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Does Change in Anxiety Predict Changes in Metacognitions?

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DOES CHANGE IN ANXIETY PREDICT CHANGES IN METACOGNITIONS?

A Master's Thesis

Presented to

The Graduate College of

Missouri State University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Science, Psychology

By

Heather Lynn Clark

August 2019

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Psychology

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ABSTRACT

In recent years an increasing number of studies have examined anxiety-related metacognitive beliefs and their relationship to anxiety disorder diagnoses and treatment outcome. However, no study to date has examined changes in metacognitive beliefs following induced anxiety. The aim of the present study is to examine the relationship between changes in state anxiety and worry-related metacognitive beliefs. Participants completed baseline measures of anxiety and metacognitions before either being exposed to a control stimulus or worry-inducing stimulus. Following exposure participants completed anxiety and metacognition measures once again. Group means comparison analyses and correlations are reported. Results suggest state anxiety can be negatively influenced by a brief, worrisome exposure. Inconclusive results about changes in anxiety and metacognitions, limitations of the present study, and implications for future research are discussed.

KEYWORDS: state anxiety, worry, metacognition, induced anxiety, beliefs

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TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

Metacognitive theory (Wells, 1995, 1999) posits that negative appraisals of one's own thoughts (i.e., metacognition; Flavell, 1979) and worry play a significant role in the etiology and maintenance of anxiety disorders such as generalized anxiety disorder (GAD). According to Wells' (1995, 1999) metacognitive model of GAD, over time with exposure to anxiety-inducing events individuals develop two types of beliefs related to worrying. Type 1 worry (i.e., positive beliefs about worry) is thought to comprise those dysfunctional beliefs about the utility of worrying, such as believing that worrying allows one to be in control. Type 2 worry (i.e., negative beliefs about worry) is defined as those dysfunctional beliefs about the consequences of worry, such as believing that not being able to control one's thoughts is dangerous. The metacognitive model poses that positive beliefs about worry heighten attention to anxiety-provoking stimuli which yields additional worry leading to negative beliefs about one's worry. Wells further asserts that temporary anxiety-relieving behavioral strategies such as reassurance seeking and avoidance elicit perpetuated worry, maintaining this vicious anxiety cycle. Dysfunctional appraisals of one's own thoughts are believed to play a role in other anxiety disorders such as obsessive-compulsive disorder (OCD). In some models of OCD, beliefs about responsibility for harm, dangerous thought control, thought-action fusion, and self-appraisal are temporarily alleviated by compulsions, which maintain the obsession-compulsion cycle (Wells, 1997; Purdon & Clark, 1999). Although arguably behavioral therapy and cognitive behavioral therapy (CBT) have targeted metacognitions under a different label for decades (Moritz & Lysaker, 2018), recently anxiety-related metacognitions (especially those domains asserted by

Wells) have been measured across treatment modalities such as metacognitive therapy (MCT) and CBT as a form of treatment outcome.

The Metacognitions Questionnaire (Cartwright-Hatton & Wells, 1997) and its shortened version, the MCQ-30 (Wells & Cartwright-Hatton, 2004) are self-report scales developed to measure five constructs of anxiety-related metacognitions including positive beliefs about worry (i.e., beliefs that worry is beneficially functional), negative beliefs about worry (i.e., beliefs that worry is harmful and uncontrollable), cognitive self-consciousness (i.e., attention to one's own thought processes), cognitive confidence (i.e., distrust in one's ability to remember information), and need to control thoughts (i.e., beliefs that thoughts are one's responsibility to control to avoid punishment). In the development of the original MCQ, Cartwright-Hatton and Wells (1997) found that all pre-post subscale scores and MCQ total scores were highly correlated, suggesting these constructs are stable over time. Similarly, test-retest scores were found to be highly correlated over an average of roughly 34 days, except for the negative beliefs about worry subscale, which was moderately correlated. The authors suggest exposure to stress may contribute to increased beliefs about the controllability of thoughts, but otherwise conclude again the MCQ-30 measures trait-like as opposed to state-dependent qualities. "Trait anxiety" typically describes a rather enduring tendency for an individual to assess upsetting situations as particularly threatening, which may influence their "state anxiety," or their severity of anxiety as a result (Spielberger, 1983). Like other trait measures of anxiety symptomology, both the MCQ and MCQ-30 have been utilized to assess treatment outcome.

For example, the MCQ and MCQ-30 have demonstrated sensitivity to change following treatment effects for individual and group CBT for OCD (MCQ-30; Solem, Håland, Vogel, Hansen, & Wells, 2009), individual inpatient MCT and CBT for a various anxiety disorders

(MCQ-30; Johnson, Hoffart, Nordahl, Ulvenes, Vrabel, & Vampold, 2017), group MCT for GAD (MCQ-30 positive and negative beliefs subscales; McEvoy et al., 2015), and individual MCT and intolerance-of-uncertainty therapy for GAD (MCQ positive and negative beliefs subscales; van der Heiden, Muris, & van der Molen, 2012). Although the MCQ-30 has been reported as sensitive to change over the course of treatment, no studies to date have examined changes in metacognitions following an anxiety-provoking stimulus or how those changes may be related to changes in state anxiety.

One study (Prados, 2011) has examined beliefs about worry and the relationship between these beliefs and changes in state anxiety following exposure to an anxiety-provoking stimulus. In the first experiment, participants were exposed to a potentially anxiety-provoking stimulus in order to examine the effects of different types of persuasion about the utility of worry on changes in state anxiety and worry about the stimulus. The potentially worrisome stimulus in this first experiment was a narrative regarding the disappearance of an Amazonian culture, "an absolutely new worrisome message for the [Spanish undergraduate students]" (p. 218, Prados, 2011) in order to control for habituation per Parkinson and Rachman (1980). Worry was measured by a single question asking participants how worried they were about the stimulus (1 – not at all to 7 – very much) after exposure (but not before), and no significant differences between groups were observed. Further, across groups, participants indicated only a moderate level of worry ($M = 4.3$, $SD = 1.17$; Prados, 2011), which may have been the result of social desirability as the author concludes. Meanwhile, significantly higher state anxiety scores (STAI-S; Spielberger, 1983) were reported after exposure. In the second experiment, a more individually meaningful anxiety-provoking stimulus was implemented, but again no significant differences were found across groups for stimulus-specific worry. However, significantly increased state anxiety scores were

observed following exposure, indicating brief exposure to a consequential worry is effective at inducing state anxiety. The primary aim of this study was to examine the effects of persuasion on beliefs about worry. As such, all participants were exposed to the same anxiety-provoking scenario. Additionally, neither the MCQ or MCQ-30 were utilized, and changes in the anxiety-related metacognitions posited to maintain generalized worry as measured by the similar Consequences of Worry Scale (COWS; Davey, Tallis, & Capuzzo, 1996) were not measured. Therefore, the question remains as to whether changes in state anxiety are related to changes in metacognitions following exposure to an anxiety-provoking stimulus.

The present study has two primary aims. The first of these is to examine the effectiveness of a degree-requirement-change narrative and writing exercise for inducing anxiety amongst undergraduate students. Additionally, this study seeks to investigate the relationship between changes in state anxiety and relevant metacognitions as measured by the MCQ-30 following exposure to an anxiety-provoking stimulus. It was first hypothesized that neither group would demonstrate significant differences on trait anxiety (STAI-T), state anxiety (STAI-S), or metacognitions (MCQ-30) total scores prior to randomization into groups. Consistent with previous research (e.g., Prados, 2011) it was then hypothesized students presented with a brief, personally concerning scenario (i.e., degree requirement changes) would report significantly increased state anxiety while students presented with a control scenario would report no change in state anxiety. Following exposure, students in the experimental condition were also hypothesized to report significantly increased MCQ-30 total scores from baseline and compared to students in the control condition. Because the metacognitive model suggests positive beliefs about worry are triggered with stress, students in the experimental condition were additionally expected to report significantly increased positive beliefs subscale scores following exposure to

the scenario and writing exercise. Similarly, as negative beliefs about the danger and uncontrollability of worry are thought to be stimulated as a result of worry, students in the experimental condition were hypothesized to report significantly higher negative beliefs subscale scores. Finally, it was hypothesized that state anxiety change scores would predict metacognition change scores while controlling for trait anxiety.

METHODS

Participants

Participants were 29 students at a large Midwestern university. Students participated in the study for two hours of course-required research participation. Students qualified for inclusion in the study if they were enrolled in an introductory psychology course, reported being at least 18 years of age, and provided informed consent. Three participants elected not to have their data included in analyses following debriefing, leaving the final sample size at 26.

The average age of participants was 19.12 years (range: 18-22, *SD* = 0.95). Participants had the ability to endorse multiple races/ethnicities, and were 84.6% (n=22) White, 7.7% (n = 2) African-American, 3.8% (n=1) Asian, and 3.8% (n=1) Bi- or Multi-Racial. Half of the participants were female (n = 13, 50.0%), while half were male; no participants identified as transgender or non-binary.

Participants were randomly assigned to one of two conditions through the Qualtrics survey system with automatic attempts at keeping each group equivalent in size. Of the 26 participants who qualified (i.e., reported being at least 18 years old), provided informed consent, completed the survey, and agreed to have their data used, 14 (53.8%) were assigned to the control condition while 12 (46.2%) were assigned to the experimental condition. All participants responded appropriately to an attention check approximately halfway through the survey, suggesting that students read questions carefully and followed instructions.

Procedures

Students enrolled in an introductory psychology course seeking research credit as part of their course requirements elected to participate in the study through the department's research participation system (SONA). Participants were directed to a web-based survey through a link to Qualtrics, where they were initially presented with a consent form. Upon providing consent, participants answered a series of demographic questionnaires at which time they were screened for age qualification. They were then asked to complete each of the following measures before being randomly assigned to either experimental or control condition. The measures and procedures utilized in this study were approved by the Institutional Review Board on March 26th, 2019 (IRB #IRB-FY2019-588; Appendix A).

In the control condition, participants were asked to complete each of the following measures (i.e., both state and trait anxiety forms of the STAI-AD, the entire MCQ-30). They were then asked to carefully read information detailing the general degree requirements for completing a baccalaureate degree at their institution. The information provided were those degree requirements, including course credit hours and GPA scores, outlined by the university's registrar's office and publicly available. These students were then asked to respond to a series of questions relevant to their reading including how satisfied they are with the current degree requirements and how concerned or confident they are about completing these requirements. These statements were rated on a 7-point Likert-type scale ranging from 1 (completely dissatisfied; very concerned) to 7 (completely satisfied; very confident) with a neutral response option. They were also asked to report how many course credit hours they are currently enrolled, number of courses enrolled, and their intended major. Control condition participants were then asked to spend approximately five minutes writing about the following topics: Why they chose to

attend their school over another university, why they chose to transfer to their school from another university (if applicable), why they chose their intended major, and why they are currently enrolled in an introductory psychology course. These questions were intended to be neutral, non-anxiety-provoking questions mirroring those of the experimental condition. Participants were then tasked with completing the state-anxiety portion of the STAI-AD and the MCQ-30 once again.

In the experimental condition, participants were asked to complete the entirety of the STAI-AD and the MCQ-30. They were then asked to carefully read information about general baccalaureate degree requirements at their university. These participants were told that an internal institutional board had proposed changes to the general degree requirements to be implemented the following semester which would affect all students who are currently enrolled. The presented degree requirements were exactly the same as those presented in the control condition, with the fictional proposed changes and a brief summary of the implications of each change listed beneath the relevant requirement (e.g., "This change is anticipated to increase the number of courses required for completion by an additional year of study"). These students were then asked to respond to a series of questions relevant to their reading including how satisfied they are with the proposed changes to degree requirements and how concerned or confident they are about completing these new requirements. Again, these statements were rated on a 7-point Likert-type scale ranging from 1 (completely dissatisfied; very concerned) to 7 (completely satisfied; very confident) with a neutral response option. They were also asked to report how many course credit hours they are currently enrolled, number of courses enrolled, and their intended major. Experimental condition participants were then asked to spend approximately five minutes writing about the following topics: What concerns they may have about completing

these additional requirements, which proposed change concerns them the most and why, how the proposed changes may impact their educational experience, and what additional resources they may need to complete these additional requirements. These questions were intended to be mildly anxiety-provoking by prompting students to consider the impact of a realistic, potential change to their university commitment.

All participants were presented with the same debriefing screen which detailed the nature of the study and required that participants type a pre-defined written statement indicating their understanding of the fictional nature of the proposed changes to degree requirements. Participants were provided with information for counseling services in the event of need for additional support, and participants were provided with the opportunity to withdraw their data from study inclusion following debriefing.

Measures

Participants were asked complete the following measures of anxiety and metacognitions after reporting their gender, age, race/ethnicity, and current academic year.

State-Trait Anxiety Inventory for Adults – Form Y (STAI; Spielberger, 1968). The STAI is a 40-item self-report measure consisting of two subscales measuring state (STAI-S; Form Y-1) and trait (STAI-T; Form Y-2) anxiety. Each subscale consists of twenty items which are rated on a four-point Likert-type scale ranging from 1 (not at all) to 4 (very much so) on the state subscale and from 1 (almost never) to 4 (almost always) on the trait subscale. The state subscale consists of questions asking participants to rate how they feel in the moment (e.g., “I feel at ease,” “I feel upset”), while the trait subscale instructs participants to indicate how they usually feel (e.g., “I lack self-confidence,” “I am a steady person”). As recommended by the

author (Spielberger, 1983), the STAI-S was administered immediately before administration of the STAI-T prior to the condition manipulation; the STAI-S was administered again following exposure. Higher scores on the STAI subscales indicate greater self-reported levels of current anxiety or anxiety proneness. The STAI subscales have demonstrated good to excellent internal consistency and acceptable to good test-retest reliability (see Barnes, Harp, & Jung, 2002 for a review). In the present study, the STAI demonstrated excellent internal consistency across both subtests at time one (STAI-S $\alpha = 0.97$; STAI-T $\alpha = 0.96$) and time two (STAI-S $\alpha = 0.98$). Additionally, the STAI-S demonstrated good test-retest reliability ($r(24) = 0.85$; $p < .001$).

Metacognitions Questionnaire – 30 (MCQ-30; Wells & Cartwright-Hatton, 2004). The MCQ-30 is a shortened version of the 65-item Metacognitions Questionnaire which maintains the original five-factor structure (MCQ; Cartwright-Hatton & Wells, 1997), which measures individual differences in maladaptive positive and negative beliefs about worry, beliefs about the need to control thoughts, confidence (or lack thereof) in one's cognitive capabilities, and attention to one's own thoughts. The 30-item self-report questionnaire asks participants to rate relevant statements in each of these domains on a 4-point Likert-type scale ranging from 1 (not at all) to 4 (agree very much). Higher scores on the MCQ-30 indicate greater levels of self-reported maladaptive beliefs about one's thoughts. The five-factor structure of the MCQ-30 has been demonstrated in a variety of samples (see Grøtte et al., 2016 for a review). Additionally, the MCQ-30 has evidenced acceptable to excellent internal consistency, strong test-retest correlations, and convergent validity with the trait subscale of the STAI (Wells & Cartwright-Hatton, 2004). In the present study, the MCQ-30 demonstrated excellent internal consistency at time one ($\alpha = 0.92$) and time two ($\alpha = 0.95$). Additionally, the MCQ-30 yielded excellent test-retest reliability for the total score ($r(24) = 0.97$; $p < 0.001$).

RESULTS

In order to test whether between-group differences existed on measures of state anxiety, trait anxiety, and metacognitive beliefs prior to exposure, a series of independent *t*-tests were conducted. At time one, there were no significant differences between the two groups on state or trait anxiety or metacognitive beliefs (Table 1). At time two, group differences between state anxiety and metacognitive beliefs were not significant (Table 2). Because the STAI-S scores at

Table 1: Pre-Exposure Group Differences

	Control Group		Experimental Group				
Measure	*Mean*	*SD*	*Mean*	*SD*	*t* value	*p* value	Effect size
STAI-Trait	38.50	14.4	42.40	13.8	-0.70	0.48	-0.28
STAI-State	35.64	17.1	40.42	14.2	-0.78	0.49	-0.28
MCQ-30 Total	54.50	14.4	62.42	13.2	-1.45	0.16	-0.57

Table 2: Post-Exposure Group Differences

	Control Group		Experimental Group				
Measure	*Mean*	*SD*	*Mean*	*SD*	*t* value	*p* value	Effect size
STAI-State	35.00	17.4	48.25	16.9	-1.97	0.061	-0.77
MCQ-30 Total	48.57	16.3	59.75	12.4	-1.94	0.064	-0.76

both times violated the Shapiro-Wilk test of normality, a Welch adjustment was utilized in each independent-samples analysis and the Wilcoxon Signed Rank test was utilized in each dependent-samples analysis involving these scores. Accordingly, effect sizes for dependent *t*-

tests are indicated by the matched rank biserial correlation. For all other analyses, effect sizes are indicated by Cohen's *d*.

A series of paired-samples *t*-tests were conducted in order to examine within-group differences between pre-exposure and post-exposure scores on metacognitive beliefs and state anxiety for those participants in the experimental condition. State anxiety was found to significantly increase following exposure with a large effect size, while MCQ-30 total scores significantly decreased with a moderate effect size (Table 3). The MCQ-30 positive and negative subscale scores did not demonstrate significant change following exposure (Table 3). Similarly, a series of paired-samples *t*-tests were conducted to examine within-group differences for those participants in the control condition. STAI-S scores at time one ($M = 35.64$, $SD = 17.1$) were not significantly different at time two ($M = 35.00$, $SD = 17.4$), $t(13) = 29.00$, $p = 0.92$. However, MCQ-30 total scores at time one ($M = 54.50$, $SD = 14.4$) significantly decreased following exposure at time two ($M = 48.6$, $SD = 16.3$) with a large effect size, $t(13) = 6.01$, $p < 0.001$, $d = 1.61$.

Table 3: Experimental Group Pre-Post Differences

	Pre-Exposure		Post-Exposure				
Measure	*Mean*	*SD*	*Mean*	*SD*	*t* value	*p* value	Effect size
MCQ-30 Total	62.42	13.2	59.75	12.4	2.70	0.021	0.78
MCQ-30 Positive	12.92	4.3	13.17	4.1	-0.49	0.63	-0.14
MCQ-30 Negative	12.17	4.9	11.67	4.4	1.20	0.26	0.35
STAI-State	40.42	14.2	48.25	16.9	7.50	0.025	-0.81

In both the whole sample and the experimental condition, STAI-S change scores were hypothesized to predict MCQ-30 change scores when controlling for the STAI-T and this hypothesis called for the use of a regression analysis. However, because there were no significant correlations between these scores for either group, a regression was not conducted. Descriptive statistics for these change scores and their correlations with trait anxiety are reported in Table 4 and Table 5.

Table 4: Change Score Descriptive Statistics

	Control Group		Experimental Group	
Measure	*Mean*	*SD*	*Mean*	*SD*
STAI-S Change	-0.64	4.8	7.80	11.9
MCQ-30 Total Change	-5.93	3.7	-2.67	3.4

Table 5: Change Scores and Trait Anxiety Correlations

	MCQ-30 Total Change		STAI-T Total	
Measure	Pearson's *r*	*p* value	Pearson's *r*	*p* value
STAI-S Change	-0.27	0.398	-0.32	0.319
MCQ-30 Total Change	--	--	0.18	0.584

DISCUSSION

The two primary aims of the present study were to (1) pilot a novel, online anxiety-inducing narrative and writing exercise aimed at undergraduate students and (2) examine the changes in state anxiety and metacognitive beliefs as previous research has not explicitly used the MCQ-30 to explore this relationship.

As hypothesized, there was no evidence of group differences on state anxiety, trait anxiety, or metacognitive beliefs prior to exposure. While the control group did not report significant changes in state anxiety, the experimental group reported significantly increased state anxiety after exposure, supporting our hypothesis. These results suggest the degree requirement change narrative and writing exercise designed for the purposes of this study were sufficiently anxiety-inducing and the matched control stimulus was appropriately neutral. However, contrary to our hypothesis, no significant difference between groups on state anxiety were observed following exposure. If such a discrepancy had occurred, these results would have provided increased support for the use of this manipulation as a means of inducing anxiety out of the lab.

Contrary to our hypotheses, following exposure both groups reported significantly decreased scores on the measure of metacognitive beliefs and there was not a significant difference between groups on post-metacognition scores. One possible conclusion that may be drawn from these results is that although the stimulus appeared to effectively increase anxiety, due to the nature of the worrisome content, positive beliefs about the benefits of worrying were not activated. Because the possible implementation of the proposed changes to degree requirements would be beyond the students' control, perhaps the participants in this condition did not find utility in worrying about such a possibility. This conclusion is supported by the

finding that there were no significant changes in the experimental condition on positive beliefs about worry following exposure, though this finding was also contrary to our hypothesis. Further, because metacognitive theory suggests positive beliefs about worry ultimately contribute to increased negative beliefs about worry, negative beliefs were hypothesized to significantly increase in the experimental condition. This hypothesis was not supported as no significant change was observed following exposure. Given the lack of significant change in positive beliefs, this result appears to be consistent with the metacognitive model.

However, the above conclusion does not explain the significant decrease in metacognition scores in the control condition. An informal *a posteriori* examination of the control participants' ratings of confidence in their ability to complete the existing degree requirements revealed an average confidence level between "mildly confident" and "somewhat confident," with half of the participants indicating they are "very confident." These results may suggest that reflecting on one's perceived ability to succeed can positively influence maladaptive beliefs about one's thoughts. On the other hand, previous research has not demonstrated a significant relationship between self-perception of problem-solving ability and positive beliefs about worry (Khawaja & Chapman, 2007). As examining the changes in individual MCQ-30 subscale scores within the control was beyond the scope of this study, future research may benefit from more closely examining these changes and additional factors that may influence them.

Finally, state anxiety change scores were hypothesized to predict metacognition change scores when trait anxiety was controlled. However, no significant relationship was observed between these change scores and trait anxiety. Similarly, there was no significant relationship between state anxiety change scores and metacognition change scores. This pattern may be due

to the significant decreases in metacognition scores, particularly in the experimental group. Because state anxiety significantly increased for this group, had their metacognition scores also significantly increased, examining the predictive power of the STAI-S on the MCQ-30 may have been applicable.

Several limitations exist for the present study. The online, self-report nature of the study, despite the attention check, did not allow for control of distracting elements as participants completed the survey. The generalizability of these results to a larger population is restricted by the demographic makeup of the sample. The most significant limitation of this study was the small sample size, which hindered power to detect differences between groups and draw meaningful conclusions.

Given the limitations of the present study, future research would advance our understanding of the relationship between state anxiety and metacognitions by examining the effects of induced anxiety on a larger, more diverse sample. The efficacy of the induced-anxiety manipulation implemented in this study would benefit from replication, particularly with a larger sample. Additionally, increasing the length of the writing exercise or time between evaluating post-exposure scores may provide more insight into the role of time spent ruminating on these changes.

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APPENDIX: HUMAN SUBJECTS IRB APPROVAL

Date: 3-26-2019

IRB #: IRB-FY2019-588
Title: Does Change in Anxiety Predict Changes in Metacognitions?
Creation Date: 3-4-2019
End Date:
Status: Approved
Principal Investigator: William Deal
Review Board: MSU
Sponsor:

Study History

Submission Type	Review Type	Decision
Initial	Expedited	Approved

Key Study Contacts

Member Heather Clark	Role Primary Contact	Contact Heather217@live.missouristate.edu
Member William Deal	Role Principal Investigator	Contact pauldeal@missouristate.edu

Initial Submission

Investigative Team

Who is the Principal Investigator?

1 *This individual will be required to certify the protocol for submission and will be responsible for the overall project and **MUST be a faculty or staff** member.*

Name: William Deal
Organization: Psychology
Address: 901 S National Ave , Springfield, MO 65897-0027
Phone: 417-836-6631
Email: pauldeal@missouristate.edu

Who is the Primary Study Contact?

2 *This person, in addition to the Principal Investigator, will be included on all correspondence related to this project. This person may be the Principal Investigator or someone else **(faculty, staff, or student)**.*

Name: Heather Clark
Organization: Psychology
Address: , Springfield, MO 65897-0027
Phone:
Email:

Will there be any Co-Principal Investigators participating in this study?

3.

Co-Principal Investigators will also be required to certify the protocol for submission and share overall responsibility with the Principal Investigator for the study. Co-Principal Investigators MUST be faculty or staff members.

Yes

✓ No

Will there be any other individuals participating with the investigation?

4

These individuals will be participating as part of the research team, but will not need to certify the protocol submissions, or be included in any correspondence regarding the study. Typically these individuals will be students or individuals from other institutions. Investigators may be faculty, staff, students, or unaffiliated individuals.

Yes

✓ No

General Information

1 What is the full title of the research protocol?

Does Change in Anxiety Predict Changes in Metacognitions?

Abstract/Summary

2 *Please provide a brief description of the project.*

The purpose of this study is to determine whether exposure to an anxiety-provoking stimulus can illicit changes in state anxiety and whether this change can predict changes in anxiety-related metacognitions. Various studies using multiple treatment modalities, including metacognitive therapy, have utilized self-report measures of relevant metacognitions to assess treatment outcome, but no studies to date have examined or reported the sensitivity to change of the Short Form of the Metacognitions Questionnaire following exposure to such a stimulus (MCQ-30; Wells & Cartwright-Hatton, 2004). Further examination of the relationship between changes in anxiety and metacognitions has implications for better understanding the metacognitive model of anxiety and treatment implications.

Wells, A. & Cartwright-Hatton, S. (2004). A short form of the metacognitions questionnaire: properties of the MCQ-30. Behaviour Research and Therapy, 42, 385-396.

Are you requesting Single IRB Review

3

Single IRB Review is applicable to a study that is being reviewed by another Institution's IRB, in which you wish to rely on the external IRB for review, approval, and oversight.

Yes

✓ No

Does the study require review and oversight of the IRB?

4

Regardless of how these questions are answered, the determination of IRB review and oversight is made by the IRB and this study will still need to be submitted for preliminary review.

Is this study a systematic investigation, following a predetermined plan, for looking at a particular issue, testing a hypothesis or research question, or developing a new theory that includes any of the following:

4A

- Collection or analysis of quantitative or qualitative data
- Collection of data using surveys, testing or evaluation procedures, interviews, or focus groups
- Collection of data using experimental designs such as clinical trials
- Observation of individual or group behavior

✓ Yes

No

Will this study contribute to generalizable knowledge, in that the purpose or intent of the project is to test or to develop scientific theories or hypotheses, or to draw conclusions that are intended to be applicable and/or shared beyond the populations or situations being studied? This may include one or more of the following:

4B

- Presentation of the data at meetings, conferences, seminars, poster presentations, etc.
- The knowledge contributes to an already established body of knowledge
- Other investigators, scholars, and practitioners may benefit from this knowledge
- Publications including journals, papers, dissertations, and theses

✓ Yes

No

4C Will this study require obtaining information or biospecimens, through intervention or interaction with an individual that will be used, studied, or analyzed by the investigative team?

✓ Yes

No

5 Will you be requesting an Exempt Review for this study?

In order to qualify for review via exempt procedures, the research must not be greater than minimal risk and must fall into at least one of the exempt categories defined by federal regulations.

Yes

✓ No

6 Is this study receiving internal or external funding?

✓ Yes

No

7 Does this study contain protected health information (PHI)?

PHI is any information in a medical record or designated record set that can be used to identify an individual and that was created, used, or disclosed in the course of providing a health care service, such as a diagnosis or treatment.

Yes

✓ No

8 Has all IRB Human Research training been taken through CITI under Missouri State University?

✓ Yes

No

Research Protocol

Describe the proposed project in a manner that allows the IRB to gain a sense of the project including:

- The research questions and objectives,
- Key background literature (supportive and contradictory) with references, and
- The manner in which the proposed project will improve the understanding of the chosen topic.

Metacognitive theory posits that negative appraisals of one's own thoughts and worry play a significant role in the etiology and maintenance of anxiety disorders such as generalized anxiety disorder (GAD) by eliciting positive and negative beliefs about one's own worry, which in turn elicits perpetuated worry (Wells, 1999). Negative appraisals of one's own thoughts (i.e., metacognition; Flavell, 1979) are thought to play a role in other anxiety disorders such as obsessive-compulsive disorder (OCD: Rachman et al., 1995; Purdon & Clark, 1999). Recently, anxiety-related metacognitions have been measured across treatment modalities such as metacognitive therapy (MCT) and cognitive behavioral therapy (CBT) as a form of treatment outcome.

The Metacognitions Questionnaire (Cartwright-Hatton & Wells, 1997) and its shortened version, the MCQ-30 (Wells & Cartwright-Hatton, 2004) have been used to measure treatment outcomes in such studies for OCD (Solem, Håland, Vogel, Hansen, & Wells, 2009), and GAD (van der Heiden, Muris, & van der Molen, 2012). The MCQ and MCQ-30 are often only measured at pre- and post-treatment. One study examining changes in metacognitions for comorbid anxiety disorders examined the changes of the MCQ-30 weekly over nine weeks of treatment (Johnson, Hoffart, Nordahl, Ulvenes, Vrabel, Wampold, 2017), but these change scores are not reported. Thus, little is known about the sensitivity to change of this measure as a form of treatment outcome.

One study has examined the effects of changes in tendency to worry and beliefs about worry and the relationship between these changes and changes in state anxiety following exposure to an anxiety-provoking stimulus (Prados, 2011), but the anxiety-related metacognitions posited to maintain generalized worry, and subsequently measured by the MCQ-30, were not measured in this study.

The present study seeks to examine the relationship between changes in state anxiety and relevant
1 metacognitions as measured by the MCQ-30 following exposure to an anxiety-provoking stimulus by presenting undergraduate students with a relevant and anxiety-inducing scenario in order to examine whether increased state anxiety can predict changes in anxiety-related metacognitions, and whether the MCQ-30 demonstrates sensitivity to change following increased worry.

Cartwright-Hatton, S. & Wells, A. (1997). Beliefs about worry and intrustions: the Meta-Cognitions Questionnaire and its correlates. Journal of Anxiety Disorders, 11(3), 279-296.

Flavell, J.H. (1979). Metacognition and cognitive monitoring: a new area of cognitive-developmental

inquiry. American Psychologist, 34(10), 906-911.

Johnson, S.U., Hoffart, A., Nordahl, H.M., Ulvenes, P.G., Vrabel, K., & Wampold, B. (2017). Metacognition and cognitions in inpatient MCT and CBT for comorbid anxiety disorders: a study of within-person effects. Journal of Counseling Psychology, 65(1), 86-97.

Prados, J.M. (2011). Do beliefs about the utility of worry facilitate worry? Journal of Anxiety Disorders, 25, 217-223.

Purdon, C. & Clark, D.A. (1999). Metacognition and obsessions. Clinical Psychology and Psychotherapy, 6, 102-110.

Rachman, S., Thordarson, D.S., Shafran, R., & Woody, S.R. (1995). Perceived responsibility: structure and significance. Behaviour Research and Therapy, 33, 779-784.

Solem, S., Håland, A.T., Vogel, P.A., Hansen, B., & Wells, A. (2009). Change in metacognitions predicts outcome in obsessive-compulsive disorder patients undergoing treatment with exposure and response prevention. Behaviour Research and Therapy, 47, 301-307.

Van der Heiden, C. Muris, P., van der Molen, H.T. (2012). Randomized controlled trial on the effectiveness of metacognitive therapy and intolerance-of-uncertainty therapy for generalized anxiety disorder. Behaviour Research and Therapy, 50, 100-109.

Wells, A. (1999). A cognitive model of generalized anxiety disorder. Behavior Modification, 23(4), 526-555.

Wells, A. & Cartwright-Hatton, S. (2004). A short form of the metacognitions questionnaire: properties of the MCQ-30. Behaviour Research and Therapy, 42, 385-396.

2 Check all research activities that apply:

- Audio, video, digital, or image recordings
- Biohazards (e.g., rDNA, infectious agents, select agents, toxins)
- Biological sampling (other than blood)
- Blood drawing
- Class Protocol (or Program or Umbrella Protocol)
- ✓ Data, not publicly available

Data, publicly available

Deception

Devices

Diet, exercise, or sleep modifications

Drugs or biologics

Focus groups

✓ Intenet or email data collection

Materials that may be considered sensitive, offensive, threatening, or degrading

Non-invasive medical procedures

Observation of participants

Oral history

Placebo

Record review

Specimen research

Surgical procedures

✓ Surveys, questionnaires, or interviews (one-on-one)

Surveys, questionnaires, or interviews (group)

Other

Describe the procedures and methods planned for carrying out the study. Make sure to include the following:

- Site selection,
- The procedures used to gain permission to carry out research at the selected sites(s),
- Data collection procedures, and
- An overview of the manner in which data will be analyzed.

Provide all information necessary for the IRB to be clear about all of the contact human participants will have with the project.

Participants will be undergraduate students enrolled in an introductory psychology course at Missouri State University. Upon indicating their age for inclusion (students younger than 18 years will be excluded) and providing informed consent, students will be randomly assigned to one of two conditions, either control or experimental. All students will be told that they are being asked to complete a survey regarding some of their general thoughts and feelings and answering questions about hour requirements for degree completion at their university.

All participants will respond to a demographic form (Appendix A) and a series of scales assessing trait anxiety, state anxiety, anxiety-related metacognitions including beliefs about worry, and respond to a series of questions related to their condition. Participants in the control condition will read a brief, general fact-piece (Appendix D) about hours for degree completion about their university consisting of information readily available to current and prospective students. These participants will respond to general, neutral questions about their reasons for choosing to attend their university, their major, and how many course credits they are currently taking. Participants in the experimental condition will read a brief, fictitious piece (Appendix E) outlining "proposed" changes to hours required for degree completion for which they will not be grandfathered in (i.e., the proposed changes to required hours will be proposed to increase by one academic school year's worth of course credits as well as an increased GPA requirement and no current student will be exempt). These participants will be asked to record their thoughts and feelings about the proposed changes and how these changes may impact their college experience, as well as how many course credits they are currently taking. The scales include the State-Trait Anxiety Inventory for Adults (STAI-AD; Spielberger, 1968, 1977; Appendix B), the Metacognitions Questionnaire – 30 (MCQ-30; Wells & Cartwright-Hatton, 2004; Appendix C). All participants will complete informed consent (Appendix F), demographics questions, and both the trait- and state-anxiety scales of the STAI-AD and the MCQ-30 prior to reading the relevant condition piece. Following exposure to the piece, all participants will then complete the state-anxiety and MCQ-30 once again in order to measure the group differences between changes (or lack thereof) in present feelings of anxiety and relevant metacognitions, and then read a debriefing form.

3

Students in the experimental condition will not be told that the proposed changes to degree requirements are fictitious until debriefing (Appendix G). It is anticipated that some students may experience a temporary increase in their subjective feelings of anxiety as a result of imagining how these changes may affect them. Withholding this information until the end of the study, though deceptive in nature, is a necessary component for measuring changes in the aforementioned constructs. All participants will be fully debriefed on the nature of the study and made explicitly aware that the proposed changes are purely fictional and were written for the purposes of the study. All students will be required to input a written statement indicating their understanding of the fictitious nature of the proposed changes to hours for degree completion. Additionally, students will be provided with current and accurate information about degree requirements, and provided with information for counseling services in the event of need for additional support.

Spielberger, C. D. (1968, 1977). State-Trait Anxiety Inventory for Adults: manual, test, scoring key. Redwood City, CA: Mind Garden.

Wells, A. & Cartwright-Hatton, S. (2004). A short form of the metacognitions questionnaire:

properties of the MCQ-30. Behaviour Research and Therapy, 42, 385-396.

Attach tests, surveys, questionnaires, and other social-behavioral measurement tools, if applicable.

4 Appendix A - Demographic Information Form.docx
Appendix B - State-Trait Anxiety Inventory for Adults (STAI-AD).docx
Appendix C - Metacognitions Questionnaire-30.docx
Appendix D - Control Condition Reading and Questions.docx
Appendix E - Experimental Condition Reading and Questions.docx
Appendix G - Debriefing.docx
Appendix F - Informed Consent.docx

5 Attach documentation of site permission, if applicable.

Participants

1 Specify the participant population(s).

Check all that apply.

- ✓ Adults
- Children (<18 years of age)
- Adults with decisional impairment
- Non-English speaking
- ✓ Student research pools (e.g. psychology)

  Specify:

  Introductory psychology students aged 18+
- Pregnant women or fetuses
- Prisoners
- Unknown (e.g., secondary use of data/specimens, non-targeted surveys, program/class/umbrella protocols)

2 Specify the age(s) of the individuals who may participate in the research.

18+

Describe the characteristics of the proposed participants, and explain how the nature of the research requires/justifies their inclusion.

3 Participants in the study will be students enrolled in an introductory psychology course at Missouri State University. The measures being investigated in the present study are intended to examine

individual differences in adults aged 18 and older, and the study does not require or exclude participants on the basis of anything other than age (participants younger than 18 years will be excluded). Additionally, these participants may represent a wide variety of presentations relevant to the constructs examined, i.e., thoughts about one's thinking and feelings of worry or anxiety, which may be generalizable to or representative of the greater public. As such these participants are ideal for investigating the relationship between changes in the measured constructs.

4 Provide the total number of participants (or number of participant records, specimens, etc.) for whom you are seeking IRB approval.

250

5 Describe what time commitment will be required from each participant, including individual interactions, total time commitment, and long-term follow-up, if any.

Participants are anticipated to spend no more than 60 minutes reading study materials (consent and debriefing) and answering survey questions with no additional follow-up.

6 Describe how potential participants will be identified (e.g., advertising, individuals known to investigator, record review, etc.). Explain how investigator(s) will gain access to this population, as applicable.

Participants will include students enrolled in an introductory psychology course at Missouri State University and be seeking research credit for their course, for which they may earn a specified number of credits by participating in this study.

7 Describe the recruitment process; including the setting in which recruitment will take place.

The study will be made available to any individual enrolled in an introductory psychology course seeking research credit through the SONA study recruitment system. Participants will voluntarily choose to participate in the study.

Attach recruitment materials (ads, flyers, website postings, recruitment letters, and oral/written scripts), if applicable .

8 Will participants receive compensation or other incentives (e.g., free services, cash payments, gift certificates, parking, classroom credit, travel reimbursement, etc.) to participate in the research study?

✓ Yes

Describe the incentive, including the amount and timing of all payments.

Participants will receive up to 60 minutes of research credit for their introductory psychology course.

No

Risks and Benefits

Describe all reasonably expected risks, harms, and/or discomforts that may apply to the research. Discuss severity and likelihood of occurrence.

1

Consider the range of risks - physical, psychological, social, legal, and economic.

It is anticipated that some students may experience a temporary increase in their subjective feelings of anxiety as a result of imagining how these changes may affect them. Withholding this information until the end of the study, though deceptive in nature, is a necessary component for measuring changes in the aforementioned constructs.

Discuss the steps that will be taken to minimize risks and the likelihood of harm.

2

Upon completion of the survey, a debriefing form highlighting the nature of the study as well as contact information for both the counseling center and Principal Investigator (P.I.) will be provided; participants will be encouraged to communicate with the P.I. regarding questions, concerns, or requests for clarification.

All participants will be fully debriefed on the nature of the study and made explicitly aware that the proposed changes are purely fictional and were written for the purposes of the study. All students will be required to input a written statement indicating their understanding of the fictitious nature of the proposed changes to hours for degree completion. Additionally, students will be provided with current and accurate information about degree requirements, and provided with information for counseling services in the event of need for additional support.

Describe the potential benefits that participants may expect as a result of this research study. State if there are no direct benefits to individual participants.

3

Participants will be granted credit in their introductory psychology course through the online SONA system. This research will provide useful information about the relationship between changes in anxiety and metacognitions following a worry-inducing stimulus.

Discuss any potential indirect benefits to future subjects, science, and society.

4 Research will provide supplementary information regarding sensitivity to change of the MCQ-30 as an individual assessment of anxiety-related metacognitions, the STAI-AD as an individual predictor of changes in anxiety following an anxiety-provoking stimulus, and implications for predicting treatment outcome as proposed by metacognitive theory.

Describe how risks to participants are reasonable when compared to the anticipated benefits to participants (if any) and teh importance of the knowledge that may reasonably be expected to result.

5 This study is expected to result in an increased understanding of the relationship between changes in current feelings of anxiety and the thoughts individuals may experience relevant to those feelings, both of which are used to investigate the effectiveness of anxiety treatment. The increased fund of knowledge regarding the utility and sensitivity to change of the MCQ-30 as an individual measure of anxiety-related metacognitions is a primary benefit of this research. As such, the risk of temporarily increased subjective feelings of anxiety which participants may or may not experience is reasonable given the anticipated contributions to the field.

Informed Consent

1 From the list below, indicate how consent will be obtained for this study.

Check all that apply.

- ✓ Written/signed consent by the subject
- Written/signed consent (permission) for a minor by a Parent or Legal Guardian
- Written/signed consent by a Legally Authorized Representative (for adults incapable of consenting)
- Request for waiver of documentation of consent (verbal consent, anonymous surveys, etc.)
- Waiver of parental permission
- Waiver of consent (consent will not be obtained from subjects)

Describe the consent process including where and by whom the subjects will be approached, the plans to ensure the privacy of the subjects and the measures to ensure that subjects understand the nature of the study, its procedures, risks and benefits and that they freely grant their consent.

This study is an anonymous online survey. No identifying information will be collected from participants, who will themselves approach the study via the SONA online recruitment system.

2 All study participants will be provided with an informed consent document prior to completing any study tasks. Participants will be explicitly informed that they may refuse to answer any question or discontinue their participation at any time.

The nature of the study will be disclosed to participants in part during the consent process, and in full during the debriefing given the necessary withholding required to measure the target constructs. The informed consent document will clearly state that they are being asked to answer questions about their thoughts and feelings, that the risks anticipated for their participation are minimal, and potential benefits include contributing to the nature on students' thoughts and feelings. Additionally, participants will be explicitly informed that their responses are confidential and will not be linked to any identifying information.

Attach all consent and assent documents here:

Appendix G - Debriefing.docx
Appendix F - Informed Consent.docx

Data Collection

Missouri State University is committed to keeping data and information secure. Please review the Missouri Ste University Information Security Policies. Discuss you project with the MSU Information Security Office or your College's IT support staff if you have questions about how to handle your data appropriately.

1 **Statement of Principal Investigator Responsibility for Data**

The principal investigator of this study is responsible for the storage, oversight, and disposal of all data associated with this study. Data will not be disseminated without the explicit approval of the principal investigator, and identifying information associated with the data will not be shared.

✓ By checking this box, all personnel associated with this study understand and agree to the Statement of Principal Investigator Responsibility for Data.

2 How will the data for this study be collected/stored?

Check all that apply.

✓ Electronic storage format

On paper

Describe where the data will be stored (e.g., paper forms, flash drives or removable media, desktop or laptop computer, server, research storage area network, external

source) and describe the plan to ensure the security and confidentiality of the records (e.g., locked office, locked file cabinet, password-protected computer or files, encrypted data files, database limited to coded data, master list stored in separate location).

3

At minimum, physical data should always be secured by lock and key when stored. Electronic data should be stored on University secure servers whenever possible (Office 365 or other secure campus server). If data has to be stored off campus, the file should be encrypted and the device password protected. Additionally, any data to be shared outside the University network will require a SUDERS request be filed and approved. See https://mis.missouristate.edu/Central/suders/create

This study is an anonymous online survey. Electronic data will be stored on secured University servers, encrypted and stored on password-protected devices, and accessible only to researchers involved in this study. The Principal Investigator of this study is responsible for the storage, oversight, dissemination, and disposal of all data associated with this study.

Describe how data will be disposed of and when disposal will occur.

4

At minimum, Federal regulations require research records to be retained for at least 3 years after the completion of the research (45 CFR 46). Research that involves identifiable health information is subject to HIPAA regulations, which require records to be retained for at least 6 years after a participant has signed an authorization. Finally, funded research projects may require longer retention periods, you may need to follow the sponsoring agency guidelines.

After completion of the study, all copies of data will be permanently deleted from computers and flash drives. Data and consent forms will be stored by the principle investigator for at least seven years after completion of this study; after this point, electronic information will be permanently deleted. The Principal Investigator of this study is responsible for the storage, oversight, dissemination, and disposal of all data associated with this study.

Funding

Is this study externally funded?

1

For example, this research is funded by a source outside Missouri State; a federal agency, non-profit organization, etc.

Yes

✓ No

Potentially (this study is being submitted for funding, but has not yet been awarded)

Is this study internally funded?

2

For example, this research is funded by a source inside Missouri State; departmental funds, the Graduate College, etc.

✓ Yes

Please list the internal funding source

Missouri State University Graduate College

No

Additional Information

1 Please include any additional information about the study below.

2 Please include any additional documents that aren't covered within the application.

Clark Heather CITI HR-SBE Basic Completion.pdf