SELF-MONITORING TO ENHANCE THE EFFECTIVENESS OF A TREATMENT

FOR ANXIETY

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Abstract

Within the common treatments for generalized anxiety disorder (GAD), one of the ways in which changes in anxiety-related symptoms in response to therapy have been assessed is by asking participants to keep regular records of anxious feelings or behaviors over time. This act of observing and recording one’s own behavior has been referred to more generally as self-monitoring (SM). It has been suggested that SM, either as part of an intervention or as an assessment tool, may result in a change in behavior beyond that caused by the intervention. For example, there is literature in related fields (e.g. academic, externalizing, health) to say that SM alone may be effective in changing behavior. However, the reactivity of SM with internalizing disorders, such as GAD, has not been explicitly examined. The purpose of the current study was to examine whether the addition of a self-monitoring (SM) component (in the form of daily journaling) to standard practice (i.e. psychotherapy) resulted in greater reductions in self-reported anxiety symptoms than standard practice alone. Four participants were recruited for the study after presenting to a university counseling center with high levels of GAD. In order to examine SM within an experimental design, the present study utilized a reversal design in which phases alternated between a psychotherapy intervention and the same psychotherapy intervention plus SM. Results indicated an overall decrease in anxiety for all participants from baseline to maintenance phases. Significant effect sizes for all of the participants were found when SM was first introduced, and a significant decrease in anxiety was also observed for three of the four participants between the second psychotherapy and SM phases. However, there was not a clear effect between the first SM phase and a return to psychotherapy, in that anxiety did not approach baseline levels.
when the SM intervention was removed. Treatment integrity and acceptability were also measured and found to be acceptable. Although the independent effect of SM was not clear, there were numerous qualitative benefits noted for the therapeutic relationship. Along with the study’s limitations, the implications for future research and practice are also addressed.
CHAPTER 1
REVIEW OF THE LITERATURE

Generalized Anxiety Disorder

The Diagnostic and Statistical Manual of Mental Disorders (DSM–V) lists a total of 12 anxiety disorder diagnoses (American Psychiatric Association, 2013). One of the most prevalent anxiety disorders is generalized anxiety disorder (GAD). The DSM-V describes GAD as a chronic disorder characterized by at least 6 months of excessive, difficult-to-control anxiety and worry. Other symptoms include restlessness, being easily fatigued, irritability, difficulty concentrating, muscle tension, and disruptions in sleep. GAD often starts during the teen years or young adulthood and may develop slowly throughout adulthood (NIMH, n.d.). Approximately one-third of GAD patients have an age of onset in the teens or early twenties (Robins & Regier, 1991). Furthermore, the National Comorbidity Survey found that the 12-month prevalence rate was 3.1% (Kessler, Chiu, Demler, Walters, 2005) and the lifetime prevalence rate was 5.7% (Kessler, Berlund, Demler, Jin, & Walters, 2005). GAD is present in 22% of primary care patients who complain of anxiety problems, making it the most frequent anxiety disorder in primary care (Wittchen, 2002). Women are twice as likely as men to develop GAD (Harvard Mental Health, 2011), with total lifetime prevalence rates of 6.6% and 3.6%, respectively (Wittchen, Zhao, Kessler, & Eaton, 1994).

As noted above, GAD is characterized by persistent worrying, recurring fears or worries, and anxiety symptoms that make it difficult to concentrate on daily tasks (Wittchen, 2002). These constant and debilitating worries are often about everyday matters, sometimes about nothing in particular (e.g., missing an appointment, losing a
job, having an accident, or even about worrying too much), and typically involve a sense that something bad is just about to happen or an anticipation of danger into all thinking (Harvard Mental Health, 2011; APA, 2010). Individuals with GAD experience distress about a wide range of emotions, view their worrisome thoughts as dangerous and uncontrollable, and report a lack of self-compassion toward their own internal experiences (Roemer, Orsillo, & Salters-Pedneault, 2008). Although they may try to define and describe their problems, the reason for the intense feelings of anxiety may be difficult to identify. The worry they experience lessens anxiety in the moment, by reducing autonomic reactivity and distracting them from more distressing topics (Borkovec, Alcaine, & Behar, 2004). In the end, however, this worry maintains a feeling of lack of control.

**Comorbidity.** Internalizing disorders have been shown to be highly comorbid with each other and with other classes of disorders (Miller, 2010). Borkovec, Abel, and Newman (1995) highlight research that supports the existence of comorbidity in anxiety disorders, explaining that “many clients diagnosed with a principal (most severe or interfering) anxiety disorder will also meet criteria for at least one additional anxiety or mood diagnosis” (p. 479). The issue of comorbidity is especially important to consider in the diagnosis and treatment of GAD. Generalized anxiety disorder has one of the highest rates of comorbidity, and is frequently diagnosed with other principal anxiety disorders (Borkovec, et al., 1995). In the epidemiological sample from the US community-based National Comorbidity Survey (n = 8098 persons aged 15–54 years), the lifetime comorbidity rate was 90.4% in respondents meeting criteria for lifetime GAD (Katzman & Tsirgielis, 2011). Similarly, Brown, Campbell, Lehman, Grisham, and Mancill
(2001) highlight studies that found over 80% of patients with a principal diagnosis of GAD in clinical samples have at least one additional current anxiety or mood disorder diagnosis. Current comorbidity for GAD has been reported to range from 8% to 22% for dysthymia, 11% to 46% for major depression, 17% to 27% for social phobia, and 11% to 36% for panic disorder (Crits-Christoph, Connolly, Azarian, Crits-Christoph, & Shappell, 1996). Research demonstrates that the presence of comorbid anxiety and mood disorders has been associated with negative outcomes including chronicity and severity of psychopathology, treatment outcome and relapse, suicide potential, and overall psychosocial functioning (Brown et al., 2001). Given these findings, comorbidity within GAD is an important issue to consider in terms of recognizing the potential complications of additional diagnoses and finding the most effective treatment methods to reduce GAD symptoms.

**Impairment.** Anxiety disorders can cause profound functional impairment, negatively affect academic and social achievement, and increase the risk for developing depression and substance abuse (Vitiello, 2010). In addition, anxiety is a risk factor for several general medical conditions (e.g., hypertension) and may exacerbate the symptoms of specific illnesses (e.g., asthma, irritable bowel syndrome) (Guite & Kazak, 2010). GAD is also associated with numerous somatic disorders, including heart disease (Kubzansky, Kawachi, Spiro, Weiss, Vokanas, & Sparrow, 1997) and muscular pain (Levy-Berg, Sandell, & Sandahl, 2009), as well as mental disorders such as depression and suicide (Allgulander, 1994; Andersson, Noyes & Crowe, 1984; Wittchen, et al., 1994).
Generalized anxiety disorder may also interfere with an individual’s daily life activities (Crits-Christoph et al., 1996). For example, in a multi-site survey of psychiatric outpatients, 71% of patients characterized their emotional health as only fair-to-poor, 25% received disability payments, only about 50% worked full-time, and 38% of the patient population had missed at least one week of work in the past year due to their anxiety symptoms (Massion, Warshaw, & Keller, 1993). The prevalence and chronicity of GAD, as well as the comorbidity and impairment in functioning, highlight the importance of identifying effective treatments for this disorder (Crits-Christoph et al., 1996).

**Interventions for Generalized Anxiety Disorder**

There are a number of different therapies for GAD that have been examined in the literature. Of these different approaches, cognitive-behavioral and psychodynamic are two of the most common and supported therapies used to treat GAD (Crits-Christoph et al., 1996). Although these two therapies use different techniques to reduce anxiety, both have been shown to produce positive results.

**Cognitive-behavioral therapy.** Among psychosocial treatments used for the treatment of GAD, cognitive-behavioral therapy (CBT) has received a significant amount of attention (Crits-Christoph et al., 1996). The goal of CBT is to help people recognize and correct misperceptions that contribute to anxiety. For example, CBT may assist individuals in recognizing when they are “misinterpreting events, magnifying difficulties, and making pessimistic assumptions on little evidence” (Harvard Mental Health, 2011, p. 3). Often, the first step in conducting CBT for GAD is to help the client become more aware of automatic thoughts and assumptions. The therapist then helps the client to make
vague worries more specific, evaluate them, and determine whether they are unrealistic. This is often done through psychoeducation any may include use of self-monitoring, which involves keeping a diary for recording and examining thoughts and feelings. Helping clients with cognitive restructuring (i.e. identifying and replacing irrational or maladaptive thoughts) and worry exposure (i.e. spending a specified period of time thinking about and processing worrisome thoughts) is also an important part of the therapy (Katzman & Tsirgielis, 2011). After clients become more aware of their worries, the next step is for them to manage their symptoms and learn more adaptive coping skills. As such, clients engage in problem-solving skills training, learning new ways to solve problems and respond to anxiety-provoking situations as well as how to set goals and establish priorities (Harvard Mental Health, 2011). Specific techniques aimed at learning these new skills include role-playing, rehearsal, and modeling (Harvard Mental Health, 2011). Applied relaxation can also be part of CBT to help individuals learn relaxation techniques (e.g., controlled rapid breathing) to apply when they experience anxiety-producing thoughts or situations (Harvard Mental Health, 2011).

Although CBT is one of the most widely supported treatments for GAD (Chambless & Ollendick, 2001), some authors have noted that there is room for improvement within CBT approaches (Newman et al., 2011). Researchers have suggested that CBT is not always as effective in terms of achieving or maintaining gains because it focuses solely on the anxiety symptoms rather than addressing variables related to GAD, such as interpersonal issues and emotional avoidance, specifically related to trauma and childhood attachment issues (Crits-Christoph et al., 1996; Newman, et al., 2011). Interestingly, although effective, CBT has the lowest average effect sizes for the
treatment of GAD when compared to CBT for other anxiety disorders (Newman et al., 2008). Some have argued that this may be because interpersonal problems are highly relevant when it comes to the treatment of GAD (Salzer, Pincus, Winkelbach, Leichsenring, & Leibing, 2011). For example, research indicates that worry, the central feature of GAD, is related to high levels of interpersonal concerns (Borkovec, Robinson, Pruzinsky, & DePress, 1983). Research has also shown that individuals with GAD worry more frequently about interpersonal concerns than any other topic, that social phobia is the most frequent comorbid anxiety disorder to GAD, and that a lack of close friendships and significantly higher rates of dysfunctional relationships are associated with the disorder (Newman, et al., 2008). For these reasons, a therapeutic approach that more directly targets interpersonal issues may be more effective for the treatment of GAD.

**Psychodynamic therapy.** Unlike CBT, psychodynamic therapy takes interpersonal concerns (e.g. relationship dynamics, emotional avoidance) into account and therefore may be better suited for the treatment of GAD. Psychodynamic therapy includes the following techniques: (a) recognizing that early relationships and life history continue to affect people as adults, (b) examining how behavior reflects both unconscious and conscious motivations, and (c) gaining insight into these factors (Harvard Mental Health, 2011, p. 3). Clients are encouraged to try new behaviors, approach feared situations, and change core conflictual relationships (Leichsenring et al., 2009). All of these techniques are carried out in the context of a positive therapeutic relationship, which is believed to help address the insecure attachment assumed to play a role in GAD (Crits-Christoph, et al., 1996).
Supportive-expressive psychodynamic therapy is one example of a psychodynamic approach that has been shown to be successful in reducing anxiety symptoms. This approach focuses on how attachment patterns were formed and how they exist in the present. Supportive-expressive therapy also examines how the individual processes the cognitive and emotional aspects of past traumatic events, all while placing the anxiety symptoms within the context of the individual’s life (Present et al., 2008). It is believed that the individual with GAD avoids thinking about more difficult emotional issues by becoming overly worried about current events. However, these emotional issues continue to exist in the form of repetitive and irrational worries and dysfunctional relationship patterns. Treatment consists of understanding anxiety in the context of these interpersonal and intrapsychic conflicts. Techniques include uncovering relationship patterns, finding better ways to cope with feelings, expressing one’s needs and exploring one’s responses to others. These techniques are implemented with an emphasis on the establishment and maintenance of a positive therapeutic alliance.

**Effectiveness of treatment approaches.** Within the literature, the effectiveness of CBT (e.g., Barlow, Rapee & Brown, 1992; Mitte, 2005), and psychodynamic therapy (e.g., Crits-Christoph et al., 1996) approaches in reducing anxiety-related symptoms have been demonstrated in both individual studies and meta-analytic reviews. In a meta-analysis looking at CBT for GAD, Mitte (2005) found that CBT, usually in conjunction with some type of exposure, resulted in positive effect sizes for anxiety (CBT with no treatment control mean ES = 0.82, CBT with placebo control mean ES = 0.57). CBT was more effective than wait-list control groups not only in reducing the main symptoms of anxiety but also in reducing the associated depressive symptoms and in improving one’s
quality of life. Similar results have also been found when examining psychotherapeutic approaches. For example, in an individual study, Crits-Christoph and colleagues (1996) examined the effectiveness of supportive-expressive psychodynamic psychotherapy for GAD. They found significant improvements in GAD symptoms, as well as in depression, worry, and interpersonal functioning.

A limited number of studies have directly compared the effectiveness of CBT and psychotherapeutic approaches. In a meta-analysis of studies evaluating therapies for patients with GAD, Hunot, Churchill, Silva de Lima and Teixeira (2007) compared the efficacy and acceptability of CBT, psychodynamic and supportive therapies, and treatment as usual or wait-list conditions. Hunot et al. (2007) reviewed 22 studies conducted in non-inpatient settings, involving adults aged 18-75 years with a primary diagnosis of GAD. In all studies, participants assigned to a psychological therapy condition were compared with either a wait list control group or participants receiving another psychological therapy in terms of anxiety reduction. One finding was that CBT-based therapies were effective in reducing anxiety over the short term. Several studies \( (n = 13) \) indicated that a CBT approach was more effective than wait list or treatment as usual in reducing anxiety, worry and depression symptoms. In the studies that look at clinical response outcome at post treatment, forty six percent of patients assigned to cognitive behavioral therapy (CBT) showed clinical response at post-treatment, in contrast with fourteen percent in waiting list/treatment as usual groups (Relative Risk = 0.64). A Relative Risk of 0 would indicate no difference in prevalence between the two groups.
Only one study (Durham et al., 1994) compared CBT to psychodynamic therapy, and found CBT to be superior. The difference between the two groups was significant, in favor of CT (RR = 0.77). However, this study had many limitations including use of a "community" psychoanalytic treatment (not a specific form of therapy), absence of a treatment manual, and the fact that no selection of therapists, training, or adherence/competence assessments were conducted (Crits-Christoph, et al., 1996). Hunot et al. (2007) pointed out that the lack of studies directly comparing CBT and psychodynamic approaches makes it difficult to draw any conclusions about their comparative effectiveness, but emphasized that this does not imply non-CBT approaches are ineffective. Also, at the six month follow-up, the difference between the two groups was smaller and was no longer significant.

Leichsenring et al. (2009) addressed the concerns of the Durham et al. (1994) study by directly studying the effects of psychodynamic psychotherapy compared with CBT with regard to treatment outcomes in individuals with GAD. They utilized a randomized, controlled trial, in which manual-guided, short-term psychotherapy was compared to manual-guided CBT. Results indicated that within both the CBT and short-term psychodynamic psychotherapy conditions, individuals made significant, large, and stable improvements with regard to symptoms of anxiety and depression. All within-group effect sizes for measures of anxiety and depression at the end of therapy were large (>0.80). Leichsenring et al.’s (2009) study therefore supports the finding that CBT and short-term psychodynamic psychotherapy may both be beneficial for patients with GAD.
Self-Monitoring Interventions

Self-management interventions have been defined as those in which individuals are taught skills to monitor and evaluate their own behavior, with the intent to increase their independence (Briesch, Briesch & Mahoney, under review). Under the umbrella of self-management interventions, the most basic as well as the most popular configuration is self-monitoring (SM) (Briesch & Chafouleas, 2009). Baskett (1985) defined SM as “the ability to be aware of and correctly label one’s own behavior” (p. 107). Typically, SM consists of self-observation (e.g., self-reflect and assess one’s behavior) and self-recording (e.g., record assessment on paper) (Moore, Prebble, Robertson, Waetford, & Anderson, 2001). Recording one’s own behavior can provide information as to the rate of occurrence of behavior and its antecedents and consequences.

Within the literature and in practice, SM has been used as both an intervention strategy and a way to collect assessment data. When used as an intervention, it is believed that the act of observing and recording one’s behaviors, thoughts, and feelings may lead to behavior change. As an assessment tool, the data collected through SM can be used to evaluate the effectiveness of the intervention or to provide further clarification to a diagnosis and/or symptoms. Applications of SM across both contexts are discussed next.

Self-Monitoring as an Intervention

As an intervention approach, there are numerous philosophical advantages to the use of SM strategies, including increasing personal responsibility and promoting independence, which are highly valued and expected qualities amongst individuals in Western cultures (Kauffman, Lloyd, & McGee, 1989; Lazarus, 1993; Moore et al., 2001; O'Leary & Dubey, 1979). Teaching individuals strategies that they can use independently
to improve their behavior may lead to improved self-control and long-term success (de Haas-Warner, 1991), self-reliance (King-Sears, 2008; Koegel, Harrower, & Koegel, 1999; Shapiro & Cole, 1994) and generalized management skills (Cole & Bambara, 1992). In addition, behavior change that occurs as a result of teaching individuals to regulate their own behavior may be more long-lasting (O'Leary & Dubey, 1979).

Research has shown that programs that emphasize self-control, rather than those that are controlled by other people, may also generalize more readily to other behaviors (Fantuzzo & Clement, 1981).

There are also many practical benefits associated with the use of SM as an intervention approach. Practically, SM requires a minimal time commitment for implementation and maintenance and does not require extensive materials (de Haas-Warner, 1991). Therapists can use SM rather than more invasive or complex interventions to obtain changes in a client’s behavior for minimal effort on the client’s end (Shapiro and Cole, 1999). SM also helps individuals observe and evaluate the antecedents and consequences of their behaviors, and find ways to alter a behavior in accordance with a larger treatment plan. Because the therapeutic effects of SM can occur quickly, this may also help to maintain the client’s interest and investment in therapy (Korotitsch & Nelson-Gray, 1999).

**Theoretical rationale.** One advantage of use of SM is that it can provide feedback as to what needs to be changed and how well the process of change is going (Brewin, 1988). SM also requires individuals to deliberately attend to, and become aware of, their behavior more so than do self-report or informal observations (Kazdin, 1974). Written recordings made by a subject, such as those written in a diary, have been shown
to affect the subject’s behavior by making the person selectively attend to the behavior (Nelson, Lipinski & Black, 1976). Although this research helps support what SM can do, the following theoretical models provide explanation for why SM is believed to work.

**Kanfer’s feedback model.** The oldest and most widely supported model is Kanfer’s (1970) feedback model. Reactivity refers to the idea that individuals alter their performance or behavior due to the awareness that they are being observed (Heppner, Wampold, & Kivlingham, 2008). Reactivity is most commonly thought of as occurring when there is an outside observer; however, with SM it is believed that reactivity occurs within the self. That is, the behavioral feedback that the individual receives is enough to evoke behavioral change. Within Kanfer’s model of SM, an individual goes through a three-stage cycle, which elicits a reactive response. First, the individual self-monitors by observing and recording her own behavior. For example, a woman who is trying to quit smoking might record the number of cigarettes smoked in a day. Second, she self-evaluates her own behavior in accordance with either established norms or personal criteria for a given behavior. The same woman might therefore evaluate whether the number of cigarettes smoked is above or below a personal goal or what is socially acceptable. Finally, the individual uses the information gained through this comparison in order to self-regulate her own behavior. Within the feedback loop, self-regulatory processes (e.g. self-reinforcement and punishment) are triggered if a behavior departs from a standard, and stop once the behavior is brought back into an acceptable range (Kazdin, 1974). If during self-evaluation an individual’s behavior matches or exceeds performance criteria, self-reinforcement occurs; however, if it falls below performance criteria, self-punishment occurs. For example, if the number of cigarettes is higher than
desired, the individual self-criticizes or punishes herself, taking away a desired reward. As a result, positively evaluated behaviors increase through self-reinforcement and negatively evaluated behaviors decrease because of self-punishment (Ciminero & Drabman, 1977; Craske & Tao, 1999). In addition, when an individual uses SM to evaluate his behavior and sees that it does not match her perception of herself, the resulting dissonance can lead to behavior change (Kanfer, 1970).

Mahoney and Thoresen (1972) noted that “the individual who records his own behavior not only becomes more aware of himself but also receives immediate and cumulative feedback on what he is (or is not) doing” (p. 8). Observing one’s behavior objectively can have a powerful impact. For example, hearing one’s voice on a recording has been noted to produce marked behavior change (Kanfer, 1970). When an individual pays close attention to an aspect of her behavior, behavior is likely to change, even if no change is intended or desired (McFall, 1970). McFall (1970) noted that “nearly everyone has had the experience of becoming self-conscious about his behavior and, as a result, experiencing a change in that behavior. For example, if a person's attention is drawn to the way he walks, holds his hands, or swings a golf club, it often makes it difficult for him to perform these activities naturally” (p. 140).

In one study supporting Kanfer’s model, Nelson, Lipinski, and Black (1976) compared the reactivity produced by SM and external monitoring. The researchers hypothesized that self-observation changes behavior in the same way that observation by an independent observer does. Observers recorded the face-touching frequency of 14 college students in a class situation through five conditions: baseline, observer-present, observer-absent, self-recording, and return to baseline. All students were asked to self-
record frequency of face-touching for one week. External-monitoring reduced face-touching frequency; however, the reactive effects of external observation were found to be variable across students. In contrast, SM was more reactive and produced more consistent reactivity across subjects. Nelson and colleagues (1976) noted that the study findings supported Kanfer’s (1970) hypothesis of a feedback loop of self-observation, evaluation and regulation. Specifically, SM causes one to pay attention to the monitored behavior, and the behavioral feedback then causes behavioral change.

**Social comparison theory.** Bandura’s (1969) social comparison theory offers a similar theoretical rationale for why SM produces behavior change; however, the emphasis in Kanfer’s model is on internal comparison, whereas in Bandura’s theory comparison is with others. Within Bandura’s model, observing others gives an individual an idea of how to behave (Bandura, 1977). Specifically, individuals observe the effects their actions have on themselves and others, and from that discern which responses are appropriate in which settings and behave accordingly (Bandura, 1977). Observing others therefore gives individuals a standard against which to evaluate their own actions, and this self-evaluative process is therefore an integral piece to the SM process. Specifically, any discrepancies between one’s performance and goals will result in dissatisfaction, which then motivates the individual to make the necessary changes in behavior (Bandura, 1977).

Although differences exist among these theories, commonalities are evident. Specifically, each explanation highlights the importance of becoming self-aware of one’s behavior. It is generally agreed upon that becoming conscious of one’s behavior in some way is likely to have an effect on it. In addition, these theories emphasize the connection
between self-observation and a self-evaluative process, whether it is internal or external. In terms of SM of internalizing issues, Kanfer’s model appears most applicable given its emphasis on internal comparison. Unlike externalizing behaviors that are more easily observed by the self and others, internalizing issues are difficult to compare to others, and are not visible to the self in such a way that would elicit a self-conscious response. Also, social norms are less established in terms of internalizing disorders. For example, it is not clear by observing others the degree of anxiety any one individual is or should be experiencing, which makes comparison to one’s own anxiety difficult. Finally, because internalizing issues are private and for the most part only accessible to the individual, it is up to the individual to engage in self-evaluation and self-reinforcement. Therefore, the self-regulatory process that occurs within Kanfer’s model appears more appropriate to effecting change with internalizing disorders.

**Use of self-monitoring interventions within the literature.** As an intervention, SM has been used across settings and age groups to target a variety of behaviors. Self-monitoring has been successfully used as a powerful intervention technique in kindergarten (e.g., de Hass-Warner, 1992), primary (e.g., Glynn & Thomas, 1974; Maag, Reid, DiGangi, 1993) and secondary schools (e.g., Dixon, Moore, Hartnett, Howard & Petrie, 1995; Houghton, 1989; Stewart & McLaughlin, 1992), as well as in adult work settings (e.g., Kaplan, Hemmes, Motz & Rodriguez, 1996). In addition, the effectiveness of SM has been demonstrated across different populations, including individuals with moderate mental retardation (e.g., Boyle & Hughes, 1994), behavior disorders (e.g., Lam, Cole, Shapiro, & Bambara, 1994), Autism (e.g., Dixon et al., 1995) emotional disturbance (e.g., Carr & Punzo, 1993; Willis, Whalen, Sweeney & McLaughlin, 1995),
learning disabilities (e.g., Maag et al., 1993; Maag, Rutherford, & DiGangi, 1992) and developmental disabilities (e.g., Kaplan et al., 1996). Depending on the population under investigation, SM has also been used to target a wide variety of behaviors, including academic performance, health-related behaviors, and internalizing problems, as discussed next.

**Academic performance.** Within the classroom-based literature, SM has been found to increase such academic variables as the completion of work (e.g., Piersal, 1985), academic performance in college students (e.g., Johnson & White, 1971), and academic productivity and accuracy (e.g., Lam, Cole, Shapiro, & Bambara, 1994; Maag et al., 1992). In these cases, students are often asked to monitor things such as studying behavior, number of problems completed, or percentage of problems completed correctly. Most frequently, however, students have been taught to monitor their attention to classroom instruction or work (e.g., paying attention, working on assigned task), in order to increase on-task behavior (e.g., Amato-Zech, Hoff & Doepke, 2006).

**Externalizing behaviors.** With regard to externalizing behaviors, SM has been used to reduce disruptive behavior (e.g., disruptive physical behaviors, loud noises) (Broden, Hall, & Mitts, 1971; Lam, et al., 1994; Maletzky, 1974), physical aggression (Singh et al., 2011), and even inattention and ADHD symptoms (e.g., Mathes & Bender, 1997). Examples of monitoring used for these types of behaviors include using a wrist counter to record maladaptive behavior, using a written slip to record the number of talk outs during class, and marking if behavior was disruptive at the sound of a tone. Although many of the SM studies looking at disruptive behavior have been conducted in school settings with students, a small number of studies have included adult participants
in therapeutic settings (Maletzky, 1974). For example, in one study adult women used a counter to track unwanted responses of maladaptive behavior, totaling their responses and charting the total on a daily graph (Maletzky, 1974).

**Health-related behaviors.** Outside of school settings, SM has also been shown to alter the frequency of a variety of health-related behaviors including smoking (e.g. McFall, 1970) and alcohol consumption (e.g., Sobell & Sobell, 1973). In these cases, clients were asked to record the number of cigarettes smoked in a day or alcoholic drinks consumed in a week. Other health-related behaviors that have been reduced through SM include hallucinations (e.g., by recording the frequency of hallucinatory behavior over a period of days; Rutner & Bugle, 1969), tics (e.g. monitoring to inhibit the rate of vocalizations and jerking neck movements; Thomas, Abrams, & Johnson, 1971), and repetitive self-scratching and nail biting (e.g., Garner, Vitousek, & Pike, 1997). SM has also been studied in relation to eating behavior, such as by asking participants to record food intake before eating (e.g., Bellack, Rozensky, & Schwartz, 1974) and by asking participants to SM daily caloric intake (e.g., Romanczyk, Tracey, Wilson & Thorpe, 1973). SM has also been used to help individuals regulate and increase control over their disordered eating routines (e.g., Garner et al., 1997).

**Internalizing behaviors.** Within the literature, SM has been used far less often to target internalizing problems. In a limited number of studies within the clinical psychology literature, researchers have used SM to supplement other therapeutic approaches such as CBT and psychoeducation to target internalizing disorders, such as GAD. To date, the use of SM within interventions for GAD has most frequently been examined within the context of CBT. Specifically, SM is used within CBT to help the
individual learn what comes before and causes anxiety symptoms (Arch & Craske, 2008). SM within the CBT framework has included having the client keep a daily diary to record a brief description of the anxiety provoking situation and their accompanying thoughts, physical sensations, behaviors, and anxiety rating (Velting, Setzer, & Albano, 2004). SM has also been included within a CBT approach by having the client engage in daily SM of cognitive, behavioral, and physiological symptoms and provide numerical ratings of mood (Mohlman & Gorman, 2004). Another example of SM has been to help clients pay close attention to the cues (e.g., environmental factors, specific thoughts) that trigger anxiety, emphasizing the importance of detecting these cues early (Borkovec & Ruscio, 2001; Newman et al., 2008). By paying close attention to progressively earlier cues and becoming more sensitive to them, clients can begin to recognize the signs of an emerging anxious experience (Borkovec & Ruscio, 2001). Recognizing worry and indicators of anxiety early on before anxious responding begins makes it easier for clients to intervene with their coping skills and increases the efficacy of their responses in reducing anxiety (Borkovec & Ruscio, 2001). Although several studies have incorporated these techniques, the limitation of these studies has been that the independent effect of SM has not been assessed.

Several studies have utilized SM within the context of an intervention for an internalizing behavior. Friedmann and Silvers (1977) implemented a therapeutic intervention for a patient with OCD that included components of SM based on the idea of paradoxical intention. Paradoxical intention refers to the act of deliberately dwelling on a thought, elaborating it, and convincing oneself of its validity instead of trying to force the thought from the mind. The researchers asked the patient to keep a diary of his
obsessional thoughts and engage in thought stoppage (i.e., yelling “stop” loudly whenever he began to have obsessional thoughts), and then positively reinforced the patient for any kind of behavior viewed as an alternative to obsessive thinking. The patient saw a therapist two times a week for one hour of psychotherapy, and also engaged in family therapy. Using both the patient’s statements in therapy and staff observations of verbal and nonverbal cues, three of the patient’s behaviors were monitored: anxiety, depression and obsessional thoughts. Anxiety was found to be at higher level at discharge than when admitted, but obsessional thoughts and depression markedly decreased. In addition, at 2.5 years post discharge, there were no significant recurrent symptoms. Although the overall treatment (i.e. psychotherapy + family therapy + SM) was found to be helpful, the independent effect of SM was not assessed.

Cash and Hrabosky (2003) examined two combined components of a self-administered body image CBT program (i.e. personalized psychoeducation, systematic SM of body image experiences) with body dissatisfied participants. They hypothesized that psychoeducation would give the participants information about the factors that cause and maintain their disordered behaviors and correct any misconceptions, which would result in a better understanding of one’s SM data. Along with reading assigned materials, participants were required to hand in homework weekly and complete 12 SM diaries characterizing positive or negative body-image experiences from the recent past. Results indicated that participants became significantly more satisfied with their appearance after the intervention of psychoeducation and SM. Interestingly, the only variable that moderated outcome was compliance with SM, in that better SM compliance predicted
greater reductions in body-image dysphoria. The effect of SM alone on body image or compliance with SM was not specifically investigated however.

Two studies have specifically looked at the reactive effect of SM with mixed results. de Jong and Bouman (1995) investigated the factors that contribute to the development of agoraphobia and the relationship between panic and situational avoidance. The aims of the study were to describe the different features of panic, determine differences in avoidance behavior, and examine the effect of SM. Participants were asked to keep a diary of panic attacks for four weeks during baseline, and then received a cognitive-behavioral treatment. Although participants self-monitored panic symptoms throughout the baseline and intervention phases, de Jong and Bouman (1995) hypothesized that SM would have an anxiety-reducing effect in terms of a decrease in panic frequency, panic intensity, and fear of body sensations. They hypothesized that by using a structured diary with no instructions about the need to seek medical assistance, they were implicitly informing participants about the relatively harmless nature of panic attacks. Overall, results indicated significant differences between avoiders and non-avoiders in terms of symptom pattern and maladaptive thoughts. Specifically looking at the effect of SM, participants showed a significant decrease in panic attack frequency and worry about physical sensations after four weeks of recording panic attacks, suggesting that SM had an anxiety-reducing effect in the absence of further treatment.

O’Hara and Rehm (1979) assessed the reactive effect of SM pleasant and unpleasant events on mood, as well as the influence of activity levels on mood. The researchers hypothesized that the type of events monitored would have a significant influence on mood (e.g., self-monitoring pleasant events would led to positive mood), but that activity
level may be more strongly correlated with mood (e.g., correlations between mood and pleasant events merely reflect correlations between mood and high levels of activity). This hypothesis was based on findings that depressed individuals selectively attend to negative events (Rehm, 1977) and distort their recall of feedback in a negative direction (Nelson & Craighead, 1977; Wener & Rehm, 1975) and that monitoring mistakes is more likely to result in a dysphoric mood than monitoring successes (Kirschenbaum & Karoly, 1977). Forty-five females spent 28 days monitoring in only one of four conditions: (a) pleasant events, (b) unpleasant events, (c) both, or (d) no monitoring. Results indicated that the event condition monitored did not influence mood. The researchers suggested that SM is a valid assessment measure of mood and events, but suggested that SM may not be a powerfully reactive process.

There have been a handful of studies that have looked at the use of SM as an intervention with internalizing disorders. These studies used SM as part of the intervention and some hypothesized that it may have a reactive effect. However, the main purpose of these studies was not to investigate the effect of SM. The studies that did examine SM found conflicting results, with one study finding no effect of SM (O’Hara & Rehm, 1979), and another finding it to be effective in terms of reducing symptoms (de Jong & Bouman, 1995). Given the state of the research on SM and internalizing disorders, it is clear that future research is needed in order to understand the independent effect of the SM component.

**Self-Monitoring as an Assessment Tool**

Although SM has been used as part of an intervention to target internalizing problems, SM procedures have more often been shown to be an effective way to collect
data on the frequency, as well as the antecedents and consequences, of internalizing behaviors (Beidel, Neal & Lederer, 1991). As an assessment tool, SM allows individuals to monitor their own progress within an intervention. As is true within SM interventions, collecting SM assessment data requires individuals to observe and record their behaviors and/or thoughts immediately prior to, during, or after a problematic situation or private event.

Self-monitoring has advantages over other traditional assessment methods (e.g. interview, self-report) especially with internalizing disorders. With SM, individuals can access internal, private emotional states and specific information concerning covert thoughts and feelings, levels of anxious or depressed feelings, and conditions surrounding the problem situations (Shapiro & Cole, 1999). Self-monitoring can therefore provide therapists with (a) data that would not otherwise be easily obtained (e.g. number of cigarettes smoked), (b) information regarding the occurrence of covert events (e.g. obsessive thoughts), (c) data that are subjective or occur infrequently (e.g., heart palpitations, occasional panic attacks), or (d) information about conditions that are difficult to replicate (e.g., compulsive rituals; Craske & Tsao, 1999; Kazdin, 1974). In addition, SM offers clinicians an alternative to having to continuously monitor the intervention themselves, which is often not feasible or desirable (Kanfer, 1970).

**Challenges in using self-monitoring data to assess intervention effectiveness.**

Despite the advantages of using SM data to assess the effectiveness of treatments, concerns have been raised with regard to the reliability of self-reported data. More generally speaking, researchers have questioned the accuracy of self-reports, which have been shown to vary depending on an individual’s developmental level as well as the
nature of the behavior being reported (LaGreca, 1990; Stone & Lemanek, 1990). At a
general level, potential bias in self-report data may include (a) an individual being
influenced through suggestion to report events that never actually occurred (Bruck, Ceci,
& Hembrooke, 1998), (b) an individual’s inability to provide accurate historical
information, and (c) an individual’s ability to respond to open-ended, global questions
(Ollendick & Francis, 1988). Data obtained through self-report may also be limited by
several factors, including an individual’s ability to understand (a) the language used on
the form, (b) the difference between emotional states (e.g., anxiety versus panic), and (c)
the use of scales to differentiate symptoms (e.g. behavior occurs often, sometimes)
(Beidel, Neal & Lederer, 1991). It is important to note, however, the distinction between
SM and self-report. Self-monitoring refers to recording of a behavior in the moment or
close to its occurrence, whereas self-report is more often retrospective (Craske & Tsao,
1999). Specifically, SM is tied to the specific event or moment in time, whereas self-
report, completed after the fact, is an estimation or judgment of experience.

**The role of self-monitoring in assessing anxiety-related symptoms.** Over the
past 35 years, SM data have been used in research studies as a way to monitor anxiety-
related symptoms, including general fluctuations in mood, feelings of social anxiety, and
panic attacks in response to an intervention. Examples of SM procedures used to assess a
range of anxiety-related symptoms are discussed next.

SM has most often been used to monitor the frequency of panic attacks in patients
with anxiety. Başoğlu, Marks, and Şengün (1992) looked at the features of panic and
anxiety using prospective self-monitoring (i.e. recording panic surges and anxiety levels
before panic episodes). Participants recorded relevant information from the moment they

felt anxious or panicky onwards throughout rest of the day and were asked to draw a continuous profile of their anxiety as it occurred. Participants within a study by Ollendick (1995), which used CBT to treat panic disorder with agoraphobia, were instructed to monitor and record information on a daily basis whenever they had panic attacks. Participants recorded the date, time, duration, location, circumstance and symptoms they experienced. The record was then reviewed at the beginning of each therapy session, and any difficulties in monitoring were addressed. Finally, in a study by Craske, Rowe, Lewin, and Noriega-Dimitri (1997), the authors compared two components of a CBT treatment for panic disorder (i.e. breathing retraining, interoceptive exposure), and used SM as a measurement tool. Participants self-monitored the nature (expected versus unexpected), intensity (anxiety 0-8) and symptoms of panic attacks as they occurred, as well as levels of anxiety, depression, worry about panicking, awareness of bodily symptoms and mediation type, and dose.

Self-monitoring has also been used to assess the social interactions of adult men and women suffering from social anxiety. Twentymann and McFall (1975) asked shy male participants to record every interaction they had for one week, and used these data to assess the effectiveness of a treatment consisting of three sessions of behavior rehearsal, modeling and coaching. In a similar study, Dow, Biglan and Glaser (1985) used SM to look at the differences between socially anxious and socially nonanxious women by asking participants to record the number of hours of social interaction that they engaged in twice a day for one week.

There are also a few studies in which SM data were used specifically with individuals suffering from GAD. Craske, Rapee, Jackel and Barlow (1989) examined the role of
worry in GAD with patients and non-anxious controls using SM data. Participants were asked to complete a questionnaire as soon as possible after they noticed themselves worrying significantly, completing up to three questionnaires over the course of three weeks. No operational definition of worrying was provided, in order to compare how worry was experienced by each group. The questionnaire included ratings of the worry content, indication of whether there was a precipitant, the time of onset and offset, level of anxiety, degree of control over worrying, degree to which content of worry was realistic and probable, attempts to resist worrying, and success of techniques for controlling worry.

In a study by Beidel, Neal, and Lederer (1991), a daily dairy was used to assess the range and frequency of anxious events in children. The authors asked participants to complete a diary for 14 days, assessing situational factors related to the occurrence of anxious events, including time of day, location, specific anxiety producing event, and behavioral responses to event.

Borkovec and Costello (1993) used SM data to look at the differences between nondirective (ND), CBT, and applied relaxation (AR) for the treatment of GAD. The researchers highlighted the importance of self-observation in detecting the initiation of anxiety early in the sequence, and developing appropriate coping skills, such as relaxation through imagery exposures and cognitive therapy. The study involved the client’s SM of their reactions, as each completed a daily diary three times a day for two weeks before therapy, throughout therapy, and then for one week before each follow-up.

Participants in these studies were asked to SM in order to generate outcome data for interventions or to distinguish between or clarify disorders. One difficulty in interpreting
the results of these studies, however, is that it is unclear whether the intervention had an effect in isolation, or if the effect of the intervention was strengthened by the addition of asking the individual to SM (i.e. reactivity effect). Although several researchers have questioned the potential role of SM in effecting change (e.g., de Jong & Bouman, 1995; Cash & Hrabosky, 2003), the potential reactive effect of SM has not been thoroughly investigated. As Shapiro and Cole (1999) noted, it is therefore “unclear whether the outcomes reported through SM are related to the implementation of the specific treatment programs or are simply attributable to repeated exposure to the assessment process itself” (p. 450).

There is one study, however, in which SM was used as an assessment tool and findings indicated that this method of data collection may be potentially reactive. Rapee, Craske, and Barlow (1990) used SM to look at participants’ (aged 19–60 yrs) descriptions of panic attacks in order to examine the nature of the disorder (e.g., number of symptoms, duration). The participants carried a SM form with them at all times and were instructed to record symptoms of their panic attack during, or as soon as possible after, the attack. Compared to retrospective self-report during an initial interview, participants recorded significantly fewer panic attacks and fewer total symptoms using SM. Rapee and colleagues (1990) hypothesized that this effect may have been because patients felt the need to present more severely at intake in order to receive treatment. However, they also suggested that the difference may have been due to the reactive nature of SM, in that SM resulted in an actual decrease in occurrence and severity of panic. Although this was offered as a potential explanation for why fewer panic attacks were recorded during SM, it was not the purpose of the study and therefore was not explicitly tested.
One study was designed in such a way that the effect of SM could be independently assessed. Barlow, Craske, Cerny, and Klosko (1989) tested variations of behavioral treatments for panic disorder (i.e., cognitive therapy combined with exposure, applied relaxation treatment, cognitive therapy and exposure combined with relaxation, and a self-monitoring-only control group) and used SM records to document daily fluctuations in anxiety and depression as well as the occurrence of panic attacks. In the wait list condition, participants continued their monitoring but were not given treatment. All three variations of treatment were superior on a variety of measures to the control group, suggesting that SM alone may not have an effect on behavior. However, although SM alone was not effective, it was effective in combination with other treatments.

**Conclusions and Future Directions**

Generalized anxiety disorder is a common mental health condition, affecting 3-6% of the population (Kessler, Berlund et al., 2005; Kessler, Chiu et al., 2005). The chronic and excessive worry that individuals with GAD experience can lead to debilitating effects, including negative academic and social outcomes, increased risk for developing general medical and mental health disorders (e.g. depression, substance abuse, heart disease) and significant psychosocial impairment (Guite & Kazak, 2010 Levy-Berg, Sandell, & Sandahl, 2009; Vitiello, 2010; Wittchen, et al., 1994). There is also a common occurrence of comorbidity with other medical and psychiatric conditions (Brown et al., 2001). The most common psychological treatments for GAD include CBT and psychodynamic therapy, both of which have found research support with regard to effectiveness (Crits-Christoph et al. 1996). Within the literature, there is significant support for the effectiveness of CBT in the treatment of GAD (Hunot et al., 2007).
However, researchers have suggested that psychodynamic approaches may be more appropriate than CBT because they address many of the issues related to GAD (e.g., interpersonal issues, emotional avoidance, trauma and attachment histories) that CBT neglects (Newman et al., 2008). Furthermore, research supports psychotherapy to be as effective as CBT (Leichsenring et al., 2009). As such, using an integrative approach utilizing elements of both CBT and psychotherapy to treat GAD may be the most effective treatment modality.

Within the literature, SM has been used both as part of an intervention for, and a way to assess, anxiety-related symptoms. In both cases, however, reactivity is a potential concern because the simple act of reflecting on one’s own behavior may cause that behavior to change (Kanfer, 1970). When SM has been used as a source of outcome data, it is complicated to tease apart the effect of the intervention (i.e. therapy) from the effect of SM. It is also difficult to isolate the reactivity of SM when it is part of an intervention package, given that the SM component has not been tested in isolation. It is therefore possible that the reactive nature of SM confounds the strength of the intervention being used (Shapiro & Cole, 1999). Shapiro and Cole (1999) suggest “given the known potential reactive nature of SM, studies need to separate the impact of the SM process from the intervention” (p. 450). Additional research therefore appears warranted in order to assess the independent influence of SM on behavior change above and beyond treatment.
References


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CHAPTER 2
EMPIRICAL RESEARCH PROPOSAL

Generalized anxiety disorder (GAD) is one of the most common anxiety disorders, found to be present in 22% of primary care patients who complain of anxiety problems (Wittchen, 2002). In addition, GAD has a lifetime prevalence rate of approximately 5% and a high rate of comorbidity with other psychiatric disorders (Borkovec, Abel & Newman, 1995; Kessler, Berlund, Demler, Jin, & Walters, 2005). The disorder is distinguished by constant, debilitating worry that is pervasive and often non-specific in nature (Harvard Mental Health, 2011; Wittchen, 2002). Approximately one-third of GAD patients have an age of onset in the teens or early twenties (Robins & Regier, 1991), and it can cause significant life-long impairment including exacerbating medical illnesses, somatic disorders and mental disorders (Guite & Kazak, 2010; Wittchen, Zhao, Kessler, & Eaton, 1994). For example, in a multi-site survey of psychiatric outpatients, anxiety symptoms were cited as the reason for 71% of patients characterizing their emotional health as only fair-to-poor, for 25% receiving disability payments, and for why only about one-half of patients worked full-time (Massion, Warshaw & Keller, 1993). Given the prevalence and significant problems associated with GAD, effective treatments are certainly needed to address this disorder.

Use of Self-Monitoring in the Treatment of Anxiety

One of the common ways in which changes in anxiety-related symptoms in response to therapy have been assessed is by asking participants to keep regular records of anxious feelings or behaviors over time. This act of observing and recording one’s own behavior has been referred to more generally as self-monitoring (SM). Within the
literature, SM data have been used as an outcome measure to monitor a range of anxiety-related symptoms, including feelings of social anxiety (e.g., Dow, Biglan & Glaser, 1985; Twentymann & McFall, 1975), panic attacks (e.g., Başoğlu, Marks & Şengün, 1992; Craske, Rowe, Lewin & Noriega-Dimitri, 1997) and generalized anxiety (e.g., Barlow, Rapee & Brown, 1992; Beidel, Neal & Lederer, 1991). Although some research has suggested that asking participants to self-monitor does not affect their behavior (O’Hara & Rehm, 1979), other researchers have expressed concern that SM may impact behavior above and beyond the therapy alone due to a reactivity effect (e.g., Cash & Hrabosky, 2003; Shapiro & Cole, 1999). In a study by de Jong and Bouman (1995), for example, participants began to use SM forms during baseline before receiving a CBT treatment. Results indicated that after four weeks of recording panic attacks, participants showed a significant decrease in panic attack frequency and worry about physical sensations. The authors suggested that even in the absence of further treatment, SM may have an anxiety-reducing effect.

A study by McFall (1970) also supports the findings of de Jong and Bouman (1995). The authors studied the effects of SM on normal smoking behavior to determine whether keeping a record of smoking behavior would significantly alter that behavior in the absence of any other intervention. Participants were assigned to one of two kinds of SM tasks: (a) recording the occasions on which they did smoke (e.g. a focus on failures and hypothesized to have an aversive effect) or (b) recording the occasions on which they decided against smoking, (e.g. a focus on success and hypothesized to have a reinforcing effect). Results indicated that SM had a reactive effect, in that focusing on the instances where participants did smoke increased the frequency of smoking but decreased the time
spent per cigarette, whereas focusing on instances of not smoking decreased smoking frequency and time per cigarette.

Kanfer’s (1970) feedback model provides an explanation for why SM can alter a behavior. Kanfer suggested that reactivity (e.g. when an individual alters a behavior because she is aware she is being observed) can occur when individuals engage in SM. More specifically, an individual goes through a three-stage cycle of SM by (a) observing and recording a behavior, (b) self-evaluating this behavior by comparing it to either established norms or personal criteria for a given behavior, and finally (c) self-regulating the behavior, or changing it to fit a standard. When an individual uses SM to evaluate her behavior and sees that it does not match her perception of herself, the resulting dissatisfaction is believed to motivate the individual to make the necessary changes in behavior. The objective observation of one’s behavior can have a powerful impact, in that an individual who records her own behavior becomes more aware of herself and receives immediate feedback on her behavior (Mahoney & Thoresen, 1972). Even if no change is desired, researchers have suggested that the simple act of paying attention to an individual’s behavior is likely to change it (McFall, 1970). For example, if an individual pays attention to the way she walks, or swings a golf club, this is likely to result in her becoming self-conscious about the behavior and lead to a change in it (McFall, 1970).

Due to this reactivity effect, SM has also been used specifically as an intervention to target a variety of different behaviors in adults, ranging from disruptive behavior (Maletzky, 1974) and eating habits (Garner et al., 1997) to smoking (McFall, 1970) and alcohol consumption (Sobell & Sobell, 1973). Gottman and McFall (1972), for example, studied the reactivity of SM when used as a treatment component with potential high school drop-outs. The study looked at one student-monitored variable (i.e. oral participation) and
two teacher-monitored variables (i.e. daily grades and office visits). Results supported the researchers’ hypothesis that SM was a reactive data-gathering procedure, in that oral participation was the only variable for which there was a significant difference between pre and post-test. Furthermore, instructions to SM positive instances of oral participation led to increased participation, while instructions to monitor negative instances (i.e. nonparticipation) resulted in less participation, which was consistent with McFall’s (1970) findings. These studies demonstrate the potential reactive effect of SM in the absence of another intervention.

Within the literature on internalizing disorders, however, SM has typically been used as one intervention component in combination with individual therapy (e.g., Friedmann & Silvers, 1977) or psychoeducation (e.g., Cash & Hrabosky, 2003). The goal of SM when applied to the treatment of anxiety is to help individuals become more aware of automatic thoughts and assumptions and to make vague worries more specific (Harvard Mental Health, 2011). SM techniques include keeping a diary or record for observing and examining thoughts and feelings, and paying special attention to cues that may be contributing to anxiety (Arch & Craske, 2008). By monitoring worries, individuals are better able to evaluate them and determine whether they are unrealistic, and can begin to see the connections between various situations, moods, and triggers of anxiety (Harvard Mental Health, 2011; Newman, Castonguay, Borkovec, Fisher, & Nordberg, 2008). SM also allows individuals to practice early cue detection, meaning that they are able to catch themselves before they experience anxiety, and put effective coping skills into place to reduce any anxious feelings (Borkovec & Ruscio, 2001; Newman et al., 2008).
Positive effects of therapeutic interventions involving SM have been demonstrated with regard to a range of internalizing behaviors/symptoms. SM has been used as an intervention component to target anxiety-related symptoms including OCD (e.g. Friedmann & Silvers, 1977), body dissatisfaction (e.g. Cash & Hrabosky, 2003), and generalized anxiety (Barlow, Rapee & Brown, 1992). Within these interventions, SM has been used in conjunction with several types of therapy, such as individual and family therapy (e.g. Friedmann & Silvers, 1977), psychoeducation (e.g. Cash & Hrabosky, 2003), CBT (Craske, Rowe, Lewin, & Noriega-Dimitri, 1997), and relaxation (Barlow et al. 1989; Barlow et al., 1992).

Although it has been suggested that SM may result in a change in behavior beyond that caused by the intervention, no studies have specifically examined the reactivity of SM. Therefore, it is impossible to tease apart the effect of the intervention (i.e. therapy) from the effect of SM. However, there is other literature in related fields to say that SM alone may be effective in changing behavior. For example, Maletsky (1974) successfully used SM strategies to reduce maladaptive behavior in adult women, Sobell and Sobell (1973) used SM to successfully reduce the number of alcoholic drinks consumed in a week and Romanczyk, Tracey, Wilson, and Thorpe (1973) effectively used SM to reduce obese adults’ weight. The purpose of current study was therefore to systematically examine whether the addition of a SM component to standard practice (i.e. psychotherpay) results in greater reductions in self-reported anxiety symptoms than standard practice alone. The specific research questions and related hypotheses are as follows:
Research Question #1: Does the addition of SM to standard practice (i.e. psychotherapy) further reduce participants’ anxiety symptoms?

Hypothesis #1: It was hypothesized that the addition of SM to standard practice would result in a greater reduction in anxiety symptoms than therapy alone. Based on prior literature, it was believed that using SM would have a reactive effect on anxiety (e.g., de Jong & Bouman, 1995; Gottman & McFall, 1972; McFall, 1970). Although studies have not examined the incremental effect of SM on anxiety-related symptoms, studies in related areas have shown SM to be effective in reducing smoking (e.g., McFall, 1970), alcohol use (e.g., Sobell & Sobell, 1973), overeating (e.g., Romanczyk et al., 1973), hallucinations (e.g., Rutner & Bugle, 1969) and disruptive behavior (e.g., Maletzky, 1974). In addition, previous researchers have highlighted the reactive nature of SM when used as an assessment tool (Rapee et al., 1990).

Research Question #2: Are the gains made through SM maintained when the intervention is removed?

Hypothesis #2: It was hypothesized that the gains made through the addition of SM to psychotherapy would not be maintained when SM was removed. Based on prior literature, there is evidence to suggest that SM is most effective when it is consistent and SM procedures are in place (e.g., Baker & Kirschenbaum, 1993; Jason & Klich, 1982). Studies using a reversal design to examine SM have also found that when the SM intervention is removed, there is a trend towards baseline levels of the behavior (Amato-Zech et al., 2006).

Research Question #3: Is SM a feasible and acceptable technique to incorporate into psychotherapy?
Hypothesis #3: It was hypothesized that SM would be easy to implement and acceptable to the participants. Previous literature has demonstrated the benefits associated with SM, including being noninvasive and less complex than other interventions (Shapiro and Cole, 1999), requiring less extensive materials (de Haas-Warner, 1991), and involving a minimal effort on the participant’s end (Shapiro and Cole, 1999). Based on previous literature, participants are likely to see effects of SM quickly, which can help to maintain the participant’s interest and investment in therapy (Korotitsch & Nelson-Gray, 1999). Treatment acceptability for SM interventions targeting anxiety and internalizing disorders in general has not been addressed, and is therefore an additional contribution of the current study.

Method

Participants, Setting, and Recruitment

The subjects for the study were students selected from a larger pool presenting for treatment at the university counseling center, which is free to students and unlimited in terms of number of sessions. The subjects were full time students enrolled at a large public university in the Northeastern United States. Students typically come into, or call, the counseling center to make an appointment with a counselor. They are then assigned to a counselor for an intake appointment, usually within a two-week period, based on scheduling and preferences (e.g. male/female counselor).

Of those students who sought counseling services, only those who did not currently have a counselor within the center were considered for the study. In terms of exclusion criteria, students were not considered for the study if they: (a) had co-morbid disorders that they wanted to focus on in therapy instead of anxiety (e.g. eating disorder,
depression), (b) were actively suicidal or psychotic, (c) had just started taking medication for mental health reasons (e.g. within the last two months), or (d) had a significant history of receiving psychotherapy and/or were currently seeing an outside clinician. Within these guidelines, subjects were accepted for inclusion if they met criteria for GAD, as determined by use of the GAD-7 screening scale. The responses to the GAD-7 questions are scored on a four-point scale (0 = not at all, 1 = several days, 2 = more than half the days and 3 = nearly every day). These scores are then summed for a total score. The cut off points for mild, moderate and severe anxiety are 5, 10, and 15, respectively. Those that scored a 10 or greater were considered for the study.

After meeting the study criteria, subjects were asked if they would be willing to participate in a study as part of their treatment. They signed a consent form that detailed the purpose of the study, including the potential benefits, as well as any potential risks (which were minimal). They were then assigned to the researcher (who served as the counselor) for the next available intake appointment. Of the 14 participants recruited for the study, four students continued in the study for its duration. The other recruited students did not fit criteria (N =7), chose not to participate (N =1), or discontinued treatment after a couple of sessions (N = 2). All of the participants were Caucasian females, between the ages of 18 and 21. Three of the four participants were nursing students, and the fourth was majoring in exercise physiology. All therapy sessions were conducted by the researcher. The researcher had four years of doctoral level training and experience in delivering therapeutic services. During the investigation, the researcher received one hour of supervision a week. Supervision consisted of individual meetings with the study supervisor to review sessions.
Measures

**Generalized Anxiety Disorder Scale (GAD-7).** The 7-item Generalized Anxiety Disorder Scale (GAD-7) was used as a brief screening tool for GAD. The GAD-7 is a reliable, valid tool to quickly screen for GAD in mental health settings and clinical research (Donker, 2011). The GAD-7 has been shown to be more sensitive to change than other tools (e.g. Penn State Worry Questionnaire; Dear, 2011). Research suggests that the scale demonstrates high levels of reliability, as well as criterion, construct, factorial and procedural validity, and it may be an efficient tool for screening for GAD (Spitzer, 2006). The GAD-7 is presented in Appendix A.

**Counseling Center Assessment of Psychological Symptoms-34 (CCAPS).** Anxiety was assessed weekly using the Counseling Center Assessment of Psychological Symptoms-34 (CCAPS-34; Locke, et al., 2012). The CCAPS is a multidimensional instrument for assessing college student mental health, designed for use in college and university counseling centers, and takes approximately 2-3 minutes to complete. Although the full CCAPS was administered each week to monitor overall functioning, the current study focuses on the GAD subscale in particular. For the purposes of this study, the raw scores were used given the study’s focus on intraindividual behavioral change as opposed to normative performance. Participants were sent a reminder to fill out the 6 questions related to the GAD scale, which were available online through a secure link on the Counseling Center website, every night for daily monitoring.

The CCAPS-34 scale was created for the purposes of making repeated measurement easier, so that it can be used as a brief assessment instrument for progress monitoring of participants at every session. A study on the CCAPS-34 showed that for
the Generalized Anxiety subscale, test-retest reliability coefficients in the 1-week and 2-week groups were .86 and .85, respectively (Locke et al., 2012). The evidence suggests that scores are relatively stable over 1- and 2-week intervals, a key component for an instrument that is sensitive to change (Locke et al., 2012). As such, the authors note that changes on the CCAPS-34 subscale scores may therefore be indicative of meaningful shifts in symptoms (Locke et al., 2012). The CCAPS-34 is presented in Appendix B.

**Treatment acceptability.** In order to assess the participants’ perceptions of the intervention they received, they were asked to complete two questionnaires at the end of the study. First, an adapted version of the Participant Satisfaction Questionnaire (CSQ; Larsen, Attiksson, Hargreaves, & Nguyen, 1979) was used. This scale assessed participants’ assessment of therapy overall (e.g., how satisfied they were with the treatment, if they would recommend it to a friend). The CSQ is a simplistic but useful evaluative tool that takes about 3-8 minutes to complete and can be added to in order to encourage more specific feedback from participants (Larsen et al., 1979). The types of questions on the CSQ include questions referring to quality of therapy received, participant satisfaction, likelihood to recommend to others, and likelihood to return to the center. These items are rated on a 4-point Likert scale (i.e. 1 = quite dissatisfied, 4 = very satisfied). There is also an open ended response where participants can write any additional comments. The CSQ was adapted slightly for use in the study by changing terminology (i.e. changing “service you received” to “therapy you received”; “our program” to “our center”). The format, intent and number of questions remained the same. The CSQ has a high degree of internal consistency and correlates with therapists’
estimates of participant satisfaction (Larsen, et al., 1979). The adapted version of the CSQ is presented in Appendix C.

In addition to the CSQ, participants also completed an adapted version of the Usage Rating Profile-Intervention (URP-I; Chafouleas, Briesch, Riley-Tillman, & McCoach, 2009), which can be found in Appendix D. The URP-I is 35-item questionnaire with four subscales (e.g., Acceptability, Understanding, Feasibility, and System Support). Participants are asked to rate the extent to which they agree or disagree with the statements made regarding the intervention using a 6-point Likert scale (i.e. 1 = strongly disagree and 6 = strongly agree). The authors of the URP-I hypothesized that multiple factors (i.e. acceptability, understanding, feasibility, and systems support) would help explain why individuals adopt and use interventions over time. Results of a factor analysis suggested that all scales possessed adequate reliability (Chafouleas et al., 2009). In the current study, however, only the Acceptability, Feasibility and Understanding subscales were used because the Systems Support subscale was not believed to be relevant to an individualized counseling context (e.g., assessing the degree to which participants feel the intervention fits within the school/work system). The URP-I was used to examine participants’ perceptions of the SM intervention specifically in terms of ease of use and suitability. Modifications to the scale included changing the wording slightly from hypothetical (e.g., I would like) to actual (e.g., I liked) use.

Design and procedure

The present study utilized a single-case reversal design with an initial baseline phase in order to assess the incremental effectiveness of adding SM to standard psychotherapy in reducing anxiety symptoms (i.e. ABCBC). All four participants were
given the ABCBC design. Within a typical reversal design (i.e. ABAB), data are first collected in the absence of an intervention (A). Then in subsequent phases, the intervention is introduced (B), removed (A), and then re-introduced (B) to a participant. Within the current study, however, the two alternating phases were implementation of the psychotherapy intervention (B) and implementation of the psychotherapy intervention plus SM (C). Within the literature on SM interventions, many studies have used a reversal design to demonstrate the effectiveness of SM across a range of target behaviors including weight (Baker & Kirschenbaum, 1993), attention (Rooney, et al., 1984) and on-task behavior (Amato-Zech et al., 2006). Use of a reversal design was believed to be appropriate in light of evidence that suggests that the effects of SM may be reduced when monitoring is not consistent or is removed (Amato-Zech et al., 2006; Baker & Kirschenbaum, 1993; Jason & Klich, 1982).

**Abbreviated Baseline (Phase A).** Participants in the baseline condition were not yet introduced to therapy at the college counseling center. Baseline data points were collected the first time the participants came in to sign up for an intake appointment as well as at the intake appointment. The participants therefore completed the CCAPS twice before beginning treatment. As the primary goal of the study was to determine whether the addition of SM to standard practice (i.e. psychotherapy) results in a greater reduction in anxiety symptoms than therapy alone, two baseline data points were collected to obtain a general level of symptomatology prior to beginning intervention. Additionally, it was considered unethical to withhold treatment for longer given that participants had come to the counseling center for psychotherapy services.
Psychotherapy intervention (Phase B). During this phase, the participants received 50 minutes of psychotherapy once a week. The goals of therapy varied depending on the participant’s presenting problems. As such, what was addressed in therapy also varied. However, across all participants, a primary goal of treatment was reducing anxiety symptoms, as this was a presenting issue identified by the participant at intake. The method of psychotherapy was a non-directive, integrative approach using both psychodynamic and CBT techniques. First of all, participants were provided with psychoeducation regarding GAD, including its symptoms and possible causes. The researcher helped the participants make their vague worries more specific, evaluate them, and determine whether they were unrealistic. Participants were encouraged to explore their feelings and thoughts about themselves and their anxiety. Participants were also encouraged to develop insight based on past experiences and experiment with alternative ways of perceiving and dealing with their experiences. Participants worked on building more effective interpersonal behaviors through skill training methods (e.g., assertion, problem-solving, communication training, role-playing) (Newman et al., 2008). The researcher did not provide advice or instructions. Instead, the researcher’s role was to reflect the content and emotions of the participant’s communications and express empathy and regard for the participant’s experiences and choices (Borkovec & Matthews, 1988). This was done within an accepting therapeutic environment. Homework assignments included assigning weekly goals and practicing new coping skills. The participant was also encouraged to generalize skills and insight through observation and exploration of between-session experiences to discuss in the next session. The
participants continued to complete the CCAPS weekly during this time and the GAD scale of the CCAPS daily.

**Self-monitoring intervention training.** Once stability of data had been noted in the psychotherapy intervention condition, the participant was introduced to the SM forms. Self-monitoring was introduced as one of the best ways for obtaining the most accurate information about the participant’s anxiety and as a way to try to get a better understanding of the factors contributing to her anxiety. The researcher explained that important information can be lost or distorted if an individual relies solely on retrospective recall of symptoms. The researcher provided the participant with psychoeducation regarding GAD, and defined the type of information that she was trying to collect with the SM forms (e.g. symptoms of anxiety). The researcher assisted the participant in generating a sample entry of the SM form (using the current day or a recent episode of worry). This increased the probability that the participant would use the forms properly between sessions. The researcher also repeated this step periodically throughout treatment to prevent drift.

**Psychotherapy + self-monitoring intervention (Phase C).** During Phase C, participants continued to receive psychotherapy (as outlined in the description of Phase B), but participants also used a daily diary to record ratings of anxiety. Participants rated their average level of general anxiety four times a day (upon arising, end of morning, end of afternoon, and end of evening) for the preceding time block on a Likert scale (i.e. 0–10; 0 = not at all, 10 = extremely). Any time their anxiety reached a level of 5 or higher, the participants were instructed to record a brief description of the situation and his or her accompanying thoughts, physical sensations, and behaviors. For each worry episode,
participants described the content, indicated whether there was a precipitant, time of onset and offset, degree of control over worrying, degree to which content of worry was realistic and probable, attempts to stop worrying, and success of techniques for controlling worry. An example of the daily diary is presented in Appendix E.

Participants used an electronic daily diary, accessed online, to record their ratings of anxiety. They received an electronic message on their phone four times a day to remind them to rate their average level of general anxiety. The participants were asked to record their anxiety as soon as possible after this message, understanding that certain constraints exist that may make recording in the moment difficult (i.e. being in a public place, in class). The idea was to remind the participants to self-monitor, and make them aware of their ratings at the time, which could then be recorded as soon as possible after.

Electronic diaries have several advantages. First, they offer more privacy and convenience than paper copies that have to be carried around and are therefore more obvious and can be lost. Second, the electronic diaries could be accessed from their computer or phone at any time, providing more opportunities for participants to find the time and privacy needed to complete them. Participants were encouraged to lock their phones and computers to reduce any potential privacy issues.

The researcher printed out the diaries and reviewed them with the participant at the next session. During each session, the participant used information collected in the SM form to identify triggers for her anxiety and engaged in cognitive restructuring to replace irrational or maladaptive thoughts. The participants also engaged in problem-solving skills training to learn new ways to respond to anxiety-provoking situations. Participants continued to keep a SM diary for the entirety of the phase.
**Maintenance Phase.** Upon completion of the second psychotherapy and SM phases, which coincided with the end of the university semester, participants engaged in a final session with the researcher to examine their progress and fill out the treatment acceptability questionnaires. Participants were informed that they could continue treatment the following semester as needed, and were given instructions on how to access treatment outside of the counseling center during the break. Participants continued to complete the daily anxiety scale for two weeks after termination in order to assess their anxiety levels in the absence of treatment.

**Treatment integrity.** In order to ensure that the intervention was being implemented as intended, three types of treatment integrity (TI) were monitored. First, participant TI was monitored using permanent products. Although it has been more common in previous literature to collect TI on the therapy intervention, for example, by examining audio tapes of sessions (i.e. Barlow, Craske, Cerny & Klosko, 1989), the few studies that have looked at SM have not examined the TI of the how the SM piece of the intervention was implemented. In the present study, the SM forms from the preceding week were examined in each therapy session and compared to a TI checklist (e.g. Did the participant record four times a day? Did she rate her anxiety level?), which can be found in Appendix F. This checklist was completed weekly by the researcher with the participants in the session. The percentage of steps completed correctly by the participant was calculated by the researcher. If TI was low (i.e. below 60%), the researcher reviewed the procedures for completing the SM forms with the participant and addressed any barriers to completion. The participant TI was high for all four participants (M = 78.2%, Range = 64.1% - 92.4%).
In order to make sure that the training for the SM intervention was being delivered consistently, TI checks were also implemented for the training sessions. Audio tapes of all of the training sessions were reviewed by the researcher’s supervisor. The supervisor used a checklist, which can be found in Appendix G, to make sure that the researcher was providing accurate information to the participant, and explaining the intervention and steps of how to self-monitor (e.g. psychoeducation on GAD, example SM entry). The TI of the SM training was 100%, and no problems were noted with regard to TI.

In order to make sure that the therapy intervention was being delivered consistently, TI checks were also implemented for the researcher. Audio tapes of 20% of the sessions were reviewed by the researcher’s supervisor. The supervisor used a checklist, which can be found in Appendix H, to make sure that the researcher was delivering appropriate psychotherapy according to a number of general therapy factors (e.g. reflective listening, empathy). Therapy TI was collected via audio tapes for 22% (8 out of 36) of the therapy sessions, which were reviewed with the researcher’s supervisor. Therapy treatment integrity was found to be 98.4%. Specifically, the majority of the tapes had 100% TI (7 out of 8 tapes), with one tape having lower TI due to one of the steps (i.e. development of insight), not being addressed.

**Results**

The participants’ scores on the Anxiety subscale of the CCAPS-34 are presented in Figures 1-4. Moderately high levels of anxiety were observed across all four participants during baseline (M= 2.58, 2.42, 2.58, 2.42), suggesting the need for intervention in order to reduce anxiety levels. It was clear that participants’ self-reported
anxiety decreased over the course of the study, as the anxiety scores reported in the final maintenance phase were substantially lower than at baseline (M=1.14, 1.86, 0.25, 1.31). Visual analysis suggests that there was a gradual decrease in anxiety symptoms across all of the phases, with some variability (i.e. unusually high or low data points) in the data. The reduction in symptoms was also maintained in the absence of any intervention. Therefore, it appears that the combination of psychotherapy and self-monitoring was effective in reducing anxiety symptoms. What is not entirely clear from the study data, however, is the extent to which the addition of SM reduced participants’ anxiety symptoms beyond psychotherapy alone. The next section will discuss each participants’ results in more detail.

Anna. During baseline, Anna’s anxiety was above the normalized mean (M = 2.42, Normalized M = 1.81). Specifically, Anna reported that on average, the six questions related to generalized anxiety symptoms described her moderately accurately (0=Not all at like me to 5=Extremely like me). During the first phase of psychotherapy, Anna’s anxiety steadily increased and stayed at this level with little variability noted throughout the phase (M = 3.21, SD = .25). It was expected that the introduction of the SM intervention would result in a decrease in self-reported anxiety. When the SM intervention was introduced, Anna’s anxiety decreased slightly right away and again remained fairly stable during the remainder of the phase (M = 2.96, SD = .18). Next, it was expected that that when the SM intervention was removed, anxiety would increase. In the absence of SM, Anna’s anxiety remained fairly stable at almost the same level as the previous phase (M = 3.07, SD = .30). Similarly to the first replication, it was expected that when SM was reintroduced, anxiety would again decrease. In the final phase, SM
was reintroduced and there was no immediate change in Anna’s anxiety. However, over time, her anxiety decreased (M = 2.35, SD = .42). Although the other phases had mostly flat trends, there was a significant decreasing trend in the second SM phase. Finally, data continued to be collected in the absence of any intervention during a maintenance phase, and her anxiety continued to stay at the same level as the end of the final SM phase (M = 1.86). This indicates that decreased anxiety was maintained in the absence of intervention.

In addition to use of visual analysis, effect sizes were calculated using Busk and Serlin’s (1992) no assumptions effect size. The overall effect size across the two replications was -1.69 (i.e. B1C1 = -.98, B2C2 = -2.39), which can be considered strong. However, these effect sizes do not take into account the difference between the first intervention phase and second baseline phase, where there did not appear to be a change in Anna’s self-reported anxiety. Anna consistently reported her daily anxiety as well as completed her SM forms with high treatment integrity (overall TI = 92.42%).

*Lilly.* During baseline, Lilly’s anxiety was above the normalized mean (M = 2.42, Normalized M = 1.81). Specifically, Lilly reported that on average, the six questions related to generalized anxiety symptoms described her moderately accurately (0=Not all at like me to 5=Extremely like me). During the first phase of psychotherapy, Lilly’s anxiety initially decreased, but then steadily increased and stayed at this level with little variability noted throughout the remainder of the phase (M = 2.63, SD = .52). There was an immediate decrease in mean level when SM was implemented; however, there was some variability in this phase, as her anxiety increased briefly before decreasing once again (M = 2.35, SD = .34). In the absence of SM, Lilly’s anxiety remained at a similar,
stable level (M = 2.33, SD = .40), with the exception of one day on which self-reported anxiety was notably higher. In the final phase, SM was reintroduced and a small but immediate decrease in anxiety was noted (M = 1.53, SD = .34). Finally, data continued to be collected in the absence of any intervention during a maintenance phase. Lilly’s anxiety in this phase was significantly lower than baseline levels (M = 1.31) and during this phase, her anxiety continued to stay at the same level as the end of the final SM phase, suggesting that her decreased anxiety was maintained in the absence of any intervention.

The overall effect size across the two replications was -1.27 (i.e. B1C1 = -.53, B2C2 = -2.01), again suggesting a strong effect. However, similar to Anna’s results, these effect sizes do not take into account the absence of a change in Lily’s self-reported anxiety between the first intervention phase and second baseline phase. Lilly consistently reported her daily anxiety as well as completed her SM forms with high treatment integrity (overall TI =88.89%).

Clara. During baseline, Clara’s anxiety was above the normalized mean (M = 2.58, Normalized M = 1.81) and she reported that the six questions related to generalized anxiety symptoms described her moderately accurately. During the first phase of psychotherapy, Clara’s anxiety initially decreased, and then stayed at this level with little variability demonstrated throughout the phase (M = 1.85, SD = .45). However, Clara did not complete the anxiety scale consistently during this phase, and as such, only 6 data points were collected over a two week period. When SM was implemented, both her mean level of anxiety and variability were fairly consistent with the psychotherapy phase (M = 1.73, SD = .35). Problems with data collection were again noted during the first two
weeks of this phase. As such, a modified data collection plan was put into place that allowed Clara to write down her responses to the anxiety scale and SM forms daily and bring the data to the therapy session. This resulted in an increase in the number of completed ratings from this phase onwards. During the reversal phase, it was expected that anxiety would increase; however, her mean level of anxiety instead decreased ($M = 1.46, SD = .69$) and was very variable ($Range = .33 – 3$). Again contrary to expectations, when SM was reintroduced, Clara’s mean level of anxiety increased ($M = 1.65, SD = .60$). Similar to the second psychotherapy phase, high levels of variability were noted in the data collected in the second SM phase. Finally, data continued to be collected in the absence of any intervention during a maintenance phase. Clara’s anxiety in the maintenance phase was lower than baseline levels ($M = 1.14$) as well as the final SM phase. However, there was considerable variability within the maintenance phase as well ($Range = 0 – 2.67$).

The overall effect size across the two replications was .02 (i.e. $B1C1 = -.25, B2C2 = .28$), suggesting no effect. Unlike the previous two participants, Clara’s self-reported levels of anxiety were highly variable, especially after she started recording the data on paper during the final three phases. Similar to the previous two participants, however, there was a slight overall decreasing trend in Clara’s anxiety across all phases. As mentioned previously, Clara was able to consistently report her daily anxiety or complete her SM forms when she started recording on paper. Therefore, although problems were noted with compliance in the first phases of the intervention (TI = 30.36%), after using the paper, treatment integrity was acceptable (TI = 94.74%).
Charlene. During baseline, Charlene’s anxiety was above the normalized mean (M = 2.58, Normalized M = 1.81) and she also reported that the six questions related to generalized anxiety symptoms described her moderately accurately. During the first phase of psychotherapy, Charlene’s mean level of anxiety decreased slightly but her ratings were highly variable (M = 2.12, SD = .83) (Range = .67-3.67). When the SM intervention was introduced, Charlene’s mean level of anxiety decreased (M = 1.27, SD = .68), although there was again some variability within the phase (Range = .50 – 2.00). In the absence of SM, Charlene’s anxiety immediately increased but then came back down and stayed at a level consistent with the previous SM phase (M = 1.69, SD = 1.27). In the final phase, SM was reintroduced and Charlene’s mean level of anxiety decreased again (M = 1.17, SD = 1.11). It was at this point in the study that Charlene had some difficulty completing the anxiety scale and SM forms consistently, resulting in fewer data points than in the first intervention phase. Despite a couple of large spikes in reported anxiety, overall there was a downward trend in the final SM phase. Finally, data continued to be collected in the absence of any intervention during a maintenance phase. Charlene’s anxiety was substantially lower than baseline levels (M = .25), staying at the same level as the end of the final SM phase, and close to an absence of self-reported GAD symptoms. Her decreased anxiety was maintained in the absence of any intervention.

The overall effect size across the two replications was -.72 (i.e. B1C1 = -1.02, B2C2 = -.41). Consistent with other participants, these effect sizes do not take into account the difference between the first intervention phase and second baseline phase, where there did not appear to be a change in Charlene’s self-reported anxiety. Although
problems were noted with compliance in the final phase of the intervention (TI = 47.22%), overall TI was at a moderate level (TI = 64.06%).

**Treatment Acceptability**

Treatment acceptability was assessed using modified versions of the Usage Rating Profile (URP; Briesch & Chafouleas, 2009) and Client Satisfaction Questionnaire (CSQ; Larsen, Attiksson, Hargreaves, & Nguyen, 1979) at the end of the study. Results of the URP indicated that the participants liked the intervention (M = 5.48, SD = 0.13), believed that it was feasible (M = 5.56, SD = 0.18), and understood the procedures involved (M = 5.56, SD = 0.22). Participants reported on the CSQ that they definitely received the kind of therapy they wanted, and were very satisfied with the services they received. They also rated the quality of therapy they received as excellent, and thought the services they received helped them a great deal with their problems.

**Discussion**

The primary goal of the current study was to assess the incremental effectiveness of adding SM to standard psychotherapy in reducing generalized anxiety symptoms with college students. Four participants were recruited for the study after presenting to the university counseling center with high levels of GAD. In order to examine SM within an experimental design, the present study utilized a reversal design in which phases alternated between a psychotherapy intervention and the same psychotherapy intervention plus SM. Significant effect sizes were observed for all of the participants when SM was first introduced, and a significant decrease in anxiety between the second psychotherapy and SM phases was also observed for three of the four participants.
In an ideal reversal design, three changes would be seen: (a) a change between the first B phase and the introduction of the intervention in phase C, (b) a change in the second B phase when the intervention is taken away and levels return to those in baseline and (c) a change when the intervention is reintroduced in the second C phase (Horner, Carr, Halle, McGee, Odon, et al., 2005). Although it was hypothesized that levels of anxiety would increase when the SM intervention was removed, given previous findings that participants rely on the SM procedures being in place to regulate their behavior, and that the most consistent monitoring leads to the best results (e.g., Baker & Kirschenbaum, 1993; Cash & Hrabosky, 2003), this did not occur.

Specifically looking at the three opportunities for an effect within the present study provides a clearer picture of the effects. At the first opportunity, between the first psychotherapy and SM phases, the mean level of anxiety decreased for all of the participants (ES = -.25, -.98, -1.02, -.53). At the second opportunity, when SM was removed, two of the participants’ mean level of anxiety increased slightly, one decreased, and one stayed the same (ES = -.79, .58, .33, -.04). Finally, at the third opportunity, when SM was reintroduced, the mean level of anxiety decreased for three of the four participants (ES = .28, -2.39, -.41, -2.00). In the present study, there was not a clear effect between the first SM phase and a return to psychotherapy, in that anxiety did not approach baseline levels when the SM intervention was removed. Therefore, it is difficult to say with certainty whether there was a true effect for the incremental effectiveness of SM.

Without being able to say with certainty that SM caused the overall decrease in self-reported anxiety symptoms, it is necessary to explore several alternative explanations
for the results of the present study. First, it is possible that anxiety decreased over time as a function of being in therapy. The effects found in the present study may be due in part to the many weeks participants spent in treatment, learning about themselves and applying the coping skills they acquired in sessions to their lives. Thus, anxiety symptoms may have gradually improved over the course of the intervention period even with only psychotherapy in place. However, there are some examples within the data that contradict this idea. For example, there was an immediate decrease in Lilly’s anxiety when SM was first implemented, and another smaller but immediate decrease when the second SM phase was implemented. Another example comes from Charlene, whose anxiety immediately increased when SM was removed. It was not possible in the present study to apply the SM intervention without simultaneously engaging in some therapeutic relationship. However, this highlights one of the challenges of adding an intervention within the context of ongoing psychotherapy: the difficult task of teasing apart the effects of the intervention above and beyond the effects and benefits of simply being in therapy over time.

Another explanation for why a reversal of anxiety symptoms was not observed in the absence of the SM intervention may be that participants were able to learn how to SM and did so in the second psychotherapy-only phase. Even though participants were not asked to self-monitor in the psychotherapy only phase, it is possible that SM was a skill they learned and could not unlearn, and therefore they were engaging in it in some way even without the external prompts. For example, they may not have been completing the SM forms, but were more aware of their anxiety and paid more attention to their triggers then they did prior to the SM training and practice. According to the theoretical rationale
for SM, the behavioral feedback an individual receives from SM can elicit a self-
evaluative response and evoke long-lasting behavioral change (Kanfer, 1970).
Specifically, when an individual uses SM to evaluate her behavior and sees that it does
not match her perception of herself, the resulting dissatisfaction is believed to motivate
the individual to make the necessary changes in behavior. At least one previous study
involving SM in children found that the behavior being monitored may not completely
return to baseline levels in the absence of intervention (i.e. Amato-Zech et al., 2006). One
possible explanation suggested by these authors was that participants are learning how to
SM and are able to do so without external prompts. Other studies have supported the idea
that teaching participants metacognition, or how to think about their thoughts, can have
long lasting benefits. For example, Teasdale, Moore, Hayhurst, Pope, et al. (2002)
studied the effects of metacognition on depression, training participants to repeatedly
monitor and identify negative thoughts and examine their accuracy. The authors found
that when individuals learn that negative thoughts and emotions are “passing events in
the mind rather than as inherent aspects of self or as necessarily valid reflections of
reality” (p. 285), they experience a reduction in depressive feelings and become less
likely to relapse than a control group. This is one possible explanation for the results of
the present study, in that participants may have learned to think differently about their
thoughts and internalized the SM process, which produced lasting change even in the
absence of external SM prompts.

Furthermore, although previous SM studies that utilized a reversal design found
that the effects were greatest when SM was in place and consistent, these studies differ
from the present study in the way SM was implemented. More specifically, these
previous studies asked participant to simply record a behavior, for example, by instructing participants to record TV watching or caloric intake. The emphasis in these studies was on self-regulation through consistent SM. However, in the present study, the focus was on self-awareness, and participants were taught a skill that could be used to manage their anxiety. Specifically, as participants became more aware of their anxiety triggers through SM, they were better able to intervene as soon as possible using the techniques discussed in treatment.

Although the independent effect of SM was not clear, there were numerous qualitative benefits noted for the therapeutic relationship. Specifically, participants reported liking the intervention (M = 5.48, SD = 0.13), and found SM to be understandable (M = 5.56, SD = 0.22) and feasible to implement (M = 5.56, SD = 0.18). They also reported that were very satisfied with the services they received and found them to help them a great deal, and rated the quality of therapy they received as excellent. Based on the researcher’s informal observations, the discussions regarding the SM forms strengthened the therapeutic alliance, as participants felt the researcher demonstrated an increased level of involvement in their lives. From the researcher’s point of view, having data to review in sessions allowed for greater depth and breadth of topics covered that were specifically relevant to each participant (e.g., triggers unique to individual, preferences regarding techniques tried, time of day and content of worry). Had this information not been collected, the researcher would have had to rely on the participants’ recall from the previous week, which may not have been as detailed or accurate. Similarly, without the SM forms, the participants may have been exposed to more generic approaches to anxiety, rather than one that was specifically tailored to their needs. The
forms also appeared to foster a sense of commitment from the participants to the therapeutic process, as the more effort they put into their treatment, the more invested they became in the outcome.

Another interesting finding within the current study related to the participant treatment integrity and compliance. In order to implement the SM intervention as intended, participants were asked to attend weekly sessions and complete nightly anxiety scales and SM forms four times a day for four weeks. Despite the heavy emphasis on participant compliance, overall treatment integrity was high for all four participants ($M = 78.2\%, \text{Range} = 64.1\% - 92.4\%)$. Previous research has indicated that the best predictors of compliance with homework are associated with therapy variables, rather than personality variables, such as explicitly attending to homework that has been assigned the previous week in subsequent sessions (Worthington, 1986). For example, in one study, compliance was found to be highest when the counselor asked directly about the homework, and the rate of compliance with previous homework assignments predicted current compliance with homework (Worthington, 1986). This behavioral interpretation of homework compliance was supported by the results of the present study. The act of reviewing the SM forms weekly was a significant element in therapy and was likely a factor in the high rate of compliance in the present study.

However, despite the high rate of compliance, there was some variability in the participants’ treatment integrity in the present study. For example, difficulties were noted with regard to compliance for two of the participants. One of the participants chose to complete the SM forms on a paper copy, after finding the online version too challenging to access regularly. The other participant’s treatment integrity decreased as she
completed the SM form less regularly during the second SM phase. Also, all four
participants stated that it was too difficult to complete the SM forms on a computer four
times a day, and preferred to complete them on paper and then enter all the data at once at
night. Lower levels of treatment integrity or compliance were associated with lower
effect sizes and more variability in the data. For example, it was unclear when Clara was
completing the daily anxiety scale or the SM forms, as there was no way to check if they
were submitted on a daily basis. Although only a small ES, Clara’s anxiety decreased
during the first intervention phase when she was completing her forms online, albeit less
frequently than preferred. In comparison, when Clara moved to completing her forms on
paper, at unknown intervals of time, her data were much more variable and there was an
ES in the opposite direction (i.e. an increase in anxiety during the SM phase). Another
example comes from Charlene’s data, where the ES between the psychotherapy and SM
phases was highest in the first replication, which was also when her compliance was the
highest. These findings are supported by previous literature that suggests that
interventions that are implemented with lower levels of integrity result in more
idiosyncratic responses from participants (Noell, Gresham, & Gansle, 2002).

**Limitations and Implications for Future Research**

One of the limitations of the present study is the lack of sufficient baseline data.
As noted previously, it was necessary to start participants in treatment as soon as possible
after they sought out services at the counseling center. Therefore, only two baseline data
points could be collected before psychotherapy treatment began. Fortunately, the two
baseline data points were fairly stable across participants. However, additional baseline
data points would have been preferred to ensure a more stable picture of behavior prior to implementing the intervention.

Another limitation of the present study is in regards to its external validity. The results of the present study were based on the outcomes for only four participants. Furthermore, those four participants were especially homogenous in their demographics (e.g. Caucasian females, ages 18-21) and educational background (e.g. health professional majors). The four participants were also all highly compliant with the intervention procedures and with coming to treatment. In addition, the participants may have differed from the general population in ways that influenced the results. For example, as nursing and health professional students in highly competitive programs, they were likely more academically motivated than the average student. The participants were also observed to be more diligent and compliant than the average student. This fits with the personality traits often associated with individuals with GAD, including being overly perfectionistic and conforming. As such, the results of the present study may be limited in terms of being able to generalize the findings to other participants.

On a similar note, the role of the researcher as the implementer likely influenced the results, as the researcher differed from the typical implementer in several ways. First, the researcher displayed a high level of enthusiasm towards the study and self-monitoring as an intervention technique. This enthusiasm may have transferred to the participants and contributed to the high level of compliance and buy-in from them. In addition, the participants were aware that they were involved in the researcher’s study. It may have been the case that the participants felt compelled to comply in order to make the researcher happy. The researcher also sent several reminders to encourage participants to
complete the SM forms and anxiety scales. The researcher’s high level of investment in the study likely led to a higher level of effort put forth to improve participant involvement, which may have differed from a typical, more impartial implementer.

In addition, the frequency with which participants submitted their anxiety scores was not consistent. For example, because participants did not submit anxiety ratings every day, it is possible that on the days they did not submit ratings, their behavior may have been substantially different from previous days (e.g. more or less likely to submit their anxiety scores on a particularly anxious/not anxious day). This potential inconsistency highlights the problems associated not only with compliance but the issues inherent in using self-report measures as the dependent variable. Whereas SM is tied to a specific event or moment in time, there is potential bias inherent in self-report data as it is completed after the fact and is therefore an estimation or judgment of experience.

Similarly, although the intention was to make the SM procedures as feasible as possible for the participants, participant feedback led to modifications in how SM data were collected. As such, recording procedures were not followed exactly as they had initially been designed and it was unclear if the participants were completing the forms when reminded to do so four times throughout the day or hours afterwards. Given these deviations from the original procedures, the optimal rating procedures are unclear, especially in terms of the proximity in time to the predetermined intervals. Future research could examine the minimum number of times participants need to SM that yields the strongest effect sizes and highest compliance. Furthermore, another area of related study would be to look at how additional supports could be added in order to
improve compliance (i.e. adding a phone call to check in, texting at random points throughout day rather than at predetermined intervals).

Given the limitations associated with compliance and the use of paper versus computer forms, future studies could also examine alternative ways of collecting the SM data. Current research is examining how common digital technology can be incorporated into psychotherapeutic practice; for example, through the use of smartphones and digital cameras to record and track progress (Eonta, Christon, Hourigan, Ravindran, et al., 2011). The use of technology that is more readily available to participants may improve the compliance and treatment integrity of SM, such as through an application on a smart phone where participants are reminded on the phone and then can quickly and easily enter SM data throughout the day.

As was suggested earlier, it is possible that there was no reversal in the absence of SM because participants had internalized the skills and were using them in the psychotherapy only phase. Although participants were not explicitly asked if they were continuing to SM, based on anecdotal evidence, it is likely that the participants continued to use the SM strategies in the psychotherapy only phase. For example, participants demonstrated an improved ability to discuss their anxiety and the triggers for it after being introduced to SM. In the second psychotherapy phase, the participants continued to discuss their anxiety while referring back to the material from the SM forms, such as detailing the time of day anxiety was highest and techniques that did and did not work. During the second psychotherapy only phase the participants stated that they felt that they had developed a better sense of their anxiety and felt like they had more “control” over it. However, the present study did not formally collect data on whether the participants were
continuing to monitor their behavior during psychotherapy. The concern being that collecting more formalized data on monitoring during the psychotherapy phase would complicate the no monitoring condition (e.g. asking participants about their monitoring behaviors would elicit a monitoring response).

Finally, as discussed previously, the limitations within the reversal design made it difficult to draw conclusions regarding the effectiveness of SM. Reversal designs in psychotherapy are challenging, in that it is not possible to have a true absence of treatment. As such, psychotherapy was provided throughout the present study. Future studies are needed to further separate the effect of SM from the effect of psychotherapy, especially in terms of attending psychotherapy for long periods of time and what that means for the effect of SM. In order to avoid these issues, the best way to examine the incremental effects of SM would likely be by using a group design. Within such a design, the control group would receive only psychotherapy, and the experimental group would receive psychotherapy and SM. It would then be possible to compare the two groups in terms of anxiety reduction, and see if the group receiving SM benefited greater as a result of the additional intervention component.

**Implications for Practice**

It is important to consider how the results of the present study can be applied to practice. The present study is one of the first to explicitly examine the use of a SM intervention with an internalizing disorder, rather than as a dependent variable or as part of a larger intervention package. Although more research is needed to determine the extent to which SM improves participant outcomes beyond psychotherapy alone, certain qualitative benefits were definitely noted. The SM intervention was easy to implement,
was well liked by the participants and the researcher, and appeared to enhance the therapeutic process as well.

Although previous literature has focused on how SM can be beneficial as a component of a therapeutic intervention, more often the focus is on the reduction of symptoms than on the therapeutic process. The present study highlights the unique benefits of SM toward enhancing the therapy process. Previous literature suggests that although the complexities of psychotherapy are difficult to study, the therapeutic alliance is often an important predictor of positive treatment outcome (Woody & Adessky, 2002). Based on qualitative data from the treatment acceptability questionnaires, as well as anecdotal evidence, the SM forms benefited the therapeutic alliance. The forms allowed the researcher a window into the participants’ lives beyond the hour a week in session. They also provided information beyond what the participant chose to discuss in sessions, giving more specifics about their anxiety than it would have been possible for them to accurately remember. Anecdotally, even in weeks when the participants were not self-monitoring, once they had learned the SM techniques, the participants brought to the sessions more detailed information regarding their experiences that week. They appeared to be more aware of their anxiety, recognized triggers, and discussed the helpful and unhelpful techniques they tried. As such, due to the participant’s enhanced self-awareness, sessions were more organized, relevant, informed and therefore, more effective. Furthermore, symptomatic improvement for participants has been shown to predict positive alliance in later sessions (DeRubeis & Feeley, 1990). As such, the early gains participants experienced from SM may have helped to establish a stronger therapeutic alliance, which in turn helped improve the participants’ compliance and
therefore led to greater gains. In the present study, the participants all commented on their satisfaction with the reduction in their anxiety, and enthusiasm for how SM gave them a sense of control over what seemed to them like uncontrollable anxiety. Adding SM to therapy enhanced the therapeutic relationship and increased the researcher’s involvement in participants’ lives beyond the traditional one hour session a week. This led to better informed treatment, and techniques and approaches tailored to the needs of each participant.
References


Figures

Figure 1. Anna

![Anna's Anxiety Ratings](image1)

Figure 2. Lilly

![Lilly's Anxiety Ratings](image2)
Figure 3. Clara

Clara's Anxiety Ratings

Figure 4. Charlene

Charlene's Anxiety Ratings
Appendix A.

Generalized Anxiety Disorder 7-item (GAD-7) scale

How often during the past 2 weeks have you felt bothered by (circle one answer):

1. Feeling nervous, anxious, or on edge?
   0 = not at all
   1 = several days
   2 = more than half the days
   3 = nearly everyday

2. Not being able to stop or control worrying?
   0 = not at all
   1 = several days
   2 = more than half the days
   3 = nearly everyday

3. Worrying too much about different things?
   0 = not at all
   1 = several days
   2 = more than half the days
   3 = nearly everyday

4. Trouble relaxing?
   0 = not at all
   1 = several days
   2 = more than half the days
   3 = nearly everyday

5. Being so restless that it is hard to sit still?
   0 = not at all
   1 = several days
   2 = more than half the days
   3 = nearly everyday

6. Becoming easily annoyed or irritable?
   0 = not at all
   1 = several days
   2 = more than half the days
   3 = nearly everyday

7. Feeling afraid as if something awful might happen?
   0 = not at all
   1 = several days
   2 = more than half the days
   3 = nearly everyday

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

__Not difficult at all __Somewhat difficult __Very difficult __Extremely difficult
Appendix B.

CCAP-34

INSTRUCTIONS: The following statements describe thoughts, feelings, and experiences that people may have. Please indicate how well each statement describes you, during the past week, from “not at all like me” (0) to “extremely like me” (4), by marking the correct number. Read each statement carefully, select only one answer per statement, and please do not skip any questions.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all like me</th>
<th>Extremely like me</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  I am shy around others</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2  My heart races for no good reason</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3  I feel out of control when I eat</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>4  I don’t enjoy being around people as much as I used to</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5  I feel isolated and alone</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6  I think about food more than I would like to</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>7  I am anxious that I might have a panic attack while in public</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>8  I feel confident that I can succeed academically</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>9  I have sleep difficulties</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>10 My thoughts are racing</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>11 I feel worthless</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>12 I feel helpless</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>13 I eat too much</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>14 I drink alcohol frequently</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>15 I have spells of terror or panic</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>16 When I drink alcohol I can’t remember what happened</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>17 I feel tense</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>18 I have difficulty controlling my temper</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>19 I make friends easily</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>20 I sometimes feel like breaking or smashing things</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>21 I feel sad all the time</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>22 I am concerned that other people do not like me</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>23 I get angry easily</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>24 I feel uncomfortable around people I don’t know</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>25 I have thoughts of ending my life</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>26 I feel self conscious around others</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>0</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>27</td>
<td>I drink more than I should</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>I am not able to concentrate as well as usual</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>I am afraid I may lose control and act violently</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>It’s hard to stay motivated for my classes</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>I have done something I regret because of drinking</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>I frequently get into arguments</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>I am unable to keep up with my schoolwork</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>I have thoughts of hurting others</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C.

THE CLIENT SATISFACTION QUESTIONNAIRE (CSQ)

We are interested in your honest opinions, whether they are positive or negative. Please answer all the questions. We also welcome your comments and suggestions. Thank you very much, we appreciate your help.

1. How would you rate the quality of therapy you received?

<table>
<thead>
<tr>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
</tbody>
</table>

2. Did you get the kind of therapy you wanted?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, definitely not</td>
<td>No, not really</td>
<td>Yes, generally</td>
<td>Yes, definitely</td>
</tr>
</tbody>
</table>

3. To what extent has our center met your needs?

<table>
<thead>
<tr>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost all of my needs have been met</td>
<td>Most of my needs have been met</td>
<td>Only a few of my needs have been met</td>
<td>None of my needs have been met</td>
</tr>
</tbody>
</table>

4. If a friend were in need of similar help, would you recommend our center to him/her?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, definitely not</td>
<td>No, not really</td>
<td>Yes, generally</td>
<td>Yes, definitely</td>
</tr>
</tbody>
</table>

5. How satisfied are you with the amount of help you received?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quite dissatisfied</td>
<td>Indifferent or mildly dissatisfied</td>
<td>Mostly satisfied</td>
<td>Very satisfied</td>
</tr>
</tbody>
</table>
6. Have the services you received helped you to deal more effectively with your problems?

<table>
<thead>
<tr>
<th></th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, they helped</td>
<td>Yes, they helped</td>
<td>No, they really</td>
<td>No, they seemed to</td>
<td></td>
</tr>
<tr>
<td>a great deal</td>
<td>somewhat</td>
<td>didn’t help</td>
<td>make things worse</td>
<td></td>
</tr>
</tbody>
</table>

7. In an overall, general sense, how satisfied are you with the service you received?

<table>
<thead>
<tr>
<th></th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfied</td>
<td>Mostly satisfied</td>
<td>Indifferent or</td>
<td>Quite</td>
<td></td>
</tr>
<tr>
<td>satisfied</td>
<td>mildly dissatisfied</td>
<td>dissatisfied</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. If you were to seek help again, would you come back to this center?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, definitely not</td>
<td>No, I don’t think so</td>
<td>Yes, I think so</td>
<td>Yes, definitely</td>
<td></td>
</tr>
</tbody>
</table>

WRITE COMMENTS BELOW:
### Appendix D.

#### Usage Rating Profile-Intervention

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Slightly Disagree</td>
<td>Slightly Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>1.</td>
<td>The amount of time required to use this intervention was reasonable.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>I implemented this intervention with a good deal of enthusiasm.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>The intervention was implemented for the duration of time I was told to.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>The amount of time required for record keeping with this intervention was reasonable.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>I was motivated to try this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6.</td>
<td>All pieces of this intervention were implemented precisely.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>The intervention was implemented with the intensity as prescribed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8.</td>
<td>I had positive attitudes about implementing this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>I understood the procedures of this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10.</td>
<td>I knew what to do when I was asked to implement this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11.</td>
<td>Overall, the intervention was beneficial for me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12.</td>
<td>The requirements for implementing this intervention were unclear.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13.</td>
<td>I was not interested in implementing this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14.</td>
<td>The intervention was implemented exactly as I was told to.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15.</td>
<td>This intervention was a good way to handle my problem.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16.</td>
<td>The intervention was a fair way to handle my problem.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17.</td>
<td>This intervention was reasonable for my problem.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>I was resistant to use this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.</td>
<td>This intervention was implemented as frequently as I was told to.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.</td>
<td>This was an acceptable intervention strategy for my problem.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21.</td>
<td>I am knowledgeable about the intervention procedures.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22.</td>
<td>This intervention is an effective choice for addressing a variety of problems.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23.</td>
<td>This intervention would not be disruptive to other students.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24.</td>
<td>I had the skills needed to implement this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>26.</td>
<td>I understood how to use this intervention</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>27.</td>
<td>I liked the procedures used in this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>28.</td>
<td>I had no idea how to implement this intervention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>29.</td>
<td>The directions for using this intervention were clear to me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix E.

Daily Self-Monitoring Sheet

Four times a day, check in and rate your current anxiety using the 0-10 scale shown below. Stop whatever you are doing for a moment to write down the time and to rate how you feel at that moment. *Do not wait until the end of the day to record your ratings.*

If your anxiety rating is 5 or higher, also write down the circumstances surrounding the episode (including any internal and external triggers, attempts to stop worrying). If you notice an anxiety episode reaching a peak of 5 or greater between your regular rating times, record this information about the anxiety episode as well. You should carry a copy of this form with you at all times to complete during the week.

Use the following scale to indicate your anxiety level since your last rating:

\[
\begin{array}{cccccccccc}
0 & \longrightarrow & 1 & \longrightarrow & 2 & \longrightarrow & 3 & \longrightarrow & 4 & \longrightarrow & 5 & \longrightarrow & 6 & \longrightarrow & 7 & \longrightarrow & 8 & \longrightarrow & 9 & \longrightarrow & 10 \\
\text{Not at all anxious} & & \text{Moderately anxious} & & \text{Extremely anxious} & & & & & & & & & & & & & \\
\end{array}
\]
# Daily Anxiety Level

<table>
<thead>
<tr>
<th>Anxiety Level Rating (0-10)</th>
<th>Content of anxiety</th>
<th>Precipitant / Triggers</th>
<th>Time /Duration</th>
<th>Degree of control over worry (H/M/L)</th>
<th>Was worry realistic/probable (Y or N)</th>
<th>Attempts to stop worrying</th>
<th>Success of techniques for controlling worry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Afternoon</td>
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</tr>
<tr>
<td>Evening</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bedtime</td>
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<tr>
<td>Other</td>
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</tbody>
</table>
Appendix F.

Self-monitoring Training Integrity Checklist

1. Researcher met with participant
2. Researcher introduced concept of self-monitoring
   a. Obtain accurate information
   b. Get better understanding of factors contributing to anxiety
   c. Difficult to rely solely on retrospective recall
3. Researcher provided psychoeducation regarding GAD
4. Generation of sample entry of SM form

Number of steps completed _____/7
% of Steps Completed =
Appendix G.

Participant Treatment Integrity Checklist

**Participant:**

**Date:**

**Integrity Checklist:** To be completed by researcher in each session

**Intervention:** Self-monitoring anxiety

1. Participant filled out SM form at prescribed times:

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<thead>
<tr>
<th></th>
<th>Morning</th>
<th>Afternoon</th>
<th>Evening</th>
<th>Bedtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
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</tbody>
</table>

2. If above the anxiety threshold, participant filled out rest of form

<table>
<thead>
<tr>
<th></th>
<th>Morning</th>
<th>Afternoon</th>
<th>Evening</th>
<th>Bedtime</th>
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<tbody>
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<td>M</td>
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<td>Su</td>
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</tbody>
</table>

Number of steps completed _____/_____

% of Steps Completed =
Appendix H.

Therapy Treatment Integrity Checklists

Date:
Integrity Checklist: To be completed by supervisor for 20% of sessions

Intervention: Psychotherapy

1. Researcher met with participant_____
2. Researcher met following requirements of therapy:
   a. Actively engaged and listening____
   b. Reflected content/emotions of communication____
   c. Demonstrated empathy____
   d. Provided accepting therapeutic environment____
3. Researcher addressed following with participant:
   a. Coping skills/skill building____
   b. Homework and goals for week____
   c. Development of insight/observation____

Number of steps completed____/8
% of Steps Completed =

Date:
Integrity Checklist: To be completed by supervisor for 20% of sessions

Intervention: Psychotherapy + Self-monitoring

1. Researcher met with participant_____
2. Researcher met following requirements of therapy:
   a. Actively engaged and listening____
   b. Reflected content/emotions of communication____
   c. Demonstrated empathy____
   d. Provided accepting therapeutic environment____
3. Researcher addressed following with participant:
   a. Coping skills/skill building____
   b. Homework and goals for week____
   c. Development of insight/observation____
4. Researcher reviewed SM forms____
5. Researcher provided feedback in terms of treatment integrity____

Number of steps completed____/10
% of Steps Completed =