Relationships Between Self-Management Skills, Worry,

and Generalized Anxiety Disorder Symptoms

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Abstract

Self-management skills allow people to change maladaptive behaviour patterns, and consist of three interdependent facets: self-monitoring, self-evaluating, and self-reinforcing. One type of maladaptive behaviour is uncontrollable worry, which is the defining feature of generalized anxiety disorder (GAD). This study examined whether self-management skills relate to GAD symptoms and inaccurate beliefs about worry. The study also examined the role of positive and negative beliefs about worry in GAD. Finally, it explored whether a self-management intervention could alleviate distress caused by worry, and if the effectiveness varied as a function of an individual's pre-existing self-management skills. One hundred and fifty-nine participants completed questionnaires on self-management skills, beliefs about worry, and GAD symptoms. One hundred and twenty-six participants returned to complete a worry-induction, and either a self-management intervention or control condition. Self-evaluation skills were found to be negatively correlated with GAD symptoms and the negative belief that worry is uncontrollable and dangerous. Further, the belief that worry is uncontrollable and dangerous was a unique predictor of GAD symptoms. With poorly developed self-evaluating skills, individuals may be more likely to believe that worry is dangerous, which leads to more GAD symptoms. The self-management intervention was found to be more effective than the passage of time in removing negative affect and anxiety, and increasing positive affect. Participants with well developed self-management skills who used their skills had the greatest decreases in negative affect, while participants who had less developed self-management skills and did not use their skills had the smallest decreases. Overall, these findings suggest that self-management skills may play an etiological role in GAD, and including self-management skills into current therapy models may improve outcome.

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People go about their day to day activities, often unaware of many of the processes they are engaging in. Tasks such as driving, checking e-mail, and preparing meals are done without conscious attention, as people rely on automated response patterns (Kanfer, 1970). However, problems arise when the automated response patterns are no longer adaptive. Some automated response patterns are also inherently maladaptive. Self-regulation processes, brought forth through controlled processing, are enacted to overcome these problems (Kanfer & Gaelic, 1986). Individuals using self-regulation processes can choose from many possible responses, develop novel responses, and formulate plans of action. Self-regulation processes can be helpful when maladaptive behaviours have become automatized, as people with well developed self-regulation processes can stop their maladaptive patterns and, overtime, automatize more adaptive responses. It is self-management skills that underlie well developed self-regulation processes.

Self-management skills are activated when an individual attempts to break out of an automated behaviour pattern and focus on establishing a new behaviour pattern. Self-management skills are developed in three interrelated facets (Kanfer & Karoly, 1972; Kanfer & Schefft, 1988). These facets allow people to: (1) monitor their own behaviours and thoughts (self-monitoring skills), (2) evaluate these behaviours and thoughts against a personal standard (self-evaluating skills), and then (3) self-reward or self-punish based on the evaluation (self-reinforcing skills). The positive or negative self-reinforcement helps the individual determine if self-management will be continued, changed, or abandoned. Research has found self-regulatory based interventions for adult psychopathology, including depression, anxiety, and habit disturbances, to be more effective than no intervention (Febbraro & Clum, 1998), and measures

of self-management skills negatively correlate with both anxiety and depression (Mezo, 2009; Mezo & Heiby, 2004; Penney, Mezo, & Duggan, 2008).

Another key element of self-regulatory processes is self-efficacy. Self-efficacy is the belief that people hold about their ability, or lack thereof, to perform the tasks that they set out to perform (Bandura, 1991). Self-efficacy can determine if behavioural outcomes are attributed to insufficient effort or low ability. Self-efficacy can also affect goal formation, a necessary part of self-regulation (Kanfer, 1979). However, it is important to note that to be able to determine self-efficacy, the individual requires information from self-management (Kanfer, 1979). Observation and assessment of performance is only possible through self-monitoring of actions and comparing those actions to a personal standard. Self-management can also provide the motivation to achieve a high self-efficacy. Therefore, self-efficacy can be considered contained within the domain of self-management skills. It is important to note that self-management skills are not a personality trait, but are intrapersonal processes that can be learned (Kanfer & Schefft, 1988).

As discussed previously, there are a number of automatized behaviours and cognitive processes that people carry out daily. One domain of cognitions that can become highly automatized is worry. Worry is a cognitive phenomenon of repetitive thought activity, dealing with potential negative future events, and is accompanied primarily by anxiety (Dugas & Koerner, 2005; Gladstone & Parker, 2003). The frequency and severity of worry tends to be consistent within individuals, with state variations (Meyer, Miller, Metzger, & Borkovec, 1990). Borkovec and Inz (1990) have shown that worry is dominated by verbal thoughts, rather than mental images, and unlike somatic anxiety, worry does not lead to increases in physiological arousal. Most people worry in response to real-life triggers, and worry is distinct from other

cognitive activities such as obsessional ideation and rumination (Gladstone & Parker, 2003). It has been proposed that worry is used as a cognitive avoidance strategy to escape fearful mental images and suppress somatic anxiety (Borkovec & Inz, 1990; Dugas & Koerner, 2005).

Worry has been found to elicit elements of both depression and anxiety (Andrews & Borkovec, 1988), yet is a non-pathological emotional state (Hofman et al., 2005). Andrews and Borkovec (1988) induced participants into states of somatic anxiety, depression, or worry, and had them complete the Multiple Affect Adjective Checklist (MAACL; Zuckerman & Lubin, 1965). The induced worry state did not significantly differ from induced depression on the depression scale of the MAACL, but was significantly lower than induced somatic anxiety and significantly higher than induced depression on the anxiety scale of the MAACL.

While multiple worry induction studies have been conducted, the methodology used is inconsistent. Andrews and Borkovec (1988) administered self-report scales only after worry induction, which does not provide evidence of distress change due to the induction. Other studies (Borkovec, Robinson, Pruzinsky, & DePree, 1983; Rusico & Borkovec, 2004; York, Borkovec, Vasey, & Stern, 1987) have conducted a 5 minute focused breathing task after the worry induction before administering self-report measures in order to sample thoughts. Five minutes of focused breathing could decrease subjective distress. Another methodological problem is the use of simplistic rating scales, which have not been empirically examined. Hofman et al. (2005) and Andor, Gerlach, and Rist (2008) used distress ratings of 0-100 to examine the pre- to post-induction effects. A final methodological issue is: how should the person worry in the experiment? Some studies (Andrews & Borkovec, 1988; York et al., 1987) have required participants read multiple worry statements to induce worry, thus requiring participants to experience a variety of intense worries. A more ecologically valid (T. D.

Borkovec, personal communication, December 5, 2008) worry induction procedure that has been used requires participants to choose a current worry topic and worry about it in their typical fashion as intensely as they can (Andor et al., 2008; Borkovec, Robinson et al., 1983; Rusico & Borkovec, 2004). Using this method the worries are unique and salient to the individual participant.

Beyond emotional distress, worry has also been connected to a number of behavioural problems and cognitive biases. Research shows that worry leads to poor problem resolution, despite having no impact on problem-solving skills (Dugas, Letarte, Rheaume, Freeston, & Ladouceur, 1995). Worry is commonly believed to help motivate people, and help people prepare for, prevent, and avoid possible negative outcomes (Borkovec & Roemer, 1995). Pathological worrying is related to numerous incorrect positive beliefs, including the beliefs that worrying minimizes emotional reaction to negative future events, worry can change future negative events, and being a worrier is a good trait to have (Francis & Dugas, 2004). However, people also have a number of negative beliefs about worry, and beliefs on the controllability and danger of worry (Cartwright-Hatton & Wells, 1997).

When worry becomes excessive and uncontrollable, and somatic symptoms develop, it can become functionally impairing. Excessive and uncontrollable worry is the defining feature of generalized anxiety disorder (GAD; American Psychiatric Association, 2000). Somatic symptoms that accompany GAD include feeling restless or keyed up, being easily fatigued, having difficulty concentrating, being irritable and experiencing sleep disturbance. In a recent American epidemiological survey (Grant et al., 2005), GAD was found to have a lifetime prevalence of 4.1% and a 12-month prevalence of 2.1% with a mean onset of 32.7 years old. Looking at social, emotional, and mental functioning, GAD was also found to be as impairing as

mood disorders, and to cause significantly more impairment than other anxiety disorders or personality disorders (Grant et al., 2005).

To date, three models of GAD have been extensively researched in the literature. Borkovec and colleagues (Borkovec, Alcaine, & Behar, 2004) have developed an avoidance theory, where people with GAD avoid intense negative emotions through the use of worry. Worry, though distressing, is maintained through the negative reinforcement provided by avoiding feared emotions and outcomes. Recently, the role of interpersonal problems and interpersonal distress have been theorized to play a maintaining role for worries related to interpersonal relationships (Newman, Castonguay, Borkovec, Fisher, & Nordberg, 2008). Dugas and colleagues (Dugas & Koerner, 2005; see also Dugas, Gagnon, Ladouceur, & Freeston, 1998) focus on the role of intolerance of uncertainty as the maintaining and exacerbating factor of GAD symptoms. In their model, the problems associated with worry arise from four tendencies found in people with GAD: an intolerance of uncertainty, erroneous positive beliefs about worry, negative problem orientation, and cognitive avoidance. Finally, Wells and colleagues (Wells, 2005; see also Wells & Carter, 2001; Wells & Carter, 1999) focus on the role of meta-cognition in developing and maintaining GAD. Specifically, meta-worry, or worrying about how much you worry, and negative beliefs about the dangers and controllability of worry, are assumed to underlie GAD.

The treatments for GAD based on the above theories have been effective (Ladouceur et al., 2000; Newman et al., 2008; Wells & King, 2006), but the treatments are not as effective as cognitive-behavioural treatments for other anxiety disorders (Fisher, 2006). By researching the possible role of self-management in GAD the current treatments might benefit from an added self-management component.

Self-Management and Worry

Worry, by definition, is a phenomenon that is only accessible by the individual experiencing it. Psychologists cannot objectively measure worry, but must instead rely on the self-report of clients. Self-management therapies were developed specifically for inner behaviours, such as worry, that can only be changed by clients (Kanfer & Gaelick, 1986). By enhancing self-management skills, clients gain skills in their ability to observe their thoughts and feelings, and more accurately report their inner experiences, which can improve therapy. Likewise, Kanfer and Gaelick (1986) argue that self-management skills are generalizable to new situations. Therefore, if a person with GAD recognized that he or she was worrying about a new topic excessively, or if the person identified new worry triggers, he or she could use self-management skills to re-evaluate and control the worry. Control of worry may even be considered a case of self-control (Kanfer, 1970), since the individual is attempting to ignore a high probability and rewarding behaviour (worrying), and attempting to engage in a lower probability behaviour (e.g., problem solving or exposure; Dugas & Koerner, 2005).

The role of self-management skills in reducing anxiety and depression supports the use of self-management skills to alleviate distress caused by worry. Self-management techniques for anxiety reduction focus on changing internal mechanisms to decrease the distress caused by anxiety response patterns (Deffenbacher & Suinn, 1982). A recent correlational study (Penney et al., 2008) provides evidence for self-management skills being negatively associated with social anxiety. In particular, having heightened self-monitoring and self-evaluating skills negatively correlated with social anxiety. In the past, treatments utilizing self-management principles have been found effective for treating agoraphobia (Emmelkamp, 1974; Taylor, 1985), heterosexual social interaction anxiety (Rehm & Marston, 1968), and depression (Fuchs &

Rehm, 1977). Emmelkamp's (1974) treatment was found to be as effective as treatment via flooding, and self-control therapy for depression (Fuchs & Rehm, 1977) is listed as one of the "probably efficacious" treatments in the empirically validated therapies reported by Chambless et al. (1998).

Beyond the therapies directly tied to self-management theory, contemporary treatments for GAD can be interpreted in light of self-management theory. Treatment according to both Borkovec and colleagues' (Newman et al., 2008) and Dugas and colleagues' (Ladouceur et al., 2000) models require clients with GAD to approach feared stimuli so that, with repeated exposure, the anxiety will decrease over time. When a client approaches a feared stimulus, they are exercising self-control (Kanfer & Karoly, 1972). Both treatments explicitly train participants to self-monitor worrisome thoughts in terms of content (Ladouceur et al., 2000) and worry triggers (Newman et al., 2008). It should be noted that self-monitoring can have a reactive effect since monitoring for certain behaviours can reduce that behaviour (Kanfer & Gaelic, 1986). Having participants actively monitor for worries could break the worry pattern that people with GAD engage in. It should also be noted that Borkovec and colleagues' treatment explicitly utilizes self-control desensitization, which was developed in self-management theory (Goldfried, 1971). Next, both treatments actively examine the utility and rationality of the beliefs people with GAD hold regarding worry. According to self-management theory, if people with GAD find worry useful, when they evaluate their use of worry, they would find no fault. Therefore, the treatments target changing the self-evaluating component of self-management from approval to a discrepancy. Finally, both treatments require participants to expose themselves to their own feared images and worry. Using exposure, participants not only habituate to their anxiety, but also achieve a sense of mastery over the feared image. Therefore, the individual stops self-

punishing him or herself for the excessive worry, and begins self-rewarding for working through the worry.

Finally, there is one study that provides direct evidence for the use of self-management techniques to reduce worry. Borkovec, Wilkinson, Folensbee, and Lerman (1983) had university undergraduate students who worried 50% of the day, and who considered worry a problem, self-restrict their worry to one 30 minute period during the day. If the student found his or herself worrying outside of this period they were to attend to their present-moment experience. From a self-management perspective, the students changed their self-monitoring from the content of their worries and the distress it caused to monitoring how much they worry. The students also established new self-evaluating criteria, such that it was not acceptable to worry outside of the worry period, but worrying during that period was allowed. Thus, the students could self-reward or self-punish based on these criteria. Utilizing this self-control, the students were able to reduce the percentage of the day they felt tense, and significantly reduce the percentage of the day spent worrying compared to no-treatment controls.

Given that self-management skills can be used to target worry, a direct test of the ability of self-management skills to reduce the distress caused by worry is justified. If self-management skills lead to a reduction in distress due to worry, self-management skills training could be considered an adjunct to current treatments for GAD. Since self-management skills can be utilized if new problems arise, self-management training could prove to be useful in treatment maintenance and relapse prevention.

Role of Beliefs in Generalized Anxiety Disorder

In the current literature, there is evidence that people with GAD hold both positive and negative beliefs regarding worry (Cartwright-Hatton & Wells, 1997). Dugas and colleagues

(Dugas & Koerner, 2005) view positive beliefs as one of the maintaining factors in GAD. The researchers have found that high worriers and people with GAD are more likely than people from the general population to endorse the beliefs that worrying helps problem solving, that worrying minimizes emotional reaction to negative outcomes, that worrying itself can alter future events, and that being a high worrier is a good personality trait (Dugas et al., 1998). In an undergraduate sample, positive beliefs about worry significantly predicted the tendency to worry, even when depressive dysfunctional beliefs were taken into account (Francis & Dugas, 2004). Since many worried about scenarios do not occur, these positive beliefs are not directly tested and continue to reinforce worrying. For example, if a client was worried that his or her friends were going to be extremely upset because the client was five minutes late meeting them, but the friends did not raise the issue, the client may believe that worrying helped make the feared situation not happen, or that he or she had been prepared to solve the problem by worrying.

Wells and colleagues (Wells, 2005) also acknowledge that people with GAD hold positive beliefs regarding worry. However, Wells' model of GAD argues that the positive beliefs regarding worry are not unique to GAD, and rather that it is the negative beliefs regarding worry that maintain and exacerbate the symptoms of GAD. The first general negative belief that people with GAD hold is that worry is uncontrollable. It should not come as a surprise then that one of the diagnostic criteria for GAD is that worry is uncontrollable (American Psychiatric Association, 2000). The second overarching negative belief is the belief that worry is dangerous. People with GAD fear that worry will cause a mental or physical breakdown, and the anxiety that accompanies worry is interpreted as a sign of danger and loss of control. Nassiff (1999; as cited in Wells, 2005) found that negative beliefs about worry held by non-patients predicted the development of GAD 12 to 15 weeks later. People with GAD have also been found to have

more negative beliefs about worry than people diagnosed with social phobia, panic disorder, and non-patients, while the groups did not differ in terms of positive beliefs (Wells & Carter, 2001).

With evidence suggesting that both positive and negative beliefs have an impact on GAD, researching if one set of beliefs more directly influences the maintenance of GAD than the other set of beliefs could have two substantial impacts on the future of GAD research. First, if only one set of beliefs are empirically supported, such findings would offer support for either Dugas and colleagues' or Wells and colleagues' model, while simultaneously providing evidence against the opposing model. Secondly, if research supports both sets of beliefs as maintaining factors of GAD, a blending of Dugas and colleagues' and Wells and colleagues' models to incorporate both sets of beliefs into a more comprehensive model would be supported.

Both positive (Francis & Dugas, 2004) and negative (Wells & Carter, 1999) beliefs about worry have been shown to relate to worry intensity and frequency, and this is assumed to contribute to GAD symptoms. However, whether these beliefs about worry can contribute to GAD symptoms beyond their influence on worry intensity and frequency has not been tested. By controlling for worry intensity and frequency, this study can examine if one type of beliefs about worry has a more direct influence on GAD symptoms. If this is the case, a stronger focus in treatment on one type of beliefs over the other may be warranted. Based on the previously discussed finding of Wells and Carter (2001), it is anticipated that negative beliefs about worry will be a stronger predictor of GAD symptoms than positive beliefs about worry once worry intensity and frequency is controlled for.

As discussed in the *Self-Management and Worry* section, when people monitor their own worry, to decide if this worry is useful or problematic, they must compare the worry to a personal criterion. This personal criterion is likely formed on the basis of the positive and

negative beliefs regarding worry a person holds. If, as is the case in people with GAD, the person holds inaccurate beliefs, this could reflect a deficit in self-evaluation skills. Beliefs about a selected behaviour are not a component of self-monitoring or self-reinforcing (Kanfer, 1970), so the inaccurate beliefs about worry would not be related to self-monitoring or self-reinforcing. Therefore, this study will also explore the relationship between self-evaluation skills and the beliefs people hold regarding worry.

Goals of the Present Study

Given the automatic nature of worry and the role of self-management skills in helping people disengage from maladaptive patterns of behaviour, the primary goal of this study was to assess whether self-management skills were related to GAD and if using self-management skills could alleviate the distress caused by worry. A secondary goal was to replicate the findings of previous worry induction studies using measures with strong psychometric properties and with an improved experimental design. Finally, this study aimed to evaluate the role of positive and negative beliefs in predicting GAD symptomology.

Hypotheses Tested

1. Self-management skills will negatively correlate with GAD symptoms and intensity and frequency of worry.

2. Both positive and negative beliefs about worry will negatively correlate with self-evaluation skills.

3. Negative beliefs about worry, but not positive beliefs about worry, will predict GAD symptoms after the intensity and frequency of worry has been controlled for.

4. Worry induction will cause significant increases in state measures of both anxiety and distress.

5. The use of self-management techniques will cause a significant decrease in state anxiety and distress compared to the decrease due to the passage of time.

6. People with better developed self-management skills who utilize self-management strategies will show a larger decrease in state anxiety and distress than people with less developed self-management skills who utilize self-management strategies.

Method

Participants

The sample for this study was recruited from the Lakehead University community, primarily from undergraduate students at Lakehead University. Recruitment posters (see Appendix A) were placed throughout the Lakehead University campus and recruitment emails were sent out to all students and faculty to allow any person at Lakehead University to volunteer. The researcher actively recruited students enrolled in Introductory Psychology and higher level Psychology courses with in-class description of the study (see Appendix A). Introductory Psychology students were eligible to collect up to two bonus course marks by participating, while students in selected higher level Psychology courses could earn one bonus course mark.

A total of 159 participants were involved in the study, with 127 participants completing both phases (79.9% retention rate). See Table 1 for the characteristics of the sample. The total sample was 65.2% female, with an age range from 17 to 65 ($M = 22.89$, $SD = 8.38$). The total sample was also predominately White/Caucasian (87.3%) and single (51.3%) or dating (34.8%). In terms of employment, most participants were unemployed students (46.2%) or students who worked part-time (46.8%). One hundred and forty (88.6%) participants had completed some university. Ninety two (57.9%) participants were in their first year at Lakehead University, 19.5% were in their second year, 11.3% in their third year, 3.1% in their fourth year, 3.1% in

Table 1

Characteristics of the Sample[1] *(N = 159)*

Demographic	*M (SD)*	Frequency	%
Age	22.92 (8.40)		
Sex			
Male		55	34.8%
Female		103	65.2%
Ethnicity			
White/Caucasian		138	87.3%
Aboriginal		6	3.8%
Asian		4	2.5%
Middle Eastern		3	1.9%
Other		6	3.8%
Relationship status			
Single		81	51.3%
Dating		55	34.8%
Married		16	10.1%
Divorced		6	3.7%
Employment status			
Unemployed student		73	46.2%
Part-time employed student		74	46.8%
Full-time employed student		5	3.2%
Full-time employed		4	2.5%
Part-time employed		1	0.6%
Retired		1	0.6%
Education			
Completed high school		3	1.9%
Completed college		2	1.3%
Some university		140	88.6%
Undergraduate degree		7	4.4%
Master's degree		5	3.2%
Doctorate degree		1	0.6%
Years at Lakehead University	1.83 (1.38)		

[1]This table contains missing data due to unanswered items

their fifth year, and 2.5% were in their sixth year or higher. Twenty five of the participants reported that they had been diagnosed with a psychological, emotional, or psychiatric condition, which included anxiety ($n = 16$), depression ($n = 13$), attention deficit/hyperactivity disorder ($n = 2$), anorexia nervosa ($n = 1$), learning disability ($n = 1$), and Tourette's syndrome ($n = 1$). However, only 6 reported receiving medication, 9 reported receiving counselling or psychotherapy, and 2 reported receiving both medication and counselling or psychotherapy. In the interest of maintaining a sample that has a broad range of characteristics, these participants were not removed from any analyses.

Measures

Generalized Anxiety Disorder Questionnaire-IV (GADQ-IV; Newman et al., 2002). The GADQ-IV is a self-report diagnostic measure of GAD. It is based on the criteria for GAD contained in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV*; American Psychiatric Association, 1994). It contains five Yes/No questions regarding worry, a question that requires participants to list up to six current worry topics, one checklist for six physical symptoms and two questions with eight-point Likert-type scales regarding distress or impairment caused by worry and physical symptoms. A skip-out rule stops participants from completing the checklist and Likert-type scale questions if they did not experience excessive and uncontrollable worries more days than not in the past 6 months. Using the skip-out rule, the GADQ-IV has good test-retest reliability, convergent and discriminant validity, specificity and sensitivity (Newman et al., 2002). The GADQ-IV has been shown to have a one factor structure, and can be scored with or without the skip-out rule (Rodebaugh, Holaway, & Heimberg, 2008). In the current study, the skip-out rule was removed, and the measure scored using each method.

Total scores can range from 0 to 13 when scored according to Newman et al. (2002) with higher scores indicating more GAD symptoms and greater impairment.

English Why Worry-II (WW-II; Holowka, Dugas, Francis, & Laugesen, 2000).

The WW-II is a 25-item self-report questionnaire of positive beliefs about worry, with items scored on five-point Likert-type scales. Total scores can range from 25 to 125 with higher scores indicating that the individual holds the beliefs strongly. It contains five subscales, which range from 5 to 25, that measure the beliefs that worry aids problem solving, that worry motivates, that worry protects from negative emotions after negative events, that the act of worrying prevents negative events (magical thinking), and that being a high worrier is a good personality trait. In the present study, both the total score and subscale scores were utilized. The WW-II has high internal consistency, good test-retest reliability, and both convergent and divergent validity (Holowka et al., 2000).

Self-Control and Self-Management Scale (SCMS; Mezo, 2009).

The SCMS is a 16-item self-report questionnaire of self-management skills, with items scored on six-point Likert-type scales. Total scores can range from 0 to 80 with higher scores indicating better self-management skills. It contains a self-monitoring subscale, which ranges from 0 to 30, a self-evaluating subscale, which ranges from 0 to 25, and a self-reinforcing subscale, which ranges from 0 to 25. The SCMS has been shown to have high content validity (well-defined three factor structure, with moderate subscale intercorrelations), with high coefficient alphas and test-retest correlations in a nonclinical sample (Mezo, 2009).

Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990).

The PSWQ is a 16-item self-report trait questionnaire of the intensity and frequency of worry an individual experiences in general, with items scored on five-point Likert-type scales.

Total scores can range from 16 to 80 with higher scores indicating more pathological worry. The PSWQ has been found to measure a single factor, have high internal consistency, and high test-retest reliability (Startup & Erickson, 2006). GAD clinical samples consistently score the highest on the PSWQ, and scores on the PSWQ decrease with successful treatment of GAD (Startup & Erickson, 2006).

Metacognitions Questionnaire-30 (MCQ-30; Wells & Cartwright-Hatton, 2004).

The MCQ-30 is a 30-item self-report questionnaire that measures beliefs about worry, memory, and thought awareness, with items scored on four-point Likert-type scales. Total scores can range from 30 to 120 with higher scores indicating pathological beliefs. It contains five subscales that measure lack of confidence in memory, which ranges from 6 to 24, positive beliefs about worry, which ranges from 6 to 24, monitoring of thoughts, which ranges from 6 to 24, beliefs about worry being uncontrollable and dangerous, which ranges from 6 to 24, and beliefs about the need to control thoughts, which ranges from 6 to 24,. The current study focused on the positive beliefs about worry, beliefs about worry being uncontrollable and dangerous, and beliefs about the need to control thoughts subscales as these scales are implicated in Wells' model of GAD (Wells & Carter, 2001). The MCQ-30 shows good internal consistency, a supported five factor structure, convergent validity and moderate test-retest reliability (Wells & Cartwright-Hatton, 2004).

English Worry and Anxiety Questionnaire (WAQ; Dugas et al., 2001b).

The WAQ is an 11-item self-report questionnaire that assesses the *DSM-IV* criteria for GAD. Like the GADQ-IV, it requires participants to list their six most common worry subjects, but uses nine-point Likert-type scales for questions regarding worry, physical symptoms and the interference of anxiety or worry in the individual's life. Total scores can range from 0 to 80, but

the list of worries is not scored. Higher scores indicate more GAD symptoms and impairment.

The original French version (Dugas et al., 2001a) has shown known-groups validity and good

test-retest reliability (as cited in Dugas & Koerner, 2005). Including this measure allowed for

symptoms to be measured in a dimensional fashion, in addition to the categorical GADQ-IV.

The English translation has no known psychometric properties at this time.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988).

The PANAS is a 20-item self-report list of feeling adjectives that measures positive and

negative affect independently, with items scored on five-point Likert-type scale. Scores on the

two scales can range from 10 to 50, with higher scores indicating higher feelings of positive or

negative affect. High negative affect is associated with both anxiety and depression.

Participants were instructed to respond to how they feel at the present moment. The PANAS has

been shown to have high internal consistencies in each scale, with low correlations between the

scales, moderate test-retest reliabilities, two distinct factors, and high convergent and

discriminant validity when the present moment time period is measured (Watson et al., 1988).

Endler Multidimensional Anxiety Scales-State (EMAS-S; Endler, Edwards, & Vitelli,

1991).

The EMAS-S is a 20-item self-report questionnaire that assesses cognitive worry and

autonomic-emotional elements of state anxiety, with items scored on five-point Likert-type

scales. Scores on the two subscales can range from 10 to 50 and can be added together for a total

score, with higher scores indicating more intense state anxiety. The EMAS-S shows high

internal consistency in the subscale scores, high correlations between the two subscales, good

concurrent validity, and undergraduates have higher scores during stressful situations than non-

stressful situations (Endler, Edwards, Vitelli, & Parker, 1989).

Worry Report

The Worry Report is a two item self-report questionnaire that was designed for this study. The first item asked participants to list the five most prevalent thoughts they had during the worry induction. The number of worry thoughts listed was added for a total score. Items were judged to be worries if they were not ruminating thoughts and appeared to be in a common worry domain, such as interpersonal relationships, family, health, school, or work (Tallis, Eysenck, & Matthews, 1992; Wells, 1994). The second item asked participants to estimate the percentage of time they spent worrying during the worry induction. Since no other worry induction studies have reported using a measure to validate that the participants were worrying, this was a novel attempt to design such a validity measure.

Procedure

Ethical approval for this study was obtained from Lakehead University's Senate Research Ethics Board. The study was comprised of two components: a screening phase and an experimental phase. After recruitment began in May 2009, students were able to attend a screening session by scheduling a time with the researcher. At this time, students were fully informed of the nature of the screening phase of the study and given the opportunity to participate (see Appendix B). The students also had the option of being contacted to participate in the experimental phase by completing a contact information sheet (see Appendix B). Consenting participants were given a demographics form and six self-report measures to complete (see Appendix C). The measures were given in the following order: the GADQ-IV (Newman et al., 2002), the WW-II (Holowka et al., 2000), the SCMS (Mezo, 2009), the PSWQ (Meyer et al., 1990), the MCQ-30 (Wells & Cartwright-Hatton, 2004), and the WAQ (Dugas et al., 2001b). Participants generally completed this phase within 20 to 40 minutes. All

participants received a debriefing form after they completed the questionnaires (see Appendix D).

Participants who wished to complete the experimental phase of the study (see Appendix B) were contacted between 4 and 10 days later to schedule a time to complete the second phase. Most participants who returned for the experimental phase completed the study approximately one week after completing the screening phase. Upon meeting with the researcher individually, the participants were informed of the nature of the experimental phase of the study and given the opportunity to consent (see Appendix B). Consenting participants then completed the following state measures (see Appendix C): the PANAS (Watson et al., 1988), and the EMAS-S (Endler et al., 1991).

Participants then completed a worry induction procedure. In this procedure, participants read the following instructions: "Choose the topic about which you currently most worry and worry about it in your usual fashion as intensely as you can. You will be told when to stop." After 5 minutes, the participants were given the state measures to complete for a second time. To ensure the participants completed the task as directed, they were also asked to report their 5 most prevalent thoughts during the procedure, and asked to report the percentage of time they spent worrying during the procedure (see Appendix C).

Following completion of the state measures for a second time, participants were assigned to one of two intervention conditions. The participants were assigned to each condition in order to ensure that each condition contained approximately equal numbers of High Scorers and Low Scorers. High Scorers were defined by having a total score greater than 54.5 on the SCMS total score, and Low Scorers had a total score less than or equal to 54. This value was chosen based on the mean SCMS total scores in previous research (Mezo, 2009; Penney et al., 2008). In the

self-management condition, participants were provided with instructions on how to use self-management techniques to alleviate any worries and distress they were experiencing. The instructions read as follows: "Please monitor your current thoughts and feelings. Try to remove any worries and think about any other subject. Silently praise yourself any time you have a thought that is not a worry thought. Silently praise yourself any time you notice you are feeling less anxious, depressed or distressed." This cognitive self-management approach was developed as cognitive approaches are recommended when the anxiety to be targeted involves misdirected attention, such as worry (Deffenbacher & Suinn, 1982).

The second intervention condition provided participants with instructions to evaluate the effects of the passage of time. The instructions read as follows: "Please wait patiently. Do not attempt to change your thoughts or feelings. Simply remain silent for the next few minutes." In both intervention conditions, after 3 minutes the participants were asked to complete the state measures for a third time.

To remove any lingering distress, participants were given the option of listening to an audiotaped excerpt from *Spring, Summer and Fall* of Vivaldi's Four seasons while the researcher lead them through a 4-minute focused breathing task. The musical excerpt has been effectively used in other positive mood induction studies (Cook, Spring, & McChargue, 2007; Spring et al., 2008). These procedures have been shown effective in eliminating any lingering distress or worry that might be present in some of the participants. In total, the experimental phase was completed in approximately 30 minutes. All participants received a debriefing form after they completed the study (see Appendix D).

Statistical Analyses

Data were examined for accuracy of data entry, missing values, outliers, and fit to multivariate assumptions. Outliers were defined as scores greater than three standard deviations above or below the mean, following recommendations by Tabachnick and Fidell (2007). Skewness and kurtosis were examined. Multicollinearity and singularity were also taken into consideration. The Mahalanobis distance was also calculated where appropriate to find any multivariate outliers. Preliminary analyses were conducted to determine the internal consistency and reliability of the measures.

The following analyses were done to test the main hypotheses using the screening phase data. Pearson's product-moment correlations (*r)* were computed between the SCMS total and subscale scores, the GADQ-IV scores, the WAQ scores, and the PSWQ scores. Participants were separated into two groups, those with many GAD symptoms (GAD analog group) and a control group, based on a validated cut-off score of 5.70 for the GADQ-IV (Newman et al., 2002). Their mean self-monitoring, self-evaluating, and self-reinforcing scores were compared using independent *t*-tests. A Pearson's *r* correlation was also computed between the SCMS total and subscale scores, the WW-II total and subscale scores, and the MCQ-30 subscale scores. A Pearson's *r* correlation was also computed between the GADQ-IV scores, the WAQ scores, and the PSWQ scores, the WW-II total and subscale scores and the MCQ-30 subscale scores. A sequential regression was conducted using the GADQ-IV scores as the dependent measure, and PSWQ scores, WW-II subscale scores, and MCQ-30 negative belief and positive belief subscales scores as independent measures. The PSWQ scores were entered on the first step, with WW-II scores and MCQ-30 scores entered on the second step. A sequential regression using the same

independent measures and procedure was also conducted using the WAQ scores as the

dependent measure.

The following analyses were done to test the main hypotheses using the experimental

phase data and the SCMS total scores from the screening phase. First, the participants were

grouped based on their SCMS total scores (High Scorers vs. Low Scorers). The participants

were also grouped based on intervention condition (self-management vs. passage of time).

MANOVAs were conducted prior to conducting any univariate analyses. To test if the worry

induction increased distress and anxiety, four independent *t*-tests compared scores from baseline

to post-induction on the PANAS subscales and EMAS-S subscales. To test the effects of the

intervention, and the interaction between the intervention and self-management skills, five 2

between (self-management, passage of time) x 2 within (post induction, post intervention) mixed

ANOVAs were conducted on the PANAS subscales and EMAS-S subscales. Post hoc *t*-tests

were conducted for simple effects. As recommended by Tabachnick and Fidell (2007), partial

eta squared (η^2) were computed where appropriate, and interpreted as according to Cohen (1988)

where .01 is a small effect, .09 is a medium effect, and .25 is a large effect. To address the

potential of a high Type I error rate, a range of options were considered, from applying a

stringent Bonferroni type adjustment, to assigning different alpha levels to different tests. Since

this was a preliminary exploration of self-management, worry and GAD, in the interest of not

becoming too conservative, alpha was set to .025 for all analyses (Tabachnick & Fidell, 2007).

Results

Data Screening

Prior to data analyses, the raw data for all variables were examined for errors and

possible outliers. It was discovered that one participant had not completed at least one item on

every scale in both phases except for the GADQ. Because of the amount of missing data for this participant, the participant's data was removed from all of the following analyses. Regarding missing data, if two or fewer items on a scale were missing, they were replaced using the average item score that was calculated from the total score of the remaining scale items . If more than two items were not completed, the missing data for that scale was not replaced. The screening phase had 12 missing scores entered (one participant had excessive missing data on one scale). Specifically, four scores were entered for the WW-II, two scores were entered for the SCMS, two scores were entered for the PSWQ, four scores were entered for the MCQ-30, and one score was entered for the WAQ. The experimental phase had seven missing scores entered (six participant had excessive missing data on one scale). For the PANAS, two scores were entered on the first administration, two scores were entered on the second administration, and one score was entered on the final administration, while for the EMAS-S, two scores were entered on the second administration.

Following recommendations by Tabachnick and Fidell, (2007), any subscale or total scale scores exceeding three standard deviations above and below the mean of that subscale or total scale was replaced. Scores that were three standard deviations above the mean were changed to be one value higher than the highest score that was not an outlier. Scores that were three standard deviations below the mean were changed to be one value lower than the lowest score that was not an outlier. In total, 11 scores were replaced in the screening phase data and 21 scores were replaced in the experimental phase data. In the screening phase, four scores were replaced for the WW-II, four scores were replaced for the SCMS, and three scores were replaced for the MCQ-30. For the experimental phase, the PANAS had two scores replaced on the first administration, two scores replaced on the second administration, and two scores replaced on the

final administration, while for the EMAS-S, four scores were replaced on the first administration, six scores were replaced on the second administration, and five scores was replaced on the final administration.

Skewness and kurtosis were examined for all measures. All scales were within acceptable limits and did not require transformation (Tabachnick & Fidell, 2007). Similarly, following Tabachnick and Fidell (2007) multicollinearity and singularity were not found with the scales used in this study. The removal of multivariate outliers on the basis of their Mahalanobis distances is reported with the associated analyses below.

Internal Consistency and Reliability of Measures

Cronbach's alpha coefficients were calculated for all measures and their subscales. The internal consistencies, means and standard deviations of measures and subscales given in the screening phase are provided in Table 2. These properties for measures and subscales given in the experimental phase are provided in Table 3. Overall the internal consistencies of all measures were quite good, with only four subscales having alpha coefficients below .80. The internal consistency for the GADQ-IV was .81, with the WAQ having a higher alpha coefficient of .90. The WW-II had an overall internal consistency of .93, with its subscales ranging from .80 to .84. The MCQ-30 had an overall internal consistency of .86, and the subscales used in this study had consistencies between .72 and .88. The internal consistency for the PSWQ was .93. The SCMS had an overall internal consistency of .83, with its subscales ranging from .65 to .77. Internal consistencies for the PANAS ranged from .83 to .93, while the internal consistencies for the EMAS-S ranged from .83 to .93. The validity measure had a low internal consistency of .11, which was expected given that it is only a two item questionnaire. However, the items were significantly correlated, $r(125) = -.17$, $p = .05$, and the participants reported multiple worry

Table 2

*Scale Means, Standard Deviations and Internal Consistencies for Screening Phase Measures (*n *= 158)*

Scale	Mean	Standard Deviation	Internal Consistency
Generalized Anxiety Disorder Questionnaire-IV			.81
With skip-out rule	4.27	3.55	
Without skip-out rule	5.80	3.10	
Why Worry-II	54.46	17.10	.93
Aids problem solving	11.33	3.99	.80
Motivates	12.98	4.67	.84
Protects from negative emotions	9.92	4.03	.81
Magical thinking	9.25	3.90	.83
Good personality trait	10.89	4.18	.82
Self-Control and Self-Management Scale	56.36	10.55	.83
Self-monitoring	20.21	4.89	.77
Self-evaluating	19.25	4.06	.65
Self-reinforcing	16.90	4.61	.76
Penn State Worry Questionnaire	52.18	14.09	.93
Metacognitions Questionnaire-30	64.62	12.84	.86
Positive beliefs	12.55	4.37	.88
Uncontrollable and dangerous	12.80	4.76	.86
Need to control thoughts	11.86	3.70	.72
Worry and Anxiety Questionnaire	37.13	16.47	.90

Table 3

Scale Means, Standard Deviations and Internal Consistencies for Experimental Phase Measures

$(n = 126)$

Scale	Mean	Standard Deviation	Internal Consistency
Positive Affect and Negative Affect Schedule			
Positive affect pre worry induction	30.03	7.32	.89
Positive affect post worry induction	24.28	8.39	.92
Positive affect post condition	25.58	8.69	.93
Negative affect pre worry induction	15.55	5.30	.83
Negative affect post worry induction	22.54	7.41	.87
Negative affect post condition	16.17	6.13	.89
Endler Multidimensional Anxiety Scales-State pre worry induction	31.66	10.51	.92
Autonomic-emotional	15.29	5.13	.83
Cognitive-worry	16.38	6.32	.90
Endler Multidimensional Anxiety Scales-State post worry induction	45.76	14.06	.91
Autonomic-emotional	21.55	7.10	.85
Cognitive-worry	24.15	8.54	.90
Endler Multidimensional Anxiety Scales-State post condition	33.46	10.89	.93
Autonomic-emotional	15.85	5.75	.87
Cognitive-worry	17.81	6.68	.90
Worry Report			.11
Number of worries reported	4.12	1.15	
Percentage of time spent worrying	73.9%	18.9%	

thoughts and spent almost three-quarters of the worry induction period actively worrying.

Participant Reassignment to Groups

Since the mean total score on the SCMS was higher than expected, participants were reassigned into High Scorers versus Low Scorers on the basis of the new mean. When they were recruited, 42 High Scorers completed the self-management intervention, 40 High Scorers completed the time-based control condition, 22 Low Scorers completed the self-management intervention, and 22 Low Scorers completed the time-based control condition. Following the reassignment, the final groups consisted of 35 High Scorers who completed the self-management intervention, 38 High Scorers who completed the time-based control condition, 29 Low Scorers who completed the self-management intervention, and 24 Low Scorers who completed the time-based control condition.

Main Analyses

Hypothesis 1.

It was proposed that having better developed self-management skills would be significantly negatively correlated with GAD symptoms and intensity and frequency of worry. Table 4 shows the correlations between the SCMS, GADQ-IV, WAQ and PSWQ. Self-evaluating skills were found to significantly negative correlated with GAD symptoms as measured by the GADQ-IV with, $r(158) = -.23$, $p < .025$, and without, $r(158) = -.18$, $p < .025$, the skip-out rule, and the WAQ, $r(157) = -.19$, $p < .025$. However, self-management skills were not significantly related to worry intensity and frequency as measured by the PSWQ.

Based on a validated cut-off score for the GADQ-IV (Newman et al., 2002), participants were separated into two groups, those with many GAD symptoms (GAD analog group) and a control group. Their self-monitoring, self-evaluating, and self-reinforcing scores were

Table 4

Correlations Between Self-Management Skills, Generalized Anxiety Disorder Symptoms, and

Worry Intensity and Frequency (*n* = 158)

Scale	1	2	3	4	5	6	7
1. SCMS total score							
2. SCMS self-monitoring subscale	.86**						
3. SCMS self-evaluating subscale	.72**	.51**					
4. SCMS self-reinforcing subscale	.74**	.46**	.22**				
5. PSWQ total score	-.08	-.05	-.15	-.01			
6. GADQ-IV with skip-out rule	-.08	-.08	-.23*	.03	.71**		
7. GADQ-IV without skip-out rule	-.07	-.07	-.18*	.04	.80**	.93**	
8. WAQ total score	-.09	-.06	-.19*	.03	.77**	.73**	.81**

Note. SCMS = Self-Control and Self-Management Scale; PSWQ = Penn State Worry
Questionnaire; GADQ-IV = Generalized Anxiety Disorder Questionnaire-IV; WAQ = Worry
and Anxiety Questionnaire.
*p < .025. **p < .01.

compared. Independent t-tests revealed that the GAD analog group ($M = 17.70$, $SD = 4.77$) had significantly less developed self-evaluation skills than the control group ($M = 19.83$, $SD = 3.61$), t (156) = 3.02, $p < .01$. The self-monitoring and self-reinforcing skills did not significantly differ between groups.

Hypothesis 2.

It was proposed that both positive and negative beliefs about worry would significantly negatively correlate with self-evaluation skills. Table 5 shows the correlations between the SCMS, WW-II, and MCQ-30. As expected, self-evaluating skills were found to significantly negatively correlate with overall positive beliefs about worrying as measured by the WW-II, r (158) = -.20, $p < .025$, and the specific positive belief that the act of worrying prevents negative events, r (158) = -.26, $p < .01$. There was also a trend for self-evaluation skills to predict the specific positive belief that being a high worrier is a good personality trait, r (158) = -.16, $p < .05$. Self-evaluating skills also significantly negatively correlated with the negative beliefs that worry is uncontrollable and dangerous, r (157) = -.24, $p < .01$, and that thoughts need to be controlled, r (157) = -.19, $p < .025$. The negative belief that worry is uncontrollable and dangerous also significantly negatively correlated with overall self-management skills, r (157) = -.20, $p < .025$. Finally, self-reinforcing skills were found to significantly positively correlate with overall positive belief about worrying as measured by the WW-II, r (158) = .19, $p < .025$, and the MCQ-30, r (157) = .18, $p < .025$, and the specific positive beliefs that the act of worrying prevents negative events, r (158) = .19, $p < .025$, and that being a high worrier is a good personality trait, r (158) = .25, $p < .01$.

Table 5

Correlations Between Self-Management Skills and Beliefs About Worry (*n* = 158)

Scale	1	2	3	4	5	6	7	8	9	10	11	12
1. SCMS total score												
2. SCMS self-monitoring subscale	.86**											
3. SCMS self-evaluating subscale	.72**	.51**										
4. SCMS self-reinforcing subscale	.74**	.46**	.22**									
5. WW-II total score	.04	.08	-.20*	.19*								
6. WW-II aids problem solving	.03	.06	-.15	.15	.86**							
7. WW-II motivates	-.03	-.02	-.15	.09	.81**	.69**						
8. WW-II protects from negative emotions	.05	.10	-.12	.11	.75**	.57**	.46**					
9. WW-II magical thinking	-.01	.02	-.26**	.19*	.80**	.61**	.48**	.53**				
10. WW-II good personality trait	.12	.16	-.16	.25**	.85**	.65**	.62**	.55**	.64**			
11. MCQ-30 positive beliefs	.10	.11	-.08	.18*	.77**	.75**	.68**	.54**	.54**	.62**		
12. MCQ-30 uncontrollable and dangerous	-.20*	-.16	-.24**	-.06	.28**	.30**	.18*	.20*	.25**	.20*	.26**	
13. MCQ-30 need to control thoughts	-.02	.03	-.19*	.08	.35**	.19*	.20*	.30**	.34**	.38**	.22**	.42**

Note. SCMS = Self-Control and Self-Management Scale; WW-II = Why Worry-II; MCQ-30 = Metacognitions Questionnaire-30.
p < .025. **p* < .01.

Hypothesis 3.

It was hypothesized that negative beliefs about worry, but not positive beliefs about worry, would predict GAD symptoms after the intensity and frequency of worry had been controlled for. Table 6 shows the correlations between the PSWQ, GADQ-IV, WAQ, WW-II, and MCQ-30. Consistent with previous research, both positive and negative beliefs about worry significantly positively correlated with worrying intensity and frequency, and with GAD symptoms.

To test if the beliefs predicted GAD symptoms independent of worry intensity and frequency sequential regressions were conducted using the PSWQ scores, WW-II subscale scores, and MCQ-30 negative belief and positive belief subscales scores as independent measures. The PSWQ scores were entered on the first step, with WW-II scores and MCQ-30 scores entered on the second step. Examination of the Mahalanobis distances for these independent variables found two multivariate outliers and their data was removed from the regression analyses. The dependent measures were the GADQ-IV scores with and without the skip-out rule, and the WAQ scores. Table 7 reports the R, adjusted R^2, R^2 change, t, and squared partial correlation for the variables in the analyses. The addition of the beliefs about worrying improved the amount of variance explained by 5-8%, $ps < .025$.

As hypothesized, when the intensity and frequency of worry was controlled for, the negative belief that worry is uncontrollable and dangerous was found to significantly predict GAD symptoms as measured by the GADQ-IV with, $t (145) = 3.12, p < .01$, and without, $t (145) = 3.78, p < .001$, the skip-out rule, and the WAQ, $t (145) = 4.92, p < .001$. This belief also had the strongest correlation with the PSWQ, $r (157) = .74, p < .001$. While the positive beliefs and negative belief that thoughts need to be controlled correlated with GAD symptoms, the belief

Table 6

Correlations Between Generalized Anxiety Disorder Symptoms, Worry Intensity and Frequency, and Beliefs About Worry (*n* = 158)

Scale	1	2	3	4	5	6	7	8	9	10	11	12
1. PSWQ total score												
2. GADQ-IV with skip-out rule	.71**											
3. GADQ-IV without skip-out rule	.80**	.93**										
4. WAQ total score	.77**	.73**	.81**									
5. WW-II total score	.39**	.23**	.29**	.31**								
6. WW-II aids problem solving	.43**	.29**	.32**	.31**	.86**							
7. WW-II motivates	.28**	.13	.21**	.20*	.81**	.69**						
8. WW-II protects from negative emotions	.33**	.16	.22**	.27**	.75**	.57**	.46**					
9. WW-II magical thinking	.28**	.21**	.23**	.25**	.80**	.61**	.48**	.53**				
10. WW-II good personality trait	.26**	.17	.21**	.22**	.85**	.65**	.62**	.55**	.64**			
11. MCQ-30 positive beliefs	.40**	.26**	.29**	.29**	.77**	.75**	.68**	.54**	.54**	.62**		
12. MCQ-30 uncontrollable and dangerous	.74**	.67**	.74**	.76**	.28**	.30**	.18*	.20*	.25**	.20*	.26**	
13. MCQ-30 need to control thoughts	.27**	.27**	.30**	.35**	.35**	.19*	.20*	.30**	.34**	.38**	.22**	.42**

Note. PSWQ = Penn State Worry Questionnaire; GADQ-IV = Generalized Anxiety Disorder Questionnaire-IV; WAQ = Worry and Anxiety Questionnaire; WW-II = Why Worry-II; MCQ-30 = Metacognitions Questionnaire-30.
*p < .025. **p < .01.

Table 7

Summary of Regression Analyses for Testing the Beliefs About Worry that Predict GAD

Symptoms when Controlling for Worry Intensity and Frequency (n = 156)

Variable	R	Adjusted R^2	R^2 Change	t	pr^2
Panel 1: GADQ-IV With skip-out rule					
Step 1	.71	.50			
PSWQ				12.35**	.50**
Step 2	.73	.53	.06*		
PSWQ				5.51**	.17**
WW-II aids problem solving				1.07	.008
WW-II motivates				-1.58	.02
WW-II protects from negative emotions				-1.14	.009
WW-II magical thinking				-0.019	.0003
WW-II good personality trait				-0.067	.00004
MCQ-30 positive beliefs				0.45	.001
MCQ-30 uncontrollable and dangerous				3.12*	.06*
MCQ-30 need to control thoughts				0.06	.005
Panel 2: GADQ-IV Without skip-out rule					
Step 1	.80	.64			
PSWQ				16.58**	0.64**
Step 2	.83	.65	.05**		
PSWQ				7.93**	.30**
WW-II aids problem solving				0.30	.0006
WW-II motivates				-0.20	.0003
WW-II protects from negative emotions				-0.89	.005
WW-II magical thinking				-0.45	.001
WW-II good personality trait				0.02	.000001
MCQ-30 positive beliefs				0.12	.0001
MCQ-30 uncontrollable and dangerous				3.79**	.09**
MCQ-30 need to control thoughts				1.09	.008
Panel 3: WAQ					
Step 1	.77	.58			
PSWQ				14.72**	.59**
Step 2	.82	.65	.08**		
PSWQ				6.01**	.20**
WW-II aids problem solving				-0.49	.002
WW-II motivates				-0.19	.0003
WW-II protects from negative emotions				1.06	.008
WW-II magical thinking				-0.65	.003
WW-II good personality trait				0.14	.0001
MCQ-30 positive beliefs				0.24	.0004
MCQ-30 uncontrollable and dangerous				4.92**	.14**
MCQ-30 need to control thoughts				1.11	.008

Note. GADQ-IV = Generalized Anxiety Disorder Questionnaire-IV; PSWQ = Penn State Worry Questionnaire; WW-II = Why Worry-II; MCQ-30 = Metacognitions Questionnaire-30; WAQ = Worry and Anxiety Questionnaire.
*$p < .025$. **$p < .01$.

that worry is uncontrollable and dangerous was the only belief that significantly predicted GAD symptoms independent of worry intensity and frequency.

Hypothesis 4.

It was proposed that the worry induction would cause significant increases in state measures of both anxiety and distress. Data from all participants who completed the experimental phase were included. Prior to univariate analyses, a 2 between (High Scores, Low Scorers) x 2 within (pre-induction measurement phase, post induction measurement phase) mixed MANOVA with three dependent measures (PANAS positive and negative affect scales, EMAS-S total score) was conducted. Since the omnibus F value for Wilk's criterion was significant, $F (6, 114) = 700.00, p < .001$, the univariate analyses were conducted. The negative affect subscale of the PANAS showed that there was a significant increase in negative affect from pre ($M = 15.50, SD = 5.29$) to post ($M = 22.54, SD = 7.41$) induction, $t (124) = 13.37, p < .001$. The positive affect subscale of the PANAS showed that there was a significant decrease in positive affect from pre ($M = 30.00, SD = 7.34$) to post ($M = 24.28, SD = 8.39$) induction, $t (124) = 11.31, p < .001$. The total score on the EMAS-S also significantly increased pre ($M = 31.79, SD = 10.57$) to post ($M = 45.62, SD = 14.03$) induction, $t (120) = 13.43, p < .001$. The autonomic-emotional subscale on the EMAS-S significantly increased pre ($M = 15.38, SD = 5.16$) to post ($M = 21.48, SD = 7.09$) induction, $t (120) = 11.99, p < .001$. The cognitive-worry subscale on the EMAS-S also significantly increased pre ($M = 16.42, SD = 6.37$) to post ($M = 24.08, SD = 8.54$) induction, $t (120) = 11.80, p < .001$.

Hypothesis 5.

It was proposed that the use of self-management techniques would cause a significant decrease in state anxiety and distress compared to the decrease due to the passage of time. Prior

to univariate analyses, a 2 between (High Scores, Low Scorers) x 2 between (self-management condition, passage of time condition) x 2 within (post induction measurement phase, post condition measurement phase) mixed MANOVA with six dependent measures (PANAS positive and negative affect scales, EMAS-S total score) was conducted. Since the omnibus F value for Wilk's criterion was significant, F (6, 112) = 569.09, $p < .001$, the univariate analyses were conducted. Five 2 between (self-management condition, passage of time condition) x 2 within (post induction measurement phase, post condition measurement phase) mixed ANOVAs were conducted with the two PANAS subscales, and EMAS-S total score and subscales as dependent variables. Post-hoc t-tests were conducted to find significant differences between groups.

For the PANAS negative affect scale, there was a significant main effect of condition, F (1, 123) = 7.36, $p < .01$, partial η^2 = .06, a significant main effect of measurement phase, F (1, 123) = 140.16, $p < .001$, partial η^2 = .53, and a significant interaction, F (1, 123) = 13.18, $p < .001$, partial η^2 = .10. Panel 1 of Table 8 shows the group means and follow up t-tests for the negative affect scale. While the groups did not significantly differ post worry induction, they did significantly differ post-condition, t (124) = 4.63, $p < .001$. The participants who utilized self-management techniques (M = 13.86, SD = 4.21) experienced less negative affect than participants who were not prompted to use these techniques (M = 18.55, SD = 6.88) after 3 minutes.

For the PANAS positive affect scale, there was a significant main effect of condition, F (1, 123) = 6.90, p = .01, partial η^2 = .05, a main effect of measurement phase that approached significance, F (1, 123) = 5.07, p = .026, partial η^2 = .04, and a significant interaction, F (1, 123) = 19.32, $p < .001$, partial η^2 = .14. Panel 2 of Table 8 shows the group means and follow up t-tests for the positive affect scale. While the groups did not significantly differ post worry

Table 8

Summary of Post-Hoc Analyses for Comparing the Effectiveness of the Self-Management

Intervention to the Passage of Time (n = 126)

Variable	M	SD	t	df	p
Panel 1: PANAS Negative affect scale					
Post Worry-Induction			0.71	123	.482
Self-management intervention	22.08	7.92			
Passage of time	23.02	6.87			
Post Condition			4.63	124	< .001
Self-management intervention	13.86	4.21			
Passage of time	18.55	6.88			
Panel 2: PANAS Positive affect scale					
Post Worry-Induction			0.83	123	.407
Self-management intervention	24.89	8.64			
Passage of time	23.64	8.15			
Post Condition			4.06	124	< .001
Self-management intervention	28.50	8.51			
Passage of time	22.56	7.86			
Panel 3: EMAS-S Total score					
Post Worry-Induction			0.21	120	.837
Self-management intervention	45.51	14.75			
Passage of time	46.03	13.40			
Post Condition			4.21	122	< .001
Self-management intervention	29.60	8.70			
Passage of time	37.32	11.54			
Panel 4: EMAS-S Autonomic-emotional scale					
Post Worry-Induction			0.01	120	.988
Self-management intervention	21.54	7.21			
Passage of time	21.56	7.04			
Post Condition			3.49	122	.001
Self-management intervention	14.13	4.70			
Passage of time	17.58	6.22			
Panel 5: EMAS-S Cognitive-worry scale					
Post Worry-Induction			0.25	120	.803
Self-management intervention	23.97	9.17			
Passage of time	24.36	7.88			
Post Condition			4.17	122	< .001
Self-management intervention	15.47	5.16			
Passage of time	20.16	7.22			

Note. PANAS = Positive Affect and Negative Affect Schedule; EMAS-S = Endler
Multidimensional Anxiety Scales-State.

induction, they did significantly differ post-condition, t (124) = 4.06, $p < .001$. While the participants who were not prompted to use self-management techniques continued to experience a decline in positive affect ($M = 22.56$, $SD = 7.86$), participants who utilized self-management techniques experienced an increase in positive affect ($M = 28.50$, $SD = 8.51$).

On the EMAS-S total score, there was a main effect of condition that approached significance, F (1, 119) = 4.50, $p = .036$, partial $\eta^2 = .04$, a significant main effect of measurement phase, F (1, 119) = 138.50, $p < .001$, partial $\eta^2 = .54$, and a significant interaction, F (1, 119) = 11.56, $p = .001$, partial $\eta^2 = .09$. Panel 3 of Table 8 shows the group means and follow up t-tests for the EMAS-S total score. While the groups did not significantly differ post worry induction, they did significantly differ post-condition, t (122) = 4.21, $p < .001$. The participants who utilized self-management techniques ($M = 29.60$, $SD = 8.70$) experienced less state anxiety than participants who were not prompted to use these techniques ($M = 37.32$, $SD = 11.54$) after 3 minutes.

Examination of the EMAS-S subscales reveals similar results. For the autonomic-emotional subscale, there was not a significant main effect of condition, F (1, 119) = 2.74, $p = .10$, partial $\eta^2 = .02$, but there was a significant main effect of measurement phase, F (1, 119) = 121.65, $p < .001$, partial $\eta^2 = .50$, and a significant interaction, F (1, 119) = 10.01, $p < .01$, partial $\eta^2 = .08$. For the cognitive-worry subscale, there was a main effect of condition that approached significance, F (1, 119) = 4.49, $p = .036$, partial $\eta^2 = .04$, a significant main effect of measurement phase, F (1, 119) = 109.87, $p < .001$, partial $\eta^2 = .48$, and a significant interaction, F (1, 119) = 12.12, $p = .001$, partial $\eta^2 = .09$. Panels 3 and 4 of Table 8 show the group means and follow up t-tests for the EMAS-S subscales. The participants who utilized self-management techniques experienced less autonomic-emotional ($M = 14.13$, $SD = 4.70$) and cognitive-worry

(M = 15.47, SD = 5.16) anxiety than participants who were not prompted to use these techniques

(M = 17.58, SD = 6.22; M = 20.16, SD = 7.22; respectively) after 3 minutes.

Hypothesis 6.

The final hypothesis predicted that people with better developed self-management skills

who utilize self-management strategies would show a larger decrease in state anxiety and distress

than people with less developed self-management skills who utilize self-management strategies.

Five 2 between (High Scores, Low Scorers) x 2 within (post induction measurement phase, post

condition measurement phase) mixed ANOVAs were conducted with the two PANAS subscales,

and EMAS-S total score and subscales as dependent variables. Post-hoc t-tests were conducted

to find significant differences between groups.

For the PANAS negative affect scale, there was no significant main effect of skill level, F

(1, 123) = 2.30, p = .13, partial η^2 = .02, a significant main effect of measurement phase, F (1,

123) = 128.88, p < .001, partial η^2 = .51, and no significant interaction, F (1, 123) = 0.32, p =

.571, partial η^2 = .003. The main effect of measurement phase was expected given that both

groups underwent the self-management condition (see Table 8). For the positive affect scale,

there was a significant main effect of skill level, F (1, 123) = 9.69, p < .01, partial η^2 = .07, a

main effect of measurement phase that approach significance, F (1, 123) = 4.82, p = .03, partial

η^2 = .04, and no significant interaction, F (1, 123) = 0.46, p = .497, partial η^2 = .004. The groups

significantly differed both post worry induction, t (123) = 3.22, p < .01, and post condition, t

(124) = 2.49, p < .025. The High Scorers had higher positive affect both post worry induction

(M = 26.25, SD = 8.45) and post condition (M = 27.19, SD = 8.75) than the Low Scorers (M =

21.52, SD = 7.56; M = 23.36, SD = 8.19; respectively).

For the EMAS-S total score, there was no significant main effect of skill level, $F(1, 119)$ = 0.72, p = .399, partial η^2 = .01, a significant main effect of measurement phase, $F(1, 119)$ = 128.69, $p < .001$, partial η^2 = .52, and no significant interaction, $F(1, 119)$ = 0.52, p = .474, partial η^2 = .004. Again, the main effect of measurement phase was expected given that both groups underwent the self-management condition (see Table 8). For the autonomic-emotional subscale, there was no significant main effect of skill level, $F(1, 119)$ = 0.44, p = .509, partial η^2 = .004, and no significant interaction, $F(1, 119)$ = 0.23, p = .633, partial η^2 = .002. Similarly, for the cognitive-worry subscale, there was no significant main effect of skill level, $F(1, 119)$ = 0.76, p = .384, partial η^2 = .01, and no significant interaction, $F(1, 119)$ = 0.77, p = .383, partial η^2 = .01.

Supplementary Analyses

Screening phase data.

In testing hypothesis 3, the results showed that the MCQ-30 subscale that measures the belief that worry is uncontrollable and dangerous uniquely predicted GAD symptoms. However, the GAD symptoms measures and MCQ-30 both refer to worry being "excessive" and "uncontrollable." It was possible that the high correlations found between these measures were found due to content and terminology, rather than an underlying process. To examine this possibility, the GADQ-IV was rescored to only include the following items: number 5, number 7, number 8, and number 9. These items ask for a list of excessive worries, measure physical signs of GAD, and measure the interference and distress that worry and physical signs cause. Table 9 contains the correlations between the GADQ-IV with this alternative scoring and the WW-II, and MCQ-30. Although all the beliefs significantly correlated with the GADQ-IV with the alternative scoring, the belief that worry is uncontrollable and dangerous had the strongest

Table 9

Correlations Between Generalized Anxiety Disorder Questionnaire-IV with Alternative Scoring and Beliefs About Worry (n = 158)

Scale	*r*	*p*
Why Worry-II total score	.28	< .001
Why Worry-II aids problem solving	.29	< .001
Why Worry-II motivates	.21	.009
Why Worry-II protects from negative emotions	.19	.018
Why Worry-II magical thinking	.25	.001
Why Worry-II good personality trait	.21	.009
Metacognitions Questionnaire-30 positive beliefs	.23	.004
Metacognitions Questionnaire-30 uncontrollable and dangerous	.68	< .001
Metacognitions Questionnaire-30 need to control thoughts	.30	< .001

correlation. Its correlation was more than double the correlation of any other belief about worry with the GADQ-IV with the alternative scoring.

Given that self-evaluating was the only self-management skill to significantly correlate with GAD symptoms, and that the belief that worry is uncontrollable and dangerous was the only belief to have a significant relationship to GAD symptoms when worry intensity and frequency was controlled for, the possibility that this belief mediated the effects of self-evaluating on GAD symptoms was examined. In this simple mediation model, self-evaluating skills deficits lead to the belief that worry is uncontrollable and dangerous, which in turn lead to GAD symptoms. The conditions for examining this model are met, since 1) self-evaluating skills significantly negatively correlate with both the negative belief and GAD symptoms, 2) the belief that worry is uncontrollable and dangerous predicts GAD symptoms, and 3) self-evaluating skills deficits should theoretically cause an individual to believe the worry is uncontrollable and dangerous which in turn contributes to GAD symptoms.

The Mahalanobis distances were first examined, and no multivariate outliers were found. Using the macros for SPSS provided by Preacher and Hayes (2004), the significance of the mediation was tested. This macro provides both the Sobel test and tests the significance of the mediation using bootstrapping. A perfect mediation is defined by a Sobel test with $p < .05$ or by 95% confidence intervals that do not include zero using the bootstrap method. For this test, 3000 bootstrap resamples was chosen and the possible mediation was tested on the GADQ-IV and WAQ. For the GADQ-IV using the skip out rule, the Sobel test z-score = -3.01, $p = .001$, and the bootstrap method provided 95% confidence intervals of -0.23 and -0.05. For the GADQ-IV without the skip out rule, the Sobel test z-score = -3.05, $p < .01$, and the bootstrap method provided 95% confidence intervals of -0.23 and -0.05. For the WAQ, the Sobel test z-score = -

3.06, p = .001, and the bootstrap method provided 95% confidence intervals of -1.25 and -0.25. Therefore, the effects of self-evaluation skills on GAD symptoms are perfectly mediated by the belief that worry is uncontrollable and dangerous. Perfect mediation is also known as complete mediation, and occurs when the inclusion of the mediating variable, in this case the belief that worry is uncontrollable and dangerous, reduces the relationship between the other variables in the model, in this cause self-evaluation skills and GAD symptoms, to zero (Preacher & Hayes, 2004).

Experimental phase data.

Since the High Scorers significantly differed from the Low Scorers on the PANAS positive affect scale after the self-management condition, the effect of pre-existing self-management skills throughout the experimental phase was examined. The effect of pre-existing self-management skills on state anxiety and distress before and after the worry induction was examined. The effect of pre-existing self-management skills, in combination with the type of condition, on state anxiety and distress was also examined. These results are combined in Figures 1 to 5.

Five 2 between (High Scores, Low Scorers) x 2 within (pre induction measurement phase, post induction measurement phase) mixed ANOVAs were conducted with the two PANAS subscales, and EMAS-S total score and subscales as dependent variables. Post-hoc t-tests were conducted to find significant differences between groups. Consistent with the results from hypothesis 4, the worry induction significantly increased negative affect, positive affect, and state anxiety, ps < .001, and the F values for these main effects are omitted.

For the PANAS negative affect scale, there was no significant main effect of skill level, F (1, 123) = 2.09, p = .151, partial η^2 = .02, and no significant interaction, F (1, 123) = 0.82, p =

Figure 1

Changes in Positive Affect by Group and Condition During the Experimental Phase (n = 126)
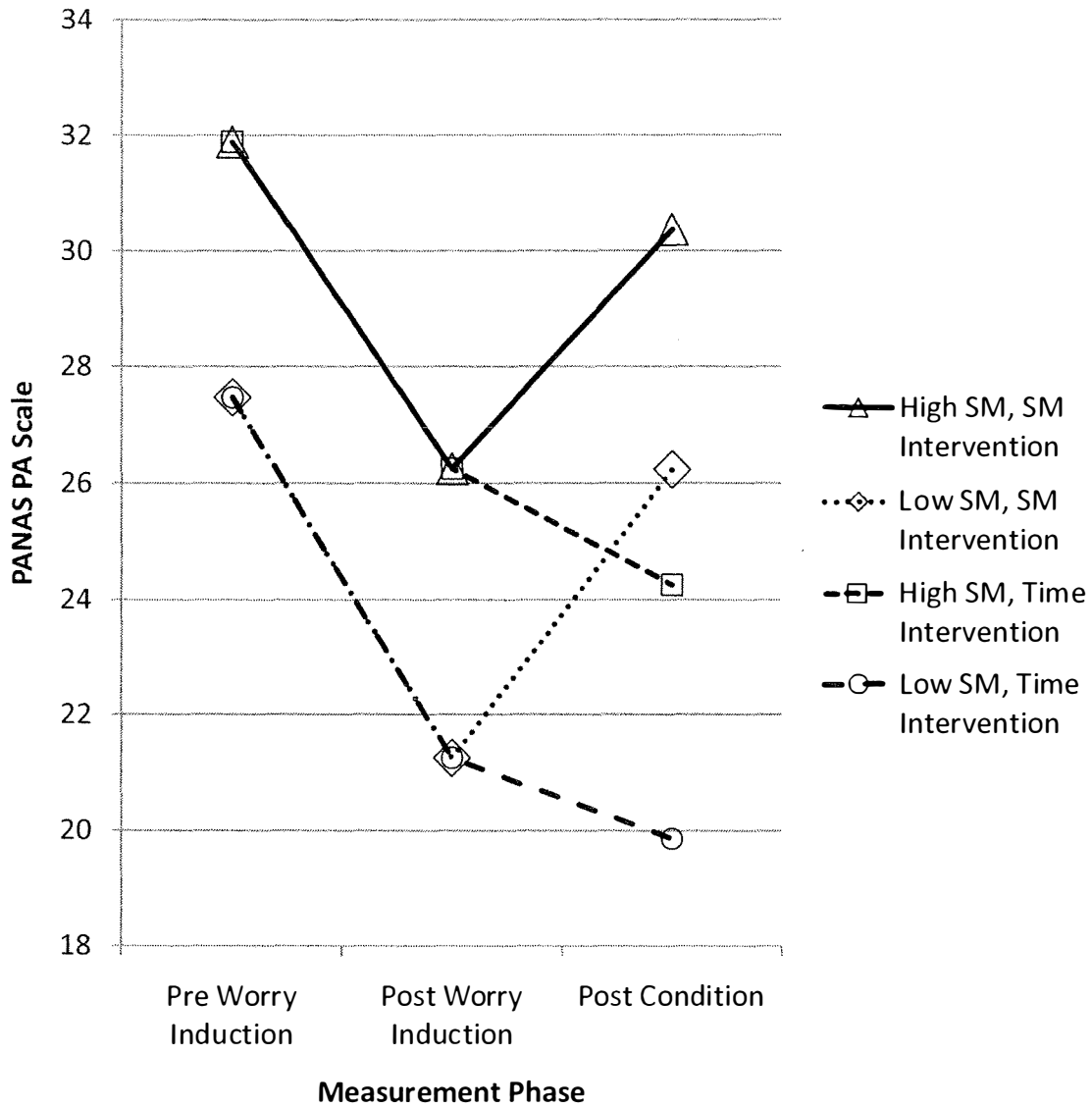
Note. PANAS PA = Positive Affect and Negative Affect Schedule Positive Affect Scale; SM = Self-Management.

Figure 2

Changes in Negative Affect by Group and Condition During the Experimental Phase (n = 126)
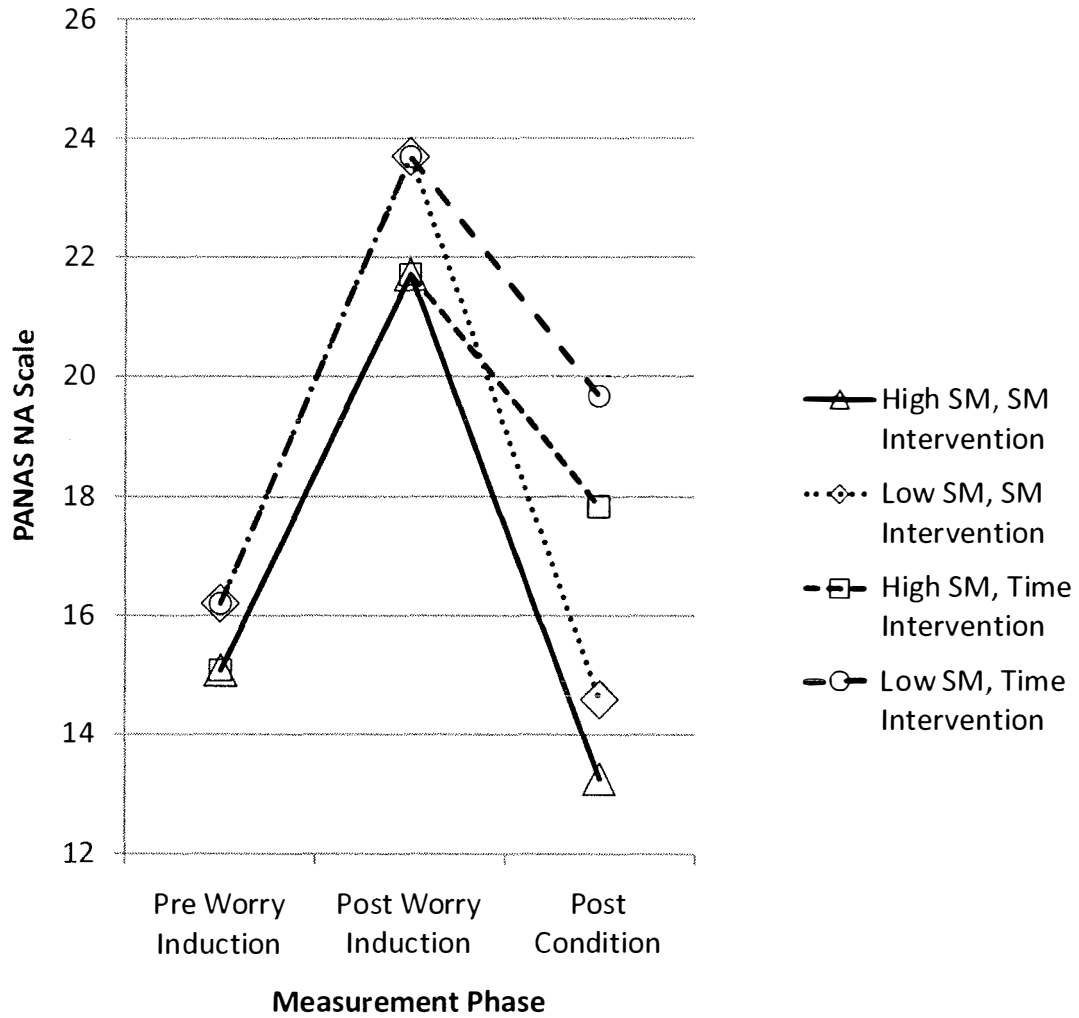
Note. PANAS NA = Positive Affect and Negative Affect Schedule Negative Affect Scale; SM = Self-Management.

Figure 3

Changes in State Anxiety by Group and Condition During the Experimental Phase (n = 126)
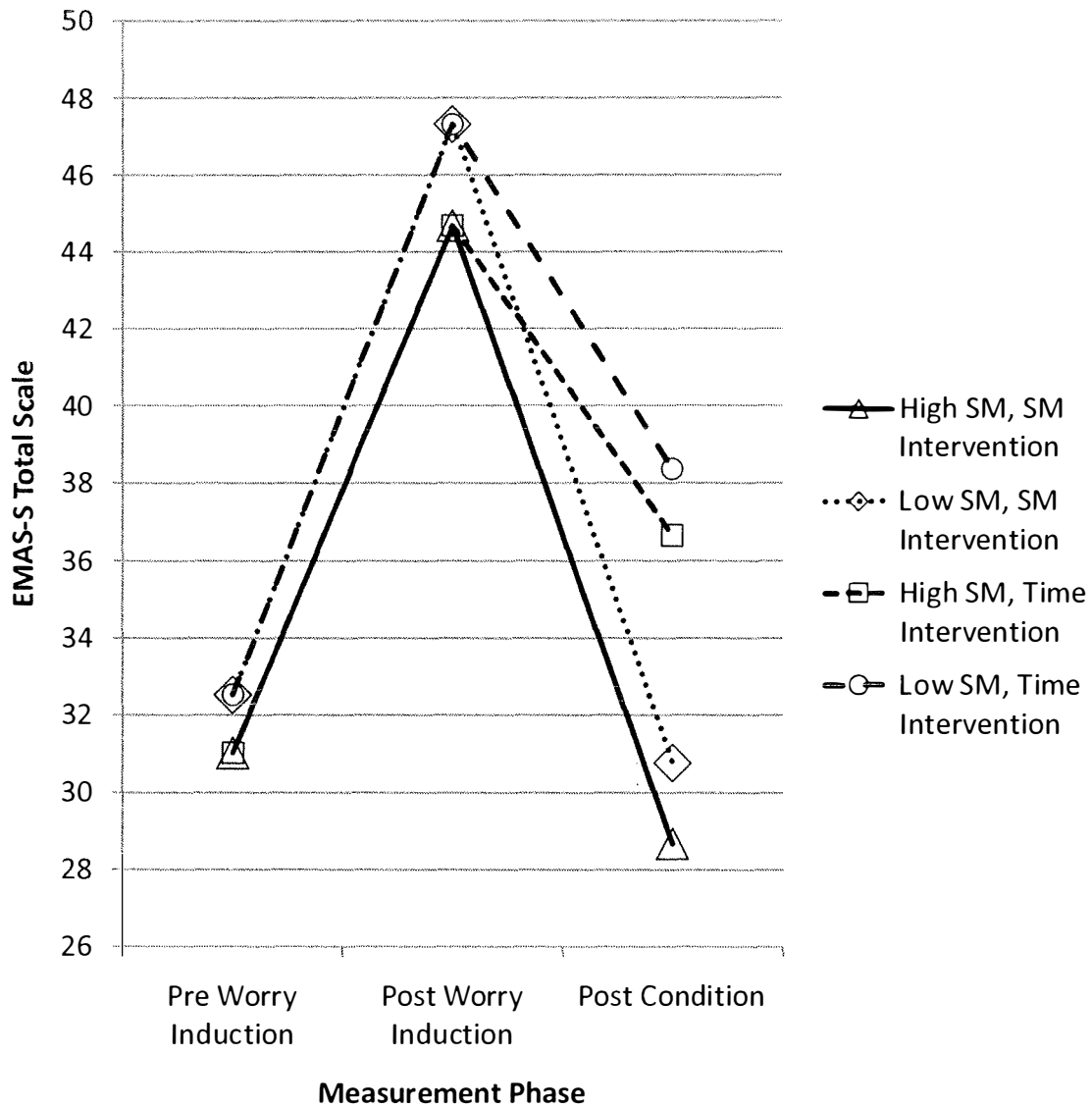
Note. EMAS-S = Endler Multidimensional Anxiety Scales-State; SM = Self-Management.

Figure 4

Changes in Autonomic-Emotional State Anxiety by Group and Condition During the

Experimental Phase (n = 126)
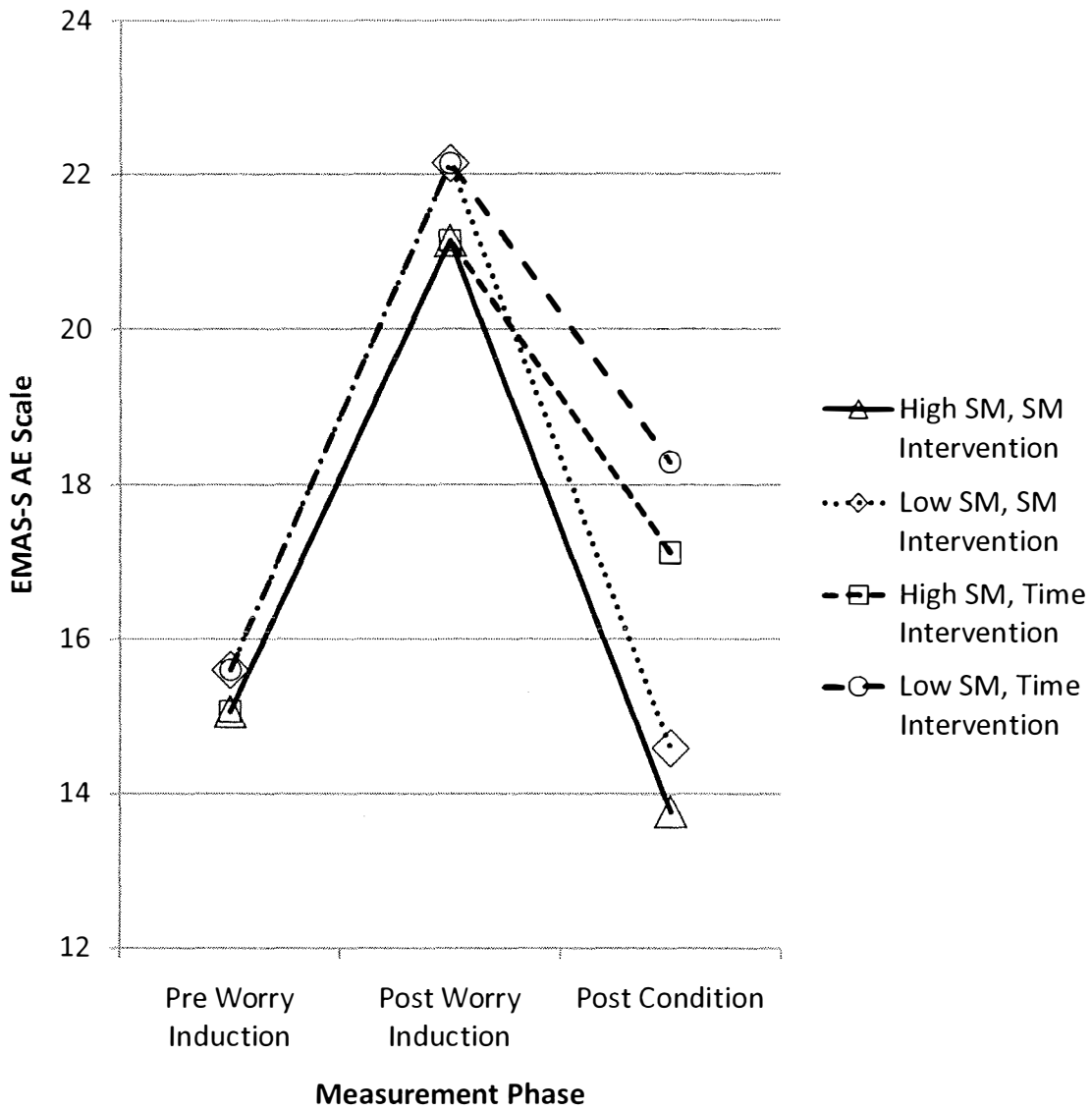
Note. EMAS-S AE = Endler Multidimensional Anxiety Scales-State Autonomic-Emotional Scale; SM = Self-Management.

Figure 5

Changes in Cognitive-Worry State Anxiety by Group and Condition During the Experimental

Phase (*n* = 126)
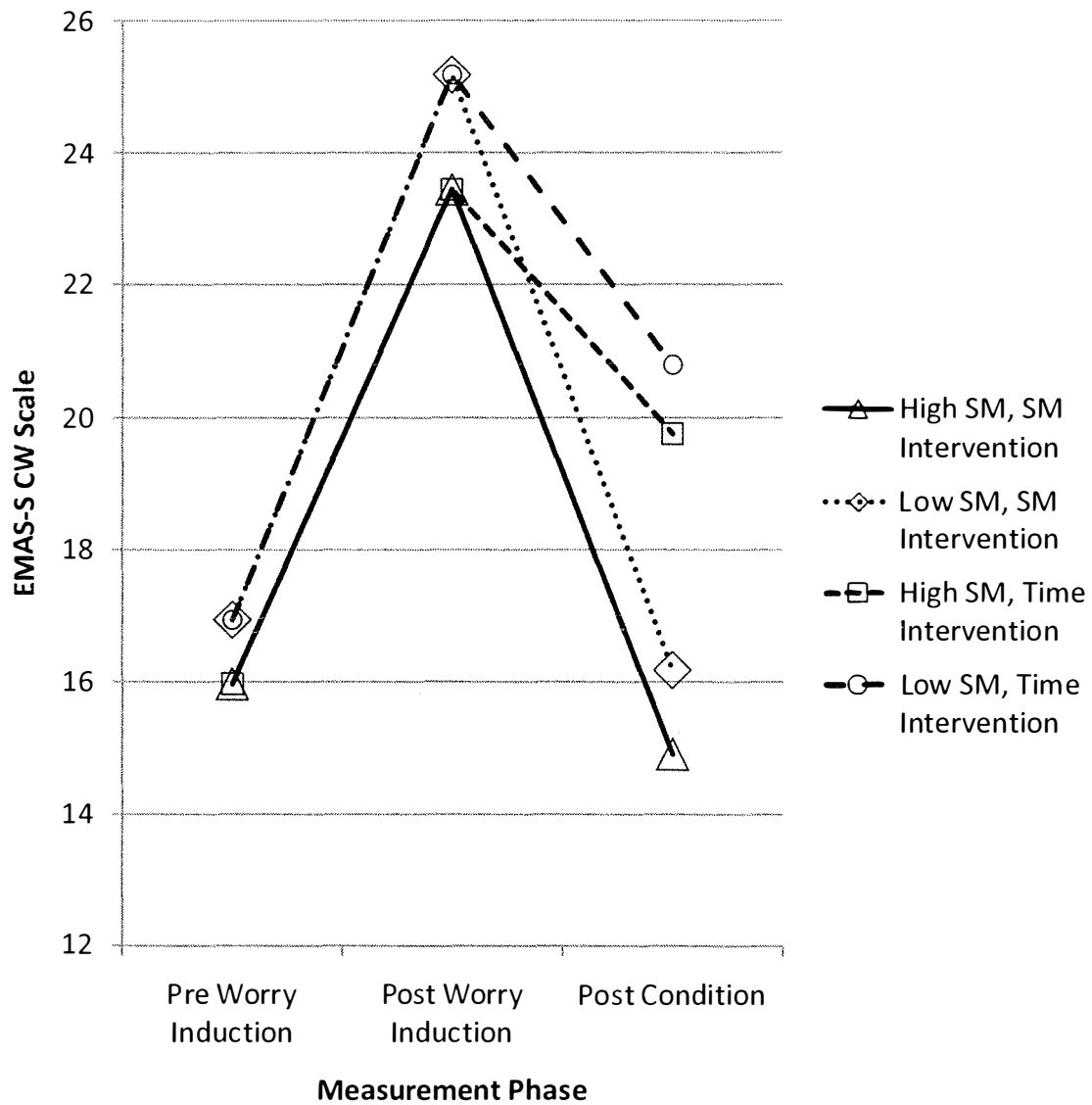
Note. EMAS-S CW = Endler Multidimensional Anxiety Scales-State Cognitive-Worry Scale; SM = Self-Management.

.368, partial $\eta^2 = .01$. For the positive affect scale, there was a significant main effect of skill level, $F(1, 123) = 13.24$, $p < .001$, partial $\eta^2 = .10$, and no significant interaction, $F(1, 123) = 0.03$, $p = .859$, partial $\eta^2 < .001$. The groups significantly differed both before, $t(124) = 3.49$, $p = .001$, and after the worry induction, $t(123) = 3.22$, $p < .01$. The High Scorers had higher positive affect before the worry induction ($M = 31.89$, $SD = 7.07$) and after the worry induction ($M = 26.25$, $SD = 8.45$) than the Low Scorers ($M = 27.47$, $SD = 6.94$; $M = 21.52$, $SD = 7.56$; respectively).

For the EMAS-S total score, there was no significant main effect of skill level, $F(1, 119) = 1.17$, $p = .282$, partial $\eta^2 = .01$, and no significant interaction, $F(1, 119) = 0.44$, $p = .509$, partial $\eta^2 = .004$. For the autonomic-emotional subscale, there was no significant main effect of skill level, $F(1, 119) = 0.72$, $p = .397$, partial $\eta^2 = .01$, and no significant interaction, $F(1, 119) = 0.24$, $p = .622$, partial $\eta^2 = .002$. Similarly, for the cognitive-worry subscale, there was no significant main effect of skill level, $F(1, 119) = 1.30$, $p = .257$, partial $\eta^2 = .01$, and no significant interaction, $F(1, 119) = 0.52$, $p = .473$, partial $\eta^2 = .004$.

Five 2 between (High Scores, Low Scorers) x 2 between (self-management condition, passage of time condition) x 2 within (pre-induction measurement, post induction measurement) mixed ANOVAs were conducted with the two PANAS subscales, and EMAS-S total score and subscales as dependent variables. Post-hoc t-tests were conducted to find significant differences between groups. The same pattern of results for the main effects of measurement phase, condition, and measurement x condition interaction from hypothesis 5 were found, and the F values for these effects are omitted.

Of the five ANOVAs, the PANAS positive affect scale was the only measure that had a significant skill main effect, $F(1, 121) = 11.74$, $p = .001$, partial $\eta^2 = .08$. The groups

significantly differed at both post worry induction, $t(123) = 3.22$, $p < .01$, and post condition, $t(124) = 2.49$, $p < .025$. The High Scorers had higher positive affect post worry induction ($M = 26.25$, $SD = 8.45$) and post condition ($M = 27.19$, $SD = 8.75$) than the Low Scorers ($M = 21.52$, $SD = 7.56$; $M = 23.36$, $SD = 8.19$; respectively). There was no significant skill x measure interaction for either the PANAS or EMAS-S scales, and all partial η^2 were less than .01. While not significantly different, the pattern of mean scores for post condition presented in Table 10 and shown in Figures 1-5 show that the four final groups have the anticipated pattern of results. Participants who were prompted to use self-management techniques had less anxiety and distress than participants who were not prompted, and within those categories, participants with higher self-management skills decreased their anxiety and distress more than participants with lower self-management skills.

Discussion

The present study investigated the role of self-management skills in GAD symptoms and beliefs about worry, and also examined whether a self-management intervention would be effective in alleviating the distress caused by worrying. The results of the screening phase illustrated that self-evaluating skills are correlated with both GAD symptoms, and the negative belief that worry is uncontrollable and dangerous. This negative belief was also the only belief about worry that predicted GAD symptoms beyond its influence on worry intensity and frequency. It would appear that having poorly developed self-evaluating skills increases the likelihood of believing that worry is uncontrollable and dangerous, and this meta-worry contributes to GAD symptoms. This model was confirmed by a perfect mediation model.

The experimental phase tested the degree to which a brief self-management intervention would be more effective in alleviating distress caused by worry than the passage of time. The

Table 10

Scale Means (Standard Deviations) for the Experimental Groups Post Condition (n = 126)

Group	PANAS NA	PANAS PA	EMAS-S Total	EMAS-S AE	EMAS-S CW
High Scorers, Self-Management Condition (*n* = 35)	13.26 (3.53)	30.37 (8.13)	28.69 (7.23)	13.77 (4.41)	14.91 (4.25)
Low Scorers, Self-Management Condition (*n* = 29)	14.59 (4.87)	26.24 (8.56)	30.78 (10.33)	14.59 (5.10)	16.18 (6.14)
High Scorers, Time-based Condition (*n* = 38)	17.84 (6.70)	24.26 (8.37)	36.66 (11.65)	17.13 (6.38)	19.76 (6.96)
Low Scorers, Time-based Condition (*n* = 24)	19.67 (7.16)	19.87 (6.26)	38.37 (11.54)	18.29 (6.01)	20.79 (7.72)

Note. PANAS PA = Positive Affect and Negative Affect Schedule Positive Affect Scale; PANAS NA = Positive Affect and Negative Affect Schedule Negative Affect Scale; EMAS-S AE = Endler Multidimensional Anxiety Scales-State Autonomic-Emotional Scale; EMAS-S CW = Endler Multidimensional Anxiety Scales-State Cognitive-Worry Scale.

intervention prompted the participants to engage in non-worrying thoughts and to apply self-reinforcement when they did so. This self-management intervention was effective in alleviating the distress caused by worrying. It decreased state negative affect and state anxiety while simultaneously increasing state positive affect, with small to medium effect sizes for the interactions. The participants' overall self-management skills significantly affected their state positive affect prior to the worry induction, and also influenced the effectiveness of their intervention. Although not significantly different, participants who had well developed self-management skills who were prompted to use their skills had the greatest decrease in negative affect, while participants who had less developed self-management skills and were not prompted had the smallest decrease in negative affect. Interestingly, this intervention was effective without directly targeting self-evaluation skills.

Findings From the Screening Phase

It was hypothesized that self-management skills would relate to GAD symptoms and worry frequency and intensity. Previous research has found that each facet of the self-management skills was related to anxiety (Mezo, 2009; Penney et al., 2008). However, in this study, only self-evaluating skills correlated with GAD symptoms, and self-management skills were unrelated to worry intensity and frequency (see Table 4). Participants who had GAD symptoms equivalent to people diagnosed with GAD had less developed self-management skills than participants with fewer GAD symptoms. The tendency to worry and GAD symptoms are assessed by asking clients how often they worry and how distressing it is for them (Meyer et al., 1990; Newman et al., 2002). This would imply that clients have developed the ability to monitor their thoughts and feelings, which would lead to a non-significant relationship between self-monitoring skills, GAD symptoms and worry tendency. Similarly, previous research has shown

that self-reinforcement better predicts depressive symptoms than anxiety symptoms (Heiby,

1982), which supports the finding of a non-significant relationship between self-reinforcement

and GAD symptoms. Other studies conducted using the SCMS have also found no significant

relationship between worry tendencies as measured by the PSWQ and self-management skills

(Broderick, Mezo, & Short, 2009). It might be suggested the relationship between self-

evaluating skills and GAD symptoms partially reflects social desirability. However, the SCMS

measure has been shown to be unrelated to social desirability (Mezo, 2009). The finding that

self-evaluating was the only skill to relate to GAD symptoms is also supported by the

relationship between self-evaluating and the belief that worry is uncontrollable and dangerous

which was a strong predictor of GAD symptoms.

In addition to being related to the belief that worry is uncontrollable and dangerous, self-

evaluating skills were also related to the belief that thoughts need to be controlled, that the act of

worrying itself can prevent negative outcomes, and overall positive beliefs about worry (see

Table 5). Self-monitoring was negatively related to the belief that worry is uncontrollable and

dangerous, while self-reinforcement was positively related to positive beliefs about worry,

including the belief that being a high worrier is a good personality trait, and that worrying

prevents negative events. It could be proposed that these relationships are artifactual, or that

these beliefs about worrying could create deficits in self-monitoring and self-evaluating, and

increase the rate of self-reinforcement. However, self-management skills are proposed to be

general life skills that affect multiple areas (Kanfer & Schefft, 1988) and self-management

interventions have been effective for a variety of problems (Febrarro & Clum, 1998), so it is

unlikely that specific beliefs about worrying could directly impact self-management skills. If a

person had well-developed self-evaluating skills, he or she would be more likely to set accurate

personal criteria regarding how useful and dangerous worrying is. With poor self-evaluating skills, a person may set a criterion where he or she needs to worry often, yet also believe the worry is damaging.

While the relationship between self-evaluating and beliefs about worry was predicted, the other findings were not anticipated. For some people, it may be that they believe their worry is dangerous and beyond their control because their poor self-monitoring skills lead them to not focus on their thoughts. They may not notice that there are periods they worry and exhibit control over their worrying. The finding that people who believe worrying is useful have better developed self-reinforcing skills is more difficult to interpret. It may be that people who self-reward more often are more likely to be proud of how they anticipate situations and believe that their worrying has been useful. More research will be needed to understand this relationship.

Wells and Carter (2001) argued that while people diagnosed with different anxiety disorders are all likely to hold positive beliefs about worry, negative beliefs about worry were unique to GAD. The present findings support this model. Despite including a measure of positive beliefs developed by Dugas and colleagues, who argue for the role of positive beliefs in GAD (Dugas & Koerner, 2005), only the negative belief that worry is uncontrollable and dangerous significantly predicted GAD symptoms after controlling for worry intensity and frequency (see Table 7). It could be argued that the content of the GAD symptom questionnaires and MCQ-30 are similar, which inflates the relationship between the measures. However, when the GADQ-IV was rescored to minimize any content overlap, the belief that worry is uncontrollable and dangerous was still the best predictor of GAD symptoms out of all the beliefs measured (see Table 9). It might also be argued that the overlap in variance for the positive belief scales eliminated either single positive belief from predicting GAD symptoms. However,

an examination of Table 8 reveals that the belief that worry is uncontrollable and dangerous had the largest zero-order correlation with GAD symptoms, and also had significant correlations to the positive beliefs about worry. This would suggest that this negative belief has a strong unique relationship to GAD symptoms, above and beyond its relationship to worry intensity and frequency, providing support for Wells' (2005) meta-worry model.

This study also found that under-developed self-evaluating skills may be one factor that leads to the belief that worry is uncontrollable and dangerous, which could create or magnify GAD symptoms. Utilizing macros provided by Preacher and Hayes (2004), the belief that worry is uncontrollable and dangerous was found to perfectly mediate the relationship between self-evaluating skills and GAD symptoms. This relationship was explored because self-evaluating skills were the only self-management skill to significantly predict GAD symptoms. Since self-evaluating was not related to worry tendencies in this study, and because the belief that worry is uncontrollable and dangerous predicted GAD symptoms after controlling for worry tendencies, worry tendencies (as measured by the PSWQ) were not included in the model. With a larger number of participants, more complex models could be investigated. These would include how self-evaluating skills influence positive beliefs about worry, which in turn increase worry intensity and frequency, which predicts GAD symptoms. It is likely that multiple factors lead to an individual believing that worry is uncontrollable and dangerous, but the results of this study show that self-management skills might play an underlying role in beliefs about worry and GAD symptoms.

Findings From the Experimental Phase

Under the assumption that self-management skills would be related to GAD symptoms, the experimental phase of the study tested if a brief self-management based intervention would

be effective in alleviating the distress and anxiety caused by worrying. The intervention was tested against asking the participants to do nothing for the same amount of time. With many previous studies using different methodology (e.g., Andor et al., 2008; Andrews & Borkovec, 1988; Hofman et al., 2005), the ability of the worry induction to produce distress and anxiety was first examined.

As recommended by Borkovec (personal communication, December 5, 2008) worrying was induced by asking participants to choose a current worry topic and worry about it in their typical fashion as intensely as they can. The degree of state positive affect, negative affect, and anxiety were measured before and after the induction. These measures were chosen because worry is accompanied primarily by anxiety (Dugas & Koerner, 2005; Gladstone & Parker, 2003), yet also causes signs of depression (Andrews & Borkovec, 1988). Negative and positive affect tap the underlying structures that lead to both anxiety and depression (Clark & Watson, 1991; Mineka, Watson, & Clark, 1998). The procedure was effective in having participants worry for an average of 75% of the time, and they reported four worrying thoughts on average (see Table 3). The worry induction procedure was found to significantly increase negative affect and anxiety, while also decreasing positive affect. Therefore, this study replicates the findings that this procedure is effective in inducing distressing worry periods (Andor et al., 2008; Borkovec, Robinson et al., 1983; Rusico & Borkovec, 2004), and this procedure would appear to be an efficient standard for inducing worry.

Interestingly, overall self-management skills were related to changes in positive affect throughout the study. Participants with well developed self-management skills had significantly higher positive affect at each of the three measurement phases in the study. Since positive affect is defined by adjectives such as "strong", "excited" and "determined", it appears that self-

management skills are related to an optimistic outlook and high self-efficacy. This supports the view that self-management skills are necessary to develop self-efficacy (Kanfer, 1979). It could also be argued that if a person had a general positive disposition, he or she may be more likely to see themselves as having high self-management skills and also maintain that disposition throughout the study. While future research will have to evaluate if trait positive affect affects the impact of worry on state positive affect, self-management skills have been shown to correlate with trait positive affect (Mezo, 2009). However, since the SCMS is unrelated to social desirability, and does relate to broad coping skills (Mezo, 2009), self-management skills should theoretically lead to heightened positive affect, rather than the reverse.

The question may be raised: Why did self-management skills impact positive affect, but not negative affect or anxiety throughout the study? Since self-management skills are not a personality trait and individuals choose when to enact them (Kanfer & Gaelic, 1986), participants in the study may have chosen not to use their self-management skills to change their negative affect or anxiety. When participants returned for the experimental phase of the study, they were told they would have to worry, and that this may cause some distress (see Appendix B). Similarly, as with participating in any novel task, especially one involving psychological research, participants likely anticipated some anxiety and trepidation. Following the self-management model presented by Kanfer and Gaelick (1986), participants would attribute these feelings to the situation and decide that they do not need to control their feelings, and therefore not engage in a self-regulation process. If they did not engage their self-management skills, participants with well-developed self-management skills would be expected to show similar increases and decreases in negative affect and anxiety as participants with less-developed self-management skills.

The concept that self-management skills impact emotional states when enacted is further supported by the effectiveness of the self-management intervention in reducing the distress and anxiety caused by worry, while also increasing positive affect (see Table 8). Participants who were prompted to use self-management techniques significantly decreased the negative affect and anxiety that had been caused by worry, and they experienced a larger decrease than participants who were prompted to not try to change their thoughts and feelings. Similarly, being prompted to use the self-management techniques significantly increased positive affect after the worry induction, and increased it more than not being prompted with a particular strategy. This conclusion is strengthened by the medium effect sizes found for the main effects and interactions.

It is interesting to note that the self-management technique used focused largely on using self-monitoring and self-reinforcing skills. The self-management intervention asked clients to monitor their thoughts, remove worry thoughts, increase non-worrying thoughts, and apply self-reinforcement when effective. It did not directly targeting self-evaluating skills, which were found to be the only self-management skill to correlate to GAD symptoms. It is possible that the intervention did change the participants' evaluation of the worries from uncontrollable and distressing to evaluating them as manageable, but the participants were not instructed to do so. This illustrates the intertwined nature of self-management skills. With minimal instruction, and no psychoeducation on the nature of worries, this intervention was effective.

Given that there are established treatments developed for GAD (Ladouceur et al., 2000; Newman et al., 2008), it can be argued that the self-management technique utilized here may not be as effective as the strategies used in these treatments. While this possibility cannot be addressed from the current research, this study was intended to be a preliminary exploration of

the effectiveness of a self-management technique for GAD. The technique was compared with a more ecologically valid comparison: doing nothing to change the effects of the worry. When people naturally worry, unless they have received psychological treatment, they are unlikely to recognize cognitive avoidance or evaluate the accuracy of the worry. Instead, people are more likely to either continue worrying , move on to another task, or be distracted by an environmental event (Borkovec et al., 1983). The comparison time-based control procedure used in this study was deemed to best replicate this real world scenario. The possibility of using a distraction task, such as completing math equations, was initially considered for the control condition. However, people who are chronic worriers would be unlikely to consider using such an engaging task. In fact, from a self-management perspective, choosing to begin a task that requires one's full attention would be considered an effective strategy for stopping the worry and alleviating its negative effects.

It is also interesting to find that this intervention worked despite its possible association with thought and emotion suppression. Telling participants to "remove any worries" could be considered a form of thought suppression. Yet recent research would suggest that thought or emotion suppression could increase distress. For example, in a study by Campbell-Sills, Barlow, Brown, and Hofmann (2006), participants who were instructed to control and suppress their emotions experienced a larger emotional reaction to a distressing film than participants instructed to accept their emotions. Likewise, patients with panic disorder who used suppression during a carbon dioxide challenge experienced more subjective anxiety during the challenge then clients who used acceptance (Levitt, Brown, Orsillo, & Barlow, 2004). The "white bear" studies (Wegner, Schneider, Carter, & White, 1987) are also often cited as evidence that trying to suppress thoughts serve to increase the occurrence of such thoughts. When people try to

suppress a personally meaningful thought, this creates more anxiety and depression than experiencing the thought without trying to suppress it (Corcoran & Woody, 2009).

However, what is often not referenced is that in the Wegner et al. (1987) study they also found that providing the participants with a distraction thought led to no significant increase in thoughts of the "white bear" when they tried to suppress thoughts of it. Instructions to not think about the bear led to thinking about the bear, but instructions to think about a car instead of the bear led to thinking about a car. Similarly, the Corcoran and Woody study (2009) told participants to think other thoughts, but the emphasis placed on not thinking a to be suppressed thought likely led to increased self-criticism, rather than self-reward for thinking a non-suppressed thought. Finally, Mclean and Broomfield (2007) found that when participants chose to suppress a given worry during a week, their belief that worry was controllable significantly increased, they spent less time worrying, they were better at suppressing them, and they found them less distressing. This may account for the success found in the self-control treatment originally developed by Borkovec and colleagues (Borkovec et al., 1983) where participants restricted their worry to one 30-minute period a day. Therefore, the self-management technique used in this study would appear ideal for practicing worry suppression and increasing the belief that worrying is controllable and not dangerous. Future research will need to examine the utility of self-praise and emphasis on distraction when performing thought and emotion suppression.

Since the self-management intervention was effective in alleviating negative affect and anxiety, and increasing positive affect, and since overall self-management skills influenced positive affect throughout the experimental phase, it was of interest to examine an interaction between overall self-management skills and the type of intervention. It was hypothesized that participants with high self-management skills would benefit more from the self-management

intervention than participants with low self-management skills. Although not significantly different, the means for these groups after the intervention follow this pattern for both the self-management and time-based control condition (see Table 10 and Figures 1 to 5). Participants with high self-management skills who completed the self-management intervention had the lowest levels of distress and highest level of positive affect, followed by participants with low self-management skills who completed the self-management intervention, followed by participants with high self-management skills who completed the time-based condition, with participants with low self-management skills who completed the time-based condition having the highest distress and lowest positive affect.

There are multiple possible reasons for the non-significant findings for this intervention by condition interaction. First, there may be a floor effect occurring with the chosen measures. With the PANAS negative affect scale, the lowest possible score is 10, and the means for the four groups were between 13 and 20. This is also true for both EMAS subscales. Therefore, if measures with a broader range had been used, or if the Likert-type scales on the PANAS and EMAS had ranged from 1 to 8, there may have been significant differences between groups. Second, the impact of the self-management intervention and time-based control conditions may have overridden any significant differences between the participants with high self-management skills and those with low self-management skills. Increasing the number of participants may also help detect a significant interaction. However, it is certainly possible that this pattern of results is a chance occurrence and will not be present with additional research.

While the present experiment is not directly generalizable to what people experience in daily worries, the results support the use of a self-management intervention for alleviating the distress caused by worrying. If chronic worriers were taught this self-management strategy, or

given reminder cards with the instructions printed on them, it may give them another coping strategy for dealing with this distressing cognition in the moment. Whether this strategy could be effectively implemented into current treatments for GAD, used as a relapse prevention strategy, or used to prevent the onset of GAD will require extensive research. However, this study offers encouraging results for the possible utility of self-management techniques in the treatment of GAD and the need for improved treatment models necessitates research into new treatment strategies (Fisher, 2006).

Strengths and Weaknesses

The strengths of the current study fall within three general categories: properties of the sample, properties of the study design, and the researchers involved in the study. This study had participants who were generally free of psychological disorders. This means that the findings are not restricted to only individuals dealing with a psychological disorder, such as GAD. The findings are also not confined to chronic high worriers. The beliefs and processes measured in this study should hold true to the general population. Similarly, the study had a good sample size and the experimental phase of the study had a high return rate. Having over 100 participants for both phases of the study is certainly a strength. Although more participants with high self-management skills completed the experimental phase than participants with low self-management skills, the cell sizes for the experimental phase were favourable and appear to be as representative of the general population as the screening phase data.

In addition to the strong sampling characteristics, this study had a strong design. The measures used in this study all have strong psychometric properties, and most have been used in previous studies of worry and GAD. As well, both the SCMS and PANAS measure underlying constructs, and adding these questionnaires to the existing research helped this study examine

potential underlying etiological factors in GAD and distress from worry. The two questionnaires used to measure GAD symptoms also allowed to measure the symptoms in both categorical and dimensional fashions. Similarly, this study used an improved worry induction procedure, with testing before and after the worry period, and the induction did not include a five minute focused breathing task. The worry report was also the first use of a questionnaire to examine the extent to which people worry during the worry induction.

The final strength of the study comes from the independence of the researchers to the measures and theories used in this study. Much of the research that has used the MCQ-30 and the WW-II has been conducted by Wells and Dugas respectively. Therefore, since the researchers in this study have no vested interest in the theories or measures used in this study, this study represents an independent replication and extension of this area. As well, while Wells did examine the role of positive beliefs (Wells & Carter, 2001), and the MCQ-30 includes a general positive beliefs scale, in this study the WW-II was included to examine the role of positive beliefs as defined by Dugas. This allowed for the role of positive beliefs to be examined to the full extent without the possibility of researcher bias.

The weaknesses of this study also encompass three general themes. These include possible issues with the sample, possible issues with the study methods and measures, and constructs not measured in the study. The sample in this study was primarily Caucasian, young adult students. While this is representative of the Lakehead University community, and commonly studied in GAD research, it impedes generalizability to other ethnic and cultural groups. Also, there was no direct attempt to recruit participants diagnosed with GAD. Without a clinical sample, it is difficult to determine if the relationships found in this sample would transfer to a clinical population.

Regarding the methodology, there were three issues noted after the study commenced. First, the questionnaires in the screening phase were given to all participants in the same order. Second, there were no validity measures. These issues raise the possibility of carry-over effects from the questionnaires, and some participants may have responded in socially desirable or random response sets. As well, because clients were not given a definition of worry, it is difficult to ensure the clients were worrying. Given the close association of worry and rumination, it is possible that the clients were focusing on past events as much as future events when they were asked to worry during the experimental phase. However, by relying on the participants' own definition of worry, this study allowed participants to worry in a manner consistent with their worrying in daily living.

Regarding the weaknesses of the experimental phase, threats to internal validity must be examined. As discussed by Shadish, Cook, and Campbell (2002) there are nine general threats to internal validity. First, it is possible the experimental phase was confounded by the fact that clients in the self-management intervention condition may have declared they had less anxiety and negative affect because they had been instructed to do things that would help them experience less, and not because they actually experienced less distress. It is also possible that asking participants to not try to change their thoughts and feelings may have led the participants in the control condition to actively try to worry to maintain their low mood, thus making the control group invalid. Thus, both groups may have completed their measures based on what they felt the researcher was demanding of them, rather than responding to the intervention (in the intervention condition) or to the passage of time (in the control condition). However, it should be noted that this design is similar in nature to many psychotherapy outcome studies where the group receiving treatment is informed that the treatment will help, while the control group is

placed on a waitlist and would not expect to improve while waiting for treatment. In this study, there was an explicit selection bias because clients were grouped into high and low self-management groups. However, these groups may have also been biased in terms of motivation or personality characteristics. The higher return rate of participants with high self-management may have also lead to a bias in some results. It is also possible that since the primary researcher developed the self-management intervention, there was an unintended bias committed when leading those participants through the study. However, written instructions were given to participants during the study to limit any influence, and any verbal instructions prior to the study commencing were generally standardized. Repeated testing, instrument change, and regression towards the mean can be assumed to have applied equally to the groups, since all measurements were standardized. The remaining threats to internal validity, including history, maturation, selection-maturation, and diffusion, were unlikely given the limited time-frame of the study, and the fact that participants completed the study individually. The experimental phase also contained 21 outliers. While these were spread throughout the three administrations of measures, they may have had an undue influence on the results of this phase.

It is also important to consider that the measure of self-management skills is a new measure, and it has not undergone extensive tests of discriminate validity. It is possible that self-management skills relate to personality characteristics such as neuroticism or agreeableness, and that these characteristics relate to GAD symptoms. It could also be that participants who believe they have well-developed self-management skills have higher self-esteem or are slightly narcissistic, and thus less likely to report difficulties with worrying.

Finally, there are other potential constructs that could play a role in GAD, be related to beliefs about worry, or be influenced by self-management skills. To keep the screening phase

from taking an excessive amount of time for participants to complete, measures of intolerance to uncertainty, cognitive avoidance, interpersonal problems, and emotional avoidance were not included. These constructs feature prominently in the models of GAD proposed by Borkovec (Borkovec et al., 2004) and Dugas (Dugas & Koerner, 2005). It would also have been beneficial if other state measures, such as a state measure of depression, could have been included during the experimental phase of the study. However, if more measures were included, the time needed to complete the measures may have decreased the distress and anxiety the participants were experiencing before undergoing the treatment conditions. Therefore, these limitations were deemed unavoidable.

Conclusions

In line with the results of Wells and Carter (2001), this study found that the negative belief that worry is uncontrollable and dangerous was a unique predictor of GAD symptoms. This replication was extended by examining the role of self-management skills in this relationship. By adding self-evaluating skills to the relationship, a perfect mediation model was supported. With poorly developed self-evaluating skills, an individual appears to be more likely to believe that worry is uncontrollable and dangerous, which leads them to experience more GAD symptoms.

In addition to finding that self-evaluation skills may play an etiological role in the development of GAD, this study also found that targeting self-management skills can reduce the distress caused by worrying. A brief intervention based on self-management theory (Deffenbacher & Suinn, 1982) was more effective than the passage of time in removing negative affect and anxiety, and it also increased positive affect. The effectiveness of this intervention appeared to be influenced by the degree of pre-existing self-management skills an individual had

developed, although the groups with high and low self-management skills did not significantly differ. Since participants with GAD symptoms that approximate clinical samples did not significantly differ from participants with fewer symptoms in terms of self-monitoring or self-reinforcing skills, it is possible that by using these skills, people with GAD could learn to control the distress caused by worry. By controlling this distress, and increasing their self-evaluating skills, people with GAD would be able to re-evaluate their negative beliefs about worry, and help alleviate GAD symptoms in treatment.

Future Research

This study examined the role of self-management skills in GAD and worry. Since this is a novel application of self-management theory, future research is warranted. As with any new research, future research should attempt to replicate and extend the findings. This would include researching other populations, especially using samples with more ethnic diversity and samples outside of a university population. This research must also be conducted with a sample of people diagnosed with GAD to extend the results into a clinical population. The relationship between self-management skills and other etiological factors in GAD, such as the intolerance of uncertainty and emotional avoidance, should be examined. As well, since other research has shown that self-evaluation skills and self-management skills predict social anxiety, and self-evaluation skills and self-reinforcing skills predict depression (Mackenzie, Mezo, Penney, & Duggan, 2009), future research can explore models of anxiety and mood disorders from a self-management perspective. The longitudinal development of self-management skills should also be investigated.

Similarly, bigger sample sizes would allow for additional statistical analyses. For example, with a larger sample structural equation modeling could be conducted. Structural

equation modeling allows the researcher to test more complex relationships than multiple regression (Tabachnick & Fidell, 2007). In this research, the relationships between self-management skills, positive beliefs about worry, negative beliefs about worry, worry frequency and intensity, and GAD symptoms could be tested using structural equation modeling. This model could test if positive beliefs about worry increase worry frequency, which increases GAD symptoms, while negative beliefs about worry increase GAD symptoms directly.

With replication of the worry-induction procedure of this experiment, additional hypotheses could be tested. For example, it has not been tested if people with many GAD symptoms experience more distress or anxiety when worrying that people with few GAD symptoms. Whether chronic worriers experience more distress or anxiety when worrying than people who rarely worry can also be tested. As well, it would be interesting to examine how much attention people focus on their worries. It could be that people with GAD focus so heavily on their worries that they do not notice changes in their environment as rapidly or as often as people without GAD. This could be tested by changing subtle features of the experimenter during a worry-induction and examine how often people with GAD notice this change in comparison to people without GAD.

Finally, with the success of the self-management intervention in this study, further research is warranted to examine the utility of self-management techniques for worry and GAD. Researchers may wish to consider testing the utility of teaching chronic worriers self-management techniques, or giving them reminder cards to use a technique such as used in this study, to investigate if such a technique can alleviate the distress caused by worry, and potentially be used as a preventative technique in the development of GAD. The addition of self-management techniques into current therapy models for GAD may also be tested. Since

current treatments for GAD are not as effective as the treatments for other anxiety disorders

(Fisher, 2006), research should investigate the utility of self-management techniques within

current treatment models could be beneficial to treatment outcome and relapse prevention.

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Appendix A

Communication Materials

Poster

Lakehead
U N I V E R S I T Y
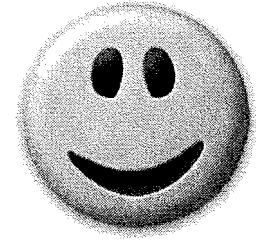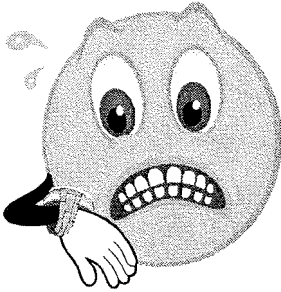
Do You Worry A Lot?
Or Do You Rarely Worry?
Or Are You Somewhere In Between?
Then You Can Participate In Our Study!

Researchers with the Department of Psychology at Lakehead University are currently recruiting participants 18 years and older for a study on Self-Management and Worry.

In the first phase we are looking for participants to complete six self-report measures on worrying and self-management, and it will take approximately 60 minutes in total.

Participants who complete the first phase may choose to participate in the second phase, which requires participants to fill out questionnaires before and after a brief period of worry.

If you are interested in being a participant in this study, please call Alex Penney at 343-8943 or email apenney@lakeheadu.ca to book an appointment.

Alex Penney & Dr. Dwight Mazmanian – Health, Hormones, and Behaviour Lab Department of Psychology at Lakehead University

Script for Classroom Presentation

My name is Alex Penney, and I am a Master's student in Clinical Psychology working with Dr. Dwight Mazmanian. I am currently conducting a study on self-management and worry. My study involves two phases. In the first phase I am looking for participants to complete six self-report measures on worrying and self-management, and it will take approximately 60 minutes in total. Participants who complete the first phase may be contacted to participate in the second phase, which requires participants to fill out questionnaires before and after a brief period of worry. You may volunteer if you worry a lot, not at all, or anywhere in between.

If you are interested in being a participant in this study, please drop by my office – Braun Building 1067A – anytime this week or next week. Please see the handout for times I will be conducting the study. (For introductory psychology) You can receive two bonus course marks if you complete both phases of the study, and one bonus mark for completing the first phase. You can choose to participate in the first phase, and not complete the second phase.

Your participation to this study is entirely voluntary, and will have no impact on your grade in this or any other course. The course instructor will not be made aware of who chooses to participate in this study.

Thank you for your time.

Classroom Handout

Study: The Role of Self-Management Skills in Worry and Mood Regulation
Researchers: Alexander Penney (MA Candidate Clinical Psychology)
              Dwight Mazmanian, PhD., C. Psych. (Associate Professor, Dept of Psychology)
Office: Braun Building 1067A
Testing times: (times to be determined as testing date approaches)

Purpose: Study the influence of self-management on worry, and beliefs about worry.
Phase 1: Completion of 6 self-report questionnaires about worrying and self-
      management. Will take approximately 60 minutes.
Phase 2: Completion of self-report questionnaires before and after a period of worrying.
      Will take approximately 30-45 minutes.

If you are in Introductory Psychology (Psychology 1100), you may be eligible to receive a bonus course mark for each phase you complete.

Appendix B

Consent Form, Information Letter,

and Contact Sheet

Project title: The Role of Self-Management Skills in Worry and Mood Regulation
<u>Consent Form</u>

I _____ (please print), have read the information letter
provided and have been told how to get more information about this study.   My signature on this
page indicates that I agree to participate in this research and understand the following:

- I have received an explanation about the nature of the research project, its purpose and
  procedures.
- The study consists of two phases. Phase 1 involves the completion of 7 questionnaires
  and it will take approximately 60 minutes to complete. Phase 2 involves completion of 2
  questionnaires before and after a period of worry, and after a brief intervention. Phase 2
  will take approximately 30-45 minutes to complete.
- I will be asked questions regarding my worrying tendencies, beliefs about worry, physical
  symptoms that may come with worry, mood and self-management. I can choose to skip
  any questions that I am not comfortable answering.
- I will be asked to complete this Consent Form before both phases of the study.
- If I wish to complete Phase 2 of the study, I may be contacted by the student researcher
  via the email address or telephone number that I provided on the Contact Information
  Sheet.
- If I am a student in Introductory Psychology (Psychology 1100), I will be able to receive
  up to 2 bonus marks added to my final grade (1 mark for each phase completed). All
  other participants will receive no direct benefit.
- I will not be placed at any foreseeable risks above those involved with daily life, or a
  period of worry.
- I am a volunteer and can withdraw at any time from this study without explanation or
  penalty.
- I understand my data will be securely stored for five years.
- Only persons directly involved with the research will have access to the questionnaires,
  and they will be required to uphold confidentiality.
- I will not be identified on any reports or publications stemming from this research.
- A summary of the research findings can be made available to me at the completion of the
  study by e-mailing Alexander Penney at apenney@lakeheadu.ca

_____   _____
Participant Signature   Date

Project title: The Role of Self-Management Skills in Worry and Mood Regulation
Information Letter – Phase 1

To the Potential Participant,

Thank you for being interested in our study on Self-Management and Worry. This research project is being conducted by Alexander Penney and Dr. Dwight Mazmanian with the Department of Psychology at Lakehead University. This study is being conducted to examine how self-management skills may influence worrying and beliefs about worry. By participating, you can help us gain a better understanding of worry and anxiety. You are being invited to participate because you are a member of the Lakehead University community.

In the first phase of the study you will be asked to fill out seven questionnaires and it will require approximately 60 minutes to complete. Questions will focus on how your worrying tendencies, beliefs about worry, physical symptoms that may come with worry and self-management. Some of the questionnaires may contain similar items, but please answer each item independently. The second phase of the study will require participants to fill out three questionnaires before and after a period of intense worry. Please fill out the Contact Information Sheet if you would like to participate in phase two.

Anonymity will be maintained throughout the study. Your name will not be published in any reports stemming from this research. All forms will be stored in a secure place at Lakehead University for five years for publication purposes. A number will uniquely identify you. Only persons directly involved with the research will have access to the questionnaires, and they will be required to uphold confidentiality. Your participation in this study is completely voluntary, you may refuse to complete any part or question in the study, and you may withdraw from this study at any point without any explanation or penalty.

If you are willing to participate, please complete the consent form provided, and return it to the student researcher. The consent form will be kept in a file separate from the study results in order to maintain confidentiality and anonymity. If you are a student in Introductory Psychology, you will receive one bonus mark for completion of the study, otherwise there is no direct benefit for completing this study. You will be placed at no more risk than a person would experience in a normal day.

Manuscripts and posters documenting the research findings may be submitted for publication and conference presentations in the future. If you would like information on the results of the study, you can make a request via e-mail to the address below and a summary will be sent to you at the end of the study.

Occasionally, completing questionnaires on worry may raise some personal issues. If this research causes any internal discomfort, please contact the Student Health and Counselling Centre at UC1007 (telephone: 343-8261). If you should have a personal emergency, please call the Thunder Bay Crisis Response Service at (1-807) 346-8282 to speak with a counsellor.

If you have any questions or concerns regarding this study, please contact Alexander Penney at **apenney@lakeheadu.ca**. You may also contact Lakehead University's Research Ethics Board at 343-8283.

Sincerely,

Alexander Penney   Dwight Mazmanian, Ph.D., C. Psych.
Clinical Psychology   Associate Professor
Master of Arts Candidate   Department of Psychology
                                                                  Email: dmazmani@lakeheadu.ca
                                                                  Tel: (807) 343-8257

Project title: The Role of Self-Management Skills in Worry and Mood Regulation
Information Letter – Phase 2

To the Potential Participant,

Thank you for being interested in continuing with our study on Self-Management and Worry. This research project is being conducted by Dr. Dwight Mazmanian and Alexander Penney with the Department of Psychology at Lakehead University. This study is being conducted to examine how self-management skills may influence worrying and beliefs about worry. By participating, you can help us gain a better understanding of worry and generalized anxiety disorder. You are being invited to participate because you are a member of the Lakehead University community and have already completed Phase 1 of the study.

In this phase of the study, participants will be required to fill out two questionnaires before and after a brief period of intense worry. You will also have to fill out the questionnaires after a brief intervention. This phase should take approximately 30-45 minutes to complete. The questionnaires will ask you questions about your current mood and any associated sensations you may have.

Anonymity will be maintained throughout the study. Your name will not be published in any reports stemming from this research. All forms will be stored in a secure place at Lakehead University for five years for publication purposes. A number will uniquely identify you. Only persons directly involved with the research will have access to the questionnaires, and they will be required to uphold confidentiality. Your participation in this study is completely voluntary, you may refuse to complete any part or question in the study, and you may withdraw from this study at any point without any explanation or penalty.

If you are willing to participate, please complete the consent form provided, and return it to the student researcher. The consent form will be kept in a file separate from the study results in order to maintain confidentiality and anonymity. If you are a student in Introductory Psychology, you will receive one bonus mark for completion of the study, otherwise there is no direct benefit for completing this study. You will be placed at no more risk than a person would experience when engaged in worry.

Manuscripts and posters documenting the research findings may be submitted for publication and conference presentations in the future. If you would like information on the results of the study, you can make a request via e-mail to the address below and a summary will be sent to you at the end of the study.

It is understandable that some personal distress may linger after the study. It should naturally decrease as it would anytime you normally worry. However, if this research causes any internal discomfort that persists, please contact the Student Health and Counselling Centre at UC1007 (telephone: 343-8261). If you should have a personal emergency, please call the Thunder Bay Crisis Response Service at (1-807) 346-8282 to speak with a counsellor.

If you have any questions or concerns regarding this study, please contact Alexander Penney at **apenney@lakeheadu.ca**. You may also contact Lakehead University's Research Ethics Board at 343-8283.

Sincerely,

Alexander Penney   Dwight Mazmanian, Ph.D., C. Psych.
Clinical Psychology   Associate Professor
Master of Arts Candidate   Department of Psychology
                                                    Email: dmazmani@lakeheadu.ca
                                                    Tel: (807) 343-8257

Project title: The Role of Self-Management Skills in Worry and Mood Regulation
Contact Information Sheet

Please fill out the following information if you are interested in completing the second phase of the study. The second phase will require participants to fill out three questionnaires before and after a period of intense worry, and fill out the questionnaires again after a brief intervention. It will take approximately 30-45 minutes to complete.

If you wish to complete the second phase, you will be contacted in approximately 2 days. This sheet will be destroyed after the second phase is complete.

Please check your preferred method of contact:

Name: _____

☐ Phone: _____

☐ E-mail: _____

For Laboratory Use Only
ID = _____

Appendix C

Measures used in the Study

Background Information Questionnaire

We would appreciate your responses to the following questions.

1) Sex:　　　　Male ☐　　　　　　Female ☐

2) Age:　　　　_____

3) Ethnicity:　Caucasian/White ☐　　　　Middle Eastern ☐

　　　　　　　African-Canadian/Black ☐　　East Indian ☐

　　　　　　　Native-Canadian/Aboriginal ☐　Hispanic/Latino ☐

　　　　　　　Asian ☐　　　　　　　Other (please specify) _____

4) What is your marital status?

　　Single ☐　　　　Dating ☐　　　　Married/common law ☐

　　Divorced/separated ☐　　　Widowed ☐

5) Are you currently employed?　Full Time ☐　　　Part Time ☐

　　　　Student ☐　　　Retired ☐　　　No ☐

6) What is the highest level of education that you have achieved?

　　Some high school ☐　　High school diploma ☐
　　Some college ☐　　　College diploma ☐
　　Some university ☐　　Undergraduate degree ☐
　　Master's degree ☐　　Doctoral degree ☐

7) If you are a student at Lakehead University, please specify the number of years you have been in university:

　　1 year ☐　　2 years ☐　　3 years ☐　　4 years ☐
　　5 years ☐　　6 years ☐　　7 years ☐　　8+ years ☐

8) Have you ever been diagnosed with a psychological, emotional, or psychiatric condition(s)?

Yes ☐   No ☐

9) If you answered "yes" above, please list the name of the condition(s) (if known):

_____

10) Are you currently receiving counselling, therapy, or medication for a psychological, emotional, or psychiatric condition(s)?

Counselling/Therapy ☐   Medication ☐   Neither ☐

11) If you answered "Counselling/Therapy" above, please list the name of the condition(s) which you are receiving counselling/therapy for (if known):

_____

12) If you answered "Medication" above, please list the name of the condition(s) which you are receiving medication for (if known):

_____

GADQ-IV   ID: _____

1. Do you experience excessive worry?

    Yes ☐   No ☐

2. Is your worry excessive in intensity, frequency, or amount of distress it causes?

    Yes ☐   No ☐

3. Do you find it difficult to control your worry (or stop worrying) once it starts?

    Yes ☐   No ☐

4. Do you worry excessively and uncontrollably about <u>minor things</u> such as being late for an appointment, minor repairs, homework, etc.?

    Yes ☐   No ☐

5. Please list the most frequent topics about which you worry excessively and uncontrollably:

a. _____   d. _____

b. _____   e. _____

c. _____   f. _____

6. During the <u>last six months</u>, have you been bothered by excessive and uncontrollable worries more days than not?

    Yes ☐   No ☐

7. During the past six months, have you often been bothered by any of the following symptoms?

Place a check next to each symptom that you have had more days than not:

Restlessness or feeling keyed up or on edge ☐

Irritability ☐

Difficulty falling/staying asleep or restless/unsatisfying sleep ☐

Being easily fatigued ☐

Difficulty concentrating or mind going blank ☐

Muscle tension ☐

8. How much do worry and physical symptoms interfere with your life, work, social activities, family, etc.? Circle one <u>number</u>:

None		Mildly		Moderately		Severely		Very Severely
0	1	2	3	4	5	6	7	8

9. How much are you bothered by worry and physical symptoms (how much distress does it cause you)? Circle one <u>number</u>:

None		Mildly		Moderately		Severely		Very Severely
0	1	2	3	4	5	6	7	8

Below are a series of statements that can be related to worry. Please think back to times when you are worried, and indicate by circling a number (0 to 5), to what extent these statements are true for you.

Not at all True	Slightly True	Somewhat true	Very True	Absolutely True
1	2	3	4	5

1. If I did not worry, I would be careless and irresponsible.

    1   2   3   4   5

2. If I worry, I will be less disturbed when unforeseen events occur.

    1   2   3   4   5

3. I worry in order to know what to do.

    1   2   3   4   5

4. If I worry in advance, I will be less disappointed if something serious occurs.

    1   2   3   4   5

5. The fact that I worry helps me plan my actions to solve a problem.

    1   2   3   4   5

6. The act of worrying itself can prevent mishaps from occurring.

    1   2   3   4   5

7. If I did not worry, it would make me a negligent person.

    1   2   3   4   5

8. It is by worrying that I finally undertake the work that I must do.

    1   2   3   4   5

9. I worry because I think it can help me find a solution to my problem.

    1   2   3   4   5

10. The fact that I worry shows that I am a person who takes care of their affairs.

    1   2   3   4   5

11. Thinking too much about positive things can prevent them from occurring.

    1   2   3   4   5

Not at all True	Slightly True	Somewhat true	Very True	Absolutely True
1	2	3	4	5

12. The fact that I worry confirms that I am a prudent person.

| 1 | 2 | 3 | 4 | 5 |

13. If misfortune comes, I will feel less responsible if I have been worrying about it beforehand.

| 1 | 2 | 3 | 4 | 5 |

14. By worrying, I can find a better way to do things.

| 1 | 2 | 3 | 4 | 5 |

15. Worrying stimulates me and makes me more effective.

| 1 | 2 | 3 | 4 | 5 |

16. The fact that I worry incites me to act.

| 1 | 2 | 3 | 4 | 5 |

17. The act of worrying itself reduces the risk that something serious will occur.

| 1 | 2 | 3 | 4 | 5 |

18. By worrying, I do certain things which I would not decide to do otherwise.

| 1 | 2 | 3 | 4 | 5 |

19. The fact that I worry motivates me to do the things I must do.

| 1 | 2 | 3 | 4 | 5 |

20. My worries can, by themselves, reduce the risks of danger.

| 1 | 2 | 3 | 4 | 5 |

21. If I worry less, I decrease my chances of finding the best solution.

| 1 | 2 | 3 | 4 | 5 |

22. The fact that I worry will allow me to feel less guilty if something serious occurs.

| 1 | 2 | 3 | 4 | 5 |

23. If I worry, I will be less unhappy when a negative event occurs.

| 1 | 2 | 3 | 4 | 5 |

24. By not worrying, one can attract misfortune.

| 1 | 2 | 3 | 4 | 5 |

25. The fact that I worry shows that I am a good person.

| 1 | 2 | 3 | 4 | 5 |

SCMS   ID: _____

Please read each of the following statements and rate how well each statement describes you, using the following scale:

5 = *Very descriptive of me*

4 = Somewhat/Mostly descriptive of me

3 = A little descriptive of me

2 = A little undescriptive of me

1 = Somewhat/Mostly undescriptive of me

0 = *Very undescriptive of me*

1. When I work toward something, it gets all my attention.

      0   1   2   3   4   5

2. The goals I achieve do not mean much to me.

      0   1   2   3   4   5

3. I become very aware of what I am doing when I am working towards a goal.

      0   1   2   3   4   5

4. I get myself through hard things by planning to enjoy myself afterwards.

      0   1   2   3   4   5

5. I know I can track my behaviour when working toward a goal.

      0   1   2   3   4   5

6. When I set important goals for myself, I usually do not achieve them.

      0   1   2   3   4   5

7. When I do something right, I take time to enjoy the feeling.

      0   1   2   3   4   5

8. I pay close attention to my thoughts when I am working on something hard.

      0   1   2   3   4   5

9. I silently praise myself even when others do not praise me.

      0   1   2   3   4   5

10. I do not seem capable of making clear plans for most problems that come up in my life.

      0   1   2   3   4   5

5 = *Very descriptive of me*

4 = Somewhat/Mostly descriptive of me

3 = A little descriptive of me

2 = A little undescriptive of me

1 = Somewhat/Mostly undescriptive of me

0 = *Very undescriptive of me*

11. I make sure to track my progress regularly when I am working on a goal.

     0   1   2   3   4   5

12. The standards I set for myself are unclear and make it hard for me to judge how I am doing on a task.

     0   1   2   3   4   5

13. I congratulate myself when I make some progress.

     0   1   2   3   4   5

14. I keep focused on tasks I need to do even if I do not like them.

     0   1   2   3   4   5

15. I have learned that it is useless to make plans.

     0   1   2   3   4   5

16. I give myself something special when I make some progress.

     0   1   2   3   4   5

PSWQ ID: _____

Circle the number that describes how typical or characteristic each item is of you, using the following scale:

Not at all Typical Somewhat Typical Very Typical
 1 2 3 4 5

1. If I don't have enough time to do everything, I don't worry about it.
 1 2 3 4 5

2. My worries overwhelm me.
 1 2 3 4 5

3. I don't tend to worry about things.
 1 2 3 4 5

4. Many situations make me worry.
 1 2 3 4 5

5. I know I shouldn't worry about things, but I just can't help it.
 1 2 3 4 5

6. When I'm under pressure, I worry a lot.
 1 2 3 4 5

7. I am always worrying about something.
 1 2 3 4 5

8. I find it easy to dismiss worrisome thoughts.
 1 2 3 4 5

9. As soon as I finish one task, I start to worry about everything else I have to do.
 1 2 3 4 5

10. I never worry about anything.
 1 2 3 4 5

11. When there is nothing more I can do about a concern, I don't worry about it anymore.
 1 2 3 4 5

12. I've been a worrier all my life.
 1 2 3 4 5

Not at all Typical		Somewhat Typical		Very Typical
1	2	3	4	5

13. I notice that I have been worrying about things.

1	2	3	4	5

14. Once I start worrying, I can't stop.

1	2	3	4	5

15. I worry all the time.

1	2	3	4	5

16. I worry about projects until they are all done.

1	2	3	4	5

MCQ-30   ID: _____

This questionnaire is concerned with beliefs people have about their thinking. Listed below are a number of beliefs that people have expressed. Please read each item and say how much you generally agree with it by circling the appropriate number. Please respond to all the items, there are no right or wrong answers.

Do not agree	Agree slightly	Agree moderately	Agree very much
1	2	3	4

1. Worrying helps me to avoid problems in the future

       1   2   3   4

2. My worrying is dangerous for me

       1   2   3   4

3. I think a lot about my thoughts

       1   2   3   4

4. I could make myself sick with worrying

       1   2   3   4

5. I am aware of the way my mind works when I am thinking through a problem

       1   2   3   4

6. If I did not control a worrying thought, and then it happened, it would be my fault

       1   2   3   4

7. I need to worry in order to remain organised

       1   2   3   4

8. I have little confidence in my memory for words and names

       1   2   3   4

9. My worrying thoughts persist, no matter how I try to stop them

       1   2   3   4

10. Worrying helps me to get things sorted out in my mind

       1   2   3   4

11. I cannot ignore my worrying thoughts

       1   2   3   4

Do not agree 1	Agree slightly 2	Agree moderately 3	Agree very much 4

12. I monitor my thoughts

1	2	3	4

13. I should be in control of my thoughts all of the time

1	2	3	4

14. My memory can mislead me at times

1	2	3	4

15. My worrying could make me go mad

1	2	3	4

16. I am constantly aware of my thinking

1	2	3	4

17. I have a poor memory

1	2	3	4

18. I pay close attention to the way my mind works

1	2	3	4

19. Worrying helps me cope

1	2	3	4

20. Not being able to control my thoughts is a sign of weakness

1	2	3	4

21. When I start worrying, I cannot stop

1	2	3	4

22. I will be punished for not controlling certain thoughts

1	2	3	4

23. Worrying helps me to solve problems

1	2	3	4

24. I have little confidence in my memory for places

1	2	3	4

25. It is bad to think certain thoughts

1	2	3	4

Do not agree 1	Agree slightly 2	Agree moderately 3	Agree very much 4

26. I do not trust my memory

| 1 | 2 | 3 | 4 |

27. If I could not control my thoughts, I would not be able to function

| 1 | 2 | 3 | 4 |

28. I need to worry, in order to work well

| 1 | 2 | 3 | 4 |

29. I have little confidence in my memory for actions

| 1 | 2 | 3 | 4 |

30. I constantly examine my thoughts

| 1 | 2 | 3 | 4 |

WAQ   ID: _____

1. What subjects do you worry about most often?

a) _____   d) _____

b) _____   e) _____

c) _____   f) _____

___

For the following items, please circle the corresponding number (0-8).

___

2. Do your worries seem excessive or exaggerated?

Not at all excessive				Moderately excessive				Totally excessive
0	1	2	3	4	5	6	7	8

3. Over the past six months, how many days have you been bothered by excessive worry?

Never				1 day out of 2				Everyday
0	1	2	3	4	5	6	7	8

4. Do you have difficulty controlling your worries? For example, when you start worrying about something, do you have difficulty stopping?

No difficulty				Moderate difficulty				Extreme difficulty
0	1	2	3	4	5	6	7	8

5. Over the past six months, to what extent have you been disturbed by the following sensations when you were worried or anxious? Rate each sensation by circling a number (0-8).

a) Restlessness or feeling keyed up or on edge.

Not at all				Moderately				Very Severely
0	1	2	3	4	5	6	7	8

b) Being easily fatigued.

Not at all				Moderately				Very Severely
0	1	2	3	4	5	6	7	8

c) Difficulty concentrating or mind going blank.

Not at all				Moderately				Very Severely
0	1	2	3	4	5	6	7	8

d) Irritability.

Not at all				Moderately				Very Severely
0	1	2	3	4	5	6	7	8

e) Muscle tension.

Not at all				Moderately				Very Severely
0	1	2	3	4	5	6	7	8

f) Sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep).

Not at all				Moderately				Very Severely
0	1	2	3	4	5	6	7	8

6. To what extent does worry or anxiety interfere with your life? For example, your work, social activities, family life, etc.?

Not at all				Moderately				Very Severely
0	1	2	3	4	5	6	7	8

PANAS   ID: _____

This scale consists of a number of words that describe different feelings and emotions. Read each item and then choose the appropriate answer by circling the number under the word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale to record your answers.

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

1. Interested

1	2	3	4	5

2. Irritable

1	2	3	4	5

3. Distressed

1	2	3	4	5

4. Alert

1	2	3	4	5

5. Excited

1	2	3	4	5

6. Ashamed

1	2	3	4	5

7. Upset

1	2	3	4	5

8. Inspired

1	2	3	4	5

9. Strong

1	2	3	4	5

10. Nervous

1	2	3	4	5

11. Guilty

1	2	3	4	5

Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1	2	3	4	5

12. Determined

| 1 | 2 | 3 | 4 | 5 |

13. Scared

| 1 | 2 | 3 | 4 | 5 |

14. Attentive

| 1 | 2 | 3 | 4 | 5 |

15. Hostile

| 1 | 2 | 3 | 4 | 5 |

16. Jittery

| 1 | 2 | 3 | 4 | 5 |

17. Enthusiastic

| 1 | 2 | 3 | 4 | 5 |

18. Active

| 1 | 2 | 3 | 4 | 5 |

19. Proud

| 1 | 2 | 3 | 4 | 5 |

20. Afraid

| 1 | 2 | 3 | 4 | 5 |

EMAS   ID: _____

The 20 items below are descriptions of reactions to and attitudes toward a certain situation. For each of the following 20 items, please circle a number on the 5-point scale to indicate:

How you feel at this particular moment.

Not at all   Very much

| 1 | 2 | 3 | 4 | 5 |

1. Hands feel moist

| 1 | 2 | 3 | 4 | 5 |

2. Distrust myself

| 1 | 2 | 3 | 4 | 5 |

3. Breathing is irregular

| 1 | 2 | 3 | 4 | 5 |

4. Unable to focus on task

| 1 | 2 | 3 | 4 | 5 |

5. Have tense feeling in stomach

| 1 | 2 | 3 | 4 | 5 |

6. Heart beats faster

| 1 | 2 | 3 | 4 | 5 |

7. Feel helpless

| 1 | 2 | 3 | 4 | 5 |

8. Unable to concentrate

| 1 | 2 | 3 | 4 | 5 |

9. Perspire

| 1 | 2 | 3 | 4 | 5 |

10. Fear defeat

| 1 | 2 | 3 | 4 | 5 |

11. Mouth feels dry

| 1 | 2 | 3 | 4 | 5 |

Not at all				Very much
1	2	3	4	5

12. Self-preoccupied

1	2	3	4	5

13. Feel uncertain

1	2	3	4	5

14. Feel tense

1	2	3	4	5

15. Feel inadequate

1	2	3	4	5

16. Hands feel unsteady

1	2	3	4	5

17. Feel flushed

1	2	3	4	5

18. Feel self-conscious

1	2	3	4	5

19. Feel incompetent

1	2	3	4	5

20. Feel lump in throat

1	2	3	4	5

Worry Report   ID: _____

1. Please list the five (5) most prevalent thoughts you had during the past 5 minutes:

     a. _____

       _____

     b. _____

       _____

     c. _____

       _____

     d. _____

       _____

     e. _____

       _____

2. Please estimate the percentage of time you spent worrying during the past 5 minutes

(0-100%):   _____

Appendix D

Debriefing Form

Project title: The Role of Self-Management Skills in Worry and Mood Regulation
<u>Debriefing Form</u>

Thank you for participating in this study on Self-Management and Worry. By participating, you are helping us to gain a better understanding of worry and how self-management skills may impact worrying. Excessive and uncontrollable worry is the defining characteristic of generalized anxiety disorder, and by understanding how self-management skills influence moods brought on by worry, we may be able to develop better treatments for generalized anxiety disorder. You may have also completed questions regarding your beliefs about worry. This research will help illuminate what beliefs may coincide with people developing generalized anxiety disorder.

Please be assured that the data you provided will be in no way linked to your name or contact information. All the questionnaires will be labelled with ID numbers that will not be connected to you and all data will remain anonymous. To obtain a summary of the results after the study is completed, please e-mail Alexander Penney at **apenney@lakeheadu.ca** and an electronic summary of the results will be sent to you at the completion of the study.

Occasionally, completing a study on worry may raise some internal issues. Any discomfort should naturally decrease as it would anytime you normally worry. However, if you notice any persisting internal discomfort, please contact the Student Health and Counselling Centre at UC1007 (telephone: 343-8261). If you should have a personal emergency, please call the Thunder Bay Crisis Response Service at (1-807) 346-8282 to speak with a counsellor.

If you are interested in research in this area, below are excellent references for background information:

Borkovec, T. D., Alcaine, O., & Behar, E. (2004). Avoidance theory of worry and generalized anxiety disorder. In R. G. Heimberg, C. L. Turk, & D. S. Mennin (Eds.), *Generalized anxiety disorder: Advances in research and practice* (pp. 77–108). New York: Guilford Press.

Dugas, M. J., & Koerner, N. (2005). Cognitive-behavioral treatment for generalized anxiety disorder: Current status and future directions. *Journal of Cognitive Psychotherapy, 19*(1), 61-81.

Kanfer, F. H., & Gaelick, L. (1986). Self-management methods. In F. H. Kanfer & A. P. Goldstein (Eds.), *Helping people change: A textbook of methods* (pp. 283-345). New York: Pergamon Press.

Sincerely,

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