

SELF-FOCUSED ATTENTION IN DEPRESSION: A STUDY OF AD LIBITUM
VIEWING BEHAVIOR

by

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Certificate of Approval

This is to certify that the accompanying thesis by Sarah Blacher and Zachary Calo has been accepted in partial fulfillment of the requirements for graduation with Honors in Psychology.

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Abstract

Previous research has demonstrated that depressed individuals tend to exhibit increased levels of self-focused attention relative to non-depressed individuals. However, these studies have examined only how depression increases self-focused cognition, without investigating how these thoughts are manifested in behavior. This study was designed to determine whether behavioral responses to external, self-relevant stimuli are consistent with findings of elevated attention towards the self in individuals with high levels of depressive symptoms. In the current study, we used an *ad libitum* viewing task, in which participants progressed through a series of images one at a time at their own pace, to examine behavior. Participants ($N = 63$) completed two *ad libitum* viewing tasks of various images that included images of each participant's own face. The first *ad libitum* viewing task took place before a sad mood induction, and the second one took place after a sad mood induction. We found a significant, positive correlation between depressive symptoms and self-focused attention, which we measured as the amount of time spent viewing images of one's own face. We also predicted that depressive symptoms would be negatively correlated with the ability to repair mood following the sad mood induction, but this hypothesis was not supported.

Key words: depression, self-focused attention, approach-avoidance motivation

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Self-Focused Attention in Depression: A Study of Ad Libitum Viewing Behavior

Whether it be ancient Greeks or Sigmund Freud, philosophers and scholars throughout the centuries have utilized a simple principle to explain human behavior. This principle, known as the hedonic principle, asserts that human beings are motivated to seek pleasure and avoid pain (Higgins, 1997). Though not a complex theory, the hedonic principle's implications are far reaching and have been the inspiration for a number of theories and proposed models of human behavior.

Hedonically Motivated Behaviors of Healthy Individuals

It is difficult to precisely define what it means to be mentally healthy, as what is considered good mental health depends on one's social environment or culture (Jahoda, 1958). In the context of this study, we use a definition constructed by Taylor and Brown (1988) to broadly define a mentally healthy individual as one who maintains long-term, positive levels of self-esteem and optimism. A variety of researchers have applied the hedonic principle to the behavior of healthy individuals to find many instances of hedonic motivation.

Hedonic patterns in behavior are the basis for at least one prominent theory of motivation, namely, the theory of approach-avoidance motivation (Kron et al., 2014). According to this theory, humans and animals alike approach pleasurable stimuli and avoid unpleasant stimuli. The implications of approach-avoidance motivation extend beyond the day-to-day actions of humans and involve evolutionary theories of species survival. In fact, Schneirla (1959) proposed that all types of species follow basic approach-avoidance behavior, and many species that are now extinct failed to successfully do so (Elliot, 2006). Indeed, it has been shown that different types of species

today – from cats and dogs to simple single-cell organisms – display approach-avoidance motivation, indicating its evolutionary importance and illustrating just how ingrained in behavior the hedonic principle seems to be (Elliot, 2006).

Given how much more complex humans are than single-cell organisms, it makes sense that not all of our behaviors and actions can be described by an approach-avoidance framework alone; however, there is certainly evidence of approach-avoidance motivation operating within human behavior to at least some degree. One such piece of evidence is that humans tend to interpret most stimuli they encounter as either positive or negative (Bargh, 1997), and interpreting a stimulus is a necessary precursor to determining whether to approach or avoid it. Secondly, several studies have documented approach-avoidance behavior. Chen and Bargh (1999) conducted an experiment in which participants pushed or pulled a lever in response to positive and negative words appearing on a screen. They found that participants tended to have shorter reaction times when they *pulled* the lever towards them when they saw a positive word and *pushed* the lever away from them when they saw a negative word (as opposed to pulling in response to negative words and pushing in response to positive ones). Chen and Bargh (1999) argued that pulling is an action one takes to bring something in (i.e. to approach something) and pushing is an action one takes to get away from something (i.e. to avoid something). From the perspective of approach-avoidance motivation, it could be argued that participants were faster at pulling the lever for positive words and pushing the lever for negative words because these external behaviors were congruent with participants' internal response to the stimuli.

Chen and Bargh (1999) noted that the decision to push or pull the lever was automatic and was likely made at the unconscious level, but approach-avoidance behaviors can also be observed in conscious behavior. For example, one study found that when individuals are given the choice to look at a previously seen pleasant image or a previously seen unpleasant image, people were more likely to choose to look at the pleasant image (Suri, Sheppes, & Gross, 2013). Other studies have also found an approach-avoidance framework in the attentional patterns of participants. In one such study, participants who were asked to freely progress through a slideshow of both unpleasant and pleasant images, in what is known as an *ad libitum* viewing task, were found to spend more time looking at the pleasant images than the unpleasant ones (Kron et al., 2014). Furthermore, optimistic individuals, who are by some accounts an example of good mental health, look less at unpleasant stimuli than those who are pessimistic, again indicating a preference for focusing attention away from unpleasant stimuli (Luo & Isaacowitz, 2007).

It is important to note that hedonically motivated attention is most commonly observed in studies of *controlled* attention (e.g., Kron et al., 2014). In studies of *automatic* attention, on the other hand, it has been shown that our attention goes to threatening stimuli before anything else (Schmidt, Belopolsky, & Theeuwes, 2015). However, the focus on threatening stimuli happens very quickly and automatically, with some research even indicating that threatening stimuli can capture attention without perceptual awareness (Lin, Murray, & Boynton, 2009). There are obvious evolutionary benefits to being able to quickly attend to threats in the environment. Indeed, individuals who are presented with neutral, positive, and threatening stimuli at the same time tend to

immediately focus their attention on stimuli that they consider threatening (Devue, Belopolsky, & Theeuwes, 2011; Rinck & Becker, 2006). After an initial focus on threatening stimuli, however, it does seem that volitional attention is primarily guided by hedonic motivation. Rinck and Becker (2006) used eye tracking to demonstrate this effect: they examined individuals with spider phobias and found that after initially focusing on a threatening image of a spider, arachnophobic participants had a tendency to then avert their gaze from this image, choosing to avoid the stimulus they found unpleasant. The conscious avoidance of unpleasant stimuli is not limited to the emotion of fear alone; studies have also shown that individuals avoid looking at images that evoke disgust (Mason & Richardson, 2010). Evidently, the hedonic principle has implications of an approach-avoidance framework of motivation that can help explain what people choose to look at.

Mood repair. Just as one tends to move away from unpleasant external stimuli, one can also avoid unpleasant internal stimuli. Previous studies have shown that individuals use a variety of different techniques to get out of a sad affective state and repair their mood (Joormann & Siemer, 2004). In the context of the hedonic principle, mood regulation can be seen as motivating individuals to move away from something unpleasant (a negative mood state) and towards something pleasant (a positive mood state). Therefore, healthy individuals should demonstrate mood repair, which specifically refers to the return to a neutral or even positive mood following a negative mood (Josephson, Singer, & Salovey, 1996). Previous research has confirmed that mood repair does in fact occur in healthy populations. In one study (Sedikides, 1994), participants were placed in a negative mood state and then asked to freely describe themselves in a

writing task. Over time, individuals shifted to describing themselves more positively than they did immediately following the mood induction. More self-positive language later in participants' writings indicated that mood repair occurred and elevated mood to a more pleasant state. Joormann and Siemer (2004) also induced a negative mood in participants, who were then subjected to a distraction task in which their thoughts were diverted away from their symptoms, emotions, and the self. Following the distraction task, mood was higher than it had been directly after the negative-mood induction (Joormann & Siemer, 2004). The authors of this study state that mood repair was able to happen when participants did not ruminate on their sad mood and instead shifted their thoughts to something else (Joormann & Siemer, 2004). If one looks at the results of Sedikides's (1994) study from this lens, it could be argued that it is not merely the passage of time that repairs mood but also the active ability of individuals to avoid ruminating on their sad mood.

Depression, Hedonics, and Approach-Avoidance Motivation

Although the hedonic principle is widely found to be at work in the attentional patterns of most individuals, with mood repair as one of its beneficial results, its ostensible absence is one of the defining features of depression. The symptom representing anhedonia in the diagnostic criteria for Major Depressive Disorder (MDD) in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) is described as "markedly diminished interest or pleasure in all, or almost all, activities" (American Psychiatric Association, 2013, p.160). Either anhedonia or a depressed mood must be present in order for MDD to be diagnosed, although the DSM-5 authors noted that the former is present almost without exception in major depressive episodes (American

Psychiatric Association, 2013). Although DSM-5 offers no etiology for depression or the anhedonic patterns that often characterize it, a large body of research has emerged that attempts to account for anhedonia's presence in depression and document its manifestation in attention and behavior (Treadway & Zald, 2013). A prominent theme throughout this research is quite unexpected: anhedonia in depression may not actually be an inability to experience pleasure, but rather a malfunction of the approach-avoidance motivational system that in healthy individuals is responsible for hedonic behavior and adaptive responses to negative circumstances, such as mood repair.

The presumed causal nature of anhedonia—that a loss of the capacity to derive pleasure from previously enjoyable activities precedes the loss of interest in pursuing those activities—has been thrown into question by a number of findings (e.g., Bylsma, Morris, & Rottenberg, 2008; Rottenberg, Gross, & Gotlib, 2005). One such finding (Bylsma, Morris, & Rottenberg, 2008) involves the precise nature of the difference between depressed and nondepressed individuals in the subjective experience of pleasure. It turns out that people who are depressed experience less of an emotional response to both positive *and* negative stimuli than their healthy counterparts, according to a meta-analysis of emotional reactivity in depression (Bylsma et al., 2008). In fact, the Emotion Context-Insensitivity hypothesis (ECI; Rottenberg et al., 2005) is grounded in the evidence of diminished emotional reactivity to stimuli of every valence in people who are depressed. This hypothesis posits that depression involves an overall disengagement from one's environment, causing one to respond less to positive and negative stimuli alike (Rottenberg et al., 2005). If this is the case, the traditional interpretation of anhedonia as being caused by an inability to experience pleasure is no longer the most

appropriate explanation of the anhedonic behaviors of depressed individuals. It was previously assumed that depressed individuals stop engaging in pleasurable activities because they suddenly lose the ability to derive pleasure from those activities. The ECI hypothesis suggests that the capacity to experience pleasure may still be intact in people who are depressed, but they cease the pursuit of all kinds of experiences, including pleasurable ones, because they are less influenced by all emotional components of their environment.

A number of findings (Sternat, Lodzinski, & Katzman, 2014; Treadway & Zald, 2011; Treadway & Zald, 2013) consistent with the ECI hypothesis convincingly suggest that a failure of the approach-avoidance motivational system is responsible for the reduced emotional reactivity of depressed individuals and the anhedonic patterns in their behavior. For example, research indicates that depressed individuals lack the motivation to pursue pleasure that healthy individuals are driven by (Treadway & Zald, 2013). Specifically, the experimental manipulation of levels of dopamine—a hormone whose concentration influences motivation, reward processing, and depression (Sternat et al., 2014)—in the brains of both animals and humans has been shown to influence how willing subjects are to work for a reward, but not how much pleasure is actually experienced when the reward is received (Treadway & Zald, 2011). The results of this research show depressed individuals serving as exceptions to the rules of normal approach motivation; contrary to the behavior of healthy individuals, depressed people do not pursue pleasant stimuli that could lead to rewarding experiences even though they possess the capacity to experience pleasure.

Other research suggests that the avoidance component of approach-avoidance motivation is also dysfunctional in depression. It has reliably been demonstrated that healthy individuals distort reality, often unconsciously, in order to create illusions that enhance self-esteem and optimism about the future, ultimately allowing them to be happy and content (Taylor & Brown, 1988). Depressed individuals display less of the self-serving, optimistic biases in attention that healthy people exhibit. This is demonstrated by the finding that nondepressed participants attend more to positive than negative or neutral stimuli, while depressed individuals attend equally to stimuli of every valence (Gotlib, McLachlan, & Katz, 1988). Additionally, the ECI hypothesis predicts decreased reactivity to negative stimuli in depressed individuals (Rottenberg et al., 2005). This hypothesis is supported by the finding that people who are depressed experience less fear, pain, and sadness when faced with negative stimuli than do nondepressed individuals (Rottenberg et al., 2005). The evenhandedness in attention and relative insensitivity to negative stimuli indicate that the motivation to avoid negative experiences is diminished in people who are depressed.

Consequences of Failed Approach-Avoidance Motivation on Mood

With the normal allocation of attentional resources towards positive stimuli and away from negative stimuli altered in depression, the mood repair that is seen in healthy individuals is often replaced by mood maintenance in depressed individuals. Instead of mood repair, the attentional patterns of depressed individuals promote negative moods and markedly diminish the experience of pleasure (Gotlib & Joormann, 2010). The biases that contribute to mood maintenance can be traced back to disruptions in approach-avoidance motivation.

One construct that is essential to understanding the attentional patterns that occur in depression is rumination, which in the context of depression refers to the continuous contemplation of one's symptoms and their origin and implications, to the exclusion of productive consideration of potential solutions (Lyubomirsky, Layous, Chancellor, & Nelson, 2015; Nolen-Hoeksema, 1991; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Rumination that occurs while one is in a negative mood leads to negative biases in cognition and memory, a pattern that perpetuates the negative mood and aggravates depression (Nolen-Hoeksema et al., 2008). Furthermore, rumination impedes problem-solving, decreases motivation, and erodes relationships (Lyubomirsky et al., 2015), all factors that make mood repair difficult.

Even outside the context of rumination, depression appears to involve attentional patterns that promote mood maintenance rather than mood repair and demonstrate deviations from normal hedonic tendencies. For example, depressed individuals recall more unpleasant than pleasant memories regardless of whether depression is induced or natural (see MacLeod, Mathews, & Tata, 1986). Additionally, clinically depressed individuals show unique automatic biases in eye tracking studies that immediately direct their attention to sad faces instead of happy or neutral faces (Gotlib, Krasnoperova, Yue, & Joormann, 2004).

One theory about the cognitive origin of depression that helps explain these negative biases and implicates the approach-avoidance motivational framework is Beck's concept of the mode. According to Beck's expanded cognitive theory of depression, the mode is a system of interconnected physiological, affective, motivational, and behavioral schemas oriented around central cognitive schemas (Beck, 2008). Beck posits that this

network is built up over time as negative interpretations of experiences accumulate, until loss-related stressors activate the complex and depression results. When activated, the mode becomes the dominant determinant of thought, feeling, and behavior. It ceases to be meaningfully influenced by external stimuli, and instead directs attention inward until it becomes self-sustaining and self-reinforcing (Beck, 2008).

The activation and subsequent dominance of self-perpetuating negative schemas in depression would override normal determinants of attention and behavior, including approach-avoidance motivation. Without approach-avoidance motivation directing a person's attention and behavior, the healthy positive biases exhibited by healthy individuals would disappear. With the motivation to avoid pain and maximize pleasure turned off, a person would not try to repress or reason away negative thoughts or attempt to escape a negative mood. There would be no reason to try to distract oneself from negative thoughts or moods by engaging in pleasurable activities. Instead, one would dwell on the negative thoughts and emotions brought up by the mode, resulting in rumination and the absence of positive biases demonstrated by nondepressed individuals. The impenetrability of the mode and the inward direction of attentional resources would explain the reduced emotional reactivity to external stimuli that the ECI hypothesis is based on. Thus, the concept of the mode provides an explanation for the apparent absence of approach-avoidance motivation and subsequent anhedonic behaviors in depressed individuals.

Self-Focused Attention in Depression

Another important component of depression that can be interpreted as a consequence of failed approach-avoidance motivation and contributes to the phenomenon

of mood maintenance is a notable increase in self-focused attention in people who are depressed. One study of dysphoric individuals found that these participants focused on themselves more relative to non-dysphoric participants and concluded that this self-focused attention likely contributed to the maintenance of dysphoric mood states (Sloan, 2005). Other studies have shown this same effect. Ignram and Wisnicki (1999), for example, examined the responses of dysphoric and non-dysphoric individuals to both sad music and happy music, and found that dysphoric individuals were more self-focused in both conditions. Sedikides (1992) found that sad-mood participants focused on themselves more relative to neutral- and happy-mood participants. He explained this effect by proposing that the sad mood caused negative self-evaluation and ultimately uncertainty about the self, which in turn led to an increase of self-focused attention. The negative effects of self-focused attention that Sedikides proposed were demonstrated in a study by Ingram and Smith (1984), who found that the proportion of negative, self-focused statements made by depressed participants was significantly higher than that of non-depressed participants. Evidently, there is not only an increase in self-focused attention among depressed individuals, but this self-focused attention appears to be negatively biased. These studies are all consistent with subdued approach-avoidance motivation and activated negative schemas. It is easy to see how a mind dominated by self-sustaining negative cognition, unrestrained by the motivation to avoid pain and maximize pleasure, would be unable to move quickly past normal instances of self-consciousness and self-doubt. Instead, as Beck's (2008) concept of the mode and a broken approach-avoidance framework would predict, the studies show that depressed individuals dwell on these negative, internal states; thus, depressed individuals are unable

to escape a negative, internal focus because the system responsible for motivating them to look toward positive, external stimuli in order to boost their mood (and affect in general) is not functioning normally.

Current Study

The current study seeks to provide evidence for the failure of the approach-avoidance motivational system in depressed individuals. Specifically, we used an ad libitum viewing task before and after a sad mood induction to examine how depression influences one's attention to happy and dysphoric stimuli and to self-relevant stimuli. As we argue above, increases in attention towards the self can be interpreted as a consequence of reduced motivation to pursue positive mood states and escape negative ones. Previous studies have thus far only examined depression's effect on self-focused cognition, whereas the current study will examine behavioral manifestations of self-focused attention (i.e. viewing time). Furthermore, other studies have examined self-focused attention in depressed individuals in the contexts of rumination and self-doubt but have not attempted to ground these trends in the underlying principle of failed approach-avoidance motivation, which the current study aims to do. By measuring the time spent attending to various stimuli, including happy, neutral, and dysphoric images, as well as images of the self and of strangers, we will be able to examine the attentional patterns of participants in the context of approach-avoidance motivation. Monitoring mood will allow us to determine whether or not individuals are successful in escaping an experimentally-induced sad mood by actively pursuing a happier mood, which will only occur if approach-avoidance motivation is intact.

Our first hypothesis (1) concerns the viewing behavior of our participant sample as a whole, regardless of individual participants' level of depression: we hypothesize that participants will demonstrate basic hedonic viewing patterns in an ad libitum viewing task. Specifically, we predict that participants will view happy images for more time than neutral images, and will view neutral images for more time than dysphoric images.

Our second through fifth hypotheses are related, and concern the impact of depression on approach-avoidance motivation: we hypothesize (2) that participants' levels of depressive symptoms will be positively correlated with baseline self-focused attention, (3) that depressive symptoms will be negatively correlated with changes in self-focused attention in response to a sad mood induction, (4) that depressive symptoms will be negatively correlated with mood repair following a sad mood induction, and (5) that the changes in self-focused attention following a sad mood induction will account for the relationship between depressive symptoms and mood repair. Should we find support for our hypotheses, the results would support the idea that the inability to distract oneself from excessive thoughts about the self, as indicated by increased time spent looking at images of the self, is the consequence of failed approach-avoidance motivation.

Methods

Participants

Participants were 65 undergraduate students at a small liberal arts college in the Pacific Northwest. The data for two of these participants were removed due to technological errors. Of the final sample of 63 participants, 20 were male (31.7%), and 43 were female (68.3%). Ages ranged from 18 to 23 with an average age of 19.65 ($SD = 1.42$), and 74.60% percent identified as white, 9.52% identified as Asian or Pacific

Islander, 0% identified as Black or African American, 4.76% identified as Hispanic or Latino, none identified as Native American or American Indian, none identified as other, and 11.11% identified with more than one race. Participants were invited to sign up for the study through emails sent to the listservs of various campus clubs and groups. As compensation, all participants were entered into a drawing to win a \$10 gift card to a local restaurant in which one out of every fifteen participants won. Additionally, participants were offered a cookie and the chance to spend five minutes watching happy movie clips in the lab before leaving.

Questionnaires

We used the *Center for Epidemiological Studies Depression Scale* (CES-D; Radloff, 1977; see Appendix A) to measure participants' level of depression. The CES-D is a commonly used 20-item ($\alpha = .87$) measure of depression that has been found to have both high validity and reliability (Hann, Winter, & Jacobsen, 1999). Participants read statements (e.g., "I felt that everything I did was an effort") and rated how often during the past week they had felt what the statement described, using a 4-point scale ranging from *Rarely or none of the time (less than one day)* to *All of the time (5-7 days)*. The average score on the CES-D was 15.3 ($SD = 8.1$).

Participants filled out four other questionnaires that measured different personality traits. We measured these variables with the goal of conducting exploratory analyses on other variables that might be correlated with depression.

The *Rosenberg Self-Esteem Scale* (RSES; Rosenberg, 1965; see Appendix B) is a 10-item questionnaire used to measure self-esteem. It has been used for decades and has shown a high degree of reliability and validity (Robins, Hendin, & Trzesniewski, 2001).

An example statement is “I feel that I have a number of good qualities.” Participants marked how well they thought each statement described them using a 5-point rating scale that ranged from 1 to 5, with 1 representing *strongly disagree* and 5 representing *strongly agree*. See Table 1 for mean scores, standard deviations, and Cronbach's alphas for each trait variable measure.

The Fleming and Courtney Self-Esteem Scale (FCSES; Fleming & Courtney, 1984) was designed to measure five components of self-esteem (Self-Regard, Social Confidence, School Abilities, Physical Appearance, and Physical Abilities). All five components correlate with the overall self-esteem measured by the RSES (Fleming & Courtney, 1984). We included only the five questions that address physical appearance (see Appendix C). An example question is “Have you ever felt ashamed of your physique or figure?” Participants answered each question using a 7-point rating scale with 1 being *Very Often* and 7 being *Almost Never*.

The *Narcissistic Personality Inventory – 16* (NPI-16; Ames, Rose, & Anderson, 2006; see Appendix D) is used to measure individuals’ levels of narcissism. This 16-item survey is an abbreviated version of the NPI-40; despite its shortened length, it is considered a reliable measure of narcissism (Gentile et al., 2013). Each item lists two statements (e.g., “I am no better or worse than most people” or “I think I am a special person”), and participants are asked to choose the option that comes closest to describing their feelings and beliefs about themselves.

The *Positive and Negative Affect Schedule* (PANAS; Watson, Clark, & Tellegen, 1988; see Appendix E) measures an individual’s levels of positive and negative affect. The PANAS is a 20-item test that requires subjects to indicate the extent to which they

generally feel certain emotional states (e.g., “inspired,” “hostile”). Participants used a 5-point Likert scale to answer each item, with 1 being *Very Slightly/ Not at All* and 5 being *Extremely*. The scale measures both positive affect and negative affect and has been found to be highly internally consistent and stable over time (Watson, Clark, & Tellegen, 1988).

Materials

Videos. To induce a sad mood, we presented a 2 min 51 s clip from the film “The Champ” (1979), in which a young boy cries and attempts to wake his father who has died after a brutal boxing match. This clip was chosen because it has been shown to induce a sad mood without significantly arousing other emotions (Rottenberg, Ray, & Gross, 2007).

Images. Three happy images (children laughing, tropical island, puppies), three dysphoric images (children crying, shipwreck, hunter and polar bear), and three neutral images (person shopping, baskets, buffalo) were selected from the Interactive Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 1995). Additionally, images of three college-aged individuals with neutral expressions from the Karolinska Directed Emotional Faces (KDEF; Lundqvist, Flykt, & Ohman, 1998) were displayed to participants (see Appendix F for images from the IAPS and KDEF). Three images of participant’s face were also used; these images were taken the first day each participant came to the lab.

Mood checks. Each mood check was identical and consisted of two 7-point scales in the following categories: happy/sad, unpleasant/pleasant. Participants were

asked to indicate how they currently felt by selecting a number on the 7-point scale for each category.

Procedure

Participants came into the lab twice, approximately a week apart, for two separate sessions. On day one, participants were presented with an informed consent form (see Appendix G) describing the experimental procedures, all of which were approved by the Whitman College Institutional Review Board and were consistent with the ethical standards of the American Psychological Association. After participants read and signed this document, they were instructed to complete the online questionnaires (RSES, FCSES, NPI-16, PANAS) that had been sent to them via email. After completing these measures, researchers took three photographs of them. Each participant was photographed against a similar background, in similar lighting, from the same distance, at three different angles: face-on, profile, and forty-five degrees. Participants were told that these photos would be used in the second half of the study and were instructed to maintain a neutral expression. After the three pictures were taken, participants left for the day.

Day 2's procedure began with a reminder of participants' right to withdraw from the study at any time with no negative consequences. Participants were then instructed to complete the online study that had been emailed to them and contained the following four items:

Picture rating task. Fifteen pictures appeared on the screen one at a time in a randomized order, each for 3 s. The pictures consisted of the set of happy, sad, and neutral images from the IAPS; the set of neutral faces of college-aged men and women

from the KDEF; and the three pictures of the participant's face with a neutral expression from Day One. After each picture was presented, participants were provided with a 7-point scale and were instructed to rate the image on how pleasant it was before the next image appeared. The primary purpose of this task was to expose participants to the images in order to limit novelty effects and allow the upcoming ad libitum viewing tasks to be better motivated by hedonic tendencies. According to Kron et al. (2014), participants' attention in ad libitum viewing tasks is guided by hedonic tendencies only after an initial viewing of the stimuli.

First ad libitum viewing task. Participants were informed that a series of pictures was about to be presented to them one at a time, and that they were to press the spacebar to progress through the pictures at their own leisure. The same set of pictures from the rating task was then shown one at a time in randomized order, and the computer program recorded the amount of time participants spent looking at each one before deciding to advance to the next image.

Mood induction and second ad libitum viewing task. On-screen instructions informed participants that a movie clip would play as soon as they completed a mood check. Participants were provided with a warning that the material depicted in the clip involves the death of a character's loved one, and may be distressing and unpleasant to watch, along with a reminder that they are free to look away or exit the study if they become upset. After clicking to continue, participants completed the first mood check. Participants once again clicked to continue, causing the mood induction clip to play. After the clips ended, participants completed the second mood check, which was identical to the first. After clicking to continue, participants were presented again with

instructions for the second ad libitum picture viewing task, completed this task, and then completed the third and final mood check, which was identical to the previous two.

CES-D, additional questions, and debrief. Participants concluded the procedure by completing the CES-D and answering two questions. The first asked whether the participant had seen the movie that the video clip was drawn from. The second question asked them to report whether they considered the three photographs we took of them to be terrible, okay, or wonderful pictures of the participant. Participants were then led to another room where they were debriefed (see Appendix H) and given the opportunity to ask questions. They were also provided with snacks and were allowed to stay for as long as they liked while the researchers showed videos of baby animals to ensure that participants' moods were restored following the sad mood induction.

Outlier management and data reduction.

Two participants' data were removed due to technological difficulties with the presentation of stimuli. Partial data for two participants were removed due to other technological errors. For one of these participants, we excluded data from the first ad libitum viewing task. For the other participant, data were excluded from the second ad libitum viewing task. Viewing times from both the first and second viewing tasks were classified as outliers (2.13%) if they were more than three standard deviations above the mean viewing time for a given image (Ratcliff, 1993). The data for each image were winsorized by reducing all outliers from their original value to a value equal to three standard deviations from mean viewing time for that particular image.

Throughout our analyses, viewing time data have been averaged across each category; we averaged the viewing times for the three happy images together, the three

sad images together, the three neutral images together, the three participant images together, and the three stranger images from the KDEF together. This was done separately for both the first and second viewing task. Throughout our analyses, self-focused attention was operationalized as the average amount of time in seconds that participants spent looking at the three participant images in a given ad libitum viewing task. Participants' scores on the CES-D were used to indicate level of depression.

Results

General viewing trends.

Images. We conducted a 2 (trial: pre, post mood induction) x 3 (emotion: pleasant, neutral, dysphoric) repeated measures ANOVA on viewing time. There was a main effect of trial, $F(1,60) = 4.68, p = .035$, such that participants looked longer at the images in the first trial, and viewed them for less time in the second trial. There was also a main effect of emotion, $F(2, 120) = 6.19, p = .003$, with participants looking longer at happy images than neutral, $t(62) = 3.45, p = .001$, and dysphoric images, $t(62) = 2.17, p = .034$. Participants did not look at neutral and dysphoric images differently $t(62) = .85, p = .40$. There was no emotion by trial interaction, $F(1,60) = 2.04, p = .135$. See Table 2 for viewing time data for each image.

Faces. We also conducted a 2 (trial: pre, post mood induction) x 2 (face: self, other) repeated measures ANOVA on viewing time, which revealed a main effect of trial with participants once again spending more time viewing images in the first trial than in the second trial, $F(1, 60) = 6.05, p = .02$. There was also a significant main effect of face, $F(1, 60) = 39.3, p < .001$, with participants looking longer at images of themselves than

at images of strangers from the KDEF. There was no interaction between trial and face, $F(1,60) = .72, p = .40$.

Does self-focused ad libitum viewing characterize depression? To examine the relationship between depression and self-focused attention, we conducted a Pearson product-moment correlation between CES-D scores and time spent viewing oneself in the first ad libitum viewing task. Consistent with our hypotheses, there was a significant positive correlation of $r = .30, p = .02$, indicating that the more depressive symptoms participants exhibited, the longer they tended to look at images of themselves. The lack of a significant correlation between depression and attention to strangers' faces ($r = .18, p = .17$), as measured by the average time spent viewing the three images from the KDEF, suggests that the relationship we found was specific to self-focused attention and did not arise from increased attention to faces in general. Additional exploratory analyses found there were no significant correlations between self-focused attention and global self-esteem, narcissism, positive affect, negative affect, or physical appearance-based self-esteem ($r_s < .231, p_s > .05$).

Do hedonic biases in ad libitum viewing characterize depression? There was no correlation between depressive symptoms and time spent viewing happy images in either the first or the second viewing trial ($p_s > .05$). Likewise, there was no correlation between depressive symptoms and time spent viewing dysphoric images in either trial ($p_s > .05$).

Does depression involve changes in ad libitum viewing in response to a sad mood induction?

Manipulation check. In examining the relation between depression and the effects of a sad mood on viewing behavior, we first conducted paired samples *t*-tests comparing self-reported participant mood on happiness/sadness and pleasantness/unpleasantness dimensions before and after the mood induction to determine if our mood manipulation was successful. There was a significant increase in self-reported sadness after the mood induction, $t(62) = -14.86, p < .001$. There was also a significant decrease in self-reported pleasantness from before the mood induction to immediately after the mood induction; $t(62) = -7.04, p < .001$. Taken together, these results indicate our sad mood induction was successful. See Table 3 for data from each mood measure.

Effects on self-focused attention. We then examined the relation between depression and the effects of a sad mood on self-focused attention by testing the correlation between CES-D scores and changes in self-focused attention. Change in self-focused attention was calculated as the average time participants looked at themselves in the first ad libitum viewing task subtracted by the time spent looking at themselves in the second ad libitum viewing task. A positive change would therefore indicate that more time was spent looking at one's self in the first trial compared to the second trial (self-focused attention decreases from trial one to trial two), and a negative change would indicate that more time was spent looking at one's own self in the second trial compared to the first trial (self-focused attention increases from trial one to trial two). We found a marginally significant correlation ($r = .24, p = .06$) between participants' degree of depressive symptoms and their change in self-focused attention following the sad mood induction. Given that both the mean change score and the correlation were positive, our

results indicate that participants with more depressive symptoms actually demonstrated marginally decreased self-focused attention following a sad mood induction, instead of the increase we were expecting to see. This finding is contrary to our second hypothesis.

Effects on hedonic biases. There was no significant correlation between depressive symptoms and changes in attention to either happy or dysphoric images following the sad mood induction. Taken together, these results indicate that participants did not alter their attention to happy, sad, or self-relevant stimuli in response to a sad mood.

Does depression lead to poor mood repair?

Symptoms of depression were not correlated with a change in mood in the time between the conclusion of the sad mood induction and the conclusion of the second ad libitum viewing task ($r = -.034, p = .793$). This indicates that depression was not associated with impaired mood repair as we had predicted it would be. Participants' depressive symptoms did not influence their ability to improve their mood following a sad mood induction. This finding fails to provide support for our third hypothesis. Due to the lack of support for our hypotheses regarding the correlations between depression, mood repair, and self-focus, it was not necessary to test our mediational hypothesis that depression would cause increased self-focus following a sad mood induction, which would lead to mood maintenance instead of repair.

Discussion

The current study fills an important gap in the existing literature by demonstrating a behavioral, as opposed to cognitive, manifestation of increased self-focused attention that is associated with depression. Our first hypothesis focused on the behavior of all

participants in general: we predicted that participants would follow basic hedonic viewing patterns and view happy images for the longest amount of time and dysphoric images for the shortest amount of time. We had an additional four related hypotheses: first, that higher levels of depressive symptoms would be correlated with increased baseline self-focused attention; second, that depressive symptoms would be negatively correlated with changes in self-focused attention in response to a sad mood induction; thirdly, that depressive symptoms would be negatively correlated with mood repair following the sad mood induction; and finally, that the changes in self-focused attention following the sad mood induction would account for the relationship between depressive symptoms and mood repair. With regards to our first hypothesis, we did not find that participants looked the least at dysphoric images, but did find that participants looked the most at happy images. Our results also supported our second hypothesis, as we found a significant, medium-sized, positive correlation between level of depression and self-focused attention. The remainder of our hypotheses were unsupported by our analyses.

Among the general viewing trends, there was evidence that hedonic properties of stimuli influenced viewing times. Most noticeably, participants looked longer at happy images than both neutral and dysphoric images. This approach of pleasant stimuli is consistent with the findings of Kron et al. (2014). However, participants did not avoid unpleasant stimuli: there was no significant difference between the viewing time of the negative images and the viewing time of the neutral images. This finding is inconsistent with the findings of Kron et al. (2014), who found that after an initial viewing of all images, participants looked at negative images less than neutral images. Our inconsistent finding may be explained by the type of negative images that we used. We used IAPS

images that were rated unpleasant in the initial validation study (Lang, Bradley, & Cuthbert, 1995), but we did not choose images at the extremely unpleasant end of the valence dimension, as these images tended to contain blood and gore. We chose not to use such images in order to minimize the distress associated with our procedure. Kron et al. (2014) did use images of mutilation and snakes and spiders, and indeed found participants chose to look at these for shorter amounts of time, compared to neutral images. Perhaps if we had used more of these types of images - potentially disturbing images that many individuals may have considered very unpleasant - we would have found that participants looked less at these images than the neutral images. Furthermore, our analyses did not control for image complexity as they did in Kron et al. (2014). Our participants may have been spending an increased amount of time on sad images merely because the images were more complex than neutral images; had all image categories been matched for complexity, it is possible that we would have seen individuals choose to avoid looking at the sad images for as long as they looked at the neutral ones. Finally, participants also viewed images of themselves longer than images of strangers' faces. The general increase in time spent viewing an image of the self is consistent with past research that has found that self-relevant stimuli often strongly attract individuals' attention (Bargh, 1982).

Although this general interest in images of the self was intriguing as a basic effect, we wanted to see if this viewing pattern was correlated with depression. Indeed, we found that depressive symptoms correlated with self-focused attention, as measured by the time spent looking at images of one's own face. This finding is consistent with past research demonstrating a link between depression and self-focused attention (e.g.,

Sloan, 2005; Ingram & Smith, 1984). However, this study has extended prior findings by measuring self-focused attention in a novel way. Previous studies measured self-focused attention only by investigating the internal thoughts and beliefs of participants through sentence completion tasks (Ingram & Smith, 1984), journals (Sloan, 2005), or other forms of self-report measures (Ingram & Wisnicki, 1999). Our study went beyond this by showing that there are actual changes in external behavior that correspond to the changes seen in previous studies. Our study alone cannot be used to explain why there is an increase in self-focused attention among individuals who have more depressive symptoms, but it does provide support for Beck's (2008) expanded model of depression, as well as the idea of a broken approach-avoidance motivation system. Previous research (Ingram & Smith, 1984) and theory (Beck, 2008) suggest that self-focused attention among depressed individuals, relative to non-depressed individuals, is comprised of a higher proportion of negative thoughts about the self. The fact that we see increased self-focused attention among depressed individuals may suggest that depressed individuals lack either the motivation or ability to avoid this negative, internal state. While non-depressed individuals would seek to avoid the negative state, and might do so by focusing towards external, positive stimuli, depressed individuals continue to look inwardly and focus on negative thoughts, and the negative state is maintained.

We had expected to find that the fewer depressive symptoms a participant reported, the more time they would spend looking at happy images and the less time they would spend looking at dysphoric images. While the general trend of looking longer at happy images than dysphoric images was demonstrated by our sample as a whole, we did not find the hypothesized correlations between depressive symptoms and time spent

viewing happy and dysphoric images. This is inconsistent with past research which has shown that non-depressed individuals show increased attention toward positive stimuli compared to controls (Gotlib, McLachlan, & Katz, 1988), and reduced attention to at least certain forms of sad stimuli (Gotlib, Krasnoperova, Yue, & Joormann, 2004).

There are several aspects of the design of our study and the makeup of our participant sample that could account for these inconsistencies. First of all, many studies examining attentional biases in depression have done so by presenting participants with multiple stimuli simultaneously and using eye tracking or other methods to determine which stimulus individuals' attention is drawn to (Gotlib et al., 1998; Gotlib et al., 2004). The current study, however, presented one stimulus at a time in our ad libitum viewing tasks. It is possible that the biases that emerge when individuals are forced to choose where to allocate their attentional resources between competing stimuli are different from the biases demonstrated when they choose how long to attend to a single stimulus that is presented to them, as in the current study. Another plausible explanation for the failure of our results to align with previous findings of hedonic biases has to do with our participant base. Our study did not sample clinically depressed individuals. It may be that in our non-clinical, college student sample, participant CES-D scores did not reflect true depression but rather the normal ups, downs, and stresses of college life. Beck's (2008) theory of the mode as a network of negative schemas that becomes activated and self-sustaining in depression suggests that depression may be less of a continuum and more of a cognitive condition that one is either in or is not in. Within a non-clinical sample, it may be that even participants with higher CES-D scores do not have an

activated mode, and thus their behavior in an ad libitum viewing task might differ from that of individuals from a clinical sample who possess activated modes.

Our hypotheses regarding participants' responses to a sad mood induction were unsupported by our results. Specifically, level of depressive symptoms was not correlated with decreased mood repair, changes in self-focused attention, or attention to either happy or dysphoric stimuli following a sad mood induction. Due to the absence of significant correlations between depression, mood repair, and self-focus, it was unnecessary to test our mediational hypothesis that depression would lead to increased self-focus in response to a sad mood induction, ultimately preventing mood repair from occurring. There are several factors that could account for why we did not find the expected correlations. One such factor was our method of inducing a sad mood. We used a video clip that featured a sad event affecting several characters and depicted those characters' emotional reactions. While sad, the vignette from the video clip may have distracted participants from self-relevant concerns and instead focused their attention outwardly, buffering against an increase in self-focused attention. Perhaps a different method of sad mood induction, such as a task in which participants write about a sad event from their past or listen to sad music, would have allowed participants to focus their attention inwardly, and would subsequently have produced the increase in self-focus that we were expecting. Furthermore, there was a main effect of trial such that participants spent less time looking at all of the images in the post-mood induction ad libitum viewing task. The reduced viewing could suggest that participants became bored with the images, perhaps due to habituation. It is likely that participants were progressing quickly through each image in this task regardless of the content of the image, leading to

less meaningful variability in viewing times. This would have made any differences in attention between the two viewing tasks difficult to detect, and thus may account for our null findings regarding the effects of the mood induction on attention.

There were a few primary limitations of this study that may have impacted our results. First, our use of a non-clinical population means that our findings are not perfectly generalizable to those who are clinically depressed. Our use of a non-clinical population may also have limited our ability to detect significant correlations between depression and changes in viewing behavior in response to a sad mood induction. The second important limitation of our study was the reduced viewing time demonstrated during the post-mood induction viewing task, presumably caused by habituation to the set of images which was seen three times in less than half an hour. A future study could remedy this by conducting an experimental, between-subjects version of this study in which participants only complete one ad libitum viewing task following either a sad mood induction or a neutral control induction. The initial picture rating task or a similar picture familiarization task should still be included, as Kron and colleagues (2014) have shown that hedonic preferences for different images only arise when participants have previously been exposed to the stimuli.

The results of the current study suggest several exciting possibilities for future research. One interesting avenue of research would be to determine the causal nature of the relationship between self-focused attention and depression; that is, to determine whether high self-focus is a risk factor for the development of depression or whether depression leads to increased self-focus as one of its symptoms. . A related direction for future research is determining how to incorporate the knowledge that there is a behavioral

manifestation of increased self-focused attention in depression into therapeutic treatment for depression. For example, a future study might examine the effectiveness of adding training on how to avoid excessive self-focus into depressed individuals' existing treatments. The same study might also assess the effectiveness of training depressed individuals to alter the nature of their self-focus from negative to positive. In fact, several such studies have already generated promising results; for example, Wells and Beevers (2010) found that attentional patterns of depressed individuals could be changed through training and that doing so led to mood improvement over time. Findings from further studies of this sort could lead to important insights into the origin of depression, the means by which depression is maintained, and ultimately the alleviation of its symptoms.

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Table 1

Mean Scores and Standard Deviations for Trait Variable Measures

Measure	<i>M</i>	<i>SD</i>	α
Self-Esteem (RSES)	16.7	4.32	.85
Physical Appearance Self-Esteem (FCSES)	17.4	6.08	.81
Narcissism (NPI-16)	0.27	0.16	.61
Positive Affect (PANAS)	35.0	5.82	.80
Negative Affect (PANAS)	21.7	5.72	.74

Table 2

Mean viewing time (in seconds) for each image in first and second ad libitum viewing task

	Trial 1		Trial 2	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Children Laughing	1.55	1.15	1.72	1.36
Tropical Island	1.96	1.96	1.49	1.30
Puppies	2.21	2.10	1.93	1.83
Children Crying	1.67	1.22	1.47	1.21
Shipwreck	1.60	1.32	1.66	1.47
Hunter and Bear	1.58	1.20	1.54	1.11
Person Shopping	1.37	0.98	-	-
Baskets	1.60	1.23	1.26	0.95
Bison	2.14	1.69	1.40	1.08
KDEF Profile	1.54	1.26	1.31	0.86
KDEF 45 Degrees	2.23	2.81	1.65	1.23
KDEF Face-On	1.91	1.63	1.33	0.94
Participant Profile	3.12	2.92	2.29	2.20
Participant 45 Degrees	2.69	2.42	2.26	1.96
Participant Face-On	3.58	3.68	2.70	2.61

Note. Viewing time data for the Person Shopping image from Trial 2 were not recorded due to a technological error.

Table 3

Self-reported mood at each point of the study

	Happy-Sad		Pleasant-Unpleasant	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
First Mood Check	3.73	0.81	3.71	1.05
Second Mood Check	5.48	0.91	4.90	0.91
Third Mood Check	4.51	0.76	4.33	0.88

Note. The first mood check occurred immediately before the sad mood induction, the second mood check occurred immediately after the sad mood induction, and the third mood check occurred after the second free viewing task.

Appendix A

Below is a list of some of the ways you may have felt or behaved. Please indicate how often you've felt this way during the **past week**. Respond to all items.

Place a check mark in the appropriate column. During the past week...	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	All of the time (5-7 days)
1. I was bothered by things that usually don't bother me.				
2. I did not feel like eating; my appetite was poor.				
3. I felt that I could not shake off the blues even with help from my family.				
4. I felt that I was just as good as other people.				
5. I had trouble keeping my mind on what I was doing.				
6. I felt depressed.				
7. I felt that everything I did was an effort.				
8. I felt hopeful about the future.				
9. I thought my life had been a failure.				
10. I felt fearful.				
11. My sleep was				

restless.				
12. I was happy.				
13. I talked less than usual.				
14. I felt lonely.				
15. People were unfriendly.				
16. I enjoyed life.				
17. I had crying spells.				
18. I felt sad.				
19. I felt that people disliked me.				
20. I could not “get going.”				

Appendix B

The next questions ask about your current feelings about yourself. For each of the following, please circle the number that corresponds with the answer that best describes how strongly you agree or disagree with the statement about yourself now.

Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
1	2	3	4

1. I feel that I am a person of worth, or at least on an equal plane with others.
1 2 3 4
2. I feel that I have a number of good qualities.
1 2 3 4
3. All in all, I'm inclined to feel that I am a failure.
1 2 3 4
4. I am able to do things as well as most other people.
1 2 3 4
5. I feel I do not have much to be proud of.
1 2 3 4
6. I take a positive attitude toward myself.
1 2 3 4
7. On the whole, I am satisfied with myself.
1 2 3 4
8. I certainly feel useless at times.
1 2 3 4
9. I wish I could have more respect for myself.
1 2 3 4
10. At times, I think I am no good at all.
1 2 3 4

Appendix D

Read each pair of statements below and place an "X" by the one that comes closest to describing your feelings and beliefs about yourself. You may feel that neither statement describes you well, but pick the one that comes closest. **Please complete all pairs.**

1. ___ I really like to be the center of attention
 ___ It makes me uncomfortable to be the center of attention
2. ___ I am no better or worse than most people
 ___ I think I am a special person
3. ___ Everybody likes to hear my stories
 ___ Sometimes I tell good stories
4. ___ I usually get the respect that I deserve
 ___ I insist upon getting the respect that is due me
5. ___ I don't mind following orders
 ___ I like having authority over people
6. ___ I am going to be a great person
 ___ I hope I am going to be successful
7. ___ People sometimes believe what I tell them
 ___ I can make anybody believe anything I want them to
8. ___ I expect a great deal from other people
 ___ I like to do things for other people
9. ___ I like to be the center of attention
 ___ I prefer to blend in with the crowd
10. ___ I am much like everybody else
 ___ I am an extraordinary person
11. ___ I always know what I am doing
 ___ sometimes I am not sure of what I am doing
12. ___ I don't like it when I find myself manipulating people
 ___ I find it easy to manipulate people
13. ___ Being an authority doesn't mean that much to me
 ___ People always seem to recognize my authority
14. ___ I know that I am good because everybody keeps telling me so
 ___ When people compliment me I sometimes get embarrassed
15. ___ I try not to be a show off
 ___ I am apt to show off if I get the chance
16. ___ I am more capable than other people
 ___ There is a lot that I can learn from other people

Appendix E

This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. Indicate to what extent you generally feel this way, that is, how you feel on the average.

	1	2	3	4	5
	Very Slightly/ Not at all	A Little	Moderately	Quite a Bit	Extremely
1.	Interested				
2.	Distressed				
3.	Excited				
4.	Upset				
5.	Strong				
6.	Guilty				
7.	Scared				
8.	Hostile				
9.	Enthusiastic				
10.	Proud				
11.	Irritable				
12.	Alert				
13.	Ashamed				
14.	Inspired				
15.	Nervous				
16.	Determined				
17.	Attentive				
18.	Jittery				
19.	Active				
20.	Afraid				

Appendix F



1710



1675



2688



2347



2745



2703



5825



7041



9600



Appendix G

Psychology Senior Thesis Informed Consent Form

About the study: Sarah Blacher and Zach Calo are conducting this study as a part of their Senior Thesis. The purpose of this study is to better understand how mood influences people's behavior. This study is for research purposes only.

What does participation involve: You will be asked to come into the lab on two separate days. On the first day, we will take a few pictures of you. We will then ask you to complete an online questionnaire. The procedure for this day should take between 15 and 20 minutes. On the second day, we will ask you to complete several online tasks in which you will watch a few short video clips, look at some pictures, and complete a short questionnaire. The procedure for this day should take between 15 and 20 minutes.

What are the benefits of this research: We will enter you into a drawing to win a \$10 gift card to a local restaurant in exchange for participation. One out of every 15 participants will win. We will also offer you a cookie. This study will greatly contribute to the psychological education of the researchers, and will give you a sense of how psychological research is carried out. Additionally, this research may provide insight into human emotions.

Terms of participation: Your participation is completely voluntary. You have the right to withdraw from the study at any point with absolutely no penalty or adverse consequence. If you tell the researchers that you'd like to end the study early, the study will be stopped, you will still be entered into the drawing for a \$10 gift card, and you will still receive a cookie. If you would like your information to be removed from the research after you have completed participation, you will let the researchers know.

What are the risks of participation: The video clips and images you will view may be unpleasant. Usually, people find it easy to answer the questions in the questionnaires, although it is possible that some people may be uncomfortable answering personal questions. If you feel uncomfortable or for any reason wish to end participation in the study, you may exit the study without completing it and may email the researchers with any concerns you have.

Confidentiality: We will keep all of the data that we collect confidential. Your name will be not be associated with your answers to the study questions (i.e. data), and we will store all data separately from the paperwork that has your name on it. We will store data collected on password protected computers. The data will only be used for the purpose of this research project. Only Sarah Blacher, Zach Calo, Professor Thomas Armstrong, and members of the Whitman College Institutional Review Board (IRB) will have access to this data.

Questions and concerns: Participants may contact Sarah Blacher (blachesl@whitman.edu) or Zach Calo (calozr@whitman.edu) at any point with

questions regarding the study. Concerns about any aspects of this study should be addressed to Professor Matthew Prull, as the chair of the Whitman College Institutional Review Board, or to Professor Thomas Armstrong (armstrtr@whitman.edu, 509-527-5804) as the advisor for this thesis project.

Please “sign” below to indicate that you have read and understood the above materials and provide your voluntary consent to participate in this study:

Name: _____ Date: _____

Appendix H

Psychology Senior Thesis Debriefing Form

Thank you so much for your participation in our study! We are interested in the connection between depression and self-focused attention. In this study, we are specifically looking at how much time people with more depressive symptoms spend looking at pictures of themselves as compared to people with fewer depressive symptoms. Additionally, we are looking at how one's level of depressive symptoms influences their ability to return to a positive mood following a sad experience. We recognize that some of the material you viewed may have been sad and distressing. If you feel that you could benefit from talking to someone about any memories or emotions that the videos or pictures stirred up, please visit the Counseling Center (contact information is provided at the bottom of this sheet). If you have any concerns about this study, questions about its results, or wish to have your data removed from the study at any time, please contact Sarah Blacher (blachesl@whitman.edu) or Zach Calo (calozr@whitman.edu).

Whitman College Counseling Center

Intake hours: Monday 1-3pm, Tuesday 1-3pm, Wednesday 9-11 am, Thursday 9-11 am

Phone: (509) 527-5195