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Action Control and the Relationship between Anhedonia, Anxiety, and Unconscious Inhibition of Positive Information

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Action control and the relationship between anhedonia, anxiety, and unconscious
inhibition of positive information

By

Taban Salem

A Thesis
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Master of Science
in Psychology
in the Department of Psychology

Mississippi State, Mississippi

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Taban Salem

2014

Action control and the relationship between anhedonia, anxiety, and unconscious
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By

Taban Salem

Approved:

Eric Samuel Winer
(Major Professor)

Michael R. Nadorff
(Committee Member)

Jared W. Keeley
(Committee Member)

Deborah K. Eakin
(Graduate Coordinator)

R. Gregory Dunaway
Professor and Dean
College of Arts & Sciences

Name: Taban Salem

Date of Degree: August 15, 2014

Institution: Mississippi State University

Major Field: Psychology

Major Professor: E. Samuel Winer

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Candidate for Master of Science

Previous research suggests that individuals with difficulty upregulating positive affect exhibit below-chance accuracy when identifying positive words presented outside of awareness, an effect termed subchance perception of positive information (SPPI). Previous findings also suggest that state orientation may underlie the relationship between clinical symptoms such as anxiety and anhedonia and SPPI. The current study addressed methodological limitations of previous research and tested hypotheses that state oriented individuals exhibit SPPI and that state orientation underlies the relationship between clinical symptoms and accuracy in identifying briefly-presented positive words. Results did not support hypotheses. The null findings in this study suggest that the relationship between action orientation and subchance perception of positive information may be less robust than preliminary findings suggested. Findings yielded from exploratory analyses suggested that future studies should include participants with greater symptom severity in order to have sufficient power to detect relationships between positive word accuracy and clinical symptoms.

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CHAPTER I

INTRODUCTION

Background and Rationale for the Present Study

Benefits of Positive Affect

Positive affect broadly refers to the subjective experience—whether conscious or unconscious—of positive emotion such as happiness, joy, excitement, interest, pride, and warmth (Kuhl, 2008). Research has demonstrated that positive affect is beneficial to physical health (for a review, see Steptoe, Dockray, & Wardle, 2009) and boosts physiological resilience following frightening or negative experiences (Fredrickson & Levenson, 1998). Further, positive affect is important for psychological resilience in stressful situations (for a review, see Folkman & Moskowitz, 2000) and for general well-being (Livingstone & Srivastava, 2012).

Positive Affect and Volition

Positive affect is also a central component of volition, i.e., the will or energy to translate intentions into behavior (Kuhl, 2008; Kuhl & Koole, 2004). The processes underlying volition are described from a functional perspective in Kuhl's personality systems interactions (PSI) theory (Kuhl, 2000; Kuhl & Koole, 2004). According to the PSI framework, volition requires alternating activation and inhibition of two self-regulatory systems: intention memory and intuitive behavioral control. Intention memory

is the system that forms and maintains explicit mental representations of uncompleted goals or intended behaviors, and intuitive behavioral control is the system that carries out behavior smoothly and automatically (Kuhl, 1981, 2000, 2008). These two systems are mutually exclusive—they cannot both be activated at once—and shifts of activation from one system to the other are driven by changes in positive affect.

When a person perceives (whether consciously or unconsciously) something potentially rewarding or need-fulfilling, positive affect increases (Kuhl, 2000, 2008). An increase in positive affect activates intuitive behavioral control (Kuhl, 1981, 2000, 2008). If there are no obstacles or dangers detected and approach behaviors can be carried out with ease, then positive affect remains high and the person approaches the reward without hesitation. However, PSI theory states that when a person encounters obstacles, difficulty, or uncertainty in goal pursuit positive affect is inhibited, and the decrease in positive affect activates intention memory (Gochke & Kuhl, 1993, Kuhl, 2000, 2008; Kuhl & Koole, 2004). The activation of intention memory, in turn, inhibits intuitive behavioral control so that behavior stops while the person deliberates what to do next or waits for an appropriate time to act (Kuhl & Kazen, 1999). According to PSI theory, an increase in positive affect is needed to release inhibition and get behavior going again, so that the person can decide what to do next and then take action. To generate this increase in positive affect, a person must lock attention onto whichever behavioral option is associated with the most implicit positive affect and then amplify or upregulate that positive affect by anticipating success in executing the behavior and achieving the desired outcome.

The Action-Control Scale (ACS-90) is a 36-item self-report measure that assesses individual differences in the tendency to upregulate positive affect (Kuhl, 1994).

Specifically, the decision-related action orientation (AOD) subscale of the ACS-90 measures this tendency. The AOD subscale includes items such as “When know I must finish something soon: A) I have to push myself to get started, or B) I find it easy to get it done and over with” and “When I don't have anything in particular to do and I am getting bored: A) I have trouble getting up enough energy to do anything at all, or B) I quickly find something to do.”

A high score on the AOD subscale of the ACS-90 indicates that a person readily upregulates positive affect to mobilize volition; the person is high in decision-related action orientation (Kuhl, 1981, 1994; Kuhl & Koole, 2004). Persons high in decision-related action orientation tend to make decisions and initiate action with relative ease. By contrast, a low score on the AOD subscale indicates that a person has difficulty upregulating positive affect; the person is low in decision-related action orientation and high in state orientation. State oriented individuals tend to focus on discrepancies between their current state and their uncompleted goals—and the frustration and uncertainty associated therewith (Kuhl, 1981, 2008; Kuhl & Koole, 2004). They are prone to hesitation, indecisiveness, and procrastination (Beckmann & Kuhl, 1984; Blunt & Pychyl, 1998; Diefendorff, Hall, Lord, & Streat, 2000).

Difficulties associated with state orientation become especially pronounced in stressful situations or when positive affect is already low. In one study, participants were grouped according to action orientation (action oriented vs. state oriented) and scores on a measure of “listlessness” (high vs. low listlessness; Kazén, Kaschel, & Kuhl, 2008).

They were then asked to press a key in response to a target word whenever it appeared in a computerized task. Sometimes the target word was preceded by a cue, and other times it was not. State oriented participants who were high in listlessness showed substantially longer response latencies for uncued target words than did either state oriented participants with low listlessness scores or action oriented participants with high listlessness scores. In other words, state orientation was associated with greater difficulty generating internal cues to act if participants were also experiencing low positive affect. Furthermore, the interaction of state orientation and low positive affect was significant when controlling for scores on an agitation measure (i.e., when controlling for negative affect).

The fact that state orientation interacted with low positive affect independent of negative affect is congruent with PSI theory, wherein downregulation of negative affect and upregulation of positive affect are considered to be separate skills (Kazen et al., 2008; Kuhl, 1994; Kuhl, 2008).

State Orientation and Symptoms of Depression and Anxiety

State orientation—that is, a tendency to focus on present frustration, uncertainty, and the discrepancies between one’s current state and a desired goal state, rather than focusing on anticipated rewards—has been linked to higher incidence of psychological problems such as learned helplessness and symptoms of depression (Baumann, Kaschel, & Kuhl, 2005; Kuhl, 1981; Kuhl & Helle, 1986; Rholes, Michas, & Shroff, 1989). In the traditional model of learned helplessness, people who experience uncontrollable negative events may develop low self-efficacy, which, in turn leads to chronic failure to take action to pursue goals (Abramson, Seligman, & Teasdale, 1978). However, Kuhl argues

that failure to act on intentions *precedes* negative beliefs about one's efficacy (Kuhl, 1981, 2000). According to PSI theory, experiencing uncontrollable negative events will only lead to learned helplessness if a person responds by becoming more state oriented (Brunstein & Olbrich, 1985; Kuhl, 2000). Kuhl posits that it is the shift toward state orientation, then, that prevents a person from upregulating the positive affect necessary for action the next time he or she faces a challenge, and ultimately gives rise to the beliefs associated with learned helplessness.

Positive Affect and Symptoms of Depression and Anxiety

Abnormal processing of positive information and loss of positive affect—commonly referred to as anhedonia—are important factors in depression and anxiety (for recent reviews, see Carl, Soskin, Kerns, & Barlow, 2013; Hechtman, Raila, Chiao, & Gruber, in press; Kashdan, Weeks, & Savostyanova, 2011). For example, in one recent study 306 female participants were randomly assigned to watch either a happy or a sad movie before completing a computerized approach-avoidance task wherein they used a joystick to either pull images toward themselves or push images away (Vrijnsen, van Oostrom, Speckens, Becker, & Rinck, 2012). They were also assessed for symptoms of depression. Participants with the highest levels of depressive symptoms were avoidant of images of happy faces, regardless of which movie they had watched (other participants did not avoid happy faces). Participants with high levels of depressive symptoms who had viewed a sad movie showed the strongest avoidance of happy faces, in comparison to other participants. In fact, they were more avoidant of happy faces than they were of angry, sad, or neutral faces. These findings support the hypothesis that state-oriented

individuals are especially likely to inhibit positive affect in the presence of negative affect (e.g., after watching an upsetting movie).

Importantly, research suggests that loss of positive affect in depression and anxiety goes beyond passive lack of attention to positive cues. Rather, in many cases, depressed and anxious persons actively avoid and/or suppress positive affect and information (Beblo et al, 2012; Geisler, Josephs, & Swann, 1996; Swann, 1992; Weeks, Jakatdar, & Heimberg, 2010; Werner-Seidler, Banks, Dunn, & Moulds, 2013). This pattern is consistent with PSI theory, which refers to inhibition of positive affect in terms of active downregulation of positive affect that occurs whenever an obstacle or difficulty is encountered and which, in turn, activates intention memory (Kuhl, 2000).

For example, in a study by Beblo and colleagues (2012) 39 individuals diagnosed with Major Depressive Disorder (MDD) and 41 non-depressed controls were assessed for acceptance, suppression, and fear of both positive and negative emotions using a self-report measure. Participants with MDD reported more fear and more suppression of positive emotions than did non-depressed controls, and degree of positive emotion suppression was positively related to severity of depression symptoms.

Similar findings have been obtained with non-clinical samples (Werner-Seidler et al., 2013). A group of 112 undergraduates (Study 1) were assessed via self-report for symptoms of depression and anxiety, fear of strong positive and negative emotions, and tendency to either suppress or amplify positive emotions. Depression and anxiety symptoms were positively correlated with both fear of experiencing positive emotions and tendency to dampen positive emotions. The same self-report measures were then administered to two groups of undergraduates (Study 2), one made up of 41 students who

had recovered from depressive episodes, and the other made up of 82 students who had never been depressed. Participants who had previously been depressed showed more fear and dampening of positive emotion than did participants who had never been depressed. In addition, continuous analyses including all 123 participants once again showed that both fear and dampening of positive emotion were positively related to number and severity of depression and anxiety symptoms.

Research using the Fear of Positive Evaluation Scale (FPE; Weeks, Heimberg, & Rodebaugh, 2008) has repeatedly shown that individuals with higher levels of social anxiety are more likely to self-report fear and avoidance of positive feedback, compared to participants with lower social anxiety (Weeks, Heimberg, Rodebaugh, & Norton, 2008; Weeks et al., 2010). In a 2011 study, a group of healthy undergraduates ($N = 77$) completed computerized training designed to induce attentional bias toward positive (as opposed to neutral) information (Taylor, Bomyea, & Amir). Afterward, participants were exposed to a laboratory stressor (having to give a speech in front of a video camera). Those with higher levels of social anxiety developed less positive bias in response to training than did participants with lower social anxiety. In turn, participants who developed less attentional bias toward positive information reported greater increases in anxiety and greater decreases in positive affect (from their own pre-stressor baseline) in response to the stressor than did those who developed stronger positive biases.

Also consistent with PSI theory are findings indicating that loss of positive affect does, in fact, precede symptoms of depression (Raes, Smets, Nelis, & Schoofs, 2012; Wood & Joseph, 2010) and moderate the relationship between negative affect and depression (Vasey, Harbaugh, Mikolich, Firestone, & Bijttebier, 2012).

Unconscious Inhibition of Positive Information

In the studies by Beblo and colleagues (2012) and Werner-Seidler and colleagues (2013), participants had to be consciously aware of fearing and avoiding positive emotions before they could accurately report those tendencies. However, PSI theory emphasizes that affect, intentions, and self-regulatory processes are frequently activated outside of awareness (Jostmann, Koole, van der Wulp, & Fockenberg, 2005; Kuhl, 2000). Thus, one would expect to find that symptoms of depression and anxiety are related to inhibition of positive stimuli on an unconscious level as well.

Recent findings indicate that depressed and anxious persons do unconsciously inhibit positive information (Winer, Cervone, Ginger, Bartoszek, Snodgrass, & Newman, 2013; Winer, Cervone, Newman, & Snodgrass, 2011). In one study, 75 participants (Experiment 1; Winer et al., 2011) who scored within the top and bottom quartiles on measures of trait anxiety and defensiveness completed a computerized word identification task. Positive and negative words were presented for 6.4 ms followed by a broken letter mask. This procedure rendered stimuli outside of awareness. After each word, participants were asked to identify which of two word choices had just been shown. Participants in the Non-Defensive High-Anxious group exhibited significantly lower accuracy at identifying positive words than did either group with low anxiety or participants in the Defensive High-anxious group. In fact, those in the Non-Defensive High-Anxious group showed below-chance accuracy when asked to identify positive words. In other words, these participants systematically chose the wrong response, more often than would have occurred by chance. The effect, termed subchance perception of positive information (SPPI), was replicated in Experiment 2 with 39 participants

preselected for high levels of trait anxiety and low levels of defensiveness (Winer et al., 2011).

SPPI has also been demonstrated in persons who have recently experienced extreme loss of interest in people or activities—i.e., extreme anhedonics (Winer et al., 2013). In that study, loss of interest was measured using the Loss of Interest item (i.e., item 12) from the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1993). In addition to this specific loss of interest variable, a conglomerated depression variable was created for comparison. Results showed a negative relationship between loss of interest and accuracy at identifying positive words in the SPPI task, and individuals who reported extreme loss of interest exhibited the SPPI effect. Finally, analyses indicated that this finding remained significant when accounting for other symptoms of depression, which suggests that a conglomerated measure of depressive symptoms may lack the specificity to identify persons likely to exhibit SPPI.

Anhedonia, SPPI, and Decision-Related Action Orientation

A follow-up study attempted to address what predictor variables most specifically predict SPPI (Winer et al., 2013). Participants ($N = 132$) completed the SPPI task and self-report measures of anxiety, anhedonia, depression, defensiveness, and action orientation. The hypothesis was that AOD would underlie the relationship between symptom-level distress and positive word accuracy, and that state-oriented individuals (on the AOD) would exhibit SPPI. A hierarchical regression was used to assess the relationship between level of anhedonia, other symptoms of depression, symptoms of anxiety, defensiveness, action orientation, and positive word accuracy in the SPPI task (Winer et al., 2013). In Step 1, anxiety, anhedonia, conglomerated symptoms of

depression, and defensiveness were entered into the model. Anxiety independently predicted positive word accuracy, such that higher levels of anxiety were associated with lower positive word accuracy. However, when AOD and another ACS-90 subscale were added to the model in Step 2, AOD independently predicted positive word accuracy, and all other predictors were no longer significant.

These results suggest that decision-related action orientation may account for the relationship between conscious symptoms of distress and unconscious inhibition of positive information. This could have wide-ranging implications for information-processing theories and applied clinical treatments. However, before these findings can be translated to clinical application, limitations of these previous studies need to be addressed. The most recent follow-up study (Winer et al., 2013) did not have sufficient power to fully address the effect of anhedonia due to a small sample of severely anhedonic individuals ($n = 6$) and the reliance on the single Loss of Interest item (i.e., item 12) from the BDI-II to measure anhedonia. Thus, a full measure would allow for substantially greater sensitivity and specificity in assessing recent changes in anhedonia.

To create an appropriate measure for this task, Winer, Veilleux, and Ginger developed the Specific Loss of Interest and Pleasure Scale (SLIPS; 2014). The SLIPS is a 23-item self-report questionnaire that allows for the assessment of recent changes in social anhedonia, independent of symptoms of lifelong anhedonia and broader symptoms of depression. With the development of the SLIPS, the next step will be the examination of the relationships between recent changes in anhedonia, symptoms of anxiety, defensiveness, action orientation, and unconscious inhibition of positive information.

Hypotheses

The purpose of the current study was threefold. First, I investigated previous findings on the relationship between SPPI and symptoms of depression and anxiety. Second, by administering the SLIPS to participants who completed the SPPI task, I gathered more information about unconscious processing of positive information as it relates to recent changes in anhedonia. Third, I examined relationships between decision-related action orientation, recent changes in anhedonia, symptoms of depression and anxiety, defensiveness, and accuracy at identifying positive words.

Based on PSI theory and findings from previous research on SPPI, my hypotheses for the current study were as follows:

1. I predicted that state oriented individuals would exhibit lower than chance accuracy in identifying positive words; in other words, state oriented individuals would exhibit SPPI.
2. I predicted that state oriented individuals would exhibit lower positive word accuracy than action oriented individuals.
3. I predicted that recent changes in anhedonia, as measured by an improved index (the SLIPS), would account for a significant amount of the variance in positive word accuracy, and that higher levels of anhedonia would be associated with lower positive word accuracy.
4. I predicted that higher levels of anxiety would be associated with lower positive word accuracy when defensiveness, depression, and recent changes in anhedonia were held constant.

5. Finally, I predicted that the relationship between clinical symptoms (i.e., recent changes in anhedonia, anxiety, depression) and positive word accuracy would be accounted for by the relationship between action orientation and positive word accuracy, and that higher levels of action orientation would be associated with higher positive word accuracy.

CHAPTER II

METHOD

Description of the Present Study

Participants

Data were collected from 152 undergraduate student volunteers enrolled in intro-level psychology courses at Mississippi State University (MSU). Participants were recruited online through the psychology department's Participant Research Pool and awarded course credit for their participation. In order to be included in the study, all participants had to be 18 or older and be enrolled in the Participant Research Pool (PRP) maintained by the MSU Psychology Department. The first 142 participants were not preselected on the basis of symptoms. However, in order to obtain an adequate sample of participants experiencing clinical symptoms, the last 10 participants were recruited from volunteers who had given a response of 2 ("I have lost most of my interest in other people or things") to BDI-II Item 12 when it was administered online as part of a broader set of prescreening measures several weeks prior.

Measures

Anhedonia. Recent changes in anhedonia were measured using the SLIPS (Winer et al., 2014). The SLIPS has very good convergent validity with the BDI-II ($r = .69$; Beck et al., 1993) and the Snaith-Hamilton Pleasure Scale ($r = .68$; Franken, Rassen, & Muris,

2007). It has also demonstrated discriminant validity from the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) positive affect subscale (PANAS-PA), $r = -.35$, and negative affect subscale (PANAS-NA), $r = .37$, as well as from the Temporal Experience of Pleasure Scale (Gard, Gard, Kring, & John, 2006) which includes the TEPS-anticipatory subscale, $r = -.48$, and the TEPS-consummatory subscale, $r = -.25$.

Depression sans anhedonia. In keeping with prior research on SPPI (Winer et al., 2013), the BDI-II with the Loss of Interest item (item 12) excluded was used as a conglomerate measure of depressive symptoms.

Anxiety. Anxiety was measured using the short form of the Taylor Manifest Anxiety Scale (MAS; Bendig, 1956), which is made up of 20 items selected from the original MAS for their reliability and validity.

Defensiveness. Defensiveness was measured using the Marlowe Crowne Social Desirability Scale (SDS; Strahan & Gerbasi, 1972; see also Fischer & Fick, 1993), a commonly used measure to assess the validity of participant response style.

Action orientation. Action vs. state orientation was assessed using the AOD subscale of the ACS-90 (Kuhl, 1994). Much empirical evidence has been collected demonstrating the reliability and validity of the scale (Diefendorff et al., 2000; Kuhl, 1994).

Emotional information-processing. Accuracy at identifying briefly-presented words was assessed using the computerized SPPI task, a variant of a two-alternative

forced choice (2AFC) identification paradigm. The SPPI task has been successfully used in previous research to detect unconscious inhibition of positive information (Winer et al., 2011, Winer et al., 2013). The SPPI task is able to differentiate active inhibition (i.e., downregulation) of emotional stimuli from mere comparative bias, because performance can be compared to the objective standard of chance accuracy. In addition, the SPPI task controls for response bias because the two words presented as response options for any given trial are of the same valence.

Materials. The SPPI task was presented via computer on 140-hz CRT monitors equipped with standard graphics cards and RAM. The stimulus sequence, timing, stimulus randomization, and data logging was controlled by E-Prime 2.0 software.

Trial sequence. Experimenters guided participants through a series of instructional screens that describe the SPPI task, after which participants completed a short practice to gain familiarity with the procedure. Each trial in the SPPI task proceeds as follows:

1. Participants focus on a fixation cross that appears in the center of the screen and, when ready, press the spacebar to start the trial.
2. When the spacebar is pressed, the fixation cross remains onscreen for 134 ms. This allows participants to get ready for the stimulus.
3. The fixation cross is immediately followed by a single prime word (e.g., “hope”) that appears in the center of the screen for 6-9 ms.
4. The prime word is followed by a mask made up of jumbled letter fragments that appears in the center of the screen for 51 ms. The short

prime duration together with the mask allow the prime to elicit activation without being perceived consciously by participants.

5. The mask is followed by a fixation cross that appears in the center of the screen for 998 ms. This allows time for semantic processing to occur.
6. Two answer choices appear (e.g., “hope” and “happy”), one on the left side of the screen and one on the right side of the screen. The words remain onscreen until participants select an answer by pressing either the “s” key or the “k” key.

Stimuli. The pool of stimuli included 16 positive words, 16 negative words, and 16 neutral words that have successfully been used in previous SPPI research to detect inhibition of positive information (Winer et al., 2013). All positive words were rated above 7 and negative words below 3 on a 9-point valence scale, based on the Affective Norms for English Words (ANEW), a database maintained by the NIMH Center for Emotion and Attention (Bradley & Lang, 1999). Words in each valence group were also matched for arousal (based on ANEW), length, and frequency (based on measures from Kučera & Francis, 1967).

Trial blocks. Each block of trials in the SPPI task consists of two presentations of the 48 stimulus words, presented in randomized order within each block, by participant. Each participant completed two trial blocks, for a total of 192 trials.

Procedure

Students enrolled in the MSU Psychology Department PRP (maintained through SONA systems) who qualified and signed up for this study reported for an in-person

session at the appointed time. Upon arriving at the lab, each volunteer was assigned a participant number so that data could be stored and analyzed anonymously. After an informed consent procedure, participants were guided through the instructions and practice blocks for the SPPI task. The experimenter then left the room while participants completed the two full blocks of the SPPI task, as described in the Measures section above. Following the SPPI task, participants completed the SLIPS, the short form of the MAS, the BDI-II, the SDS, and the ACS-90. After completing these measures, participants were thanked for their time and dismissed. The procedure took no longer than two hours per session, and each participant was awarded two credits toward a psychology course.

CHAPTER III

RESULTS

Participant Characteristics

Of the 152 participants who completed the study, nine were excluded from analyses for the following reasons: vision problems (1), non-fluency in English (1), use of headphones to listen to music during the 2AFC task (1), failure to follow task instructions (2), and computer malfunctions during the 2AFC task (3). Finally, one participant was excluded due to excessive missing responses on self-report measures.¹ After these participants were removed, there were only two missing responses in the data set, BDI Item 13 and Item 15, both of which were from the same participant. Thus, missing values comprised less than .02% of all self-report values included in analyses. These two values were replaced using mean substitution.²

A total of 143 participants (86 female) were included in analyses. In the full sample, Cronbach's alphas were above .7 for the AOD subscale of the ACS-90 ($M =$

¹ In addition, previous studies examining SPPI effects have excluded participants with median response times below 450 ms across valence categories, as this was found in pilot studies to be too little time for untrained participants to complete the 2AFC (Winer et al., 2011). In the current study nine participants had median response times below 450 ms, but hypothesis tests excluding these participants yielded the same pattern of results, so they were retained as part of the sample for the hypothesis tests reported here.

² Hypothesis tests re-run excluding this participant produced the same pattern of results, thus the participant was retained as part of the sample.

6.03, $SD = 2.92$, $\alpha = .73$), the SLIPS ($M = 5.43$, $SD = 5.77$, $\alpha = .87$), the BDI sans anhedonia ($M = 10.18$, $SD = 8.32$, $\alpha = .90$), and the MAS ($M = 8.63$, $SD = 4.99$, $\alpha = .86$), evidencing adequate reliability for these scales. Cronbach's alpha fell just short of .7 for the SDS ($M = 10.34$, $SD = 3.39$, $\alpha = .68$).

Participants with an AOD sum score of seven or greater comprised the Action Oriented (AO) group ($n = 62$), and those with an AOD sum score of six or fewer comprised the State Oriented (SO) group ($n = 81$). Chi-square goodness-of-fit tests indicated that the AO and SO groups did not differ significantly with regard to gender, $\chi^2(1) = .62$, $p = .43$, two-tailed; age group, $\chi^2(1) = 1.15$, $p = .28$, two-tailed; or ethnicity $\chi^2(3) = 5.87$, $p = .12$. Predictably, two-tailed independent samples t -tests showed that the AO group ($M = 8.74$, $SD = 1.63$) and SO group ($M = 3.95$, $SD = 1.74$) did differ significantly in demand-related action orientation, $t(141) = 16.78$, $p < .001$. There were also significant group differences in recent changes in anhedonia (AO group $M = 3.16$, $SD = 3.18$, SO group $M = 7.17$, $SD = 6.66$), $t(141) = 4.76$, $p < .001$; depressive symptoms sans anhedonia (AO group $M = 6.99$, $SD = 5.05$, SO group $M = 12.62$, $SD = 9.47$), $t(141) = 4.57$, $p < .001$; trait anxiety (AO group $M = 6.82$, $SD = 3.97$, SO group $M = 10.01$, $SD = 5.27$), $t(141) = 4.13$, $p < .001$; and social desirability (AO group $M = 11.31$, $SD = 3.47$, SO group $M = 9.59$, $SD = 3.16$), $t(141) = 3.08$, $p = .002$. Participant characteristics are presented for each group in Table 1.

Table 1

Characteristics of Action and State Oriented Groups

Variable	Action Oriented (<i>n</i> = 62)		State Oriented (<i>n</i> = 81)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gender (%)				
Female		56.5		63.0
Male		43.5		37.0
Age group (%)				
18-20		87.1		91.4
21-34		12.9		7.4
Ethnicity (%)				
Caucasian		62.9		77.8
African American		35.5		21.0
Asian/Pacific Islander		--		1.2
Multiracial		1.6		--
AOD score***	8.74	1.63	3.95	1.74
SLIPS score***	3.16	3.18	7.17	6.66
BDI sans anhedonia score***	6.99	5.05	12.62	9.47
MAS score***	6.82	3.97	10.01	5.27
SDS score**	11.31	3.47	9.59	3.16
Positive word accuracy (%)	49.45	5.73	49.29	5.78

Note. Data on Age was missing for one participant in the Action Oriented group. Independent samples *t*-tests for ethnicity, recent changes in anhedonia, anxiety, and depressive symptoms sans anhedonia were adjusted for inequality of variances. AOD, demand-related action orientation; SLIPS = Specific Loss of Interest or Pleasure; BDI = Beck Depression Inventory-II; MAS = Taylor Manifest Anxiety Scale – Short Form; SDS = Marlowe-Crowne Social Desirability Scale. Asterisks indicate significant group differences;

* $p < .05$, two-tailed

** $p < .01$, two-tailed

*** $p < .001$, two-tailed

Hypotheses 1 & 2

Preliminary analyses

To evaluate normality, skewness and kurtosis statistics for positive word accuracy in the AO group (.471 and -.640, respectively) and in the SO group (-.025 and .318, respectively) were divided by their standard errors; all ratios were less than 3.0, indicating adequately normal distributions for both groups (Tabachnick & Fidell, 2007). Levene's Test for Equality of Variances was carried out on mean positive word accuracy for the AO and SO groups, and results confirmed that the variance in positive word accuracy was equal for the two groups.

Main analyses

Hypothesis 1, that the SO group would exhibit subchance accuracy in identifying positive words, was tested using a single-sample, one-tailed *t*-test comparing mean positive word accuracy for the SO group ($M = 49.29$, $SD = 5.78$) with chance (0.5) accuracy. Results did not reach significance, $t(80) = 1.11$, $p = .135$, one-tailed, therefore the null hypothesis could not be rejected and hypothesis 1 was not supported. Hypothesis 2, that the AO group would exhibit significantly higher positive word accuracy than the SO group, was tested using an independent-samples, one-tailed *t*-test comparing mean positive word accuracy for the SO group to that of the AO group ($M = 49.45$, $SD = 5.73$). Again, results did not reach significance, $t(141) = .16$, $p = .435$, one-tailed, therefore the null hypothesis could not be rejected and hypothesis 2 was not supported.

Hypotheses 3-5

Preliminary analyses

For the remaining analyses, demand-related action orientation (sum score on the AOD subscale) was treated as a continuous variable, and AO and SO groups were no longer used. Hypotheses 3-5 were tested using hierarchical multiple regression analysis with mean positive word accuracy as the outcome variable and recent changes in anhedonia, depression sans anhedonia, anxiety, defensiveness, and action orientation as predictor variables.

Skewness and kurtosis statistics (.183 and -.108, respectively) for mean positive word accuracy across the full sample were within standard guidelines for regression analyses, indicating that the normality assumption was met (Kline, 2005). Bivariate scatterplots of predictor variables with mean positive word accuracy yielded no evidence of non-linear relationships. To examine relationships between pairs of predictor variables, a correlation matrix was computed (see Table 2). Mahalanobis distance and its probability was calculated for each case; all probabilities were $> .001$, indicating that the data set did not contain any extreme multivariate outliers. The variance inflation factors for predictor variables were all below 10, indicating that predictor variables were not linearly related to one another to such a degree as to invalidate the regression model (Tabachnick & Fidell, 2007). A scatterplot showed a relatively constant spread of residuals over the range of predicted values for positive word accuracy, indicating that the data were fairly homoscedastic.

Table 2

Summary of Spearman's Rho Correlations, Means, and Standard Deviations for

Variables

Measure		1	2	3	4	5	Total	
							<i>M</i>	<i>SD</i>
1	SLIPS	1					5.43	5.77
2	SDS	-.29**	1				10.34	3.39
3	MAS	.45**	-.42**	1			8.63	4.99
4	BDI sans anhedonia	.71**	-.30**	.64**	1		10.18	8.32
5	AOD	-.35**	.34**	-.44**	-.44**	1	6.03	2.92

Note. Due to non-normality of variables, correlations were computed using Spearman's Rho. SLIPS = Specific Loss of Interest or Pleasure; BDI = Beck Depression Inventory-II; MAS = Taylor Manifest Anxiety Scale – Short Form; SDS = Marlowe-Crowne Social Desirability Scale; AOD = demand-related action orientation.

** $p < .01$ (two-tailed)

Main analyses

To test hypothesis 3, recent changes in anhedonia was entered in Step 1 of the regression model; however, it was not a significant predictor of positive word accuracy, $R^2 = .005$, $F(1, 141) = .69$, $p = .41$, two-tailed. To test hypothesis 4, defensiveness, anxiety, and depressive symptoms sans anhedonia were added in Step 2 of the regression model. The addition of these variables did not significantly increase the variance in positive word accuracy accounted for by the model, $\Delta R^2 = .031$, $F(4, 138) = 1.48$, $p = .22$, two-tailed, and the overall model remained non-significant, $F(4, 138) = 1.28$, $p = .28$, two-tailed. However, defensiveness showed a trend in the expected direction, $B = .003$, $t = 1.71$, $p = .09$, two-tailed, with higher levels of defensiveness associated with higher positive word accuracy. Finally, to test hypothesis 5, action orientation was added in Step 3 of the model. The increase in the model's predictive value was not significant, $\Delta R^2 =$

.003, $F(5, 137) = .41, p = .52$, two-tailed, and the overall model still failed to account for a significant amount of variance in positive word accuracy, $F(5, 137) = 1.10, p = .36$, two-tailed. Thus, hypotheses 3-5 were not supported (see Table 3).

Table 3

Hierarchical Multiple Regression Analyses Predicting Mean Positive Word Accuracy from Measures of Action Orientation, Recent Changes in Anhedonia, Anxiety, Defensiveness, and Other Depressive Symptoms.

Variable	Step 1			Step 2			Step 3		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
SLIPS	.001	.001	.83	<.001	.001	.28	<.001	.001	.33
BDI sans anhedonia				<.001	.001	.07	<.001	.001	
SDS				.003	.002	1.71	.003	.002	1.54
MAS				.002	.001	1.43	.002	.001	1.52
AOD							.001	.002	.64
ΔR^2	.005			.03			.003		
<i>F</i> for ΔR^2	.69			1.48			.411		

Note. SLIPS = Specific Loss of Interest or Pleasure; BDI = Beck Depression Inventory-II; MAS = Taylor Manifest Anxiety Scale – Short Form; SDS = Marlowe-Crowne Social Desirability Scale; AOD = demand-related action orientation.

Exploratory Analyses

The pattern of results obtained from this sample differed from predictions and from results from previous research on the SPPI effect (Winer et al., 2013), so a series of exploratory follow-up analyses were carried out. In order to increase sensitivity of analyses to any patterns that might exist in the data, nine participants whose median response time across all words was below 450 ms— meaning that they likely responded too quickly to have completed 2AFC trials validly (Winer et al., 2011)—were excluded

from exploratory analyses, leaving an N of 134. All exploratory analyses were performed using two-tailed tests.

First, a repeated measures ANOVA examined mean word identification accuracy with word valence (negative, neutral, positive) as a within-subjects variable and no between-subjects variables. Results were significant, $F(2, 266) = 4.39, p = .01$, indicating that participants' mean accuracy was not equal across valence categories (negative words, $M = 51.32, SD = 5.25$; neutral words, $M = 49.55, SD = 5.82$; positive words, $M = 49.53, SD = 5.67$). A follow-up repeated measures ANOVA comparing mean accuracy for positive and negative words was also significant, $F(1, 133) = 6.91, p = .01$, indicating that across the full sample, participants showed a negativity bias, i.e., that they were more accurate identifying positive than identifying negative words. This is consistent with findings from previous studies of SPPI effects (Winer et al., 2011). However, a second follow-up analysis comparing mean accuracy for positive and neutral words was not significant. This indicates that, differing from previous SPPI research (Winer et al., 2013), participants' mean accuracy in the current sample was similar for positive and neutral words.

Next, a repeated measures GLM was carried out with anxiety, defensiveness, and the anxiety x defensiveness interaction as between-subjects variables and word valence as a within-subjects variable. Again, the main effect of valence was significant $F(2, 260) = 5.09, p = .007$, and trends emerged for defensiveness x valence, $F(2, 260) = 2.62, p = .07$, as well as for anxiety x valence, $F(2, 260) = 2.52, p = .08$. The 3-way interaction of valence, anxiety, and defensiveness was not significant.

To follow up the defensiveness x valence interaction trend, two simple linear regressions were computed with defensiveness as the predictor variable and negative and neutral word accuracy, respectively, as outcome variables, but neither model reached significance, $B = .002, t = 1.42, p = .16$ and $B = -.002, t = -1.29, p = .20$. The relationship between defensiveness and positive word accuracy was already examined in a regression model as described above in the Hypotheses 3-5 subsection, and as noted defensiveness showed a trend in the same direction seen in previous studies, $B = .003, t = 1.71, p = .09$, with higher defensiveness tending to predict higher mean positive accuracy.

Similarly, two simple regressions were carried out to follow up the anxiety x valence interaction trend; anxiety was the predictor variable and negative and neutral word accuracy, respectively, were outcome variables. Neither model reached significance, $B = -.001, t = -1.64, p = .10$ for negative accuracy and $B < .001, t = -.021, p = .98$ for neutral accuracy, nor did the relationship between anxiety and positive word accuracy, described already in the Hypotheses 3-5 subsection.

Another repeated measures GLM was carried out with word valence (positive, negative, neutral) as a within-subjects variable and anxiety, decision-related action orientation, recent changes in anhedonia, the AOD x SLIPS interaction, the anxiety x AOD interaction, and the anxiety x SLIPS interaction as between-subjects variables. Other than the significant main effect of word valence and the anxiety x valence trend already described, no effects neared significance.

In order to better understand the relationship between anxiety and recent changes in anhedonia in the current sample, MAS and SLIPS sum scores were split into three groups (high, moderate, low) based on the observed distributions (e.g., Tran, Lamplmayr,

Pintzinger, & Pfabigan, 2013). Strikingly, the current sample deviated from expectation and from findings from previous SPPI research (Winer et al., 2013), in that *high levels of anxiety were independent of recent changes in anhedonia*. Of the 21 participants who reported high anxiety, seven were in the high group, seven were in the moderate group, and seven were in the low group for recent changes in anhedonia. However, all but three of the 40 participants who reported low anxiety were also in the low group for recent changes in anhedonia (Table 4). Notably, when mean positive word accuracy was computed for each anxiety x anhedonia combination, the seven participants who reported both high anxiety and high levels of anhedonia exhibited mean positive word accuracy of 47.54, $SD = 6.92$.

Table 4

Participants Grouped by Anxiety Level and Level of Recent Changes in Anhedonia

Recent changes in anhedonia	Low anxiety	Mod. anxiety	High anxiety	Totals
Low	37	43	7	87
Mod.	3	20	7	30
High	0	10	7	17
Totals	40	73	21	

Note. Low anxiety, MAS sum score of 0-5; Moderate anxiety, MAS sum score of 6-13; High anxiety, MAS sum score ≥ 14 ; Low recent changes in anhedonia, SLIPS sum score 0-5; Moderate recent changes in anhedonia, SLIPS sum score of 6-12; High recent changes in anhedonia, SLIPS sum score ≥ 13 .

In previous research, median response time (RT) has been found to moderate SPPI effects, with highly anxious, non-defensive participants who responded faster showing more pronounced inhibition of positive information than those who tended to

take longer to respond (Winer et al., 2011). In order to test for potential moderation by median RT in the current study, a repeated measures GLM was carried out with word valence (negative, neutral, positive) as a within-subjects variable and anxiety, defensiveness, median RT, and all interactions as between-subjects variables. No effects that included median RT reached significance. In order to examine potential median RT effects on negativity bias specifically, another repeated measures GLM was carried out with only two levels of valence (positive and negative) as a within-subjects variable and anxiety, defensiveness, median RT, and all interactions as between-subjects variables. This time valence x median RT reached significance, $F(1, 126) = 4.22, p = .04$, and valence x median RT x anxiety x defensiveness showed a near-significant trend, $F(1, 126) = 2.98, p = .09$. Follow up analyses with the same set of between-subjects variables were carried out for positive word accuracy and negative word accuracy separately; there was a significant effect of median RT on positive word accuracy, $F(1, 126) = 4.03, p = .047$, indicating that participants who took longer to respond had higher mean positive word accuracy. No other significant effects for positive word accuracy and no significant effects for negative word accuracy were found.

CHAPTER IV

DISCUSSION

The current study was conducted to examine previous findings showing that highly anxious, non-defensive persons (Winer et al., 2011) and those experiencing extreme recent levels of anhedonia (Winer et al., 2013) exhibit SPPI, and that individual differences in decision-relevant action orientation account for the relationship between clinical variables and positive word accuracy in the 2AFC task (Winer et al., 2013). In keeping with these past findings, it was hypothesized that state oriented persons would exhibit SPPI, that action oriented persons would exhibit higher accuracy than state oriented persons at identifying positive words, and that recent changes in anhedonia and other depressive and anxious symptoms would be negatively related to positive word accuracy when controlling for defensiveness. Further, it was hypothesized that the relationship between action orientation and positive word accuracy would account for the relationship between positive word accuracy and depressive and anxious symptoms. These hypotheses were not supported in this sample, as results did not reach significance for the planned analyses. Nonetheless, the results provide several points for discussion and potential directions for future research.

A possible explanation for the null findings in this study is that the SPPI effect might be less robust, and therefore require more power to detect, in non-clinical populations than among persons experiencing clinical levels of anxiety or anhedonia.

This pattern would be consistent with findings on the robustness of attentional bias findings from other measures, such as the dot-probe task (Schmukle, 2005). Moreover, the process Winer and colleagues (2011) have proposed as potentially underlying the SPPI effect involves the repeated association of potentially rewarding stimuli with negative experiences such as disappointment or rejection, so that over time positive information comes to be perceived as increasingly threatening. If the intensity and/or generality of SPPI is linked to the severity of anxious and anhedonic symptoms, then one might expect biases in positive information processing to be weaker and therefore more difficult to detect in samples with only mild to moderate symptoms.

Participants' low symptom severity was one of the primary limitations of the current study. Despite the preselection of a subset of participants for severe recent loss of interest, the highest SLIPS score that occurred in the current sample was 26 (out of a maximum possible score of 46), and only 7 participants obtained a sum score greater than 17 on the measure. Furthermore, the mean SLIPS score for the current sample (5.43, $SD = 5.77$) was notably less than the mean score (9.27, $SD = 9.34$) from a combined sample ($N = 528$) of Amazon.com Mechanical Turk (MTurk) workers and university subject pool participants surveyed in the validation of the SLIPS (Winer et al., 2014). The mean score from the university subject pool participants alone in the SLIPS validation study ($N = 346$), excluding the MTurk workers, was 3.23 ($SD = 5.27$). Thus, the current study and previous research indicate that student populations tend to report low scores on the SLIPS, which highlights the need to work with clinical populations in order to examine unconscious processing of positive information in participants with extreme recent changes in anhedonia.

The preselection procedure in the current study was also limited by the unforeseen shift of participants' anhedonia symptoms in the time that elapsed between prescreening and administration of the 2AFC task. Only two out of the 10 participants who had responded with a "2" to Item 12 of the BDI-II during prescreening still responded with a "2" to the question a few weeks later when they came to the lab and completed the 2AFC task. One participant responded to the same item with a "3" ("It's hard to get interested in anything") at the time of the main experiment, five participants responded with a "1" ("I am less interested in other people or things than before"), and two participants responded with a "0" ("I have not lost interest in other people or activities"). This outcome underscores the importance in future studies of having participants complete the 2AFC as soon as possible after responding to online prescreening measures, so that those who meet symptom cutoffs at prescreening will still qualify for inclusion at the time of the actual experiment.

In addition, the preselection procedure could be strengthened by administering the SLIPS as a prescreening measure and using a minimum SLIPS sum score, rather than response on Item 12 of the BDI-II, as an inclusion criterion. Although the overall SLIPS distribution did not relate to mean positive word accuracy in the current study, research in clinical populations suggests that a major strength of examining changes in anhedonia lies in the ability to differentiate amongst various degrees of anhedonia and predict clinical outcomes, even within severely depressed samples (Winer et al., in press).

It is also worth noting that in the current sample, participants' symptoms of anxiety and recent changes in anhedonia were not related in the ways that would be expected based on previous SPPI research (Winer et al., 2013). In the previous study that

evaluated anxiety and recent changes in anhedonia in relation to the SPPI effect, all six of the participants who reported high levels of recent changes in anhedonia (a response of “2” on BDI Item 12) also reported elevated symptoms of anxiety. In the current study, high levels of anxiety were independent of recent changes in anhedonia, with equal numbers of high anxious participants reporting low, moderate, and high levels of recent changes in anhedonia. Although only seven participants in the current sample reported high anxiety AND a high degree of recent changes in anhedonia, those seven participants exhibited mean positive word accuracy of 47.54, $SD = 6.92$, which is consistent with the mean positive word accuracy exhibited by the small number of extreme anhedonics in the 2013 study by Winer and colleagues. Thus, in future studies on unconscious processing of positive information it will be important to preselect larger samples of participants with high anxiety *and* high levels of recent changes in anhedonia, or, ideally, to examine participants in treatment settings with clinical levels of pathology.

The lack of severely anxious and anhedonic participants in the current sample may also have mitigated the potential impact of state orientation on positive word accuracy. As noted in the earlier summary of PSI theory, difficulties associated with state orientation become especially pronounced in stressful situations or when positive affect is already low (Kazén et al., 2008). Thus, it is possible that the SPPI effect and other hypothesized relationships did not appear with this sample because analyses lacked power to detect milder biases that may correspond to milder symptoms. Consistent with this possibility is the fact that, while results did not reach significance, comparison of the SO group’s positive word accuracy to chance (50% accuracy) revealed a trend in the predicted direction, with state oriented persons tending to respond incorrectly when asked

to identify positive words. Also consistent with this possibility, in step 2 of the hierarchical regression analysis defensiveness neared significance in the expected direction as a predictor of mean positive word accuracy when depressive and anxious symptoms were held constant.

Finally, it is possible that regional differences exist in the way that stimulus words are interpreted, such that participants in the current study processed the positively valenced words differently than did participants in previous studies of SPPI, who were recruited from a large metropolitan area in the Midwest. This possibility could be examined in the future by comparing participant ratings of the valence, arousal, and dominance of stimulus words (via the Self-Assessment Manekin rating scale; Bradley & Lang, 1994) from studies conducted in different geographical regions.

REFERENCES

- Abramson, L. Y., Seligman, M. E., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87*(1), 49-74.
- Baumann, N., Kaschel, R., & Kuhl, J. (2005). Striving for Unwanted Goals: Stress-Dependent Discrepancies Between Explicit and Implicit Achievement Motives Reduce Subjective Well-Being and Increase Psychosomatic Symptoms. *Journal of Personality and Social Psychology, 89*(5), 781-799. doi:10.1037/0022-3514.89.5.781
- Beblo, T., Fernando, S., Klocke, S., Griepenstroh, J., Aschenbrenner, S., & Driessen, M. (2012). Increased suppression of negative and positive emotions in major depression. *Journal of Affective Disorders, 141*(2-3), 474-479. doi:10.1016/j.jad.2012.03.019
- Beck, A. T., Steer, R. A., & Brown, G. K. (1993). Beck Depression Inventory-II (BDI-II). *Manual for Beck Depression Inventory-II*.
- Bendig, A. W. (1956). The development of a short form of the Manifest Anxiety Scale. *Journal of Consulting Psychology, 20*(5), 384. doi:10.1037/h0045580

- Blunt, A., & Pychyl, T. A. (1998). Volitional action and inaction in the lives of undergraduate students: State orientation, procrastination and proneness to boredom. *Personality and Individual Differences, 24*(6), 837-846. doi:10.1016/S0191-8869(98)00018-X
- Bradley, M. M., & Lang, P. J. (1994). Measuring emotion: the self-assessment manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry, 25*(1), 49-59.
- Bradley, M. M., & Lang, P. J. (1999). *Affective norms for English words (ANEW): Instruction manual and affective ratings*. Technical Report C-1, The Center for Research in Psychophysiology, University of Florida.
- Brunstein, J. C., & Olbrich, E. (1985). Personal helplessness and action control: Analysis of achievement-related cognitions, self-assessments, and performance. *Journal of Personality and Social Psychology, 48*(6), 1540-1551. doi:10.1037/0022-3514.48.6.1540
- Carl, J. R., Soskin, D. P., Kerns, C., & Barlow, D. H. (2013). Positive emotion regulation in emotional disorders: A theoretical review. *Clinical Psychology Review, 33*(3), 343-360. doi:10.1016/j.cpr.2013.01.003
- Chen, N. M., Clarke, P. F., MacLeod, C., & Guastella, A. J. (2012). Biased attentional processing of positive stimuli in social anxiety disorder: An eye movement study. *Cognitive Behaviour Therapy, 41*(2), 96-107. doi:10.1080/16506073.2012.666562

- Diefendorff, J. M., Hall, R. J., Lord, R. G., & Streat, M. L. (2000). Action-state orientation: Construct validity of a revised measure and its relationship to work-related variables. *Journal of Applied Psychology, 85*(2), 250-263.
doi:10.1037/0021-9010.85.2.250
- Dunn, B. D., Stefanovitch, I., Buchan, K., Lawrence, A. D., & Dalgleish, T. (2009). A reduction in positive self-judgment bias is uniquely related to the anhedonic symptoms of depression. *Behaviour Research and Therapy, 47*(5), 374-381.
doi:10.1016/j.brat.2009.01.016
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160.
- Fischer, D. G., & Fick, C. (1993). Measuring social desirability: Short forms of the Marlowe-Crowne Social Desirability Scale. *Educational and Psychological Measurement, 53*(2), 417-424. doi:10.1177/0013164493053002011
- Folkman, S., & Moskowitz, J. T. (2000). Positive affect and the other side of coping. *American Psychologist, 55*(6), 647-654. doi:10.1037/0003-066X.55.6.647
- Fredrickson, B. L. (1998). What good are positive emotions?. *Review of General Psychology, 2*(3), 300-319. doi:10.1037/1089-2680.2.3.300
- Fredrickson, B. L., & Levenson, R. W. (1998). Positive emotions speed recovery from the cardiovascular sequelae of negative emotions. *Cognition and Emotion, 12*(2), 191-220. doi:10.1080/026999398379718

- Gard, D. E., Gard, M. G., Kring, A. M., & John, O. P. (2006). Anticipatory and consummatory components of the experience of pleasure: a scale development study. *Journal of Research in Personality, 40*(6), 1086-1102.
doi:10.1016/j.jrp.2005.11.001
- Giesler, R. B., Josephs, R. A., & Swann Jr, W. B. (1996). Self-verification in clinical depression: the desire for negative evaluation. *Journal of Abnormal Psychology, 105*(3), 358-368. doi:10.1037/0021-843X.105.3.358
- Hechtman, L. A., Raila, H., Chiao, J. Y., & Gruber, J. (in press). Positive emotion regulation and psychopathology: A transdiagnostic cultural neuroscience approach. *Journal of Experimental Psychopathology*.
<http://dx.doi.org/10.5127/jep.030412>
- Jostmann, N. B., & Koole, S. L. (2010). Dealing with high demands: The role of action versus state orientation. In R. H. Hoyle (Ed.), *Handbook of personality and self-regulation* (pp. 332-352). Wiley-Blackwell. doi:10.1002/9781444318111.ch15
- Jostmann, N. B., Koole, S. L., van der Wulp, N. Y., & Fockenberg, D. A. (2005). Subliminal affect regulation. *European Psychologist, 10*(3), 209-217.
doi:10.1027/1016-9040.10.3.209
- Kashdan, T. B. (2007). Social anxiety spectrum and diminished positive experiences: Theoretical synthesis and meta-analysis. *Clinical Psychology Review, 27*(3), 348-365. doi:10.1016/j.cpr.2006.12.003

- Kashdan, T. B., Weeks, J. W., & Savostyanova, A. A. (2011). Whether, how, and when social anxiety shapes positive experiences and events: A self-regulatory framework and treatment implications. *Clinical Psychology Review, 31*(5), 786-799. doi:10.1016/j.cpr.2011.03.012
- Kazén, M., Kaschel, R., & Kuhl, J. (2008). Individual differences in intention initiation under demanding conditions: Interactive effects of state vs. action orientation and enactment difficulty. *Journal of Research In Personality, 42*(3), 693-715. doi:10.1016/j.jrp.2007.09.005
- Kessler, R. C., Berglund, P., Demler, O., Jin, R. & Walters, E. E. (2005) Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry 62*, 593–602.
- Kessler, R. C., Chiu, W. T., Demler, O. & Walters, E. E. (2005) Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry 62*, 617–27.
- Kline, R. B. (2005). Principles and Practice of Structural Equation Modeling. New York, NY: Guilford.
- Kučera, H., & Francis, W. (1967). *Computational analysis of present-day American English*. Providence, RI: Brown University Press.
- Kuhl, J. (1981). Motivational and functional helplessness: The moderating effect of state versus action orientation. *Journal of Personality and Social Psychology, 40*(1), 155-170. doi:10.1037/0022-3514.40.1.155

- Kuhl, J. (1994). Action and state orientation: Psychometric properties of the action control scales (ACS-90). In J. Kuhl & J. Beckmann (Eds.), *Volition and personality: Action versus state orientation* (pp. 47-59). Göttingen, Germany: Hogrefe.
- Kuhl, J. (2000). A Functional-Design Approach to Motivation and Self-Regulation: The Dynamics of Personality Systems Interactions. In M. Boekaerts, P.R. Pintrich & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 111-170). San Diego: Academic Press.
- Kuhl, J. (2008). Individual differences in self-regulation. In J. Heckhausen, H. Heckhausen (Eds.), *Motivation and Action* (2nd ed.) (pp. 296-322). New York, NY US: Cambridge University Press.
- Kuhl, J., & Helle, P. (1986). Motivational and volitional determinants of depression: The degenerated-intention hypothesis. *Journal of Abnormal Psychology, 95*(3), 247-251. doi:10.1037/0021-843X.95.3.247
- Kuhl, J., & Kazen, M. (1999). Volitional facilitation of difficult intentions: Joint activation of intention memory and positive affect removes Stroop interference. *Journal of Experimental Psychology. General, 128*(3), 382-399. doi:10.1037/0096-3445.128.3.382
- Kuhl, J., & Koole, S. L. (2004). Workings of the Will: A Functional Approach. In J. Greenberg, S. L. Koole, T. Pyszczynski (Eds.), *Handbook of experimental existential psychology* (pp. 411-430). New York, NY US: Guilford Press.

- Raes, F., Smets, J., Nelis, S., & Schoofs, H. (2012). Dampening of positive affect prospectively predicts depressive symptoms in non-clinical samples. *Cognition & Emotion*, 26(1), 75-82. doi:10.1080/02699931.2011.555474
- Rholes, W. S., Michas, L., & Shroff, J. (1989). Action control as a vulnerability factor in dysphoria. *Cognitive Therapy and Research*, 13(3), 263-274.
doi:10.1007/BF01173407
- Schmukle, S. C. (2005). Unreliability of the dot probe task. *European Journal of Personality*, 19(7), 595-605.
- Step toe, A., Dockray, S., & Wardle, J. (2009). Positive affect and psychobiological processes relevant to health. *Journal of Personality*, 77(6), 1747-1776.
doi:10.1111/j.1467-6494.2009.00599.x
- Strahan, R., & Gerbasi, K. C. (1972). Short, homogeneous versions of the Marlowe-Crowne Social Desirability Scale. *Journal Of Clinical Psychology*, 28(2), 191-193. doi:10.1002/1097-4679(197204)28:2<191::AID-JCLP2270280220>3.0.CO;2-G
- Swann, W. B., Wenzlaff, R. M., & Tafarodi, R. W. (1992). Depression and the search for negative evaluations: More evidence of the role of self-verification strivings. *Journal of Abnormal Psychology*, 101(2), 314-317. doi:10.1037/0021-843X.101.2.314
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics*. Boston, MA: Pearson Education Inc.

- Taylor, C. T., Bomyea, J., & Amir, N. (2011). Malleability of attentional bias for positive emotional information and anxiety vulnerability. *Emotion, 11*(1), 127-138.
doi:10.1037/a0021301
- Treadway, M. T., & Zald, D. H. (2011). Reconsidering anhedonia in depression: lessons from translational neuroscience. *Neuroscience & Biobehavioral Reviews, 35*(3), 537-555. doi:10.1016/j.neubiorev.2010.06.006
- Vasey, M. W., Harbaugh, C. N., Mikolich, M., Firestone, A., & Bijttebier, P. (2013). Positive affectivity and attentional control moderate the link between negative affectivity and depressed mood. *Personality and Individual Differences, 54*(7), 802-807. doi:10.1016/j.paid.2012.12.012
- Vrijzen, J. N., van Oostrom, I., Speckens, A., Becker, E. S., & Rinck, M. (2013). Approach and Avoidance of Emotional Faces in Happy and Sad Mood. *Cognitive Therapy and Research, 37*(1), 1-6. doi:10.1007/s10608-012-9436-9
- Weeks, J. W., Heimberg, R. G., Rodebaugh, T. L., & Norton, P. J. (2008). Exploring the relationship between fear of positive evaluation and social anxiety. *Journal of Anxiety Disorders, 22*(3), 386-400. doi:10.1016/j.janxdis.2007.04.009
- Weeks, J. W., Jakatdar, T. A., & Heimberg, R. G. (2010). Comparing and contrasting fears of positive and negative evaluation as facets of social anxiety. *Journal of Social and Clinical Psychology, 29*(1), 68-94. doi:10.1521/jscp.2010.29.1.68
- Werner-Seidler, A., Banks, R., Dunn, B. D., & Moulds, M. L. (2013). An investigation of the relationship between positive affect regulation and depression. *Behaviour Research and Therapy, 51*(1), 46-56. doi:10.1016/j.brat.2012.11.001

- Winer, E. S., & Newman, L. S. (2011). Defensive processes. In D. S. Dunn (Ed.), *Oxford Bibliographies Online: Psychology*. New York: Oxford University Press.
- Winer, E. S., Cervone, D., Newman, L. S., & Snodgrass, M. (2011). Subchance perception: Anxious, non-defensive individuals identify subliminally-presented positive words at below-chance levels. *Personality and Individual Differences*, *51*(8), 996-1001. doi:10.1016/j.paid.2011.08.010
- Winer, E. S., Veilleux, J. C., & Ginger, E. J. (2014). Development and validation of the Specific Loss of Interest and Pleasure Scale (SLIPS). *Journal of Affective Disorders* *152*(154), 193-201.
- Winer, E. S., Cervone, D., Ginger, E. J., Bartoszek, G., Snodgrass, M., & Newman, L. S. (2013, May). *Implicit emotion regulation, subchance perception, and distress*. Paper presented at the 25th annual meeting of the Association for Psychological Science, Washington DC.
- Winer, E. S., Nadorff, M. R., Ellis, T. E., Allen, A. G., Herrera, S., & Salem, T. (in press). Anhedonia predicts suicidal ideation in a large psychiatric inpatient sample. *Psychiatry Research*.
- Wood, A. M., & Joseph, S. (2010). The absence of positive psychological (eudemonic) well-being as a risk factor for depression: A ten year cohort study. *Journal of Affective Disorders*, *122*(3), 213-217. doi:10.1016/j.jad.2009.06.032

APPENDIX A
SELF-REPORT MEASURES

The Beck Depression Inventory

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** that best describes the way you have been feeling during **the past two weeks, including today**. Circle the number beside the statement you have picked. If several statements in a group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness

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

2. Pessimism

- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

3. Past Failure

- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

4. Loss of Pleasure

- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings

- 0 I don't feel particularly guilty.
- 1 I feel guilty over many things I have done or should have done.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all the time.

6. Punishment Feelings

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

7. Self-Dislike

- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed in myself.
- 3 I dislike myself.

8. Self-Criticalness

- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all of my faults.
- 3 I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes

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

10. Crying

- 0 I don't cry anymore than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

11. Agitation

- 0 I am no more restless or wound up than usual.
- 1 I feel more restless or wound up than usual.
- 2 I am so restless or agitated that it's hard to stay still.
- 3 I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

- 0 I have not lost interest in other people or activities.
- 1 I am less interested in other people or things than before.
- 2 I have lost most of my interest in other people or things.
- 3 It's hard to get interested in anything.

13. Indecisiveness

- 0 I make decisions about as well as ever.
- 1 I find it more difficult to make decisions than usual.
- 2 I have much greater difficulty in making decisions than I used to.
- 3 I have trouble making decisions.

14. Worthlessness

- 0 I do not feel I am worthless.
- 1 I don't consider myself as worthwhile and useful as I used to.
- 2 I feel more worthless as compared to other people.
- 3 I feel utterly worthless.

15. Loss of Energy

- 0 I have as much energy as ever.
- 1 I have less energy than I used to have.
- 2 I don't have enough energy to do very much.
- 3 I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

- 0 I have not experienced any change in my sleeping pattern.
- 1a I sleep somewhat more than usual.
- 1b I sleep somewhat less than usual.
- 2a I sleep a lot more than usual.
- 2b I sleep a lot less than usual.
- 3a I sleep most of the day.
- 3b I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

- 0 I am no more irritable than usual.
- 1 I am more irritable than usual.
- 2 I am much more irritable than usual.
- 3 I am irritable all the time.

18. Changes in Appetite

- 0 I have not experienced any change in my appetite.
- 1a My appetite is somewhat less than usual
- 1b My appetite is somewhat more than usual
- 2a My appetite is much less than before
- 2b My appetite is much greater than usual.
- 3a I have no appetite at all.
- 3b I crave food all the time.

19. Concentration Difficulty

- 0 I can concentrate as well as ever.
- 1 I can't concentrate as well as usual.
- 2 It's hard to keep my mind on anything for very long.
- 3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

- 0 I am no more tired or fatigued than usual.
- 1 I get more tired or fatigued more easily than usual.
- 2 I am too tired or fatigued to do a lot of the things I used to do.
- 3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

- 0 I have not noticed any recent change in my interest in sex.
- 1 I am less interested in sex than I used to be.
- 2 I am much more interested in sex now.
- 3 I have lost interest in sex completely

Action Control Scale

Choose the one of the possible answers (A or B) that is most like you and give an answer for every question on the supplied answer sheet. Please don't make any marks on this questionnaire.

1. When I have lost something that is very valuable to me and I can't find it anywhere:
A. I have a hard time concentrating on something else
B. I put it out of my mind after a little while
2. When I know I must finish something soon:
A. I have to push myself to get started
B. I find it easy to get it done and over with
3. When I have learned a new and interesting game:
A. I quickly get tired of it and do something else
B. I can really get into it for a long time
4. When I have to solve a difficult problem:
A. It takes me a long time to adjust myself to it
B. It bothers me for a while, but then I don't think about it anymore
5. When I don't have anything in particular to do and I am getting bored:
A. I have trouble getting up enough energy to do anything at all
B. I quickly find something to do
6. When I'm working on something that's important to me:
A. I still like to do other things in between working on it
B. I get into it so much that I can work on it for a long time
7. When I'm in a competition and have lost every time:
A. I can soon put losing out of my mind
B. The thought that I lost keeps running through my mind
8. When I am getting ready to tackle a difficult problem:
A. It feels like I am facing a big mountain that I don't think I can climb
B. I look for a way that the problem can be approached in a suitable manner
9. When I'm watching a really good movie:
A. I get so involved in the film that I don't even think of doing anything else
B. I often want to get something else to do while I'm watching the movie

10. If I had just bought a new piece of equipment (for example, a tape deck) and it accidentally fell on the floor and was damaged beyond repair:
 - A. I would manage to get over it quickly
 - B. It would take me a long time to get over it

11. When I have to solve a difficult problem:
 - A. I usually don't have a problem getting started on it
 - B. I have trouble sorting out things in my head so that I can get down to working on the problem

12. When I have been busy for a long time doing something interesting (for example, reading a book or working on a project):
 - A. I sometimes think about whether what I'm doing is really worthwhile
 - B. I usually get so involved in what I'm doing that I never think to ask about whether it's worthwhile

13. If I have to talk to someone about something important and, repeatedly, can't find her/him at home:
 - A. I can't stop thinking about it, even while I'm doing something else
 - B. I easily forget about it until I can see the person again

14. When I have to make up my mind about what I am going to do when I get some unexpected free time:
 - A. It takes me a long time to decide what I should do during this free time
 - B. I can usually decide on something to do without having to think it over very much

15. When I read an article in the newspaper that interests me:
 - A. I usually remain so interested in the article that I read the entire article
 - B. I still often skip to another article before I've finished the first one

16. When I've bought a lot of stuff at a store and realize when I get home that I paid too much -- but I can't get my money back:
 - A. I can't concentrate on anything else
 - B. I easily forget about it

17. When I have work to do at home:
 - A. It is often hard for me to get the work done
 - B. I usually get it done right away

18. When I'm on vacation and I'm having a good time:
 - A. After a while, I really feel like doing something completely different
 - B. I don't even think about doing anything else until the end of my vacation

19. When I am told that my work has been completely unsatisfactory:
 - A. I don't let it bother me for too long
 - B. I feel paralyzed
20. When I have a lot of important things to do and they must all be done soon:
 - A. I often don't know where to begin
 - B. I find it easy to make a plan and stick with it
21. When one of my co-workers brings up an interesting topic for discussion:
 - A. It can easily develop into a long conversation
 - B. I soon lose interest and want to go do something else
22. If I'm stuck in traffic and miss an important appointment:
 - A. At first, it's difficult for me to start doing anything else at all
 - B. I quickly forget about it and do something else
23. When there are two things that I really want to do, but I can't do both of them:
 - A. I quickly begin one thing and forget about the other thing I couldn't do.
 - B. It's not easy for me to put the thing that I couldn't do out of my mind
24. When I am busy working on an interesting project:
 - A. I need to take frequent breaks and work on other projects
 - B. I can keep working on the same project for a long time
25. When something is very important to me, but I can't seem to get it right:
 - A. I gradually lose heart
 - B. I just forget about it and go do something else
26. When I have to take care of something important but which is also unpleasant
 - A. I do it and get it over with
 - B. it can take a while before I can bring myself to do it
27. When I am having an interesting conversation with someone at a party:
 - A. I can talk to him or her the entire evening
 - B. I prefer to go do something else after a while
28. When something really gets me down:
 - A. I have trouble doing anything at all
 - B. I find it easy to distract myself by doing other things
29. When I am facing a big project that has to be done:
 - A. I often spend too long thinking about where I should begin
 - B. I don't have any problems getting started

30. When it turns out that I am much better at a game than the other players:
A. I usually feel like doing something else
B. I really like to keep playing
31. When several things go wrong on the same day:
A. I usually don't know how to deal with it
B. I just keep on going as though nothing had happened
32. When I have a boring assignment:
A. I usually don't have any problem getting through it
B. I sometimes just can't get moving on it
33. When I read something I find interesting:
A. I sometimes still want to put the article down and do something else
B. I will sit and read the article for a long time
34. When I have put all my effort into doing a really good job on something and the whole thing doesn't work out:
A. I don't have too much difficulty starting something else
B. I have trouble doing anything else at all
35. When I have an obligation to do something that is boring and uninteresting:
A. I do it quickly and get it over with
B. It usually takes a while before I get around to doing it
36. When I am trying to learn something new that I want to learn:
A. I'll keep at it for a long time
B. I often feel like I need to take a break and go do something else for a while

The Specific Loss of Interest and Pleasure Scale (SLIPS)

Please carefully read the following groups of statements and choose only one from each group which best describes how you have been feeling during the past two weeks, including how you are feeling today.

1. 0 I still enjoy going out with friends.
 1 I don't enjoy going out with friends as much as I used to.
 2 I no longer enjoy going out with friends.
 3 I have never enjoyed going out with anyone.

2. 0 Being with my friends makes me feel as good or better than it ever has.
 1 Being with my friends doesn't make me feel as good as it used to.
 2 Being with my friends no longer makes me feel good.
 3 I don't have friends.

3. 0 I have not lost enjoyment for leisure activities that involve other people.
 1 I have less enjoyment for leisure activities that involve other people.
 2 I have lost most enjoyment for leisure activities that involve other people.
 3 I have never enjoyed leisure activities that involve other people.

4. 0 I have not lost comfort in knowing that I have friends who care about me.
 1 Knowing that I have friends who care about me is less comforting than it used to be.
 2 Knowing that I have friends who care about me is no longer comforting.
 3 I don't have friends who care about me.

5. 0 When people tell me about their problems and hang-ups, I am usually interested.
 1 Lately, when people tell me about their problems and hang-ups, I am less interested than I used to be.
 2 Lately, when people tell me about their problems and hang-ups, I am not really interested.
 3 I have never been interested when people tell me about their problems and hang-ups.

6. 0 I have not lost affection for those who are close to me.
 1 I have less affection than I used to for those who are close to me.
 2 I have very little affection for those who are close to me.
 3 I have never had affection for others.

7. 0 I have not lost interest in having long, personal conversations with friends.
 1 I have less interest than I used to for long, personal conversations with friends.
 2 I no longer have interest in having long, personal conversations with friends.
 3 I have never had interest in having long, personal conversations with friends.
8. 0 I like making new friends no less than I did before.
 1 I don't like making new friends as much as I used to.
 2 I have little to no interest in meeting new people.
 3 I have never had interest in meeting new people.
9. 0 I prefer to live amongst people than to live all alone in a cabin in the woods.
 1 I don't prefer to live amongst people as much as I used to.
 2 Recently, I have lost most interest for living amongst people.
 3 I have always preferred to live all alone in a cabin in the woods, than to live amongst people.
10. 0 I have not lost interest in other people's daily activities and opinions.
 1 People's daily activities and opinions are less interesting than they used to be.
 2 People's daily activities and opinions are no longer interesting to me.
 3 People's daily activities and opinions have never been interesting to me.
11. 0 I have not lost interest in having strong relationships with people.
 1 I have less interest than I used to in having strong relationships with people.
 2 I have lost most interest in having strong relationships with people.
 3 I have never been interested in having strong relationships with people.
12. 0 I enjoy talking to people no less than before.
 1 I enjoy talking to people less than I used to.
 2 I hardly find enjoyment in talking to people anymore.
 3 I never enjoyed talking to people.
13. 0 I have not had a loss of pleasure from the physical activities I enjoy.
 1 I don't get as much pleasure as I used to from the physical activities I enjoy.
 2 I get very little pleasure from the physical activities I used to enjoy.
 3 I have never gotten pleasure from physical activities.

14. 0 I have not lost interest in other people.
 1 I have less interest in other people.
 2 I have lost most of my interest in other people.
 3 I have never had interest in other people.
15. 0 I like my friends no less than before.
 1 I don't like my friends as much as I used to.
 2 I don't like my friends anymore.
 3 I have never liked my friends.
16. 0 I have not lost pleasure in interacting with a co-worker or classmate.
 1 I get less pleasure than I used to from interacting with a co-worker or classmate.
 2 I get little pleasure from interacting with a co-worker or classmate anymore.
 3 I have never gotten pleasure from interacting with a co-worker or classmate.
17. 0 It seems like my friends enjoy my company no less than before.
 1 It seems like my friends don't enjoy my company as much as they used to.
 2 It seems like my friends don't enjoy my company anymore.
 3 I have never felt like my friends enjoy my company.
18. 0 My job performance is no less important.
 1 I don't care about my job performance as much as I used to.
 2 I no longer care about my job performance.
 3 I have never cared about my job performance.
19. 0 I prefer to eat with other people no less than I used to.
 1 I don't like to eat with people as much as before.
 2 I don't like eating with people anymore.
 3 I have never liked eating with other people.
20. 0 I have not lost interest in watching my favorite types of movies.
 1 I have less interest in watching the types of movies I have always enjoyed.
 2 I have little to no interest in watching the types of movies I have always enjoyed.
 3 I have never enjoyed watching any type of movie.
21. 0 I have not lost interest in my favorite activities.
 1 I have less interest in my favorite activities.
 2 I have lost most interest in my favorite activities.
 3 It's always been hard to get interested in activities.

22. 0 I am looking forward to something exciting coming up in my life.
1 I am not looking forward to a future exciting event as much as I used to look forward to things.
2 I no longer look forward to anything coming up in my life.
3 I have never looked forward to upcoming exciting life events.
23. 0 I get excited the night before a fun event as much or more than I ever have.
1 I get less excited the night before a fun event than I used to.
2 I no longer get excited the night before a fun event.
3 I have never been excited the night before a fun event.

Shortened Version of the Marlowe Crowne Social Desirability Scale

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is True (T) or False (F) as it pertains to you personally. Please circle T or F and do not skip any items.

- | | | |
|---------------------------------------------------------------------------------------------------------------------|---|---|
| 1. I never hesitate to go out of my way to help someone in trouble. | T | F |
| 2. I have never intensely disliked anyone. | T | F |
| 3. I sometimes feel resentful when I don't get my way. | T | F |
| 4. I like to gossip at times. | T | F |
| 5. There have been times when I felt like rebelling against people in authority even though I knew they were right. | T | F |
| 6. I can remember "playing sick" to get out of something. | T | F |
| 7. There have been occasions when I took advantage of someone. | T | F |
| 8. I'm always willing to admit it when I make a mistake. | T | F |
| 9. I always try to practice what I preach. | T | F |
| 10. I sometimes try to get even, rather than forgive and forget. | T | F |
| 11. When I don't know something I don't at all mind admitting it. | T | F |
| 12. I am always courteous, even to people who are disagreeable. | T | F |
| 13. At times I have really insisted on having things my own way. | T | F |
| 14. There have been occasions when I felt like smashing things. | T | F |
| 15. I would never think of letting someone else be punished for my wrongdoings. | T | F |
| 16. I never resent being asked to return a favor. | T | F |
| 17. I have never been irked when people expressed ideas very different from my own. | T | F |
| 18. There have been times when I was quite jealous of the good fortune of others. | T | F |
| 19. I am sometimes irritated by people who ask favors of me. | T | F |
| 20. I have never deliberately said something that hurt someone's feelings. | T | F |

Shortened Version of the Taylor Manifest Anxiety Scale

CHAPTER V Please circle **T** (True) or **F** (False) for each item. Do not skip any items.

- | | | |
|----------------------------------------------------------------------------------------------------|----------|----------|
| 1. I believe I am no more nervous than most others. | T | F |
| 2. I work under a great deal of tension. | T | F |
| 3. I cannot keep my mind on one thing. | T | F |
| 4. I am more sensitive than most other people. | T | F |
| 5. I frequently find myself worrying about something. | T | F |
| 6. I am usually calm and not easily upset. | T | F |
| 7. I feel anxiety about something or someone almost all the time. | T | F |
| 8. I am happy most of the time. | T | F |
| 9. I have periods of such great restlessness that I cannot sit long in a chair. | T | F |
| 10. I have sometimes felt that difficulties were piling up so high that I could not overcome them. | T | F |
| 11. I find it hard to keep my mind on a task or job. | T | F |
| 12. I am not unusually self-conscious. | T | F |
| 13. I am inclined to take things hard. | T | F |
| 14. Life is a strain for me much of the time. | T | F |
| 15. At times I think I am no good at all. | T | F |
| 16. I am certainly lacking in self-confidence. | T | F |
| 17. I certainly feel useless at times. | T | F |
| 18. I am a high-strung person. | T | F |
| 19. I sometimes feel that I am about to go to pieces. | T | F |
| 20. I shrink from facing a crisis or difficulty. | T | F |

SONA Online Screening Question

Loss of Interest

- 0 I have not lost interest in other people or activities.
- 1 I am less interested in other people or things than before.
- 2 I have lost most of my interest in other people or things.
- 3 It's hard to get interested in anything.



E. Samuel Winer <esamwiner@gmail.com>

Study 12-379: Identification of Briefly-Presented Stimuli

5 messages

jroberts@research.msstate.edu <jroberts@research.msstate.edu>
To: sw1388@msstate.edu
Cc: jroberts@research.msstate.edu

Tue, Dec 11, 2012 at 7:21 PM

December 11, 2012

E. Samuel Winer
Department of Psychology

RE: IRB Study #12-379: Identification of Briefly-Presented Stimuli

Dear Dr. Winer:

This email serves as official documentation that the above referenced project was reviewed and approved via expedited review for a period of 12/11/2012 through 12/11/2013 in accordance with 45 CFR 46.110 #7. Please note the expiration date for approval of this project is 12/11/2013. If additional time is needed to complete the project, you will need to submit a Continuing Review Request form 30 days prior to the date of expiration. Any modifications made to this project must be submitted for approval prior to implementation. Forms for both Continuing Review and Modifications are located on our website at <http://www.orc.msstate.edu>.

Any failure to adhere to the approved protocol could result in suspension or termination of your project. Please note that the IRB reserves the right, at anytime, to observe you and any associated researchers as they conduct the project and audit research records associated with this project.

Please note that the MSU IRB is in the process of seeking accreditation for our human subjects protection program. As a result of these efforts, you will likely notice many changes in the IRB's policies and procedures in the coming months. The first of these changes is the implementation of an approval stamp for consent forms. The approval stamp will assist in ensuring the IRB approved version of the consent form is used in the actual conduct of research. Your stamped consent form will be attached in a separate email. You must use copies of the stamped consent form for obtaining consent from participants.

Please refer to your docket number (#12-379) when contacting our office regarding this project.

We wish you the very best of luck in your research and look forward to working with you again. If you have questions or concerns, please contact Jodi Roberts at jroberts@research.msstate.edu or call 662-325-2238. In addition, we would greatly appreciate your feedback on the IRB approval process. Please take a few minutes to complete our survey at <http://www.surveymonkey.com/s/YZC7QQD>.

Sincerely,

Jodi Roberts, Ph.D.
IRB Officer