looking old or unattractive.
 2. I feel that there are permanent changes in my appearance that makes me look unattractive.
 3. I believe that I look ugly.
15. 0. I can work about as well as before.
 1. It takes an extra effort to get started at doing something.
 2. I have to push myself very hard to do anything.
 3. I can't do any work at all.
16. 0. I can sleep as well as usual.
 1. I don't sleep as well as I used to.
 2. I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
 3. I wake up several hours earlier than I used to and cannot get back to sleep.
17. 0. I don't get more tired than usual.
 1. I get tired more easily than I used to.
 2. I get tired from doing almost anything.
 3. I am too tired to do anything.
18. 0. My appetite is no worse than usual.
 1. My appetite is not as good as it used to be.
 2. My appetite is much worse now.
 3. I have no appetite at all anymore.
19. 0. I haven't lost much weight, if any lately.
 1. I have lost more than 5 pounds.
 2. I have lost more than 10 pounds.
 3. I have lost more than 15 pounds.
20. I am purposely trying to lose weight by eating less.
 0. Yes
 1. No
21. 0. I am no more worried about my health than usual.
 1. I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
 2. I am very worried about physical problems and it's hard to think of much else.
 3. I am so worried about my physical problems, that I cannot think about anything else.
22. 0. I have not noticed any recent change in my interest in sex.
 1. I am less interested in sex than I used to be.
 2. I am much less interested in sex now.
 3. I have lost interest in sex completely.

SHEEHAN SCALE

On this page, please circle one response for each of the following three questions.

1. To what extent have emotional symptoms disrupted your work (including schoolwork) in the last month?

0	1	2	3	4	5	6	7	8	9	10	N/A
⏟	⏟			⏟			⏟			⏟	
Not at all	Mildly			Moderately			Markedly			Extremely	

2. To what extent have emotional symptoms disrupted your social life in the last month?

0	1	2	3	4	5	6	7	8	9	10	N/A
⏟	⏟			⏟			⏟			⏟	
Not at all	Mildly			Moderately			Markedly			Extremely	

3. To what extent have emotional symptoms disrupted your family life/home responsibilities in the last month?

0	1	2	3	4	5	6	7	8	9	10	N/A
⏟	⏟			⏟			⏟			⏟	
Not at all	Mildly			Moderately			Markedly			Extremely	

Q-LES-Q

This questionnaire is designed to help assess the degree of enjoyment and satisfaction experienced during the past week. For each question, please make one rating on the scantron using the following scale:

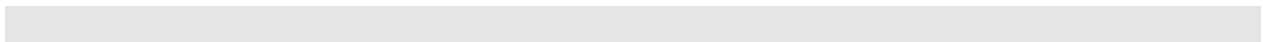
0	1	2	3	4
Not at all or never	Rarely	Sometimes	Often or most of the time	Frequently or all the time

With regard to your physical health, during the past week how much of the time have you...

1. ... been completely free of aches, pains, or discomfort?
2. ... felt rested?
3. ... felt energetic?
4. ... felt in excellent physical health?
5. ... felt in at least very good physical health?
6. ... been free of worry about your physical health?
7. ... felt you got enough sleep?
8. ... felt able to be as physically active as needed?
9. ... felt well coordinated?
10. ... felt your memory was functioning well?
11. ... felt good physically?
12. ... felt full of pep and vitality?
13. ... been free of visual problems?

During the past week, how much of the time have you...

14. ... felt clearheaded?
15. ... felt satisfied with your life?
16. ... felt good about your appearance?



0	1	2	3	4
Not at all or never	Rarely	Sometimes	Often or most of the time	Frequently or all the time

17. ... felt happy or cheerful?
18. ... felt independent?
19. ... felt content?
20. ... felt able to communicate with others?
21. ... felt interested in taking care of your appearance (hair, clothing) and personal hygiene (bathing, dressing)?
22. ... felt able to make decisions?
23. ... felt relaxed?
24. ... felt good about your life?
25. ... felt able to travel about to get things done when needed (walk, use car, bus, train, or whatever is available as needed)?
26. ... felt able to deal with life's problems?
27. ... felt able to take care of yourself?

Please respond to the next set of questions based on any courses you have taken, classes you have gone to, or involvement in any type of course work, school, or college studies (including graduate studies and research) during the past week.

During the past week how much of the time have you...

28. ... enjoyed the course/class work?
29. ... looked forward to getting to work on the course/class work?
30. ... dealt with the course/class work without undue stress?
31. ... thought clearly about the course/class work?
32. ... been decisive about the course/class work when needed?
33. ... been pleased with your course/class work accomplishments?
34. ... been interested in your course/class work?
35. ... concentrated on the course/class work?
36. ... felt good while doing your course/class work?
37. ... communicated and interacted with ease with others at your course/class?

0	1	2	3	4
Not at all or never	Rarely	Sometimes	Often or most of the time	Frequently or all the time

The following set of questions refers to leisure time activities such as watching T.V., reading the paper or magazines, tending house plants or gardening, hobbies, going to museums or the movies, or to sports events, etc.

38. When you had time, how often did you use that time for a leisure time activity?
39. How often did you enjoy the leisure activities?
40. How often did you look forward to the leisure activities before spending time at them?
41. How often did you concentrate on the leisure activities and pay attention to them?
42. If a problem arose in your leisure activities, how often did you solve it or deal with it without undue stress?
43. How often did the leisure activities sustain your interest?

During the past week how often have you...

44. ... enjoyed talking with or being with friends or relatives?
45. ... looked forward to getting together with friends or relatives?
46. ... made social plans with friends or relatives for future activities?
47. ... enjoyed talking with co-workers or neighbors?
48. ... been patient with others when others were irritating in their actions or words?
49. ... been interested in the problems of other people?
50. ... felt affection toward one or more people?
51. ... gotten along well with other people?
52. ... joked or laughed with other people?
53. ... felt you met the needs of friends or relatives?
54. ... felt your relationships with your friends or relatives were without major problems or conflicts?

Please respond to the following questions using the new scale below:

0	1	2	3	4
Very Poor	Poor	Fair	Good	Very Good

Taking everything into consideration, during the past week how satisfied have you been with your...

55. ... physical health?
 56. ... mood?
 57. ... work?
 58. ... household activities?
 59. ... social relationships?
 60. ... family relationships?
 61. ... leisure time activities?
 62. ... ability to function in daily life?
 63. ... sexual drive, interest and/or performance?
 64. ... economic status?
 65. ... living/housing situation?
 66. ... ability to get around physically without feeling dizzy or unsteady or falling?
 67. ... your vision in terms of ability to do work or hobbies?
 68. ... overall sense of well being?
 69. ... medication? (If not taking any, leave item blank)
70. How would you rate your overall life satisfaction and contentment during the past week?

EXPECTANCY SCALES

We would like you to indicate below how much you believe, right now, that the type of skills offered to you during this workshop will help to reduce your worry and anxiety. To keep your responses anonymous, please put the sheet in the provided envelope when you are done.

1. At this point, how logical does this workshop seem? (*Circle one number*)

1	2	3	4	5	6	7	8	9
not at all logical				somewhat logical				very logical

2. At this point, how successfully do you think this workshop will reduce your worry and anxiety? (*Circle one number*)

1	2	3	4	5	6	7	8	9
not at all useful				somewhat useful				very useful

3. How confident would you be in recommending this type of workshop to a friend who experiences worry and anxiety? (*Circle one number*)

1	2	3	4	5	6	7	8	9
not at all confident				somewhat confident				very confident

4. After 5 to 6 weeks of practicing these skills (when the effects of the skills are likely to become apparent to you), how much improvement in your anxiety do you think will occur because of this workshop? (*Circle one number*)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

PLEASE NOW SEAL THIS SHEET IN THE PROVIDED ENVELOPE.

Checking Your Knowledge

In order to evaluate the effectiveness of our workshop and get a sense for how well we were able to convey information to you, we'd like you to answer a few brief questions assessing knowledge of worry-reduction strategies. Some of the questions may appear more difficult than others, but please answer each question to the best of your ability. Please make all responses directly on this form.

Why is it important to have a daily Worry Management Period?

What style of breathing leads to feelings of relaxation?

What are the steps involved in problem solving?

What is the benefit of logically analyzing your worries (i.e., cognitive restructuring)?

SCORING GUIDE FOR
CHECKING YOUR KNOWLEDGE QUESTIONNAIRE

2 points = full credit; 1 point = partial credit; 0 points = no credit

1. Why is it important to have a daily Worry Management Period?

2 points: Response reflects understanding that WMP is a stimulus control strategy (i.e., it eliminates the association between worry and many different times and/or places).

Examples of 2-point responses:

“It limits worry to just one time and place each day.”

“It reduces the number of situations that are associated with worry.”

“It prevents worry from becoming associated with many different times and places.”

1 point: Response focuses on the fact that having a scheduled WMP enhances ability to focus on the present moment or designates a specific time to deal constructively with worries.

Examples of 1-point responses:

“It allows you to postpone worries that are experienced throughout the day.”

“It lets you focus on what you need to do now rather than focusing on worry.”

“It sets aside time for you to think about your problems or to do problem solving/cognitive restructuring/diaphragmatic breathing.”

“You don’t spend all day worrying.”

0 points: Response is either factually incorrect or so vague or superficial as to suggest a lack of understanding.

Examples of 0-point responses:

“It helps to relax you.”

“It’s something that you need to do to reduce worry.”

“It helps you think about/organize/reflect on your worries.”

2 points = full credit; 1 point = partial credit; 0 points = no credit

2. What style of breathing leads to feelings of relaxation?

2 points: Response highlights the importance of breathing from the diaphragm (or stomach) rather than breathing from the chest

Examples of 2-point responses:

“Breathing from the stomach”
“Diaphragmatic breathing”

1 point: Response mentions (a) the pace or depth of breathing or (b) focusing attention on one’s breathing or thinking a calming word, but does not mention breathing from the diaphragm or stomach.

Examples of 1-point responses:

“Breathing deeply”
“Slow, deep breathing”

0 points: Response is either factually incorrect or so vague or superficial as to suggest a lack of understanding.

Examples of 0-point responses:

“Just breathe normally.”
“Breathe in a relaxing way.”

* See below for point allocation *

3. What are the steps involved in problem solving?

2.5 or 3 points: Response mentions all three steps of problem solving.

1.5 or 2 points: Response mentions two of the three steps of problem solving.

0.5 or 1 point: Response mentions one of the three steps of problem solving.

0 points: Response doesn't mention any specific steps of problem solving, names only incorrect steps, or describes problem solving in a vague or superficial manner that suggests a lack of understanding.

** For this question only, full or partial credit is determined within each point block (i.e., 2.5-3 points, 1.5-2 points, 0.5-1 point). Full credit is given within the block when the steps mentioned are fully correct and sufficiently detailed. Partial credit is given within the block when the steps are correct, but one or more of the steps is not sufficiently detailed*

Examples of good descriptions of Step 1

(for full credit, must mention specifying a worry that is under your control):

“Identify a worry over which you have some control”

“Focus on a problem that you can do something about”

“Separate your worries into two lists; focus on the worries over which you have control”

Examples of good descriptions of Step 2

(for full credit, must mention consideration of multiple options/actions):

“Identify several possible courses of action for dealing with the problem”

“Write down some different things that you can do to prevent a bad outcome”

“List your options and consider their pros, cons, and feasibility”

Examples of good descriptions of Step 3

(for full credit, must mention making a plan/taking action):

“Choose a course of action and establish a concrete plan for carrying it out”

“List each task you need to complete and decide when you will complete it”

“Schedule each step of the plan into your calendar”

2 points = full credit; 1 point = partial credit; 0 points = no credit

4. What is the benefit of logically analyzing your worries (i.e., cognitive restructuring)?

2 points: Response makes the connection between (a) worried thoughts are often inaccurate and (b) logical analysis of worries leads to more accurate or realistic perspectives. Response either states or implies that this process leads to a reduction in worry.

Examples of 2-point responses:

“It makes us consider possibilities other than the worst-case scenario.”

“It helps us make more realistic and accurate predictions about what will happen.”

“It shows us when an outcome is really unlikely and there’s no point in wasting time and energy worrying about it.”

“It challenges the accuracy of our worried thoughts and helps us see things the way they really are.”

1 point: Response recognizes that worried thoughts are often inaccurate but doesn’t discuss how logical analysis of worries can help. Or, mentions that cognitive restructuring helps put worries into perspective or helps them realize that they can cope with any outcome, but doesn’t discuss how this process happens. Or, accurately describes when one should use cognitive restructuring without explaining how/why it works.

Examples of 1-point responses:

“Most of the things that we worry about never actually happen.”

“Things almost always turn out better than we fear.”

“It helps put problems into perspective.”

“It helps to reduce worry about problems that are out of our control.”

“It helps to reduce worries that can’t be helped by problem solving.”

0 points: Response is factually incorrect, merely describes the steps of cognitive restructuring without explaining their benefit, or so vague or superficial as to suggest a lack of understanding.

Examples of 0-point responses:

“It helps us think logically rather than emotionally about a problem.”

“It helps us consider all the facts.”

“It helps us solve problems.”

APPENDIX B: CONSENT AND DEBRIEFING FORMS

INFORMED CONSENT FORM FOR CLINICAL RESEARCH STUDY
The Pennsylvania State University

Title of Project: Worry Reduction Study

Principal Investigator: Ayelet Meron Ruscio, M.S.

Other Investigator: Thomas D. Borkovec, Ph.D.

This is to certify that I, _____, have been given the following information with respect to my participation as a volunteer in a program of investigation under the supervision of Dr. Tom Borkovec.

1. Purpose of the study: To enhance understanding of the process of worry and to evaluate the effectiveness of two treatment programs for alleviating worry.
2. Procedures to be followed:
 - Completing several self-report questionnaires and a brief interview with the experimenter concerning your experiences of worry, anxiety, and related states
 - Attending one of two workshops, along with several other student participants, in which strategies will be taught for reducing worry. The strategies taught in both workshops have been shown to be effective in reducing worry.
 - Practicing these strategies for four weeks with the use of a workbook while monitoring daily worry experiences
 - Attending a second meeting at the end of the study, during which you will be asked to complete several additional questionnaires and an interview, and the experimenter will describe the full nature of the study to you
3. Discomforts and risks: No known specific discomforts or risks are involved in this study, other than possible mild emotional discomfort due to answering questions about personal experiences, or becoming more aware of your worrying due to closer monitoring of this activity. Although many people have found these treatment methods useful, some people may find them more helpful than others, and there is no guarantee regarding how helpful they will be for any particular individual.
4. Benefits to the participant: Possible reduction in the frequency and/or intensity of worry
Potential benefits to society: Adding to scientific knowledge about worry and its treatment
5. Alternative procedures which could be utilized: Private practitioners and Penn State's Center for Counseling and Psychological Services (CAPS) can provide therapy that is useful in reducing anxiety and worry. The psychology department provides academic alternatives to research participation that allow you to receive full credit for the PSY 002 research requirement.
6. Time duration of participation:
 - Today's meeting (1¼ hours)
 - Worry-reduction workshop (1¼ hours)
 - Daily monitoring of worry levels for four weeks (2 minutes per day)
 - Final meeting (1¼ hours)
 - Amount of practice of the worry-reduction techniques is up to the participant; a 30-minute daily worry management period is recommended

7. Statement of confidentiality: Your participation in this research is confidential. Any data obtained will be number-coded so that your name never appears in association with the information that you provide. Only Ayelet Ruscio and Dr. Borkovec will have access to the master list pairing names with code numbers, which will be destroyed after the study is completed. Structured interviews will be conducted by an experimenter who is aware of and will abide by the confidentiality of all responses. All interviews will be audiotaped. Audiotapes will be number-coded and stored separately from any identifying information. Only the experimenters will have access to the audiotapes, which will be stored in a locked cabinet and destroyed when the study is completed, or by the year 2010, whichever comes first. In the event of publication of this research, no personally identifying information will be disclosed.

Because participation in this study occurs through a group format, it is essential that all participants help to maintain the confidentiality of the study. By signing this consent form, you hereby agree not to share the identity of other research participants, nor any information offered by others during the study, with anyone.

8. Right to ask questions: You have been given the opportunity to ask any questions you may have, and all such questions or inquiries have been answered to your satisfaction.

If you have any further questions about this study, please contact Ayelet Ruscio at (814) 865-1590 or Dr. Tom Borkovec at (814) 865-1725. Questions about the rights of research participants may be directed to Penn State's Office for Regulatory Compliance at (814) 865-1775. If you are interested in pursuing additional therapy for anxiety or worry, contact Dr. Borkovec (who can provide you with referrals) or call the University's Center for Counseling and Psychological Services (CAPS) at (814) 863-0395.

9. Compensation: I understand that I will receive research credit for participating as specified in the syllabus provided by my instructor, that alternative means for earning this research credit are available as specified in the syllabus, and that I am entitled to no other compensation. I understand that medical care is available in the event of injury resulting from research but that neither financial compensation nor free medical treatment is provided. I also understand that I am not waiving any rights that I may have against the University for injury resulting from negligence of the University or investigators.

10. Voluntary participation: I understand that my participation in this study is voluntary and that I may withdraw from this study without penalty at any time by notifying the experimenter. I also understand that I may decline to answer specific questions without penalty.

This is to certify that I consent to and give permission for my participation as a volunteer in this program of investigation and that I am at least 18 years of age or have obtained signed parental consent to participate. I understand that I will receive a signed copy of this consent form. I have read and understood the content of this consent form.

Volunteer signature

Date

I, the undersigned, have defined and explained the study involved to the above volunteer.

Experimenter signature

Date

Worry Reduction Study
Debriefing Form

The present study had two primary purposes. First, we wished to compare the effectiveness of two brief interventions for worry. Research has shown that when students postpone their worry to a daily worry period and apply basic problem-solving strategies to cope constructively with their worries, they experience a reduction in worry. We wanted to determine whether worry could be decreased even further if we also taught students strategies for relaxing themselves and for replacing worried thoughts with more realistic alternatives. In other words, we wanted to see whether we could make an already effective intervention even more effective by expanding the skills that are taught. Second, we wished to determine whether these interventions were equally effective for all students. For example, it may be that the ability of a student to benefit from the interventions depends in part on the severity of worry and anxiety that he or she experiences. To answer these questions, we asked you to complete a number of interviews and questionnaires, both before the intervention and after four weeks of practice, so that we could assess the extent to which your worry and anxiety were reduced by learning and practicing these new strategies. We hope that the information that you and the other participants provided during the study will enhance psychologists' understanding of the nature of worry and anxiety, leading to more effective treatments for worried individuals.

In order to protect the integrity of this study and ensure that future participants are not biased in any way, we ask that you not share this debriefing form—or its contents—with anyone. We thank you for your participation and appreciate your help in keeping the purpose and methods of this study confidential. If you should have any questions about the study or would like to receive information about its results, please contact Ayelet Ruscio at amr205@psu.edu or (814) 865-1590. If you are interested in pursuing psychotherapy, please contact the University's Center for Counseling and Psychological Services (CAPS) at (814) 863-0395.

THANK YOU!

APPENDIX C: THERAPY MANUALS AND OVERHEADS

Therapy Manual (*Basic Treatment Condition*)

Introduction: The Nature of Worry

Worrying bothers almost everyone periodically. Whenever we are facing problems, our minds will be addressing them and trying to figure out what to do. This process is natural and is sometimes adaptive. But at times, worry can create emotional stress. We can find ourselves thinking about past events which were depressing or anxiety-provoking, or we can think about all kinds of future events that might happen and which would make us feel badly if they did. At times, for no obvious reason, we just can't stop thinking about such things. And each time we do think about them, our bodies react just as if the event were actually happening or about to happen.

For example, recall the last time someone criticized you or said something hurtful. Or think about doing poorly in an important academic or professional situation in the future. The more you think about this happening, the worse you will feel. The amazing thing about thinking about such events is that they are not actually happening right now. They exist only in our minds. Yet how we feel right now is being influenced by something that no longer exists or may never exist.

Most of the time, should such thoughts come to mind, we recognize that those events are not happening and can readily dismiss them. At other times, however, we find we cannot ignore such thoughts. They continue to return to our awareness, and we just can't stop them. We refer to this kind of preoccupation with past or future bad events as worry. Such thoughts are often associated with the phrases, "If only..." and "What if..."

"If only..." refers to thoughts about an unhappy event that has happened and we wish it hadn't. The event has left us with an unresolved emotional feeling, and under these circumstances our mind continues to try to resolve it, trying to figure out what went wrong and how to fix it. Unfortunately, because the event has already happened, nothing can be done. We cannot go back into the past and miraculously have the event turn out differently. But when our mind recalls the event, its natural tendency is to keep trying to solve the problem it represented.

"What if..." refers to thoughts about the future. In the case of worry, these thoughts are about any number of possible negative things that could happen. What if I run out of money and can't pay my bills? What if my significant other should someday no longer love me? What if I make a mistake and everyone thinks I'm a fool because of it? Each of these is a possible future event. If we think about it enough, we can make ourselves depressed or anxious, no matter how unlikely it is that such an event will actually happen.

Now, most people will worry if an unpleasant event has just happened and if it involved something or someone very important to us. Suddenly losing our money, or having a hurtful argument with someone close to us, or making a mistake will naturally result in our mind trying to cope with the negative feelings that those events aroused. Similarly, most of us worry if a highly probable unwanted event is coming our way. If a sudden large expense occurs, or there is real evidence that our partner is no longer as loving as he/she used to be, or we are facing an important challenge where poor performance on our part is a real possibility, then again our minds will try to work out how to avoid a bad outcome.

If worrying is a natural response, when is worry maladaptive? How much worry is too much worry? (*wait for 1-2 responses*)

There is no absolute answer to this question, but there are some good general guidelines. While thinking about a past bad event might be natural shortly after it occurs, constantly thinking about it long afterwards is not adaptive for us. Also, while anticipating the future and planning ways to avoid bad events is adaptive, constant thinking about negative possibilities is not useful. If our thinking is causing emotional distress, has been interfering with our daily functioning, and is not quickly or clearly providing solutions, worrying has become maladaptive. In particular, when worry cannot be voluntarily turned off, that is the best clue that worry is maladaptive.

PSYCHOEDUCATION

Rationale for Psychoeducation

It is often helpful to learn how a problem is developed and maintained in order to address it successfully. The more you know about where worry comes from and how it works, the better a position you will be in to effectively reduce your worrying. I would therefore like to begin by sharing with you what we currently know about the origins of worry. Then, I'd like to tell you some important facts that researchers have discovered about the nature of worry and its effects on attention, physiology, and performance. Once you have a solid foundation of information about worry and understand how it operates, I will teach you some specific strategies for reducing worry, anxiety, and stress in your daily life.

The Origins of Worry

People often ask whether anxiety is caused by genetic factors. In other words, are worry and anxiety inherited? What do you think? (*wait for 1-2 responses*)

Research on the origins of anxiety is advancing quickly, and the results so far suggest that there is a genetic component to anxiety. Thus, if your parents, or others in your family, become worried and anxious when they are under stress, the chances are greater that you will also react to stress with feelings of worry and anxiety. However, as with just about everything in psychology, anxiety is not determined by genetics alone. Let me share with you what we now know about the origins of anxiety.

First, it does not appear that individuals inherit a specific type of anxiety. For example, people do not inherit a tendency to worry, or to fear heights or snakes, or to have panic attacks. Instead, what appears to be inherited is a general sensitivity, a tendency to react to life events with strong emotions. This sensitivity may be referred to as being “nervous,” “high strung,” or “emotional.” Individuals who inherit this sensitivity from their families do not just experience negative emotions more strongly than most other people; rather, they seem to experience all emotions strongly, including the positive ones. Thus, you might feel more empathy and compassion toward others, or may more easily become excited, than other people that you know. This means that it is possible to be sensitive without being overly anxious, particularly when you act in ways that help to contain and moderate anxiety that occurs in reaction to stressful life events.

Nevertheless, having this general sensitivity may make people more vulnerable to experiencing high levels of worry and anxiety, particularly in the face of significant stress. Rather than being predisposed to developing a specific form of anxiety, individuals who inherit this sensitivity have a higher chance of developing any kind of emotional distress, including worry, some other kind of anxiety, or even depression. How is this vulnerability transmitted? There is currently no evidence of a single, specific gene that gives rise to emotional sensitivity. Instead, many genes in different areas on the chromosomes together produce this biological vulnerability for anxiety.

It is important to emphasize again that genetics do not tell the whole story when it comes to anxiety. That is, inheriting a tendency to be “nervous” or “emotional” does not necessarily mean that you will have problems with worry and anxiety. What additional factors, then, help to determine whether a person with this vulnerability will actually develop anxiety? Do you have any ideas (based on your own experiences, your observations of others, or what you’ve learned in classes)? *(wait for 1-2 responses)*

Research suggests that individuals who feel they have little control over what happens to them are at higher risk for becoming worried and anxious. Such individuals are particularly likely to experience a sense of uncertainty and uncontrollability when they are faced with tasks that they regard as challenging or threatening. In addition, these individuals have little confidence in their ability to handle negative events or outcomes. Thus, any failures that they experience are attributed to their personal deficits for coping with life events (for example, “I failed the test because I’m not smart enough”) rather than to possible external causes (“It was a difficult exam”) or temporary personal lapses (“I didn’t study enough this time”). As you might imagine, if you perceive outcomes as being outside of your control, and if you perceive yourself as unable to handle difficult events well, you are likely to feel worried and anxious when you find yourself in a situation where a negative outcome may occur.

Having said all of this, I’d like to emphasize two critical points. First, people differ from one another in many important ways. Although the information that I’ve shared with you seems to characterize anxious individuals as a group, the factors that cause worry or anxiety in any particular individual may be similar to or different than the ones that I’ve described, but will almost certainly be more complex. Second, it’s important to remember that having a predisposition to worry does not mean that worry is inevitable and that you have no choice but to be a worrier for the rest of your life. Even those who have inherited an emotional sensitivity or who have developed a diminished sense of control over life can learn to act in ways that substantially reduce worry and that, over time, help them develop a greater sense of control over their emotions and their lives. Thus, by understanding where worry comes from, you are in a better position to take the necessary steps to manage it successfully.

WHAT HAPPENS WHEN WE WORRY?

Now that you’ve learned about the origins of worry, I’d like to tell you what researchers have discovered about what happens when we worry. In other words, what actually goes on in our heads when we worry, and what effects does this have on our other thought processes and on our bodies?

Characteristics of Worry

I'd like you to take a moment and think about what it means to worry. What do you actually do when you're worrying? (*wait for 1-2 responses; e.g., thoughts vs. images, negative vs. positive thoughts, experience of fear/anxiety*)

When individuals who are engaged in worry are asked to observe what is going on in their minds, they typically report a stream of thoughts about the topic that is worrying them, with few visual images. Consistent with these reports, psychophysiological studies that monitor brain activity during worry have found increased activity in brain centers that are involved in verbal processing. Together, these findings suggest that when we worry, we are talking to ourselves in anxious ways.

What, then, are we telling ourselves when we worry? Research indicates that the central themes of worry focus on possible danger, threat, or other negative events that may occur in the future. In addition, worry focuses on our potential inability to obtain the outcome that we desire. In other words, worry represents a fear that something bad is going to happen in an important area of our lives, and that we will be unable to predict or control the way that things turn out. Thus, if we were to express worry in a single sentence, we might say, "That terrible event could happen, and I might not be able to deal with it, but I've got to be ready to try."

If we believe that we're facing a real threat that we might not be able to handle successfully, worry may seem like a reasonable strategy to marshal our attention and energy so that we can try to solve (or at least prepare for) the negative event that is approaching. In fact, the very act of worrying may provide the illusion of taking action; it makes us feel that we are actually doing something that will reduce the likelihood of a negative outcome. Moreover, by anticipating and planning for future negative events through worry, we may come to feel a greater sense of prediction and control over these events than we did at first. These perceptions of taking action and taking control may make us feel less helpless in the face of an unknown and threatening future. Therefore, although worry can be disruptive and distressing, it may be hard to give up if it is the only approach that we feel can help us regain control over our lives.

The problem, of course, is that worry is not a very effective coping strategy. Although it may feel like it's helping us to perform better, research has shown that worry impairs our ability to concentrate and causes changes in our bodies that actually disrupt effective performance. Let's discuss each of these consequences in turn.

Attentional consequences of worry

First, I'd like you to think about how worry affects your ability to focus your attention when you're studying or during other activities. What happens when you're trying to concentrate on something and you begin to worry? (*wait for 1-2 responses*)

We've talked about the fact that worry creates a state of readiness to try to cope with upcoming negative events. One consequence of this state of readiness is that our attention narrows to focus primarily on sources of threat in our environment. We focus on everything that could go wrong, becoming hypersensitive to any information which suggests that things are going poorly or that our feared outcome is likely to occur. Even information that is not clearly positive or negative is

interpreted in a negative or threatening light. At the same time, we focus on aspects of ourselves which we find lacking and become preoccupied with what we perceive to be our inability to handle the situation well. While this is going on, we ignore or deemphasize any indications that things are going well or that we are handling things better than we initially expected.

Let me give you an example of this process that is especially common among students. Say you have an exam coming up in a few days in a class that you find challenging. The more you worry about the exam and what will happen if you do poorly on it, the more you will focus on the worst possible outcomes. Your attention will be drawn to each section of your book that doesn't make sense to you, or every item on your review sheet that you can't answer, and you will become increasingly certain that you are completely lost and that you will bomb the exam. Your attention will also be drawn to your fears that you don't know what you're doing and to your belief that you will not be able to do well on the exam. Not surprisingly, this attentional focus is likely to increase your feelings of anxiety and to fuel additional worrying.

However, emotional distress is not the only consequence of the narrowed attention that comes with worry. Another consequence is that your attention is less likely to go where you most need it: to actually preparing for the exam. This is simply a matter of limited resources. Human beings have a finite amount of attention that they can allocate to different tasks. To the extent that our attention is tied up with worrying about negative outcomes and looking for evidence of threat in our environment and in ourselves, we have less attention available to direct to actually working toward a better outcome. Thus, in our previous example, worrying about the exam will cause a shift in attention to negative, self-evaluative thoughts that will make it harder to concentrate on studying for the exam. In this way, worry may actually decrease your chances of doing well on the exam.

Physiological Consequences of Worry

In addition to its impact on attention, worry also leads to significant changes in our physiological state. What are some physical sensations that you have noticed when you worry? (*wait for 2-3 responses; e.g., muscle tension, feeling keyed up, stomach disturbance*)

Since the goal of worry is to prepare us to react successfully to an anticipated threat, it is not surprising that one of its consequences is to get our bodies ready to deal with this threat. How does it do this? Worry causes the body to become increasingly aroused and poised for action. This includes tensing the muscles, increasing alertness, and heightening the overall level of physiological arousal. Thus, people who worry a lot tend to feel restless, keyed up, or on edge, and may have trouble falling or staying asleep. They tend to suffer from muscle that are tight, tense, or stiff. The effort to stay alert and aroused for extended periods of time often leads people to become easily fatigued, and may result in irritability. These are some of the most common physiological consequences of worry, though others may be experienced as well.

It is interesting to note that the physiological reaction in worry is somewhat different than that experienced in other forms of anxiety. When people are anxious about specific external threats, such as a fear of heights or a fear of snakes, their reaction when they encounter these threats is to get away from the threat as quickly as possible or to prepare to defend themselves against it. Have you heard of the "fight or flight" response? (*wait for nods.*) This is what I'm talking about here. This response involves such physiological changes as an increase in heart rate and

breathing rate, sweating, tingling in the extremities due to greater blood flow to those regions, and other reactions that help to mobilize the person for action. When there is a real and present threat, these physiological changes are highly adaptive, because they increase the odds that the person will survive the threat.

But when we worry, it would not help to react in this way because the threat exists only in our minds and in the future—it has not happened yet, and may in fact never happen. In essence, we want to react in some way that will reduce our feelings of helplessness, but because the threat does not exist in the present, we cannot escape it. In such cases, the fight or flight response is not adaptive and is therefore suppressed. We can see parallels of this process in the animal world. When animals are trapped in a threatening situation from which escape is not possible, they do not try to fight or flee. Instead, they freeze, tightening their muscles and inhibiting any physical reaction that might increase unwanted attention from a predator or other threat. The same physiological response occurs when people worry: we tighten our muscles and suppress the fight-or-flight response.

All of these effects are a result of the body's natural attempt to prepare for future threat. At the same time, when we are keyed up, fatigued, and tense; when we have trouble getting a good night's sleep; when worry and irritability begin to negatively affect important relationships in our lives, these consequences of worry may exert a significant negative toll on our performance and on our quality of life. When we further consider the additional negative impact of worry on attention and concentration, there appears to be a compelling case for the value of reducing worry in our daily lives. While you may be able to think of some ways in which worrying is helpful to you, the consequences of worry are sufficiently severe that it seems worthwhile to learn some ways to better control your worrying and, ultimately, to reduce its frequency and intensity in your life. Therefore, the remainder of this workshop will be spent teaching you specific strategies to manage and reduce your worrying.

Any questions?

Rationale for Behavioral Intervention

It's important to remember that worrying is a habit. Habits are developed because we have practiced them so often that we just start doing them without being aware that they have started. The automatic nature of habits is a good thing when the habit is positive and useful. However, when a habit is maladaptive, its automatic nature means that it will require effort to change.

This is important to keep in mind as you learn and rehearse strategies for reducing worry. Because worrying is a habit that you have practiced for a long time, you should realize that it will take frequent, deliberate practice of other responses, ones that are incompatible with worry, to reduce the habit of worrying. The more these strategies are practiced, the stronger the new habit becomes, and the weaker the old habit of worry becomes.

SELF-MONITORING

Have you ever had the experience of realizing you are worrying, but not really knowing when or how the worry started? (*wait for nods*)

Most of us, when we worry, are not even aware that it has started. That is the nature of habits. So any effort to reduce worry must begin by learning to become aware of our worrying. Begin by observing your worrying with this goal in mind: to catch the worry as soon as it begins.

Let's practice this together so you can see what I mean. I'd like you to close your eyes and begin worrying in your usual fashion about a topic that is currently worrisome to you. When you start to really get into the worrying, raise your finger and keep it raised until I ask you to open your eyes. Go ahead.

Wait until everyone has raised finger, then proceed.

Open your eyes and stop worrying for a moment. Focus on the room around you. Now I'd like you to practice catching worry early. Your goal is to see how soon after worry begins you can catch yourself worrying. I will ask you to close your eyes and concentrate on your breathing. Because you just worried in this situation, your worrying has been "primed" and will likely start again seemingly all on its own. As soon as you notice yourself having a worrisome thought, raise your finger.

Wait until everyone has raised finger, then proceed.

The purpose of this exercise was to show that even though worry can be highly automatic, we can increase awareness of our worrying earlier and earlier in the process if we make a point of observing worry. This is important for two reasons. First, the longer an episode of worrying lasts, the more the worry habit is strengthened. By becoming increasingly conscious of your worrying, you will become better able to switch it off very early before it becomes obsessional. Second, all of the worry-reduction methods that I'll be teaching you today are more effective the earlier that they are applied in the worry process. Therefore, when you catch a worry early, you are in a better position for dealing with it effectively.

STIMULUS CONTROL

Worrying can occur at any time and in any place. Because of this, worrying automatically becomes associated with many times and many places. Whenever we enter a place in which we've recently worried, the place reminds us of the worry, and we start worrying again. In this way, worrying is triggered by our surroundings and can sometimes go on all day.

One strategy for reducing worry, then, is to practice limiting the occurrence of worry to just one place and one time of day. To do this, set aside a period of time each day that you will devote to worry. Identify an amount of time that seems reasonable to you (30 minutes is often ideal). Then choose a particular time and place for worrying that will always be the same each day. Make the place unique, a place where you will only worry and where you will not do anything else. Choosing your bed or study area would not be a sensible idea. A chair placed in a corner of a room only during this period would be better. It creates a unique environment which will only be associated with worry. Choose a time that is convenient each day so that you are rarely busy with something else that might prevent you from using your Worry Management Period. Avoid choosing a time too close to bedtime; it is not helpful to associate worry with going to sleep!

Before we discuss how the Worry Management Period works, take a moment to decide when and where you will hold this period each day, and write this information in your workbook. Remember that the length of the Worry Management Period is less important than the fact that you have one every day.

Postpone worries to the Worry Management Period

We have discussed the importance of observing your worries and catching worries as soon as they begin. Now let's add another step. As soon as you notice the beginning of a worry, remind yourself that you have set aside time specifically for thinking about topics that are worrying you. Since you will have time later to think about that topic, there is no need to worry about it now. In fact, worrying later during the Worry Management Period will likely lead to better solutions than worrying now, when you don't have the time to concentrate on the problem and there are other things going on that require your attention. So postpone the worry. If you are concerned that you might forget the problem before you get to the Worry Management Period, write the topic down.

Attend to the immediate environment

Once you have mentally postponed a worry to the Worry Management Period, focus your attention on the immediate environment or the task that you are working on. As you practice this, become increasingly aware of the difference between attending to what actually exists in the world around you and attending to what exists only in thoughts and images. There can be no anxiety or depression if we focus completely on the present moment

As you postpone a worry and turn your attention back to the present moment, you may notice the worried thoughts try to intrude in your mind, often almost immediately. Rather than trying to block out these thoughts, just let them pass through your mind, imagining them floating out of your head. Then, gently turn your attention back to your immediate environment. You may need to repeat this process several times before you are able to concentrate fully on the present moment. However, with practice, your ability to let go of worried thoughts will increase, making it easier and easier to focus your attention on the events and activities of your daily life.

Each time you catch worry early, postpone it to the Worry Management Period, and return your attention to the immediate environment, the worry habit gets weaker, and newer, more adaptive habits are strengthened. Don't get discouraged if the worry continues to try to intrude; just repeat the same procedure each time you catch it intruding. Remember, old habits die hard, but practice and repetition of new habits are the key to change.

Use of the Worry Management Period

As we've discussed, just knowing that you have a scheduled Worry Management Period will make it possible to postpone worries during other times. However, when you reach your Worry Management Period each day, there are several strategies that you can use to make it particularly useful.

The Worry Management Period is the time that you have set aside to deal with your worries. Although you may spend this time worrying if you wish, we recommend that you use at least some (if not all) of this time dealing with your worries in a more constructive fashion. There are

two reasons for this. First, worry is a self-reinforcing process: the more we worry now, the more we will worry later. Thus, try to limit the amount of worrying that you do during the Worry Management Period.

A second reason to minimize worrying during the Worry Management Period is that some of the things that we worry about can be prevented if we develop a concrete plan of action for dealing with them. In such cases, it seems far preferable to deal effectively with worrisome situations than to suffer both the anxiety of worrying and the greater possibility of a negative outcome! Therefore, rather than dwelling on your fears of what might happen, you can apply problem-solving strategies to actually reduce the chance that this feared outcome will occur.

PROBLEM SOLVING

The first step in the problem-solving process is to distinguish between those worries that you can do something about and those that you cannot. Can anyone name a worry over which we have at least some control? (*wait for 1-2 responses, e.g., performance on an exam, finding a part-time job, getting into graduate school*). Can anyone name a worry that is out of our control? (*wait for 1-2 responses, e.g., loved one getting into an accident, another terrorist attack, bad blizzard*).

Whereas problem-solving is likely to help with the former, it will not help with the latter. Therefore, separate your worries into two lists, and focus on the list of worries over which you have some influence.

Step 2 is to identify several possible courses of action for each of the problems over which you have some control. What steps can you take to reduce the chance that the bad event will happen? Is there information you can get that might help you come up with a solution, or someone you could talk to who might help you identify possible solutions? List the pros and cons of each course of action that you are considering. Consider the feasibility of each plan.

The third and final step is to choose a course of action from the ones that you've identified, and to establish a concrete plan for carrying it out. List each of the tasks that you need to complete, then work them into your schedule so that you know exactly *when* you will complete them.

(Turn to sample Problem Solving Worksheet)

For example, say that you are worrying about doing poorly on a large term paper that is coming up in one of your classes. Possible actions that you could take might include meeting with the professor to get feedback on your ideas, starting the paper early, setting aside time each day to work on the paper, visiting the writing center for help, and so on. Not all of these actions may be equally feasible, given your other priorities or available time, and some actions may be more beneficial than others. The important thing at this stage is to write down as many actions as possible, and then weigh the pros and cons of each.

In our example, if you decided to discuss your paper topic with the professor, you would note when you will research possible paper topics, when you will choose a topic for your paper, and when you will go to office hours to speak with the professor. It is best if you schedule a specific block of time for each task (for example, 4-5 pm on Tuesday) rather than just putting it on a to-

do list. This will reduce worrying by increasing your confidence that you know what you need to do and when you need to do it.

So, to review: Use your Worry Management Period to deal constructively with your worries by applying problem-solving strategies. For each worry over which you have some control, identify several possible courses of action and consider the pros, cons, and feasibility of each. Once you have chosen a course of action, list the tasks that are involved, then act on each task, scheduling each for a specific date and time.

Your workbook contains a number of problem-solving worksheets for you to use as you go through the problem-solving process during the Worry Management Period. To make sure that this process and the worksheet are clear, I'd like you to apply the strategies I just described to one of your current worries using the next worksheet. Remember, this should be a worry over which you have some control. In the interest of time, please use a worry topic that is relatively small or moderate in scope. Be sure to let me know if you have any questions.

After everyone has finished:

Remember that the problem-solving process should be relatively brief: Take a quick look at the problem, and if there is anything that you can do about it, do it! However, if you find that you're not coming up with useful ideas fairly quickly, it's best to let that problem go (or to use another worry-reduction strategy) rather than dwelling on it. Also, this technique works best with worries about future problems or events. If you find yourself ruminating about bad things that have already happened, postpone those thoughts to the Worry Management Period as you would any other worry. However, since the past cannot be changed, we encourage you to focus as much as possible on the things that you can do something about.

Summarizing the strategies

I've taught you several strategies today for reducing worry. I'd like to take a moment now to pull it all together.

First, become more aware of your worrying with the goal of catching the worry as soon as it begins. When you catch yourself worrying, we recommend that you follow the following process:

- First, postpone the worry to your Worry Management Period. Remind yourself that you have time set aside later for thinking about and dealing with that problem. If you are concerned that you might forget the problem, write it down.
- Second, turn your attention back to the immediate environment or the task that you are working on – the things that actually exist *right now* in the present moment.

Remember, the worried thought will try to intrude in your mind. Just let the thought pass through your mind, then gently turn your attention back to your immediate environment.

Second, make good use of your daily Worry Management Period to deal with the problems that are worrying you. Although you can spend some or all of your Worry Management Period

actually worrying, we recommend that you spend as much time as possible engaged in problem solving.

- Begin by distinguishing those worries that you can do something about from those that you cannot. If you find yourself worrying about a problem over which you have some control, use problem-solving strategies to develop a course of action and to establish a concrete plan for carrying it out.

Using a daily Worry Management Period is critical for successful reduction of worry. Keep in mind that the length of the Worry Management Period is less important than the fact that you have one every day.

Introduce Other Workbook Materials

- *Point out summary sheets and cheat sheet*

- *Review use of the Worry Management Period Log and Bedtime Rating Scale*

- It's absolutely essential that ratings on both measures be made every day. To assist you, dates are printed at the top of each column.
- Begin Bedtime Rating Scale tonight, Worry Management Period Log tomorrow.

Once you've used the Problem Solving Worksheet several times and feel comfortable working through the steps, it's up to you whether to use the worksheet or to follow the steps in your mind. The advantage of using the worksheet is that it prevents you from just thinking about your worries without actually taking steps to address them. However, you might find it quicker to deal with relatively minor worries by looking at—but not writing in—the worksheet. We ask that you use the worksheet for at least the first few days; after that, use it in whatever way is most helpful to you. Please remember that whether or not you continue filling out this worksheet, the Worry Management Period Log and Bedtime Rating Scale must be filled out *every day* until you come in for your second assessment session.

You'll notice that at the back of the binder there are a few blank sheets of paper. We've put these here in case you'd like to jot down additional thoughts or ideas that come to mind during the Worry Management Period. For example, you could identify additional strategies for dealing with worry or write down statements that will motivate you to practice.

Any questions?

As you begin using the techniques that you learned today, you may find some of them to be more or less helpful than others. It is important to remember, however, that many of these strategies require regular, conscientious practice before their effects become apparent. In fact, it will likely take 5 to 6 weeks of consistent application of these techniques before you observe a clear reduction in your worrying.

We therefore recommend that you apply the full package of techniques that you learned today for the next few weeks and give them all a fair chance to work. If at the end of the study you still feel that one or more of these methods is not working for you, you may wish to more heavily

emphasize those strategies that best suit you and that have been most helpful in reducing your worrying. The important point is to give each method a good try before deciding it doesn't work for you and abandoning it completely.

Promoting motivation for skills rehearsal and application

When we have taught these techniques to other students, they have reported a significant reduction in worry and anxiety in their lives. However, what they found to be the hardest part of this program was not using the techniques, but making the time to practice them every day, and staying motivated to practice them over a minimum of 5-6 weeks. One thing that often helps is to keep in mind all of the positive benefits that these techniques can have on your life, including your work, health, and quality of life. If you practice these techniques regularly, they will increase your ability to concentrate, make you more efficient and productive, and improve the quality of your work, in addition to helping you feel happier and less stressed. Although practicing the techniques and holding a Worry Management Period every day will require time, they will ultimately save you time by freeing up all the time you would have spent worrying or being distracted by worry throughout the day.

I'd like you to think for a moment about what you will do to remind and motivate yourself to keep practicing these techniques during the next 5-6 weeks, especially during weekends or very busy times. Some strategies that have worked for other students include: scheduling a daily Worry Management Period in your calendar or appointment book, setting an alarm to signal the beginning of your Worry Management Period, posting reminder notes in a prominent place, and keeping your workbook visible. Take a moment to write in your workbook the strategies that you will use to encourage yourself to practice every day.

After everyone has finished writing:

We will be sending you periodic e-mails to remind you to keep practicing, and I will be calling you in a couple of weeks to see how things are going. However, I also strongly encourage you to use whatever strategies you can to stay on track with your practicing.

Before we wrap up, I'd like you all to close your eyes and spend a few moments visualizing what your life would be like if you were less worried and anxious. (*After about 20 sec.*): Remember this image, and come back to it if you start to feel discouraged or don't feel like practicing. This is your goal, and you can get there by practicing the skills that you learned today.

***Complete Therapy Credibility and Expectancy Scales before leaving;
seal in envelope with Pretherapy Bedtime Rating Scale.***

Therapy Manual (*Augmented Treatment Condition*)

Introduction: The Nature of Worry

Worrying bothers almost everyone periodically. Whenever we are facing problems, our minds will be addressing them and trying to figure out what to do. This process is natural and is sometimes adaptive. But at times, worry can create emotional stress. We can find ourselves thinking about past events which were depressing or anxiety-provoking, or we can think about all kinds of future events that might happen and which would make us feel badly if they did. At times, for no obvious reason, we just can't stop thinking about such things. And each time we do think about them, our bodies react just as if the event were actually happening or about to happen.

For example, recall the last time someone criticized you or said something hurtful. Or think about doing poorly in an important academic or professional situation in the future. The more you think about this happening, the worse you will feel. The amazing thing about thinking about such events is that they are not actually happening right now. They exist only in our minds. Yet how we feel right now is being influenced by something that no longer exists or may never exist.

Most of the time, should such thoughts come to mind, we recognize that those events are not happening and can readily dismiss them. At other times, however, we find we cannot ignore such thoughts. They continue to return to our awareness, and we just can't stop them. We refer to this kind of preoccupation with past or future bad events as worry. Such thoughts are often associated with the phrases, "If only..." and "What if..."

"If only..." refers to thoughts about an unhappy event that has happened and we wish it hadn't. The event has left us with an unresolved emotional feeling, and under these circumstances our mind continues to try to resolve it, trying to figure out what went wrong and how to fix it. Unfortunately, because the event has already happened, nothing can be done. We cannot go back into the past and miraculously have the event turn out differently. But when our mind recalls the event, its natural tendency is to keep trying to solve the problem it represented.

"What if..." refers to thoughts about the future. In the case of worry, these thoughts are about any number of possible negative things that could happen. What if I run out of money and can't pay my bills? What if my significant other should someday no longer love me? What if I make a mistake and everyone thinks I'm a fool because of it? Each of these is a possible future event. If we think about it enough, we can make ourselves depressed or anxious, no matter how unlikely it is that such an event will actually happen.

Now, most people will worry if an unpleasant event has just happened and if it involved something or someone very important to us. Suddenly losing our money, or having a hurtful argument with someone close to us, or making a mistake will naturally result in our mind trying to cope with the negative feelings that those events aroused. Similarly, most of us worry if a highly probable unwanted event is coming our way. If a sudden large expense occurs, or there is real evidence that our partner is no longer as loving as he/she used to be, or we are facing an important challenge where poor performance on our part is a real possibility, then again our minds will try to work out how to avoid a bad outcome.

If worrying is a natural response, when is worry maladaptive? How much worry is too much worry? (*wait for 1-2 responses*)

There is no absolute answer to this question, but there are some good general guidelines. While thinking about a past bad event might be natural shortly after it occurs, constantly thinking about it long afterwards is not adaptive for us. Also, while anticipating the future and planning ways to avoid bad events is adaptive, constant thinking about negative possibilities is not useful. If our thinking is causing emotional distress, has been interfering with our daily functioning, and is not quickly or clearly providing solutions, worrying has become maladaptive. In particular, when worry cannot be voluntarily turned off, that is the best clue that worry is maladaptive.

Rationale for Behavioral Intervention

It's important to remember that worrying is a habit. Habits are developed because we have practiced them so often that we just start doing them without being aware that they have started. The automatic nature of habits is a good thing when the habit is positive and useful. However, when a habit is maladaptive, its automatic nature means that it will require effort to change.

This is important to keep in mind as you learn and rehearse strategies for reducing worry. Because worrying is a habit that you have practiced for a long time, you should realize that it will take frequent, deliberate practice of other responses, ones that are incompatible with worry, to reduce the habit of worrying. The more these strategies are practiced, the stronger the new habit becomes, and the weaker the old habit of worry becomes.

SELF-MONITORING

Have you ever had the experience of realizing you are worrying, but not really knowing when or how the worry started? (*wait for nods*)

Most of us, when we worry, are not even aware that it has started. That is the nature of habits. So any effort to reduce worry must begin by learning to become aware of our worrying. Begin by observing your worrying with this goal in mind: to catch the worry as soon as it begins.

Let's practice this together so you can see what I mean. I'd like you to close your eyes and begin worrying in your usual fashion about a topic that is currently worrisome to you. When you start to really get into the worrying, raise your finger and keep it raised until I ask you to open your eyes. Go ahead.

Wait until everyone has raised finger, then proceed.

Open your eyes and stop worrying for a moment. Focus on the room around you. Now I'd like you to practice catching worry early. Your goal is to see how soon after worry begins you can catch yourself worrying. I will ask you to close your eyes and concentrate on your breathing. Because you just worried in this situation, your worrying has been "primed" and will likely start again seemingly all on its own. As soon as you notice yourself having a worrisome thought, raise your finger.

Wait until everyone has raised finger, then proceed.

The purpose of this exercise was to show that even though worry can be highly automatic, we can increase awareness of our worrying earlier and earlier in the process if we make a point of observing worry. This is important for two reasons. First, the longer an episode of worrying lasts, the more the worry habit is strengthened. By becoming increasingly conscious of your worrying, you will become better able to switch it off very early before it becomes obsessional. Second, all of the worry-reduction methods that I'll be teaching you today are more effective the earlier that they are applied in the worry process. Therefore, when you catch a worry early, you are in a better position for dealing with it effectively.

RELAXATION TRAINING

One of the consequences of worry is that it creates uncomfortable bodily sensations. What are some of the physical sensations that you have noticed when you worry? (*wait for 2-3 responses, e.g., muscle tension, stomach disturbance, accelerated heart rate.*)

Whenever you catch yourself worrying or feeling such sensations, you can replace them with a relaxation response to calm your body and make it easier to think more reasonably and clearly.

The way that we breathe has important implications for how anxious or relaxed we feel. When we breathe quickly and shallowly from the chest, we actually *create* many of the uncomfortable bodily sensations associated with anxiety. In contrast, when we breathe slowly and deeply from the stomach (or diaphragm), we produce bodily sensations associated with deep relaxation.

Let's try breathing from the diaphragm together. First, watch me. Notice how my abdomen, rather than my chest, is expanding with each breath. (*3 breaths*)

Now you try it. Begin by noticing how anxious or tense you currently feel. Then, put your hand on your stomach, and breathe so that your hand moves forward and back with each breath. Now slow down your breathing to a deep but comfortable rate. Pay attention to the feelings in the abdomen as it expands and falls. (*3 breaths*)

As you breathe more slowly and deeply, focus your attention on inhaling and exhaling. Each time you exhale, think the word "relax" or "calm" or any other word that brings you relaxation and peace. If you notice thoughts intruding, just let those thoughts pass through your mind and imagine them floating out of your head or flowing out of you with each exhalation. Then gently focus your attention back to the pleasant feelings of relaxation that naturally occur when you breathe this way. (*3 breaths*)

Notice how you're feeling right now. Your goal is to remember the relaxed feeling that comes with diaphragmatic breathing, and to apply this breathing technique whenever you notice yourself shifting away from this relaxed state during the day. From now on, try to make slow, deep diaphragmatic breathing a constant habit. It may take a little practice to get the hang of this, but your reward will be increased feelings of relaxation throughout the day.

STIMULUS CONTROL

Worrying can occur at any time and in any place. Because of this, worrying automatically becomes associated with many times and many places. Whenever we enter a place in which we've recently worried, the place reminds us of the worry, and we start worrying again. In this way, worrying is triggered by our surroundings and can sometimes go on all day.

One strategy for reducing worry, then, is to practice limiting the occurrence of worry to just one place and one time of day. To do this, set aside a period of time each day that you will devote to worry. Identify an amount of time that seems reasonable to you (30 minutes is often ideal). Then choose a particular time and place for worrying that will always be the same each day. Make the place unique, a place where you will only worry and where you will not do anything else. Choosing your bed or study area would not be a sensible idea. A chair placed in a corner of a room only during this period would be better. It creates a unique environment which will only be associated with worry. Choose a time that is convenient each day so that you are rarely busy with something else that might prevent you from using your Worry Management Period. Avoid choosing a time too close to bedtime; it is not helpful to associate worry with going to sleep!

Before we discuss how the Worry Management Period works, take a moment to decide when and where you will hold this period each day, and write this information in your workbook. Remember that the length of the Worry Management Period is less important than the fact that you have one every day.

Postpone worries to the Worry Management Period

We have discussed the importance of observing your worries and catching worries as soon as they begin. Now let's add another step. As soon as you notice the beginning of a worry, remind yourself that you have set aside time specifically for thinking about topics that are worrying you. Since you will have time later to think about that topic, there is no need to worry about it now. In fact, worrying later during the Worry Management Period will likely lead to better solutions than worrying now, when you don't have the time to concentrate on the problem and there are other things going on that require your attention. So postpone the worry. If you are concerned that you might forget the problem before you get to the Worry Management Period, write the topic down.

Attend to the immediate environment

Once you have mentally postponed a worry to the Worry Management Period, briefly relax yourself using your breathing technique. Then, focus your attention on the immediate environment or the task that you are working on. As you practice this, become increasingly aware of the difference between attending to what actually exists in the world around you and attending to what exists only in thoughts and images. There can be no anxiety or depression if we focus completely on the present moment

As you postpone a worry and turn your attention back to the present moment, you may notice the worried thoughts try to intrude in your mind, often almost immediately. Rather than trying to block out these thoughts, just let them pass through your mind, imagining them floating out of your head. Then, gently turn your attention back to your immediate environment. You may need to repeat this process several times before you are able to concentrate fully on the present

moment. However, with practice, your ability to let go of worried thoughts will increase, making it easier and easier to focus your attention on the events and activities of your daily life.

Each time you catch worry early, postpone it to the Worry Management Period, and return your attention to the immediate environment, the worry habit gets weaker, and newer, more adaptive habits are strengthened. Don't get discouraged if the worry continues to try to intrude; just repeat the same procedure each time you catch it intruding. Remember, old habits die hard, but practice and repetition of new habits are the key to change.

Use of the Worry Management Period

As we've discussed, just knowing that you have a scheduled Worry Management Period will make it possible to postpone worries during other times. However, when you reach your Worry Management Period each day, there are several strategies that you can use to make it particularly useful.

The Worry Management Period is the time that you have set aside to deal with your worries. Although you may spend this time worrying if you wish, we recommend that you use at least some (if not all) of this time dealing with your worries in a more constructive fashion. There are two reasons for this. First, worry is a self-reinforcing process: the more we worry now, the more we will worry later. Thus, try to limit the amount of worrying that you do during the Worry Management Period. Apply your breathing technique instead to strengthen your relaxation skills and to reduce any feelings of anxiety. In particular, use diaphragmatic breathing to relax yourself during the last few minutes of the Worry Management Period as you prepare to make your transition to other tasks.

A second reason to minimize worrying during the Worry Management Period is that some of the things that we worry about can be prevented if we develop a concrete plan of action for dealing with them. In such cases, it seems far preferable to deal effectively with worrisome situations than to suffer both the anxiety of worrying and the greater possibility of a negative outcome! Therefore, rather than dwelling on your fears of what might happen, you can apply problem-solving strategies to actually reduce the chance that this feared outcome will occur. Once you've done all of the problem solving that you can, there are other strategies that you can use to reduce any remaining worry; we will discuss these strategies a little later today.

PROBLEM SOLVING

The first step in the problem-solving process is to distinguish between those worries that you can do something about and those that you cannot. Can anyone name a worry over which we have at least some control? (*wait for 1-2 responses, e.g., performance on an exam, finding a part-time job, getting into graduate school*). Can anyone name a worry that is out of our control? (*wait for 1-2 responses, e.g., loved one getting into an accident, another terrorist attack, bad blizzard*).

Whereas problem-solving is likely to help with the former, it will not help with the latter. Therefore, separate your worries into two lists, and focus on the list of worries over which you have some influence.

Step 2 is to identify several possible courses of action for each of the problems over which you have some control. What steps can you take to reduce the chance that the bad event will happen? Is there information you can get that might help you come up with a solution, or someone you could talk to who might help you identify possible solutions? List the pros and cons of each course of action that you are considering. Consider the feasibility of each plan.

The third and final step is to choose a course of action from the ones that you've identified, and to establish a concrete plan for carrying it out. List each of the tasks that you need to complete, then work them into your schedule so that you know exactly *when* you will complete them.

(Turn to sample Problem Solving Worksheet)

For example, say that you are worrying about doing poorly on a large term paper that is coming up in one of your classes. Possible actions that you could take might include meeting with the professor to get feedback on your ideas, starting the paper early, setting aside time each day to work on the paper, visiting the writing center for help, and so on. Not all of these actions may be equally feasible, given your other priorities or available time, and some actions may be more beneficial than others. The important thing at this stage is to write down as many actions as possible, and then weigh the pros and cons of each.

In our example, if you decided to discuss your paper topic with the professor, you would note when you will research possible paper topics, when you will choose a topic for your paper, and when you will go to office hours to speak with the professor. It is best if you schedule a specific block of time for each task (for example, 4-5 pm on Tuesday) rather than just putting it on a to-do list. This will reduce worrying by increasing your confidence that you know what you need to do and when you need to do it.

So, to review: Use your Worry Management Period to deal constructively with your worries by applying problem-solving strategies. For each worry over which you have some control, identify several possible courses of action and consider the pros, cons, and feasibility of each. Once you have chosen a course of action, list the tasks that are involved, then act on each task, scheduling each for a specific date and time.

Your workbook contains a number of problem-solving worksheets for you to use as you go through the problem-solving process during the Worry Management Period. To make sure that this process and the worksheet are clear, I'd like you to apply the strategies I just described to one of your current worries using the next worksheet. Remember, this should be a worry over which you have some control. In the interest of time, please use a worry topic that is relatively small or moderate in scope. Be sure to let me know if you have any questions.

After everyone has finished:

Remember that the problem-solving process should be relatively brief: Take a quick look at the problem, and if there is anything that you can do about it, do it! However, if you find that you're not coming up with useful ideas fairly quickly, it's best to let that problem go (or to use another worry-reduction strategy) rather than dwelling on it. Also, this technique works best with worries about future problems or events. If you find yourself ruminating about bad things that have already happened, postpone those thoughts to the Worry Management Period as you would any

other worry. However, since the past cannot be changed, we encourage you to focus as much as possible on the things that you can do something about.

COGNITIVE RESTRUCTURING

Rationale for cognitive restructuring

Earlier I emphasized the importance of distinguishing worries that you can do something about from worries that are outside your control. We've discussed problem-solving strategies that can be applied to those worries whose outcome you can influence. But what about the worries that do not have clear solutions or whose outcome is entirely out of our hands? What can we do to reduce our worry about those things?

First, it is important to note that worry is useful only to the extent that the feared future event is really *likely* to happen. If a spot occurs on our skin, it may be adaptive to have a doctor take a look at it. However, to worry about it after the doctor says that the spot is not cancerous is not adaptive, because the likelihood of cancer is then virtually nonexistent.

Even for future bad events that are quite likely to happen, worry may not be useful and will simply cause additional distress. This is the case when we have done all the problem-solving we can do before the event and there is nothing more to do about it. Of course it is natural for the mind to periodically be reminded about the upcoming event until it is over. But if we've done all we can reasonably do, to continue to constantly think about it merely causes more distress and interference with our life in the meantime. So although worrying in this case may be natural, it is not helpful, and applying methods to reduce it would be worthwhile.

It may be useful at this point to talk a little about what we are actually doing when we worry. Worry occurs when we believe that something bad or threatening might happen and that we will be unable to cope with it. When we worry, we are essentially creating lots of possible future catastrophes in our mind. Now I have a question for you. Do most of the catastrophes that you worry about actually happen? (*emphasize: vast majority never happen*). What about when bad things have happened—have you generally been able to deal with them? (*emphasize: we nearly always cope better than we think we will*).

This leads to two important conclusions. First, our worrisome predictions for the future are usually inaccurate. Second, we are needlessly experiencing the stress and anxiety that are caused by these inaccurate predictions, not to mention wasting time and energy that could be used in more productive and enjoyable ways.

For these reasons, psychologists have developed a highly effective strategy for dealing with worries which cannot be readily addressed through problem solving. This strategy, called cognitive restructuring, consists of specifying and closely examining the predictions that we are making about the future when we worry. Rather than treating these predictions as facts, we examine the evidence for and against them and consider the actual probability that they will occur. This process challenges the accuracy of our worried thoughts and helps us to more clearly see things the way they really are.

Application of cognitive restructuring

Your workbook contains multiple copies of a worksheet to guide you through the steps of cognitive restructuring. Let's look at it together.

When you worry, you are making predictions about a negative event that you fear will happen. So, the first step is to ask yourself, "What am I afraid might happen?" The more specific and concrete you can be, the better. Write down this fear in the form of a prediction in the first column of the worksheet. For example, if you were worried about an upcoming exam, your prediction might be, "I will fail this exam." If you find yourself making multiple negative predictions, write them all down and evaluate each one individually.

Now take each prediction and logically analyze it. What evidence do you have that this prediction will come true, and what evidence do you have that the prediction will not come true? For example, how have similar situations turned out in the past? What information do you have about the situation and yourself that might suggest how things will turn out? Write down any evidence that you have for and against the prediction in the second column. For example, evidence for the prediction that you will fail the upcoming exam might include the fact that you find the exam material challenging and feel unprepared. Evidence against this prediction might include that you have never (or very rarely) failed an exam before, that you tend to do better on exams than you worry you will do, that you have good study skills, and that you have plenty of time to study for the exam.

Next, consider the actual probability that your predicted outcome will occur, given the evidence in the second column. Is it reasonable to predict that the feared event will happen at all? If so, how likely is it to happen? Write your estimate as a percentage in the third column (*note guide on back of example*). In our example, the much stronger evidence against rather than for the prediction might be represented by a probability of 5% of failing the exam.

If the probability listed in column 3 is not zero, this means that you believe there is still a chance that your prediction will come true. In this case, ask yourself the following questions. What is the worst thing that could happen if the prediction came true? How bad would that really be? Could I handle it? Have I handled negative situations in the past without terrible consequences? A year after the event, what difference will it make? Write your answers in column 4. The purpose of considering these kinds of questions is to help you put the feared outcome into perspective and to recognize that even if the outcome isn't pleasant, it may not turn out to be as terrible as you fear. More important, it points out that you would survive the negative event—that you would be able to handle it and then move on with your life.

In our example, the worst thing that could happen might be to get a 0% on the exam—getting every single question wrong. Although this outcome would certainly be bad, it would not be the end of the world. There are many things you could do to minimize its impact, such as studying especially hard for the remaining exams in the class, taking advantage of extra credit opportunities, even dropping the class if necessary. There have probably been other times when you have done worse on an exam than you hoped, and it probably didn't have a catastrophic effect on your life. Therefore, although bombing an exam would not be pleasant, you would most likely be able to deal with it and move on.

It is important to remember, however, that the worst-case scenario—getting a 0% on the exam—is not the only way that things could turn out. In fact, there are usually several possible outcomes for any situation, and some are much more probable than others. As we discussed before, there is no point in wasting time and emotional energy worrying about an outcome that is very unlikely to occur. Therefore, in column 5, write several other possible outcomes and estimate how likely each one is to occur. Keep in mind that the event most likely to occur is almost always better than what people worry will happen. In our example, some likely possible outcomes are that you would do well on the exam or that you would not do as well as you liked, but certainly better than failing. Both of these outcomes seem much more likely than the prediction that you will fail the exam; in fact, given that you usually perform fairly well on exams, the fact that you’ve been attending class and doing the required reading, and the fact that you plan to study hard for the exam, the most likely outcome is that you will do quite well.

What does this all mean? It means that it is more realistic and accurate to predict that you will do well on the exam than that you will fail it. Therefore, it will not be useful to spend much time worrying about it. Instead, if you notice yourself worrying about the exam again, it will be more helpful to replace the worry with a more realistic thought or prediction. For example, tell yourself, “It is much more likely that I will do well than that I will fail. And even if I did fail this exam, I would be able to handle it.” Take a moment to vividly imagine the most likely outcome—an image of yourself receiving a good score on the exam. You might also remind yourself that you’re taking the necessary steps to do well, and that relaxation will lead to more effective studying and better test performance than worrying. Write these statements in the final column of the worksheet, and remind yourself of them whenever you catch yourself worrying about this topic in the future.

Now that you’ve seen an example, I’d like you to apply the techniques of cognitive restructuring to one of your current worries using this worksheet. In the interest of time, please use a worry topic that is relatively small or moderate in scope. Be sure to let me know if you have any questions.

Participants practice cognitive restructuring

It’s important to emphasize that cognitive restructuring is not just a simplistic process of “positive thinking.” Rather, it is a process that helps you become more *realistic* and *accurate* in your predictions about the future. Because people often automatically focus on the possible negative outcomes and ignore the likelihood of neutral or positive outcomes, cognitive restructuring often leads to the realization that things are likely to turn out better than expected, and that we are generally more capable of dealing with negative outcomes than we give ourselves credit for. Therefore, this more realistic perspective often (though not always) leads to a more positive outlook and a reduction in worry.

It’s also important to note that, at first, the new thoughts may not *feel* true compared to the old worrisome thoughts. Just remind yourself that they *are* more true, based on your logical evidence-based analysis. With repeated practice, the new thoughts will start feeling more true, and it will become easier and easier to make more accurate predictions about the future that are also less anxiety-provoking. One thing that can help is to notice how often things actually turn out better, worse, or the same as you predicted, and whether you handled the outcome well or not well. Studies have shown that few things actually turn out as badly as we expect, and those few

times when they do, they don't have the terrible consequences that we imagine. Taking note of such evidence will increase your confidence in yourself and your trust that, whatever the future holds, you will be ready for it.

We recommend that you apply the techniques of cognitive restructuring during your Worry Management Period, after you have settled on a plan of action for those worries under your control. This ensures that you have enough time to consider all of the available evidence and to think of more useful statements to substitute for worried thoughts. If you then catch yourself worrying about this topic again, apply your new, more adaptive thoughts, then vividly imagine the most likely outcome for 5 seconds. If you notice yourself worrying about a new topic that you have not yet analyzed in this way, either apply cognitive restructuring if you have the time, or postpone the worry and use these techniques during your Worry Management Period.

Summarizing the strategies

I've taught you several strategies today for reducing worry. I'd like to take a moment now to pull it all together.

First, become more aware of your worrying with the goal of catching the worry as soon as it begins. When you catch yourself worrying, you have several strategies at your disposal. We recommend that you follow the following process:

- First, postpone the worry to your Worry Management Period. Remind yourself that you have time set aside later for thinking about and dealing with that problem. If you are concerned that you might forget the problem, write it down.
- Second, briefly apply your breathing technique to relax your body and calm your mind. While you shift to diaphragmatic breathing at a slow and comfortable rate, focus your attention on your breathing and think “calm” or “relax” every time you exhale.
- Third, if you have analyzed this particular problem before using cognitive restructuring, replace your worried thought with a more realistic and positive view of the situation based on what is actually most likely to occur. Then, vividly imagine this most likely outcome for 5 seconds.
- Finally, turn your attention back to the immediate environment or the task that you are working on – the things that actually exist *right now* in the present moment.

Remember, the worried thought will try to intrude in your mind. Just let the thought pass through your mind, then gently turn your attention back to your immediate environment.

Second, make good use of your daily Worry Management Period to deal with the problems that are worrying you. Although you can spend some or all of your Worry Management Period actually worrying, we recommend that you spend as much time as possible applying the following strategies:

- First, distinguish those worries that you can do something about from those that you cannot. If you find yourself worrying about a problem over which you have some control, use problem-solving strategies to develop a course of action and to establish a concrete plan for carrying it out.

- If, however, you find yourself worrying about problems that cannot be readily addressed through problem solving, use cognitive restructuring techniques to systematically examine the evidence for and against your negative predictions and to identify other outcomes that are more likely to occur.
- Finally, spend the last few minutes of each Worry Management Period practicing the breathing technique that I taught you. This will strengthen your relaxation skills and reduce any anxiety that may have been raised during the Worry Management Period.

Using a daily Worry Management Period is critical for successful reduction of worry. Keep in mind that the length of the Worry Management Period is less important than the fact that you have one every day.

Introduce Other Workbook Materials

- *Point out summary sheets and cheat sheet*

- *Review use of the Worry Management Period Log and Bedtime Rating Scale*

- It's absolutely essential that ratings on both measures be made every day. To assist you, dates are printed at the top of each column.
- Begin Bedtime Rating Scale tonight, Worry Management Period Log tomorrow.

Once you've used the Problem Solving and Cognitive Restructuring Worksheets several times and feel comfortable working through the steps, it's up to you whether to use the worksheets or to follow the steps in your mind. The advantage of using the worksheets is that they prevent you from just thinking about your worries without actually taking steps to address them. However, you might find it quicker to deal with relatively minor worries by looking at—but not writing in—the worksheets. We ask that you use the worksheets for at least the first few days; after that, use them in whatever way is most helpful to you. Please remember that whether or not you continue filling out these worksheets, the Worry Management Period Log and Bedtime Rating Scale must be filled out *every day* until you come in for your second assessment session.

You'll notice that at the back of the binder there are a few blank sheets of paper. We've put these here in case you'd like to jot down additional thoughts or ideas that come to mind during the Worry Management Period. For example, you could identify additional strategies for dealing with worry, write down statements that will motivate you to practice, or keep track of how the things that you worry about actually turn out.

Any questions?

As you begin using the techniques that you learned today, you may find some of them to be more or less helpful than others. It is important to remember, however, that many of these strategies require regular, conscientious practice before their effects become apparent. In fact, it will likely take 5 to 6 weeks of consistent application of these techniques before you observe a clear reduction in your worrying.

We therefore recommend that you apply the full package of techniques that you learned today for the next few weeks and give them all a fair chance to work. If at the end of the study you still

feel that one or more of these methods is not working for you, you may wish to more heavily emphasize those strategies that best suit you and that have been most helpful in reducing your worrying. The important point is to give each method a good try before deciding it doesn't work for you and abandoning it completely.

Promoting motivation for skills rehearsal and application

When we have taught these techniques to other students, they have reported a significant reduction in worry and anxiety in their lives. However, what they found to be the hardest part of this program was not using the techniques, but making the time to practice them every day, and staying motivated to practice them over a minimum of 5-6 weeks. One thing that often helps is to keep in mind all of the positive benefits that these techniques can have on your life, including your work, health, and quality of life. If you practice these techniques regularly, they will increase your ability to concentrate, make you more efficient and productive, and improve the quality of your work, in addition to helping you feel happier and less stressed. Although practicing the techniques and holding a Worry Management Period every day will require time, they will ultimately save you time by freeing up all the time you would have spent worrying or being distracted by worry throughout the day.

I'd like you to think for a moment about what you will do to remind and motivate yourself to keep practicing these techniques during the next 5-6 weeks, especially during weekends or very busy times. Some strategies that have worked for other students include: scheduling a daily Worry Management Period in your calendar or appointment book, setting an alarm to signal the beginning of your Worry Management Period, posting reminder notes in a prominent place, and keeping your workbook visible. Take a moment to write in your workbook the strategies that you will use to encourage yourself to practice every day.

After everyone has finished writing:

We will be sending you periodic e-mails to remind you to keep practicing, and I will be calling you in a couple of weeks to see how things are going. However, I also strongly encourage you to use whatever strategies you can to stay on track with your practicing.

Before we wrap up, I'd like you all to close your eyes and spend a few moments visualizing what your life would be like if you were less worried and anxious. (*After about 20 sec.*): Remember this image, and come back to it if you start to feel discouraged or don't feel like practicing. This is your goal, and you can get there by practicing the skills that you learned today.

***Complete Therapy Credibility and Expectancy Scales before leaving;
seal in envelope with Pretherapy Bedtime Rating Scale.***

Overheads for Basic Treatment Session

WORRY

- If only...
- What if...

When is worry maladaptive?

- Constantly worrying
- Causing emotional distress
- Interfering with functioning
- Not quickly providing solutions
- Cannot be turned off

THE ORIGINS OF WORRY

Are worry and anxiety inherited?

- There is a genetic component to anxiety
- Inherited in the form of a *general sensitivity*
- Higher chance of developing any kind of emotional distress

What factors determine whether anxiety will be developed?

- Feeling little control over what will happen
- Feeling little confidence in ability to handle negative events

WHAT HAPPENS WHEN WE WORRY?

We talk to ourselves in anxious ways

- “That terrible event could happen, and I might not be able to deal with it, but I’ve got to be ready to try”
- Worry provides illusion of taking action

Our attention is affected

- Attention narrows to focus on sources of threat
- Attention is less likely to go where you most need it

Our physiological state is affected

- Body increasingly aroused and poised for action
- “Fight or flight” response is suppressed

WORRYING IS A HABIT

- Only frequent, deliberate practice of *new* responses can reduce the habit of worrying
- Become more aware of your worrying in order to *catch the worry as soon as it begins*
 - stop worry before it becomes obsessional
 - worry-reduction methods are more effective

WORRY IS TRIGGERED BY MANY SITUATIONS

Limit worry to one period of time each day

Choose a unique time and place

As soon as you catch a worry:

- **postpone it** to the Worry Management Period
- **return attention** to your immediate environment

Worried thoughts may try to intrude

THE WORRY MANAGEMENT PERIOD

Limit the amount of time you spend worrying during the Worry Management Period

Problem solving strategies:

- *Step 1:* Identify a worry over which you have some control
- *Step 2:* Identify several possible courses of action for dealing with the problem
- *Step 3:* Choose a course of action and establish a concrete plan for carrying it out

Problem solving should be relatively brief

- Focus on future problems

SUMMARY

Catch your worry as soon as it begins, then:

- Postpone worry to the Worry Management Period
- Turn attention back to the immediate environment

Make good use of the Worry Management Period:

- Use problem solving for worries over which you have some control

Remember...

- Regular practice for 5-6 weeks to see benefits
- Give all the strategies a chance to work

STAYING MOTIVATED

Positive benefits of these techniques:

- improved ability to concentrate
- greater efficiency and productivity
- improved quality of work
- feel happier and less stressed

These techniques will ultimately save you time

Overheads for Augmented Treatment Session

WORRY

- If only...
- What if...

When is worry maladaptive?

- Constantly worrying
- Causing emotional distress
- Interfering with functioning
- Not quickly providing solutions
- Cannot be turned off

WORRYING IS A HABIT

- Only frequent, deliberate practice of *new* responses can reduce the habit of worrying
- Become more aware of your worrying in order to *catch the worry as soon as it begins*
 - stop worry before it becomes obsessional
 - worry-reduction methods are more effective

WORRY CREATES UNCOMFORTABLE BODILY SENSATIONS

Replace worry with a relaxation response:

- Breathe slowly and deeply from the diaphragm
- Do this whenever you catch yourself worrying
- Try to make it a constant habit

WORRY IS TRIGGERED BY MANY SITUATIONS

Limit worry to one period of time each day

Choose a unique time and place

As soon as you catch a worry:

- **postpone it** to the Worry Management Period
- **relax yourself** using your breathing technique
- **return attention** to your immediate environment

Worried thoughts may try to intrude

THE WORRY MANAGEMENT PERIOD

Limit the amount of time you spend worrying during the Worry Management Period

Problem solving strategies:

- *Step 1:* Identify a worry over which you have some control
- *Step 2:* Identify several possible courses of action for dealing with the problem
- *Step 3:* Choose a course of action and establish a concrete plan for carrying it out

Problem solving should be relatively brief

- Focus on future problems

Worry is not useful when:

- the feared event is unlikely to happen
 - you've done all you reasonably can to prevent it
1. Worrisome predictions are usually inaccurate
 2. We are needlessly experiencing stress and anxiety (and wasting time and energy) on worry

When worries cannot be readily addressed through problem solving, use **cognitive restructuring**

COGNITIVE RESTRUCTURING

- **Step 1:** Ask yourself, “What am I afraid might happen?”
- **Step 2:** Logically analyze each prediction
- **Step 3:** Consider the probability that your predicted outcome will occur, given the evidence
- **Step 4:** Put the feared outcome into perspective
- **Step 5:** Consider other possible outcomes and estimate how likely each one is to occur
- **Step 6:** If you worry about this topic again, replace the worry with a more realistic prediction
 - Vividly imagine the most likely outcome

Cognitive restructuring is not just “positive thinking”

- Leads to more *realistic* and *accurate* predictions

At first, the new thoughts may not feel true

- Remind yourself that they are more true
- Notice how things actually turn out

Cognitive restructuring in Worry Management Period

- If worry reoccurs, apply new adaptive thoughts
- If a new worry arises, decide whether to apply cognitive restructuring now or later

SUMMARY

Catch your worry as soon as it begins, then:

- Postpone worry to the Worry Management Period
- Briefly apply breathing technique
- Replace worry with a more realistic prediction;
vividly imagine this outcome for 5 seconds
- Turn attention back to the immediate environment

Make good use of the Worry Management Period:

- Use problem solving for worries over which you have some control
- Use cognitive restructuring for remaining worries
- End by practicing the breathing technique

Remember...

- Regular practice for 5-6 weeks to see benefits
- Give all the strategies a chance to work

STAYING MOTIVATED

Positive benefits of these techniques:

- improved ability to concentrate
- greater efficiency and productivity
- improved quality of work
- feel happier and less stressed

These techniques will ultimately save you time

APPENDIX D: WORKBOOK MATERIALS

WORKSHOP SUMMARY (*Basic Treatment Condition*)

Worrying is a habit

- Worry is repeated so often that it occurs automatically and effortlessly. We often don't even notice when it has started.
- Therefore, we can reduce worry by learning to catch worry as soon as it starts and then consistently replacing it with other responses
- Frequent, repeated practice will weaken the worry habit and strengthen more adaptive responses

Become more aware of your worrying

- The longer an episode of worrying lasts, the more the worry habit is strengthened
- Catching worry early makes it easier to switch it off before it becomes obsessional
- Therefore, your goal is to *catch the worry as soon as it begins*

Reduce the number of situations associated with worry

- Because worry can occur in any time or place, it automatically becomes associated with many situations and is therefore easily triggered by those situations
- To reduce worry, practice limiting worry to one period of time each day (30 minutes is ideal)
- Choose a unique place and time for this Worry Management Period that will be the same each day:

My Worry Management Period will take place from _____ to _____ in _____ each day.
location

Postpone worries to the Worry Management Period

- As soon as you notice the beginning of a worry, remind yourself that have set aside time specifically for dealing with worrisome topics, and postpone the worry to the Worry Management Period
- If you are concerned that you might forget the topic, write it down
- After mentally postponing the worry, return your attention back to your immediate environment or current task
- If worried thoughts try to intrude, don't try to block them out; rather, let them pass through and out of your mind, then gently turn your attention back to your immediate environment
- Repeat this process until you are able to concentrate fully on the present moment

Use the Worry Management Period constructively

- Although you may spend the Worry Management Period worrying if you wish, we recommend that you spend at least some (if not all) of this time dealing with your worries more constructively
- Separate your worries into those that you can do something about and those that you cannot

Use problem-solving strategies for worries over which you have some control

- **Step 1:** Identify a worry over whose outcome you have some influence
- **Step 2:** Identify several possible courses of action for dealing with the problem
 - What steps can you take to reduce the likelihood of a negative outcome?
 - Can you seek information or assistance that might help you come up with a solution?
 - Consider the pros, cons, and feasibility for each possible course of action
- **Step 3:** Choose a course of action and establish a concrete plan for carrying it out
 - List each task you need to complete and specify when you will complete each one

It is likely to take regular practice of these skills for 5-6 weeks before their effects become apparent

- Therefore, you are unlikely to notice significant improvement in your worrying until that time
- Also, even if you find some of these techniques more helpful than others, we recommend that you apply the full package of techniques that you learned today for the entire study and give them all a fair chance to work

I will remind and motivate myself to keep practicing these skills for the next 5-6 weeks by:

_____	_____
_____	_____
_____	_____

“CHEAT SHEET” for WORRY REDUCTION STUDY

When you catch yourself worrying during the day:

- Postpone the worry to your Worry Management Period
- Turn your attention back to the present moment

During your daily Worry Management Period:

- *Rate your anxiety at the start of the period on the Worry Management Period Log*
- Distinguish those worries that you can do something about from those that you cannot
- Use problem-solving strategies to identify a course of action for problems under your control
- *Complete the remaining ratings for today’s period on the Worry Management Period Log*

Before going to sleep:

- *Rate your experiences of worry today using one column of the Bedtime Rating Scale*

WORKSHOP SUMMARY (*Augmented Treatment Condition*)

Worrying is a habit

- Worry is repeated so often that it occurs automatically and effortlessly. We often don't even notice when it has started.
- Therefore, we can reduce worry by learning to catch worry as soon as it starts and then consistently replacing it with other responses
- Frequent, repeated practice will weaken the worry habit and strengthen more adaptive responses

Become more aware of your worrying

- The longer an episode of worrying lasts, the more the worry habit is strengthened
- Catching worry early makes it easier to switch it off before it becomes obsessional
- Therefore, your goal is to *catch the worry as soon as it begins*

Replace worry with a relaxation response

- Worry creates uncomfortable bodily sensations and increases tension
- Slow, deep breathing from the stomach (or diaphragm) increases feelings of relaxation
- Whenever you catch yourself worrying or becoming tense or anxious, shift to diaphragmatic breathing
- As you breathe more slowly and deeply, focus your attention on inhaling and exhaling
- Each time you exhale, think the word "relax" or "calm"
- If you notice thoughts intruding, let them pass through your mind and flow out of you with each exhalation, then gently return your attention to your breathing and the pleasant feeling of relaxation
- Try to make slow, deep diaphragmatic breathing not only a response to worry, but a constant habit

Reduce the number of situations associated with worry

- Because worry can occur in any time or place, it automatically becomes associated with many situations and is therefore easily triggered by those situations
- To reduce worry, practice limiting worry to one period of time each day (30 minutes is ideal)
- Choose a unique place and time for this Worry Management Period that will be the same each day:

My Worry Management Period will take place from _____ to _____ in _____ each day.
location

Postpone worries to the Worry Management Period

- As soon as you notice the beginning of a worry, remind yourself that you have set aside time specifically for dealing with worrisome topics, and postpone the worry to the Worry Management Period
- If you are concerned that you might forget the topic, write it down
- After mentally postponing the worry, briefly relax yourself using your breathing technique
- Then, return your attention back to your immediate environment or current task
- If worried thoughts try to intrude, don't try to block them out; rather, let them pass through and out of your mind, then gently turn your attention back to your immediate environment
- Repeat this process until you are able to concentrate fully on the present moment

Use the Worry Management Period constructively

- Although you may spend the Worry Management Period worrying if you wish, we recommend that you spend at least some (if not all) of this time dealing with your worries more constructively
- Separate your worries into those that you can do something about and those that you cannot

Use problem-solving strategies for worries over which you have some control

- **Step 1:** Identify a worry over whose outcome you have some influence
- **Step 2:** Identify several possible courses of action for dealing with the problem
 - What steps can you take to reduce the likelihood of a negative outcome?
 - Can you seek information or assistance that might help you come up with a solution?
 - Consider the pros, cons, and feasibility for each possible course of action
- **Step 3:** Choose a course of action and establish a concrete plan for carrying it out
 - List each task you need to complete and specify when you will complete each one
- If you still feel worried after completing these 3 steps, recognize that this worry is now out of your hands and may be most effectively addressed through cognitive restructuring.

Use cognitive restructuring for worries whose outcomes are out of your hands

- When we worry, we are predicting that something negative will happen. However, most of the things we worry about never happen, and we nearly always cope better than we expect.
- Thus, by closely examining the predictions that we make when we worry and considering the actual probability that they will occur, we can come to see things more realistically and greatly reduce feelings of anxiety

- **Step 1:** Ask yourself, “What am I afraid might happen?” Be specific and concrete.
 - If you are making multiple predictions, evaluate each individually using the steps below
- **Step 2:** Take each prediction and logically analyze it
 - What evidence do you have that this prediction will come true, and what evidence do you have that it will not come true?
- **Step 3:** Consider the probability that your predicted outcome will occur, given the evidence
 - Is it reasonable to predict that the feared outcome will happen at all? If so, how likely is it to happen?
- **Step 4:** Use the questions on Page 4 to help put the feared outcome into perspective. Recognize that even if the outcome isn’t pleasant, it may not be as terrible as you fear, and you will be able to survive it and maybe even grow as a result.
- Consider other possible outcomes and estimate how likely each one is to occur, given your past experience and any other information. Remember that things almost always turn out better than we fear, and that there’s no point in wasting time and energy worrying about a highly unlikely outcome.
- If you notice yourself worrying about this topic again, replace the worry with a more realistic prediction. Then, for 5 seconds, vividly imagine this most likely outcome actually happening.
- If you notice yourself worrying about a new topic that you have not analyzed in this way, either apply the techniques of cognitive restructuring if you have time, or postpone the worry and use these techniques during your next Worry Management Period.
- Evaluate your accuracy by taking note of how often things actually turn out better, worse, or the same as you predicted, and how well you handled the outcome.
- At first, the new predictions may not *feel* true compared to the old worrisome predictions. Just remind yourself that they *are* more true, based on your logical analysis. With practice, it will become easier to make predictions that are more accurate and less anxiety-provoking.

It is likely to take regular practice of these skills for 5-6 weeks before their effects become apparent

- Therefore, you are unlikely to notice significant improvement in your worrying until that time
- Also, even if you find some of these techniques more helpful than others, we recommend that you apply the full package of techniques that you learned today for the entire study and give them all a fair chance to work

I will remind and motivate myself to keep practicing these skills for the next 5-6 weeks by:

_____	_____
_____	_____
_____	_____

Useful Questions to Help Put Feared Outcomes into Perspective

- How often have such bad things happened in the past?
- What kinds of good outcomes have happened in similar situations in the past?
- How well have I coped with bad things in the past? Have I been able to handle negative situations before without terrible consequences?
- What is the worst thing that could happen if my prediction came true? How bad would that really be? Would I be able to cope? To survive?
- What resources do I have to help me cope if the bad thing does happen?
- Are there things that I could do to minimize the impact of a negative outcome?
- What would I tell a close friend, if that person had this same anxiety or worry?
- A year after the event, what difference will it make?

Remember: Even if the outcome isn't pleasant, it may not turn out to be as terrible as you fear. You will survive the negative event and be able to move on with your life. You may even learn new things from a bad event that will help you to grow and that will benefit you in the future.

“CHEAT SHEET” for WORRY REDUCTION STUDY

When you catch yourself worrying during the day:

- Postpone the worry to your Worry Management Period
- Briefly apply your breathing technique to relax yourself
- If you have already analyzed this problem using cognitive restructuring, replace your worried thought with a more realistic prediction, then vividly imagine this outcome for 5 seconds
- Turn your attention back to the present moment

During your daily Worry Management Period:

- *Rate your anxiety at the start of the period on the Worry Management Period Log*
- Distinguish those worries that you can do something about from those that you cannot
- Use problem-solving strategies to identify a course of action for problems under your control
- Apply cognitive restructuring to worries which cannot be addressed through problem solving
- Spend the last few minutes of each Worry Management Period practicing your breathing technique; this will strengthen your relaxation skills and reduce any anxiety raised by thinking about worries
- *Complete the remaining ratings for today’s period on the Worry Management Period Log*

Before going to sleep:

- *Rate your experiences of worry today using one column of the Bedtime Rating Scale*

Problem Solving Worksheet

1. Specify a worry over which you have some control: _____

2. Identify several possible courses of action, and consider the pros, cons, and feasibility of each:

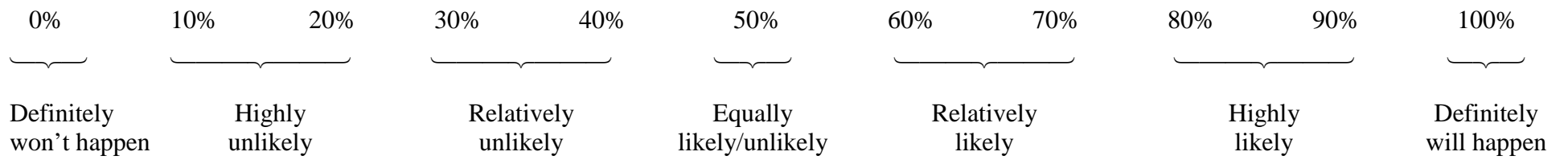
<i>Possible course of action</i>	<i>Pros</i>	<i>Cons</i>	<i>Feasibility</i>
			Low Moderate High
			Low Moderate High
			Low Moderate High
			Low Moderate High

3. Choose a course of action and establish a concrete plan for carrying it out:

<i>Task to be completed</i>	<i>Day/time when task will be completed</i>

Cognitive Restructuring Worksheet

What am I afraid might happen?	What is the evidence for and against this prediction?	What is the actual probability that this will occur?	What's the worst thing that could happen? How bad would that be? Would I be able to handle it?	What are some other ways that this could turn out? How likely is each of these outcomes? (%)	What will I tell myself if I worry about this again?
	<u>For:</u> <u>Ag:</u>	%			
	<u>For:</u> <u>Ag:</u>	%			
	<u>For:</u> <u>Ag:</u>	%			

GUIDE TO ESTIMATING PROBABILITIES:

BEDTIME RATING SCALE *(pretherapy)*

Before making any ratings, mentally “walk through” your day so that your responses reflect your overall experiences today.

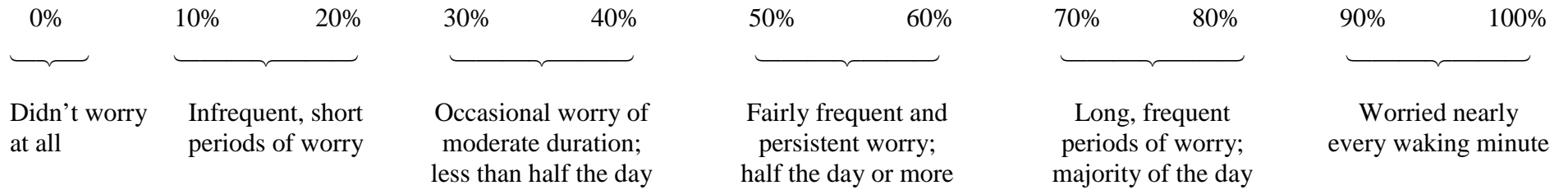
Today's date:							
What percent of the day did you spend engaged in worry? (0 – 100)	%	%	%	%	%	%	%

Use the following scale to rate the worry that you experienced today:

0	1	2	3	4	5	6	7	8
None		Mild		Moderate		Fairly severe		Very severe

<u>Intensity</u> of worry experienced today:							
Amount of <u>distress</u> caused by worry today:							
Degree to which worry <u>interfered</u> in what you were doing or wanted to do today:							

GUIDE TO ESTIMATING PERCENT OF DAY SPENT WORRYING:



BEDTIME RATING SCALE *(following basic treatment session)*

Before making any ratings, mentally “walk through” your day so that your responses reflect your overall experiences today.

Today's date:							
What percent of the day did you spend engaged in worry? (0 – 100)	%	%	%	%	%	%	%

Use the following scale to rate the worry that you experienced today:

0	1	2	3	4	5	6	7	8
None		Mild		Moderate		Fairly severe		Very severe

<u>Intensity</u> of worry experienced today:							
Amount of <u>distress</u> caused by worry today:							
Degree to which worry <u>interfered</u> in what you were doing or wanted to do today:							

To what extent did you use each of the following strategies today in response to naturally occurring worries (outside the Worry Management Period)? Use the following scale:

0	1	2	3	4
Not used today	Less than half the time	Half the time	More than half the time	Every time that I detected a worry

Postponing worry to the worry period:							
Focusing on the present moment:							

BEDTIME RATING SCALE *(following augmented treatment session)*

Before making any ratings, mentally “walk through” your day so that your responses reflect your overall experiences today.

Today's date:							
What percent of the day did you spend engaged in worry? (0 – 100)	%	%	%	%	%	%	%

Use the following scale to rate the worry that you experienced today:

0	1	2	3	4	5	6	7	8
None		Mild		Moderate		Fairly severe		Very severe

Intensity of worry experienced today:							
Amount of <u>distress</u> caused by worry today:							
Degree to which worry <u>interfered</u> in what you were doing or wanted to do today:							

To what extent did you use each of the following strategies today in response to naturally occurring worries (outside the Worry Management Period)? Use the following scale:

0	1	2	3	4
Not used today	Less than half the time	Half the time	More than half the time	Every time that I detected a worry

Postponing worry to the worry period:							
Focusing on the present moment:							
Diaphragmatic Breathing:							
Cognitive Restructuring:							

Worry Management Period Log *(Basic Treatment Condition)*

Date and Day: _____

Had worry period? Y N Y N Y N Y N Y N Y N Y N

Time: _____ to _____ _____ to _____ _____ to _____ _____ to _____ _____ to _____ _____ to _____ _____ to _____

Anxiety at start of worry period (0-8, below): _____

0	1	2	3	4	5	6	7	8
No anxiety		Mild anxiety		Moderate anxiety		Fairly severe anxiety		Very severe anxiety

Anxiety at end of worry period (0-8, above): _____

Estimated time (in min.) spent on:

Worrying: _____

Problem solving: _____

Other: _____
(Please specify): _____

Worry Management Period Log *(Augmented Treatment Condition)*

Date and Day: _____

Had worry period? Y N Y N Y N Y N Y N Y N Y N

Time: _____ to _____ _____ to _____ _____ to _____ _____ to _____ _____ to _____ _____ to _____ _____ to _____

Anxiety at start of worry period (0-8, below): _____ _____ _____ _____ _____ _____ _____

0	1	2	3	4	5	6	7	8
No anxiety		Mild anxiety		Moderate anxiety		Fairly severe anxiety		Very severe anxiety

Anxiety at end of worry period (0-8, above): _____ _____ _____ _____ _____ _____ _____

Estimated time (in min.) spent on:

Worrying: _____ _____ _____ _____ _____ _____ _____

Problem solving: _____ _____ _____ _____ _____ _____ _____

Cognitive restructuring: _____ _____ _____ _____ _____ _____ _____

Diaphragmatic breathing: _____ _____ _____ _____ _____ _____ _____

Other: (Please specify): _____ _____ _____ _____ _____ _____ _____

APPENDIX E: REHEARSAL PERIOD MATERIALS

Reminder E-Mail #1

E-mail subject heading: begin practicing worry-reduction strategies

Message:

Just a quick reminder that -- starting today -- you should begin practicing the worry-reduction strategies that you learned at yesterday's workshop.

Remember that worry is a habit, and that the best way to weaken this habit is to replace it with more adaptive responses each time that it occurs. Although these strategies may be difficult to use at first, remember that the more you practice them, the easier they will be to use, and the less worried and anxious you will feel.

Remember to set aside time today for your first Worry Management Period, and to make your daily ratings in the Worry Management Period Log and the Bedtime Rating Scale.

If you have any questions about the techniques or the worksheets that you are using, please e-mail me (hkw103@psu.edu) or Ellen (your workshop leader; eed114@psu.edu) at any time.

Thank you for your participation in the Worry Reduction Study!

Heather Woodward
Research Assistant

Stress & Anxiety Lab
Department of Psychology
Penn State University

Reminder E-Mail #2

E-mail subject heading: keep practicing worry-reduction strategies

Message:

Just a quick reminder to keep practicing the worry-reduction strategies that you learned at last Wednesday's workshop. Keep at it -- it will get easier each time you do it!

Remember that practicing these strategies and holding a Worry Management Period each day will ultimately **save you time** by freeing up all the time you would have spent worrying throughout the day. The actual length of the Worry Management Period is less important than making sure you have one every day.

Please continue making daily ratings in the Worry Management Period Log and the Bedtime Rating Scale.

If you have any questions about the techniques or the worksheets, please e-mail me (hkw103@psu.edu) or Ellen (your workshop leader; eed114@psu.edu) at any time.

Keep up the good work!

Heather Woodward
Research Assistant

Stress & Anxiety Lab
Department of Psychology
Penn State University

Reminder E-Mail #3

E-mail subject heading: reducing worry

Message:

I'm writing to remind you to keep practicing the techniques that you learned last week for reducing worry, anxiety, and stress.

Remember that these techniques will be most effective if you apply them every time you catch yourself worrying, and if you practice them each day during your Worry Management Period. Through regular practice, you are weakening your old worry habit.

Don't forget to make ratings each day in the Worry Management Period Log and the Bedtime Rating Scale.

If you have any questions, please e-mail me (hkw103@psu.edu) or Ellen (your workshop leader; eed114@psu.edu) at any time.

Keep up the good work!

Heather Woodward
Research Assistant

Stress & Anxiety Lab
Department of Psychology
Penn State University

Reminder E-Mail #4

E-mail subject heading: reducing worry

Message:

This is a reminder to keep using the techniques that you learned at your worry-reduction workshop.

If you find yourself getting discouraged or losing momentum, remember your vision of what life would be like if you were less worried and anxious. You can get there by consistently applying these techniques each time you catch yourself worrying, and by dealing with your worries effectively during your daily Worry Management Period.

Be sure to complete a column each day in the Worry Management Period Log and the Bedtime Rating Scale. If you have any questions, please e-mail me (hkw103@psu.edu) or Ellen (eed114@psu.edu) at any time.

Don't quit now -- it will only get easier from here.

Heather Woodward
Research Assistant

Stress & Anxiety Lab
Department of Psychology
Penn State University

Reminder E-Mail #5

E-mail subject heading: keep reducing your worry

Message:

Please continue practicing your techniques for reducing worry, anxiety, and stress.

Remember that by practicing these skills today, you are investing in yourself and your future. All the time that you spend now will pay off by improving your productivity, your health, and your stress level for the rest of your life. So keep at it -- it's worth it!

Continue making ratings in the Worry Management Period Log and the Bedtime Rating Scale each day. If you have any questions, please e-mail me (hkw103@psu.edu) or Ellen (eed114@psu.edu) at any time.

Thank you for all your hard work -- we really appreciate it.

Heather Woodward
Research Assistant

Stress & Anxiety Lab
Department of Psychology
Penn State University

Reminder E-Mail #6

E-mail subject heading: scheduling your final appointment

Message:

I am sending this e-mail for two reasons. First, I wanted to remind you to keep applying the strategies that you've learned for reducing worry. You've come this far -- don't give up now! You should begin to see improvements in your worry and anxiety in just a few weeks if you continue practicing these strategies regularly and consistently.

Second, I wanted to let you know that I've scheduled your final appointment for the study for:

____(Day, date)____ from __-__ PM in ____ Building.

At this meeting, you will return your workbook and complete an interview and several questionnaires, thereby completing your participation in the Worry Reduction Study. Please make a note of this appointment in your records. **If you are not available at the time for which you've been scheduled, please let me know immediately so that I may reschedule you.**

You should be completing a column in the Worry Management Period Log and the Bedtime Rating Scale each day. If you have any questions about the worry-reduction strategies or your workbook, please e-mail me (hkw103@psu.edu) or Ellen (eed114@psu.edu) at any time.

Thanks,

Heather Woodward
Research Assistant

Stress & Anxiety Lab
Department of Psychology
Penn State University

Reminder E-Mail #7

E-mail subject heading: working to reduce your worry

Message:

I'm writing to remind you to keep up your efforts to reduce worry. All of your hard work will pay off soon if you continue to practice the strategies that you learned in the workshop.

If you've been consistently applying your worry-reduction strategies and holding a Worry Management Period each day, good for you! You're well on your way to a healthier, happier, and more relaxed life. If you've stopped practicing these strategies, now's the time to start again. Remember, your worry and anxiety will only decrease when you make consistent efforts to change these habits.

Please complete a column in the Worry Management Period Log and the Bedtime Rating Scale every day. If you have any questions, please e-mail me (hkw103@psu.edu) or Ellen (eed114@psu.edu) at any time.

Remember -- the more you practice, the easier it will get.

Heather Woodward
Research Assistant

Stress & Anxiety Lab
Department of Psychology
Penn State University

Reminder E-Mail #8

E-mail subject heading: keep working to reduce your worry

Message:

I'm writing to remind you to keep using the strategies that you've learned for reducing worry, anxiety, and stress.

With everything you have going on, it may feel challenging to stay motivated and to find the time that's required for making positive changes in your life. If you find yourself falling back into your old habit of worrying, remind yourself that things will only get worse -- not better -- if you don't make the time now to reduce your worry. Remember, it is within your power to live a less stressful and anxious life, but only if you take responsibility for making it happen.

Continue to make daily ratings in the Worry Management Period Log and the Bedtime Rating Scale. If you have any questions, please e-mail me (hkw103@psu.edu) or Ellen (eed114@psu.edu) at any time.

Don't stop now -- you're almost there.

Heather Woodward
Research Assistant

Stress & Anxiety Lab
Department of Psychology
Penn State University

Reminder E-Mail #9

Note: This e-mail should only be sent to participants whose POST assessments will take place next week. Students participating in POST tomorrow should be sent reminder e-mail #10 instead.

E-mail subject heading: efforts to reduce worry are still important

Message:

Just a quick reminder to keep practicing the worry-reduction strategies that you learned at your workshop.

Remember that the more you rehearse these strategies, the bigger the changes you will see in your worry, anxiety, and stress. Although you may prefer some of these strategies over others, we strongly recommend that you continue using **all** of these strategies at least until you finish the study, to give them all a fair chance to work for you.

Please make ratings each day in the Worry Management Period Log and the Bedtime Rating Scale each day. If you have any questions, please e-mail me (hkw103@psu.edu) or Ellen (eed114@psu.edu) at any time.

Give yourself credit for all the hard work that you've put in so far.

Heather Woodward
Research Assistant

Stress & Anxiety Lab
Department of Psychology
Penn State University

Reminder E-Mail #10

Note: This e-mail should be sent to participants on the night before their POST assessment session.

E-mail subject heading: REMINDER OF APPOINTMENT

Message:

This is a reminder that you are scheduled to participate in final session of the “Worry Reduction Study” tomorrow evening (___DAY, DATE___) at ___ p.m. in _____. Please plan to arrive five minutes before ___ p.m., because we will be starting directly at _____.

Please bring your workbook (with all completed worksheets) to this final meeting. If you would like to keep a blank copy of any of the worksheets for future use, please remove it from the workbook now. To keep your interviewer from knowing which workshop you attended, you will be asked to seal your workbook in an envelope at the beginning of tomorrow’s meeting, and will not be able to retrieve anything from the workbook after that time.

If you have any questions, please e-mail me at ___(your e-mail address)___.

Sincerely,

Heather Woodward
Research Assistant

Stress & Anxiety Lab
Department of Psychology
Penn State University

Phone Contact (*Basic Treatment Condition*)

Hi _____, this is _____ calling from the psychology department. I led the worry-reduction workshop that you attended a couple of weeks ago. How are you doing?

I'm calling to find out how your practicing is going and to see if you have questions about any of the techniques that I taught you. Do you have a few minutes to talk? *If not, schedule a specific time for you to call them back within the next 24 hours.*

I'd like to discuss each technique that you learned in the workshop, one at a time, to see how well you've been able to apply it and if you have any questions about it.

One technique that you learned was to catch a worry as soon as it begins and to postpone it to your Worry Management Period. Just to remind you, the idea behind this technique is that by limiting worry to just one time and place each day, you prevent worry from becoming associated with (and triggered by) many places and situations in your life.

- Let me start off by asking: Have you been making time for a Worry Management Period each day?
 - **If YES:** Terrific! Do you have any questions about the Worry Management Period?
 - **If NO:** What has kept you from having a Worry Management Period? *If the problem is uncertainty or questions about how to do this, answer questions and develop a plan with the participant that they agree to begin today. If the problem is time: I know it can be hard to find time for one more thing you have to do, but it's important to remember that having a daily Worry Management Period ultimately saves you time by freeing up all the time you would have spent worrying or being distracted by worry throughout the day. This is really critical if you are serious about wanting to reduce your worry and anxiety. Can we look at your schedule together and see if we can come up with a small block of time each day for the Worry Management Period? *Settle on times each day (can be less than 30 minutes), have participant enter these into planner and agree to begin today.**
- When you catch yourself worrying about something, have you been postponing the worry?
 - **If YES:** How is this going? Have you had any trouble with this? What percent of the time do you think you've been able to do this successfully? Do you have any questions about how to apply this to your life?
 - **If NO:** What has kept you from using this technique?

If participant is having problems, find out the specific nature of the problem, then brainstorm with participant about ways to make this easier. If participant is able to do this but finds it difficult or unhelpful, remind them that it will get much easier with practice and that it often takes 5 to 6 weeks of practice to see effects; encourage them to keep trying it for at least another couple of weeks.

- When you notice yourself worrying, have you generally been able to stop the worry and turn your attention back to the present moment?
 - **If YES:** Great! Have you had any trouble with this? Do you have any questions about how to do this?
 - **If NO:** What has kept you from doing this?

If participant is having problems, find out the specific nature of the problem, then brainstorm with participant about ways to make this easier. If the problem is with intrusive thoughts: Rather than trying to block out these thoughts, just let them pass through your mind, imagining them floating out of your head. Then, gently turn your attention back to your immediate environment. It's important not to force out these thoughts, but to just keep bringing your attention to what's going on around you until the worried thoughts subside. If participant is able to do this but finds it difficult or unhelpful, remind them that it will get much easier with practice and that it often takes 5 to 6 weeks of practice to see effects; encourage them to keep trying it for at least another couple of weeks.

Let's go on to another technique that you learned in the workshop: the Problem Solving technique. If you'll recall, we talked about the fact that some of the things that we worry about can be prevented if we develop a plan of action for dealing with them. I therefore encouraged you to use your Worry Management Period to go through 3 steps: identify each worry over which you have some control, consider several possible courses of action for dealing with that worry (weighing their pros, cons, and feasibility), and choose a course of action and create a concrete plan for carrying it out.

- Have you been using the Problem Solving technique?
 - **If YES:** How is this going? Have you had any trouble with this? How helpful has it been? Do you have any questions about how to apply problem solving strategies to your life?
 - **If NO:** What has kept you from using this technique?

If participant is having problems, find out the specific nature of the problem, then brainstorm with participant about ways to make this better. Make sure that the worries to which problem solving are being applied are ones over which they have some control. If needed, go through a line in the worksheet together using one of their worries. If participant is able to use problem solving but finds it difficult or unhelpful, remind them that it will get much easier with practice and that it often takes 5 to 6 weeks of practice to see effects; encourage them to keep trying it for at least another couple of weeks.

- Have you been using the Problem Solving Worksheet?
 - **If YES:** Good! Do you have any questions about the worksheet?
 - **If NO:** How come? *If participant has become familiar with the steps and is doing them without the worksheet, make sure they used the worksheet for the first few days and that they feel comfortable with each of the steps. If this is the case, it's fine. If they are having any trouble with the problem-solving technique, encourage them to go back to using the worksheet for a few days until they're able to apply the technique without difficulty (or, if they really don't want to, ask them at least to look at the worksheet while they're problem solving).*

Have you been making ratings every day on the Bedtime Rating Scale? How about making ratings every day on the Worry Management Period Log (even on days when you haven't had a Worry Management Period)?

- **If YES:** Wonderful. Please keep up the good work!
- **If NO:** I know it may be hard to remember to do this, but we absolutely need this information to evaluate our workshops and to see whether or not they've been helpful to you. We gave you this free workshop and will be compensating you at the end of the study. In return, we need you to help us by making ratings in both of these forms every day. It should only take a few minutes to do. *Brainstorm with participant about things they can do to remind themselves to make the ratings; have them commit to a reminder strategy.*

Do you have any final questions about any of these techniques or about the workbook?

Thanks so much for making the time to talk to me. If you think of any questions or have any problems between now and the end of the study, please e-mail my assistant, Heather, at hkw103@psu.edu.

Phone Contact (*Augmented Treatment Condition*)

Hi _____, this is _____ calling from the psychology department. I led the worry-reduction workshop that you attended a couple of weeks ago. How are you doing?

I'm calling to find out how your practicing is going and to see if you have questions about any of the techniques that I taught you. Do you have a few minutes to talk? *If not, schedule a specific time for you to call them back within the next 24 hours.*

I'd like to discuss each technique that you learned in the workshop, one at a time, to see how well you've been able to apply it and if you have any questions about it.

One technique that you learned was to catch a worry as soon as it begins and to postpone it to your Worry Management Period. Just to remind you, the idea behind this technique is that by limiting worry to just one time and place each day, you prevent worry from becoming associated with (and triggered by) many places and situations in your life.

- Let me start off by asking: Have you been making time for a Worry Management Period each day?
 - **If YES:** Terrific! Do you have any questions about the Worry Management Period?
 - **If NO:** What has kept you from having a Worry Management Period? *If the problem is uncertainty or questions about how to do this, answer questions and develop a plan with the participant that they agree to begin today. If the problem is time: I know it can be hard to find time for one more thing you have to do, but it's important to remember that having a daily Worry Management Period ultimately saves you time by freeing up all the time you would have spent worrying or being distracted by worry throughout the day. This is really critical if you are serious about wanting to reduce your worry and anxiety. Can we look at your schedule together and see if we can come up with a small block of time each day for the Worry Management Period? *Settle on times each day (can be less than 30 minutes), have participant enter these into planner and agree to begin today.**
- When you catch yourself worrying about something, have you been postponing the worry?
 - **If YES:** How is this going? Have you had any trouble with this? What percent of the time do you think you've been able to do this successfully? Do you have any questions about how to do this?
 - **If NO:** What has kept you from using this technique?

If participant is having problems, find out the specific nature of the problem, then brainstorm with participant about ways to make this easier. If participant is able to do this but finds it difficult or unhelpful, remind them that it will get much easier with practice and that it often takes 5 to 6 weeks of practice to see effects; encourage them to keep trying it for at least another couple of weeks.

- When you notice yourself worrying, have you generally been able to stop the worry and turn your attention back to the present moment?
 - **If YES:** Great! Have you had any trouble with this? Do you have any questions about how to do this?
 - **If NO:** What has kept you from doing this?

If participant is having problems, find out the specific nature of the problem, then brainstorm with participant about ways to make this easier. If the problem is with intrusive thoughts: Rather than trying to block out these thoughts, just let them pass through your mind, imagining them floating out of your head. Then, gently turn your attention back to your immediate environment. It's important not to force out these thoughts, but to just keep bringing your attention to what's going on around you until the worried thoughts subside. If participant is able to do this but finds it difficult or unhelpful, remind them that it will get much easier with practice and that it often takes 5 to 6 weeks of practice to see effects; encourage them to keep trying it for at least another couple of weeks.

Now I'd like to ask you some questions about the diaphragmatic breathing technique. In the workshop, I showed you how breathing slowly and deeply from the diaphragm (rather than the chest) can help increase your feelings of relaxation. I also recommended that, as you use this technique, you focus on your attention on your breathing and on a calming word to relax your mind as well as your body.

- Have you been using the Diaphragmatic Breathing technique?
 - **If YES:** How is this going? Have you had any trouble with this? How helpful has it been? Do you have any questions about how to do diaphragmatic breathing or apply it to your life?
 - **If NO:** What has kept you from using this technique?

If participant is having problems, find out the specific nature of the problem, then brainstorm with participant about ways to make this better. If the problem is with intrusive thoughts: Rather than trying to block out these thoughts, just let them pass through your mind, imagining them floating out of your head. Then, gently turn your attention back to your breathing, and repeat your calming word with each exhalation. It's important not to force out these thoughts, but to just keep bringing your attention to your breathing until the worried thoughts subside. If participant is able to do this but finds it difficult or unhelpful, remind them that it will get much easier with practice and that it often takes 5 to 6 weeks of practice to see effects; encourage them to keep trying it for at least another couple of weeks.

- Have you been practicing Diaphragmatic Breathing at the end of each Worry Management Period?
 - **If YES:** Great.
 - **If NO:** I recommend you try this. We've found that this really helps people strengthen their relaxation skills, as well as helping to reduce any anxiety that may be raised during the Worry Management Period.

Let's go on to another technique that you learned in the workshop: the Problem Solving technique. If you'll recall, we talked about the fact that some of the things that we worry about can be prevented if we develop a plan of action for dealing with them. I therefore encouraged you to use your Worry Management Period to go through 3 steps: identify each worry over which you have some control, consider several possible courses of action for dealing with that worry (weighing their pros, cons, and feasibility), and choose a course of action and create a concrete plan for carrying it out.

- Have you been using the Problem Solving technique?
 - **If YES:** How is this going? Have you had any trouble with this? How helpful has it been? Do you have any questions about how to apply problem solving strategies to your worries?
 - **If NO:** What has kept you from using this technique?

If participant is having problems, find out the specific nature of the problem, then brainstorm with participant about ways to make this better. Make sure that the worries to which problem solving are being applied are ones over which they have some control. If needed, go through a line in the worksheet together using one of their worries. If participant is able to use problem solving but finds it difficult or unhelpful, remind them that it will get much easier with practice and that it often takes 5 to 6 weeks of practice to see effects; encourage them to keep trying it for at least another couple of weeks.

- Have you been using the Problem Solving Worksheet?
 - **If YES:** Good! Do you have any questions about the worksheet?
 - **If NO:** How come? *If participant has become familiar with the steps and is doing them without the worksheet, make sure they used the worksheet for the first few days and that they feel comfortable with each of the steps. If this is the case, it's fine. If they are having any trouble with the problem-solving technique, encourage them to go back to using the worksheet for a few days until they're able to apply the technique without difficulty (or, if they really don't want to, ask them at least to look at the worksheet while they're problem solving).*

Now we come to the Cognitive Restructuring technique. In the workshop, we talked about cognitive restructuring as a particularly useful technique when you find yourself worrying about a problem that is outside of your control. It's based on the fact that, most of the time, the things that we worry about do not come true—and those few times they do come true, the outcome is usually not as bad as we feared, and we cope with it quite well. I therefore encouraged you to specify what it was you were afraid would happen, to evaluate how likely this was to actually happen, to consider how well you could cope if it happened, and to identify some other ways that things could turn out which were more accurate and realistic.

- Have you been using the Cognitive Restructuring technique?
 - **If YES:** How is this going? Have you had any trouble with this? How helpful has it been? Do you have any questions about how to apply cognitive restructuring to your worries?
 - **If NO:** What has kept you from using this technique?

If participant is having problems, find out the specific nature of the problem, then brainstorm with participant about ways to make this better. Make sure that the participant is applying the technique correctly, that they are going through each step systematically, that their probability estimates are relatively accurate, and that more accurate thoughts are being generated and actually applied to recurring worries (along with vividly imagining the most likely outcome). If needed, go through a line in the worksheet together using one of their worries. If participant is able to use cognitive restructuring but finds it difficult or unhelpful, remind them that it will get much easier with practice and that it often takes 5 to 6 weeks of practice to see effects; encourage them to keep trying it for at least another couple of weeks.

- Have you been using the Cognitive Restructuring Worksheet?
 - **If YES:** Good! Do you have any questions about the worksheet?
 - **If NO:** How come? *If participant has become familiar with the steps and is doing them without the worksheet, make sure they used the worksheet for the first few days and that they feel comfortable with each of the steps. If this is the case, it's fine. If they are having any trouble with the cognitive restructuring technique, encourage them to go back to using the worksheet for a few days until they're able to apply the technique without difficulty (or, if they really don't want to, ask them at least to look at the worksheet while they use the technique).*
- If the same worry has come to mind again, have you replaced the worried thought with a more realistic view of the situation, then vividly imagined this most likely outcome for several seconds?
 - **If YES:** Great.
 - **If NO:** I recommend you try this. We've found that this really helps people reduce their worry and anxiety.

Finally, have you been making ratings every day on the Bedtime Rating Scale? How about making ratings every day on the Worry Management Period Log (even on days when you haven't had a Worry Management Period)?

- **If YES:** Wonderful. Please keep up the good work!
- **If NO:** I know it may be hard to remember to do this, but we absolutely need this information to evaluate our workshops and to see whether or not they've been helpful to you. We gave you this free workshop and will be compensating you at the end of the study. In return, we need you to help us by making ratings in both of these forms every day. It should only take a few minutes to do. *Brainstorm with participant about things they can do to remind themselves to make the ratings; have them commit to a reminder strategy.*

Do you have any final questions about any of these techniques or about the workbook?

Thanks so much for making the time to talk to me. If you think of any questions or have any problems between now and the end of the study, please e-mail my assistant, Heather, at hkw103@psu.edu.

APPENDIX F: PILOT STUDY

Objectives

A small-scale pilot study was conducted to meet several specific objectives. First, the study aimed to evaluate and refine the therapy manuals that had been written for each treatment condition, to determine whether the chosen therapeutic skills could be conveyed clearly and succinctly in a group format, and to determine the likely duration of the treatment sessions based on these manuals. Second, the study sought to determine the utility of the treatment workbooks as a therapy aid, to ascertain what form the treatment workbooks should take, and to refine the worksheets and rating scales included in the workbooks. Third, the study aimed to identify motivational obstacles to skills rehearsal and implementation, to generate ideas for enhancing participant motivation, and to evaluate an e-mail contact system as one method of facilitating the rehearsal of learned skills.

Method

Twelve undergraduate students participated in the pilot study, all of whom reported moderate to high levels of worry on the PSWQ. Thus, these participants were quite similar to those who were expected to be recruited for the primary investigation. One basic treatment session and one augmented treatment session were conducted, with participants randomly assigned to one of these two sessions within the confines of their availability, resulting in a total of six participants per condition.

At each treatment session, participants were given a consent form and then administered the treatment outlined in the therapy manual corresponding to that condition. Immediately following each treatment session, participants engaged in a 30-minute group debriefing and discussion led by the therapist, in which their feedback was solicited about: (a) the interest, length, and clarity of the treatment session; (b) their understanding of, and comfort with, the

skills that were taught; (c) their motivation to practice these skills and ideas for maintaining motivation throughout the skills rehearsal period; and (d) other suggestions for improving the treatment.

Participants in both conditions received a treatment workbook with which to practice their learned therapeutic skills for two weeks. During this two-week period, participants were contacted via e-mail to (a) invite them to ask any questions that may have arisen during skills rehearsal and application and (b) remind and encourage them to continue practice these skills. To determine the optimal frequency of contact, half of the participants received one e-mail message per week, whereas the other half received two messages per week. After the two-week period, participants returned to the lab for an additional 30-minute debriefing session concerning their experiences with skills rehearsal and application, including: (a) any difficulties in applying each of the therapeutic skills, (b) how helpful they perceived each skill to be, (c) their suggestions for improving the workbook and its worksheets, (d) their suggestions for enhancing the motivation of future participants to practice the therapeutic skills, and (e) additional feedback about any aspect of the study.

Results

Participants reported that the therapy manuals were clear and that the skills taught in each condition were understood and readily implemented outside the treatment session. Participants also indicated that they liked the treatment workbook and found it helpful in facilitating skills rehearsal. Finally, participants noted that twice-per-week e-mail contact worked best as a reminder to practice the therapeutic skills. At the same time, participants in both conditions offered a number of suggestions for making the treatment sessions more engaging and concise and for making the worksheets clearer and easier to use. Suggestions that were raised by more

than one individual and that seemed to enhance the quality of the treatments or their acceptability to students were used to refine the therapy manuals, worksheets, and rating sheets. These refinements resulted in the final materials appearing in the Appendix.

VITA
AYELET MERON RUSCIO

EDUCATION

Bachelor of Arts in Psychology (1996)

Summa Cum Laude

Brandeis University, Waltham, MA

Master of Science in Psychology (1999)

The Pennsylvania State University, University Park, PA

Doctor of Philosophy in Clinical Psychology (2004)

The Pennsylvania State University, University Park, PA

Predocloral Clinical Internship: Veterans Affairs Medical Center, Salem, VA

HONORS AND AWARDS

National Research Service Award Individual Predocloral Fellowship – National Institute of Mental Health (2000–2004), College of Liberal Arts Graduate Student Award for Excellence in Research in the Social Sciences (2002), Sigma Xi Scientific Research Society (2000), Highest Honors in Psychology (1996), Phi Beta Kappa (1996), Psi Chi National Honor Society (1995), Dean’s List Scholar (1993–1996)

AD HOC REVIEWER

Archives of General Psychiatry, Behavior Therapy, Child Abuse & Neglect, Journal of Abnormal Psychology, Journal of Social and Clinical Psychology, Journal of Traumatic Stress, Psychological Assessment, Psychology of Addictive Behaviors

PROFESSIONAL MEMBERSHIPS

American Psychological Association, American Psychological Society, Association for Advancement of Behavior Therapy, Society for a Science of Clinical Psychology

SELECTED PUBLICATIONS

- Ruscio, A. M., & Borkovec, T. D. (in press). Experience and appraisal of worry among high worriers with and without generalized anxiety disorder. *Behaviour Research and Therapy*.
- Ruscio, J., & Ruscio, A. M. (2004). Clarifying boundary issues in psychopathology: The role of taxometrics in a comprehensive program of structural research. *Journal of Abnormal Psychology, 113*, 24-38.
- Ruscio, J., Ruscio, A. M., & Keane, T. M. (2004). Using taxometric analysis to distinguish a small latent taxon from a latent dimension with positively skewed indicators: The case of Involuntary Defeat Syndrome. *Journal of Abnormal Psychology, 113*, 145-154.
- Ruscio, A. M., & Ruscio, J. (2002). The latent structure of analogue depression: Should the Beck Depression Inventory be used to classify groups? *Psychological Assessment, 14*, 135-145.
- Ruscio, A. M., Ruscio, J., & Keane, T. M. (2002). The latent structure of posttraumatic stress disorder: A taxometric investigation of reactions to extreme stress. *Journal of Abnormal Psychology, 111*, 290-301.
- Ruscio, A. M., Borkovec, T. D., & Ruscio, J. (2001). A taxometric investigation of the latent structure of worry. *Journal of Abnormal Psychology, 110*, 413-422.
- Ruscio, J., & Ruscio, A. M. (2000). Informing the continuity controversy: A taxometric analysis of depression. *Journal of Abnormal Psychology, 109*, 473-487.
- Weathers, F. W., Ruscio, A. M., & Keane, T. M. (1999). Psychometric properties of nine scoring rules for the Clinician-Administered Posttraumatic Stress Disorder Scale. *Psychological Assessment, 11*, 124-133.