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Is endorsement of fear of happiness associated with behavioral aversion to reward?

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By

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Is endorsement of fear of happiness associated with behavioral aversion to reward?

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Previous research suggests that some individuals have negative views about happiness and may actively avoid positivity due to associating it with previous negative experiences. The Approach-Avoidance Task (AAT) is a paradigm that examines approach and avoidance tendencies. However, the AAT has previously never been used to examine motivational tendencies in individuals who fear happiness. In this study, we used the AAT to examine if individuals who fear happiness respond aversively in the face of prospective positivity. Results revealed that the difference between the duration of pulling the joystick for both stimuli is negatively related to fear of happiness (FHS) such that individuals with higher FHS scores pulled the joystick for a shorter amount of time for positive stimuli than neutral. This suggests that individuals with a fear of happiness may exhibit aversive tendencies for positive information in comparison to neutral information, similar to that seen in depressed individuals.

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CHAPTER I

INTRODUCTION

Happiness

Positive psychology is a psychological subdiscipline centered on the examination of positive experiences and positive emotions and their ability to increase well-being and life satisfaction (Seligman & Csikszentmihalyi, 2000). Positive psychology's influence is growing exponentially. For example, on February 12th, 2018, a Google Scholar search of the phrase "positive psychology" revealed a pattern of exponential increase in citation counts over the last three decades. From 1988-1997 the search yielded 224 references; from 1998-2007 about 11,000 references; and from 2008 onward the search yielded 51,000 references. The rising popularity of positive psychology is quite understandable, given that (a) the majority of these references stem from Western journals, (b) a major emphasis of positive psychology is on increased happiness and well-being, consistent with shared cultural values, and (c) positive psychology has been given increasing scientific cache in both academic and non-academic circles (Sheldon & King, 2001). The number of articles on PsycINFO involving "happiness" in their abstract has also exponentially increased since 1995 (Myers & Diener, 2018). Thus, there has been revolutionary growth of positive psychology as a discipline.

Happiness is associated with positive psychology, often viewed as a main affect domain that falls under subjective well-being (Blore, Stokes, Mellor, Firth, & Cummins, 2010; Davern, Cummins, & Stokes, 2007; Diener, Suh, Lucas, & Smith, 1999). The definition of happiness itself has been long debated, but can be defined as the frequent experience of positive emotions or affect (Diener, 2000). This is typically operationalized by increased frequency of positive affect alongside decreased frequency of negative affect through engaging experiences, such as positive social interaction (Diener, 2000; Diener, Scollon, & Lucas, 2009).

Emphasis of Happiness in Western Cultures

Individuals tend to adopt and strive toward goals that are valued by the culture that they belong to. Since happiness tends to be a common value for Western cultures, it is not surprising that most individuals in Western cultures strive to achieve happiness (Cantor & Sanderson, 2003). Furthermore, happiness is typically seen as attainable and is associated with a drive to generate positive emotions to improve well-being and life satisfaction in Western cultures. Happy people also tend to have more social support and fewer symptoms of illnesses, both of which are correlated to increased life satisfaction (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009). Moreover, individuals who are happier report having higher life satisfaction (Suh, Diener, Oishi, & Triandis, 1998) and general well-being (Diener & Diener, 1995).

The Other Side of Happiness: Fearing Positivity

Happiness and well-being may not be interchangeable for some people however, raising concerns about some of the core postulates of positive psychology. For example, recent research suggests that some individuals have negative views about happiness and therefore do not value or wish to approach it. Indeed, some view the pursuit of happiness as irrelevant because extreme happiness is unattainable and thus leads to unhappiness itself (Joshanloo & Weijers, 2013). Individuals with this opinion express an aversion to happiness because they believe that happiness is not worthy of pursuit because of the possibility of it being unattainable. Moreover, they may think that failure to achieve happiness is a result of their own actions and they can only blame themselves. As a result, these individuals may then view the pursuit of happiness as a lose-lose situation because they become dissatisfied with themselves if they feel that they have not achieved happiness (Joshanloo & Weijers, 2013).

Some individuals may be averse to happiness because they believe that negative experiences, such as sadness, distress, and suffering, happen more often to happy people due to the belief that negative things may often occur after one is happy (Gilbert et al., 2012). Thus, these experiences and the negative emotions that accompany them are typically seen as stronger than happiness and the positive emotions that accompany it (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Furthermore, some individuals have a tendency to diminish their positive moods because they are inclined to ruminate on any negativity that may come from positive situations (Quoidbach, Berry, Hansenne, & Mikolajczak, 2010; Wood, Heimpel, & Michela, 2003).

Fearing happiness may cause someone to avoid positive emotions because they associate these with unpleasant experiences, which could be because some positive emotions have been linked to previous, negative experiences (Gilbert, 2014; Gilbert et al., 2012). Furthermore, happiness can be seen as a ‘taboo’ and cause individuals to avoid feelings and experiences that are associated with happiness and positive emotions (Gilbert et al., 2012). This association often comes from those who believe that happiness is temporary or that bad things ultimately happen when one is happy. They may believe that experiencing happiness is not worth experiencing the negative experiences that may occur afterward. Thus, those who actively try to diminish their positive moods tend to exhibit aversive tendencies and ultimately avoid stimuli that could potentially elicit happiness.

Reward Devaluation

Expanding upon these individual findings, reward devaluation theory provides a framework describing how and why individuals who avoid positive material may come to devalue happiness and its rewards by positing an information-processing model (Winer & Salem, 2016). Reward devaluation theory posits that some individuals have a tendency to actively avoid rewarding stimuli because they have come to view positivity as a threat and that this is a potentially discriminant pattern that is more likely to be associated with depressed individuals than with other clinical populations (Frewen, Dozois, Joanisse, & Neufeld, 2008; Winer & Salem, 2016). Buttressing this claim, Winer and Salem (2016) found, in a large series of meta-analyses examining responses to the dot-probe task, that depressed individuals do not simply exhibit a lack of attention toward rewarding stimuli, but avoid positivity in comparison to neutral information. This was indeed also a discriminant finding, such that only individuals with a primary symptom of depression – even in comparison to other clinical groups – evidenced this pattern. This finding was also discriminating from the pattern found in response to threat; depressed individuals exhibited a vigilant response to threat, as well, but other clinical groups showed the same pattern. In other words, avoidance of positivity, in response to briefly presented stimuli, seems to be unique to individuals who report elevated depressive symptoms.

Beyond this large meta-analysis, other research also suggests that some individuals have a diminished approach to reward and pleasurable stimuli and show decreased responsiveness to rewarding stimuli (Henriques & Davidson, 2000; Pluess & Belsky, 2013; Shane & Peterson, 2007). In the past, initial hopefulness may have led to disappointing outcomes. Thus, positive stimuli have become associated with disappointment, leading to biased processing away from positive information (Peckham, McHugh, & Otto, 2010; Winer & Salem, 2016). Furthermore, positive information can be viewed as a threat and more dangerous than neutral and even negative information, resulting in individuals becoming more avoidant of positivity compared to the latter.

Importantly, studies that find a lack of approach-related tendencies toward positivity by depressed persons often interpret these findings as evidence of biological dysfunction at the level of the behavioral activation system (Henriques & Davidson, 2000). In other words, there is a decrease in responsiveness to reward because there is less activation of the behavioral activation system and/or less behavioral evidence of approaching positive, in comparison to neutral, stimuli. However, these interpretations often overlook a critical consideration, namely, that what appears as a lack of an approach-related tendency may in fact be an aversive response (i.e., a freezing) to positivity when individuals are asked to approach positive stimuli.

Approach-Avoidance Task

Fortunately, aversive responses to rewarding information can be examined through the Approach-Avoidance Task (AAT), which uses arm movement to measure approach and avoidance tendencies (Rinck & Becker, 2007). The AAT uses arm extension, or pushing, to represent avoidance of unpleasant or harmful stimuli, and arm flexion, or pulling, to represent approach to pleasant or advantageous stimuli (Beatty, Cranley, Carnaby, & Janelle, 2016; Markman & Brendl, 2005; Marsh, Ambady, & Kleck, 2005; Rinck & Becker, 2007). The motivational tendencies of approach and avoidant behavior are assessed indirectly because participants are instructed to react with the joystick to the features of the frame around the pictures instead of focusing on the pictures themselves.

Reaction times have been used to measure automatic motivational tendencies for approach and avoidance behavior. For example, individuals are usually faster to pull pleasant stimuli toward themselves than unpleasant stimuli (Marsh et al., 2005; Rinck & Becker, 2007). Moreover, previous studies have observed that reaction times are slower for individuals who are instructed to pull the joystick for threatening pictures, thus suggesting avoidant behavior (Bartoszek & Winer, 2015; Najmi, Kuckertz, & Amir, 2010). These findings represent a delayed automatic reaction from individuals who are unconsciously hesitant in pulling threatening pictures toward themselves.

AAT studies have typically examined reaction times to show that anxious or spider-fearful individuals avoid pictures that are negative or threatening (Bartoszek & Winer, 2015; Heuer, Rinck, & Becker, 2007; Rinck & Becker, 2007). However, Bartoszek and Winer (2015) investigated response *duration* to examine a second variable while investigating approach/avoidance tendencies. To do so, they examined sustained arm flexion in response to stimuli, with the hypothesis that those exhibiting aversive tendencies would not engage with stimuli as long as others. When examining this novel duration variable, they indeed found that depressed individuals pulled the joystick for a shorter amount of time for positive pictures than neutral pictures, which was not a pattern evidenced by comparison groups. This finding may represent difficulty in sustaining motivation and maintaining positive affect when approaching positive information. It may also suggest a freezing in response to prospective positive information due to, for example, its implausibility. Thus, depressed individuals may respond aversively when asked to approach or sustain engagement with positive information (Bartoszek & Winer, 2015; Mansell, Clark, Ehlers, & Chen, 1999; McMakin, Siegle, & Shirk, 2011; Winer & Salem, 2016). Especially given the finding that depressed individuals may show exaggerated aversive tendencies when asked to engage with positive stimuli, we are interested in whether a positive mood induction might be used to further delineate the parameters of reward devaluation among individuals who fear happiness.

Review of Mood Induction Procedures

Some evidence suggests that emotions prime behaviors (Mauss & Robinson, 2009). Mood inductions procedures (MIPs), for example, elicit changes in cognition, judgment, and behavior (Lench, Flores, & Bench, 2011). MIPs have been used to induce several emotional states, including happiness, sadness, anger, anxiety, and neutral moods (Lench et al., 2011; Tamir & Robinson, 2007). Different MIP methodology used to induce emotions includes showing pictures, playing music, showing film clips, having participants recall personal emotional situations, and asking participants to imagine themselves in various situations (Lench et al., 2011; Westermann, Spies, Stahl, & Hesse, 1996). The emotion comparisons that have been shown to have the largest effect sizes include happiness vs sadness, happiness vs anger, and happiness vs anxiety (Lench et al., 2011). The methods with the largest effect sizes include the use of pictures, film, music, imagination, and Velten, which consists of asking participants to put themselves in a target mood state and read a given statement (Lench et al., 2011). Given these results, the present study will use an imagination mood induction to induce positive or neutral moods.

Imagination methods may involve asking participants to recall past events that are emotional or asking them to listen to or read an emotional scenario while placing themselves in that situation (Bartoszek & Cervone, 2016; Cervone, Kopp, Schaumann, & Scott, 1994; Lench et al., 2011; Velasco & Bond, 1998). When participants are placed in an imagination MIP, they may be asked to think about and reflect on the situation, or to write down their thoughts, feelings, and reactions to the imagined scenario.

One potential disadvantage of using MIPs is demand characteristics. An example of which includes participants responding or acting in ways they believe are in line with the study hypotheses. So, cover stories (as we have included for this study) are frequently used to mask the hypotheses of the study and the purpose of the mood induction to prevent demand characteristics (Lench et al., 2011).

The method used to check if the MIP was successful may also, paradoxically, lead to demand characteristics. Self-report measures and rating scales have been found to produce demand characteristics because participants are more likely to predict the purpose of the mood induction (Clark, 1983; Paulhus & Reid, 1991). To reduce the possibility of demand characteristics, implicit measures have been used to measure the effectiveness of MIPs. Implicit measures assess emotions indirectly by having participants focus on the stimuli instead of their own feelings. Extant validated implicit measures use seemingly unrelated objects to which subjects attribute their own emotional states without their awareness. These have included Chinese characters, word lists, and abstract paintings to assess for emotional states (Bartoszek & Cervone, 2016; Krieglmeyer, Wittstadt, & Strack, 2009; Paulhus & Reid, 1991; Payne, Cheng, Govorun, & Stewart, 2005).

In the Implicit Measure of Distinct Emotional States paradigm (IMDES; Bartoszek & Cervone, 2016), participants are instructed to view abstract paintings and indicate which emotion they believe the artist was aiming to express in each painting. The IMDES paradigm has demonstrated incremental validity over that of the Positive and Negative Affect Schedule when examining distinct emotional states, and a modification of the IMDES using Chinese characters instead of abstract paintings has been used successfully to assess the effectiveness of mood inductions (Bartoszek & Cervone, 2016; Bryant, Winer, Salem, & Nadorff, 2017).

Study Rationale and Design

To our knowledge, no studies have assessed the aversive tendencies associated with fear of happiness in the face of a positive MIP using the Approach-Avoidance Task. The purpose of this study is thus to address the gaps in the reward motivation literature by examining if individuals who fear happiness exhibit aversive motivational tendencies in response to positive (in comparison to neutral) information after being presented with a positive (in comparison to neutral) mood induction.

Three hypotheses were tested: higher levels of FHS will be associated with lower ratings for the perceived effectiveness and fit of the proposed video in the positive mood induction, higher levels of FHS will be associated with shorter duration of pulling the joystick for positive stimuli than neutral stimuli, and higher levels of FHS will be associated with longer reaction times of pulling the joystick for positive stimuli than neutral stimuli. Estimates for the duration and reaction times are based on work that has used the AAT when examining spider phobics' and depressed individuals' responses to spider and positive stimuli, respectively (Bartoszek & Winer, 2015).

The main analysis for our hypotheses will consist of two 2 (Mood Manipulation: positive, neutral) x 2 (Emotion Stimulus: positive, neutral) mixed ANCOVAs with FHS as a covariate to examine (a) reaction times and (b) duration from the AAT. We anticipated both Omnibus ANCOVAs to evidence significant differences. Planned comparisons examined differences between mood induction groups on emotion stimuli and the interaction between mood induction group, FHS, and emotion stimuli.

CHAPTER II

METHOD

Participants

Participants were recruited from the psychology subject pool at a large southern university as part of their course credit. The study was approved by the university's Institutional Review Board (IRB #18-535). Two hundred and fifty-five ($N = 255$) participants completed the current experiment, consisting of a mood induction, manipulation check, the Approach-Avoidance Task (AAT), the Antisaccade, and self-report measures. Prior to entering the laboratory, participants were randomly assigned to the positive or neutral mood induction. The purpose of the mood induction was to induce participants to experience the targeted mood (positive or neutral).

Procedure

Please see Figure C1 in the appendix for the outline of the session.

Pre-Mood Induction Emotion Assessment

After completing the informed consent process, participants completed a pre-mood induction check using an implicit measure of emotions; participants rated the emotional states that they believe artists are trying to convey in abstract images (IMDES; Bartoszek & Cervone, 2016). Thirty black-and-white abstract images were displayed one at a time on a computer screen with 5 of them being practice images. Participants were given a forced-choice answer scale and instructed to choose which emotion they believe the artist was aiming to express in the given image: anger, fear, happiness, sadness, or no emotion. They were given 5 seconds to select their choice for each image but instructed to respond during the last 3 seconds to record their answer.

Mood Induction

After the pre-mood induction check, participants in each mood induction watched a film, lasting approximately 2 minutes, of a narrator describing a future study that they may be invited to participate in later in the semester. They were informed that the purpose of the video was to introduce a future study, which aimed to serve as a cover story from the real purpose of the video being a mood induction. They were instructed to visualize themselves participating in this study, which differs for the positive and neutral inductions. Participants in the positive induction were told that they would have to opportunity to work on increasing their overall level of positive emotions. This film described the various activities that they would engage in during the future study in order to increase their positive emotions. Participants in the neutral induction were told that they would have the opportunity to work on maintaining their current level of emotions. This film described the various activities that they would engage in during the future study in order to maintain stability of their current emotions. After the film ended, participants in both inductions answered questions about their perceived effectiveness and fit of the study that was described in the film.

Post-Mood Induction Emotion Assessment

After participants from both mood induction conditions finished answering the questions that follow the induction, they completed a post-mood induction emotion assessment using the same implicit measure of emotions as before. The change in pre- and post-mood assessments was used to evaluate the effectiveness of the video manipulation.

Approach-Avoidance Task (AAT)

After participants completed the mood induction check, they completed the AAT. The AAT was programmed using E-Prime 2.0 Professional (version 2.0.10.242, Psychology Software Tools), which is commonly used to record RTs for the AAT (Kotynski & Demaree, 2017; Lobbestael, Cousijn, Brugman, & Wiers, 2016; Paulus et al., 2017). Similar to existing studies, the Logitech Attack 3 was used as the joystick apparatus that participants responded with during the AAT and was positioned on the table between participants and the computer screen (Bartoszek & Winer, 2015; Roelofs et al., 2010). Participants were instructed to either push or pull a joystick while simultaneously holding down the trigger in response to pictures as quickly and accurately as possible. They were also instructed to ignore the pictures and only pay attention to the color of the frame around the pictures. In previous AAT studies, each stimulus has been presented with either a blue or yellow frame around the picture (Bartoszek & Winer, 2015). Prior to entering the laboratory, participants were either assigned to the condition where they were instructed to pull the joystick when the blue frame is present and push the joystick when the yellow frame is present or to the condition where they were given the opposite instructions to pull the joystick when the yellow frame is present and push the joystick when the blue frame is present. The facial stimuli shown for each trial consisted of positive or neutral faces taken from the NimStim Set of Facial Expressions (Tottenham et al., 2009).

Practice trials. Participants completed 8 Zooming-AAT practice trials to demonstrate the idea that images would move toward the participant when the joystick was pulled or that the images would move away from the participant when the joystick was pushed. Each trial consisted of the presentation of a fixation cross for 1000 ms, which was then followed by a neutral facial image that was initially presented at 173 x 200 pixels. When participants pulled the joystick, the initial image increased to a larger size until it disappeared. When participants pushed the joystick, the initial image decreased to a smaller size until it disappeared.

Due to images only staying on the screen until they reached their maximum or minimum size, duration could not be accurately recorded with the Zooming-AAT as participants would let go of the joystick whenever the image disappeared. So, Zooming-AAT trials were only completed as practice to illustrate what participants were asked to imagine during the experimental trials. Participants then completed 8 practice trials that consisted of the facial images remaining stationary on the screen (i.e., not zooming) but with instructions to approach the task as if the stimuli were zooming as before. Each trial consisted of the presentation of a fixation cross for 1000 ms, which was then followed by a neutral facial image that was presented at 173 x 200 pixels for 2000 ms.

Experimental trials. After completing both blocks of the practice trials, participants then completed the main experimental trials that resembled the second practice block (i.e., the pictures did not change size). They completed 32 trials that consisted of the presentation of a fixation cross for 1000 ms, which was then followed by either a positive or neutral facial image that was presented at 173 x 200 pixels for 2000 ms. Each of the 16 facial images were shown twice, once with a yellow frame and once with a yellow frame, resulting in a total number of 32 trials. Bartoszek & Winer (2015) examined duration on the AAT with 84 trials; however, due to the short-lasting effects of mood inductions, we limited our number to a total of 32 trials to attempt to fully capture the effects of the mood induction on the performance on the AAT, which was completed within 10 minutes after the end of the mood induction video. Previous research has suggested that the effects of a positive or neutral mood induction last approximately 9 minutes after completing the task (Gomez, Zimmermann, Guttormsen Schär, & Danuse, 2009).

Antisaccade

After participants finished the AAT, they completed the Antisaccade using E-Prime (Kane, Bleckley, Conway, & Engle, 2001) for future examination of attentional control. The Antisaccade task is a measure related to attention control (Kane et al., 2001). It has been found to have adequate internal consistency and load significantly onto attention control with a factor loading of .63 (Unsworth & Spillers, 2010).

Practice trials. In the practice trials, participants were instructed to identify the target stimulus for each trial on the computer (e.g., B, P, or R) by pressing the corresponding key on the computer keyboard. Each trial consisted of the presentation of a fixation cross for either 200, 600, 1000, 1400, 1800, or 2200 ms, which indicated the location of the target stimulus. The target stimulus appeared after the fixation cross disappeared and was briefly shown on the screen for 100 ms. After this disappeared, backward-masking stimuli consisting of an “H” and an “8” that served to mask the initial target stimulus appeared on the screen. The “H” appeared for 50 ms and the “8” appeared afterward and remained on the screen until participants pressed the corresponding key that matches the target stimulus that appeared first.

Experimental trials. In the experimental trials, the trials first consisted of a teal “+” fixation cross for either 200, 600, 1000, 1400, 1800, or 2200 ms. Then a white “=” sign appeared for 100 ms on either the left or right side of the screen after the fixation cross disappeared. Participants were instructed that the “=” symbol would appear on the opposite side of the screen from the target stimulus. Additionally, they were instructed to look for the initial target stimulus that followed the appearance of the “=” symbol and press the corresponding key for the target stimulus. The same target stimulus (e.g., B, P, or R) was shown for 100 ms on the side of the screen that was opposite from the "=" sign and then followed by the same backward-masking stimuli as in the practice trial. Participants completed 54 trials with the first 18 trials being considered the practice trials and other 36 trials being the experimental trials, although participants were not told that there were any practice trials for this part of the experiment.

Questionnaires

After they finished the Antisaccade, participants answered the Fear of Happiness Scale (Gilbert et al., 2012). After they answered the Fear of Happiness Scale, they then answered other measures for future analyses, including the Implicit Theories about Happiness Scale, an emotion motives measure, the Quick Inventory of Depressive Symptomatology self-report (Rush et al., 2003), the Specific Loss of Interest and Pleasure Scale (Winer, Veilleux, & Ginger, 2014), the Ruminative Responses Scale (Treynor, Gonzalez, & Nolen-Hoeksema, 2003), the credibility/expectancy questionnaire (CEQ; Devilly & Borkovec, 2000), and lastly a demographics questionnaire.

Fear of Happiness Scale (FHS). The FHS is a 9-item self-report measure that assesses people's feelings about happiness and positive feelings (Gilbert et al., 2012). It has good internal consistency with a Cronbach's alpha of .90. The Cronbach's alpha for this FHS in this study was .85.

Implicit Theories about Happiness Scale (ITHS). The Implicit Theories about Happiness Scale is a revised scale of the Implicit Theories of Emotion Scale ((ITES; Tamir, John, Srivastava, & Gross, 2007). The Implicit Theories about Happiness Scale is a 4-item self-report measure of implicit theories regarding fixed or malleable views of happiness (Veilleux, Praseuth, Pollert, Hill, Skinner, Baker, & Spero, 2018). Changes to the ITES include replacing the “emotion” with “happiness.” The ITES has adequate internal consistency with a Cronbach’s alpha of .75 (Tamir et al., 2007).

Quick Inventory of Depressive Symptomatology (QIDS-SR). The QIDS-SR is a widely used 16-item self-report measure of depressive symptoms (Rush et al., 2003). It has good internal consistency with a Cronbach’s alpha of .86.

Specific Loss of Interest and Pleasure Scale (SLIPS). The SLIPS is a 23-item self-report measure of recent changes in anhedonia (Winer et al., 2014). The SLIPS has good internal consistency with a Cronbach’s alpha of .94. It also has demonstrated very good divergent validity from the Temporal Experience of Pleasure Scale (Gard, Gard, Kring, & John, 2006) and Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988).

Ruminative Responses Scale (RRS). The RRS is a 22-item self-report measures that assesses rumination (Treynor et al., 2003). The RRS has good internal consistency with a Cronbach’s alpha of .90. It also has demonstrated adequate test-retest reliability with a coefficient of .67.

Credibility/Expectancy Questionnaire (CEQ). The CEQ is 6-item questionnaire that assesses treatment expectancy and rationale credibility (Devilly & Borkovec, 2000). The CEQ is derived into two factors: expectancy and credibility. The expectancy factor has been found to have adequate internal consistency with a Cronbach’s alpha of .79 and good test-retest reliability with a coefficient of .82, The credibility factor has been found to have good internal consistency with a Cronbach’s alpha of .81 and adequate test-retest reliability with a coefficient of .75. The total scale of the CEQ has been found to have good internal consistency with a Cronbach’s alpha of.84 and a good test-retest reliability with a coefficient of .83.

CHAPTER III

RESULTS

Data Cleaning

Twenty-six (10.2%) participants were excluded from the main analyses due to correctly guessing the purpose of the mood induction task (e.g., “I think the video is supposed to affect my mood”) during the debrief at the end of the experiment. Four (1.57%) participants were excluded due to apparatus error or participant non-compliance (e.g., using their phone during tasks).

Three (1.18 %) participants were excluded from the AAT main analyses due to reaction time (RT) not being recorded for any of the trials, which would be due to either not pulling or pushing the joystick far enough. Additionally, 3 (1.18%) more participants were excluded from the AAT analyses due to more than half of the RTs not being recorded for any of the trials. This resulted in valid data for 219 participants for the AAT RT analyses. Eighty-nine (1.5%) trials were removed due to incorrect responses, consistent with the number of incorrect responses seen in prior studies (Bartoszek & Winer, 2015; Heuer et al., 2007; Rinck & Becker, 2007). In addition, trials with RTs were removed using cutoffs below 100 ms (0.1%) and above 1500 ms (0.91%), consistent with prior studies (Bartoszek & Winer, 2015; Roelofs et al., 2010; Struijs et al., 2018).

To our knowledge, only one other study has examined duration of pushing and pulling the joystick in the AAT, which was programmed using *MediaLab/DirectRT* (Bartoszek & Winer, 2015; Jarvis, 2004) software to accurately record RT and duration. Thus, the current study is the first to record duration on the AAT using E-Prime. Given the novelty of this, several challenges were presented while attempting to program the AAT to record duration. Duration was recorded using the trigger on the joystick such that participants were instructed to hold down the trigger while simultaneously pushing or pulling the joystick. Duration was thus recorded as the time that participants held down the trigger during each trial. Duration was not recorded for a portion of participants and trials, which piloting had revealed was likely due to the duration not recording if a participant continued to hold the trigger after the stimulus had disappeared. This recording limitation is similar to the previous study examining duration in which duration was only recorded while the stimulus was on the screen and thus data was not usable when participants pulled or pushed the joystick past the presentation of the stimulus (Bartoszek & Winer, 2015). Additionally, duration was not recorded if a participant did not press the trigger at any time during a given trial. To establish an *a priori* cutoff that both excluded participants who did not have a large enough number of duration trials to be representative but also to not eliminate meaningful responses, participants who were missing duration responses for over 50% of trials for all four conditions (neutral push, neutral pull, positive push, and positive pull) were excluded from the main AAT analyses. This resulted in the exclusion of 30 (13.3%) participants who did not meet criteria after removal for a) inaccurate trials b) trials below or above the RT cutoffs and c) for having 50% missing duration due to the experimental error discussed above. This percentage is comparable to a previous study examining duration (12.5%; Bartoszek & Winer, 2015).

After completion of the data cleaning methods above, a final number of 189 participants were included in the main AAT duration analyses. Further analyses were conducted to determine the missing duration for each attribute of the remaining participants. Of the remaining participants, 14.37% of duration was missing: 14.35% of duration was missing for the neutral-pull condition, 14.22% for the positive-pull condition, 14.81% for the neutral-push condition, and 14.09% for the positive-pull condition. These percentages are higher than the previous study examining duration using the AAT (1.8% of trials inaccurate and 4.2% of trials missing duration; Bartoszek & Winer, 2015), likely due to the use of E-Prime, as discussed in detail above. However, 178 (94.18%) of participants had at least half of the duration recorded for the neutral-pull condition, 181 (95.77%) for the positive-pull condition, 177 (93.65%) for the neutral-push condition, and 184 (97.35%) for the positive-push condition. Thus, at least ~94% of duration data was retained for each condition and each participant included in analyses likely had representative duration indices.

Hypotheses

We predicted that higher fear of happiness (FHS) scores would be associated with lower ratings for fit questions 1, 2, and 4 and higher ratings for fit question 3 for participants in the positive mood induction. Additionally, we predicted that there would be a difference in pre- and post-IMDES scores based on the mood induction. Regarding the AAT, we predicted that higher FHS scores would be associated with shorter duration for positive stimuli than neutral stimuli for participants in the positive mood induction. We also predicted that higher FHS scores would be associated with longer RTs for pulling the joystick for positive stimuli than neutral stimuli for participants in the positive mood induction, although this final hypothesis was exploratory as it diverged from previous findings in the depression literature (Bartoszek & Winer, 2015).

Fit Ratings

The four measures of fit ratings were assessed for normality (see the Appendix for a list of these questions). The suggested values for normality regarding skewness and kurtosis are less than 3 and 10 respectively (Kline, 2011). The distribution of question 1 (skewness = -0.415; kurtosis = -0.079), question 2 (skewness = -0.539; kurtosis = 0.744), question 3 (skewness = 0.563; kurtosis = -0.362), and question 4 (skewness = -0.463; kurtosis = 0.254) were all within normal parameters. The distribution of the FHS (skewness = 1.025; kurtosis = 0.486) and FHS prescreen score (skewness = 0.978; kurtosis = 0.570) were also within normal parameters. For all questions assessing fit, the mood induction was coded as a group variable consisting of a neutral (N = 106) and positive (N = 119) condition.[1] See Table B1 for a list of means for each fit question. Additionally, see Table B2 for the correlations between all dependent variables in these analyses.

To examine the effect of the mood induction on the combined four questions assessing fit, we initially conducted a MANOVA. The main effect of mood induction condition was not significant, $F(4,220) = 2.33$, $p = .06$, $\eta_p^2 = .04$, observed power = .67. There were also no individual main effects of mood induction on the individual fit ratings. This suggests that no individual item differed with respect to ratings of fit.

Fit Ratings and Fear of Happiness

We also assessed the impact of the mood induction on all four questions assessing fit when accounting for FHS with a MANCOVA. The mood induction was the between-subjects

[1] During data collection, participants were assigned to mood induction conditions in an attempt to have an equal number of participants in each condition for the AAT analyses. As participants may have been excluded from the AAT analyses due to invalid AAT data, this did not exclude them from all other analyses. This resulted in an unequal number of participants in the two mood induction conditions.

variable, and the FHS was entered as a covariate and a full factorial model was stipulated. Results suggested that there were no significant main effects of mood induction condition, $F(4,218) = 1.23$, $p = 0.30$, $\eta_p^2 = .02$, observed power = .38, or FHS, $F(4,218) = 0.83$, $p = .51$, $\eta_p^2 = .02$, observed power = .26, on fit ratings. The interaction of mood induction condition x FHS was also not significant, $F(4,218) = 0.70$, $p = .59$, $\eta_p^2 = .01$, observed power = .23, as were individual ANCOVAs similar to the initial analysis.

Fit question 3 asked about how much participants wanted to *not* participate in the study, and this may have affected the results of both the MANOVA and MANCOVA that examined all four fit questions together. We conducted another MANOVA that only examined the main effect of the mood induction on the other three questions assessing fit of the future study shown during the mood induction task (i.e., fit questions 1, 2, and 4). The results suggest that the main effect of mood induction condition was not significant, $F(3,221) = 1.21$, $p = .31$, $\eta_p^2 = .02$, observed power = .32.

To examine the effect of the mood induction on the three other questions assessing fit with FHS as the covariate, we conducted a MANCOVA. Results of the MANCOVA suggest that there were no significant main effects of mood induction condition, $F(3,219) = 1.32$, $p = .27$, $\eta_p^2 = .02$, observed power = .35, or FHS, $F(3,219) = 0.48$, $p = .70$, $\eta_p^2 = .01$, observed power = .15, on fit ratings. The interaction of mood induction condition x FHS was also not significant, $F(3,219) = 0.72$, $p = .54$, $\eta_p^2 = .01$, observed power = .20. The individual main effects of mood induction on the individual fit ratings were not significant. The interactions of mood induction condition x FHS for each of the individual fit ratings were also not significant. This suggests that no individual item differed with respect to ratings of fit.[2]

Contrary to our hypotheses, there were no significant differences in fit ratings between individuals with higher FHS scores who received the positive mood induction and individuals with lower FHS scores who also received the positive mood induction.

IMDES Analyses

The first five images shown to participants served as practice trials and are not included in analyses. The frequency that each emotion was selected before and after the mood induction was calculated by dividing the count score for each emotion by the total number of images shown to which participants recorded a valid response. Then, a change score was calculated by subtracting the frequency of pre scores from the frequency of post scores for each emotion. Five participants were excluded from the following analyses due to having insufficient data for pre-mood induction scores (i.e., having responses for 8 or less images). There were 105 participants in the neutral mood induction and 115 participants in the positive mood induction for all following IMDES analyses. See Table B1 for a list of means for each emotion. Additionally, see Table B2 for the correlations between all dependent variables in these analyses.

As recommended in the original IMDES paper, the choice "no emotion" was not included in analyses (Bartoszek & Cervone, 2016). Four emotions were thus evaluated at both pre- and post-mood induction: anger, fear, happiness, and sadness. The distribution of pre-anger (skewness = 0.495; kurtosis = 0.186), pre-fear (skewness = 0.312; kurtosis = 0.828), pre-

[2] We also examined FHS (both prescreen and during the experiment) as a moderator of mood induction condition predicting fit question 3. No predictor in the model approached significance.

happiness (skewness = 0.312; kurtosis = 0.217), pre-sadness (skewness = -0.202; kurtosis = 0.077), post-anger (skewness = 0.380; kurtosis = 0.255), post-fear (skewness = 0.249; kurtosis = 0.402) post-happiness (skewness = 0.397; kurtosis = 0.477), post-sadness (skewness = 0.244; kurtosis = 0.512) were all within normal parameters.

We conducted an initial 2 (between-subject: mood induction condition) x 2 (within-subject: time) x 4 (within-subject: emotion) mixed ANOVA.[3] Results suggest that there was a main effect of emotion, $F(3,216) = 36.31$, $p < .001$, $\eta_p^2 = .34$, observed power = 1.00. The main effect of time was not significant, $F(1,218) = 0.19$, $p = .67$, $\eta_p^2 = .00$, observed power = .07, and none of the interactions were significant (time x mood induction condition: $F(1,218) = 0.34$, $p = .56$, $\eta_p^2 = .00$, observed power = .09; emotion x mood induction condition: $F(3,216) = 0.58$, $p = .63$, $\eta_p^2 = .01$, observed power = .17; time x emotion: $F(3,216) = 0.85$, $p = .47$, $\eta_p^2 = .01$, observed power = .23; time x emotion x mood induction condition: $F(3,216) = 0.34$, $p = .80$, $\eta_p^2 = .01$, observed power = .12). Including FHS as a covariate did not alter this constellation of results, with the exception of a non-significant interaction of emotion x FHS, $F(3,214) = 2.18$, $p = .09$, $\eta_p^2 = .03$, observed power = .55.

Simple contrasts indicated that the main effect of emotion was driven by higher happiness scores in comparison to the other emotions (happiness: $M = .28$; anger: $M = .20$; fear: $M = .21$; sadness: $M = .21$; happiness vs anger: $F(1,219) = 90.60$, $p < .001$, $\eta_p^2 = .29$, observed power = 1.00; happiness vs fear: $F(1,219) = 94.16$, $p < .001$, $\eta_p^2 = .30$, observed power = 1.00; happiness vs sadness: $F(1,219) = 64.34$, $p < .001$, $\eta_p^2 = .23$, observed power = 1.00).

[3] IMDES emotion scores were also originally analyzed with three separate MANOVAS for pre, post, and change scores; however, Bartoszek & Cervone recommend using repeated measures ANOVAs. These MANOVA analyses can be found in the appendix.

Because of the difference between emotion grand means and the lack of a difference due to mood induction condition, we also examined how FHS related to average emotional response on the IMDES via hierarchical regression. The regression contained two steps. The first step included anger, fear, and sadness as independent variables, and the second step included happiness. Fear of happiness was the dependent variable. See Table B3 for the correlations between these variables.

Step 1. The emotions entered in Step 1 accounted for 1.2% of the variance in FHS scores. The overall model was not significant. The three emotions did not independently predict FHS.

Step 2. The emotions entered in Step 2 accounted for 3.2% of the variance in FHS scores. Happiness, $\beta = -.19$, $p = .008$, significantly predicted FHS, such that as the frequency of happiness chosen increased by one standard deviation, FHS decreased by .19 standard deviations. Anger, fear, and sadness again did not independently predict FHS. See Table B4 for these results.

These results suggest that there were no differences in the frequencies of each emotion chosen between the pre-manipulation and post-manipulation IMDES. However, there was a significant main effect of emotion, such that happiness was endorsed across both IMDES assessments more than the other three emotions. Moreover, there was a non-significant emotion x FHS trend, which we further examined using multiple regression. This regression analysis revealed that happiness was endorsed *less* by individuals who were higher in FHS and that this finding was discriminant to only happiness of the four emotions.

Fear of Happiness at Prescreen and During the Experiment

To determine if there were significant differences of FHS scores between the two mood induction conditions, we conducted a t-test. Results suggest that those in the positive mood induction condition had higher FHS scores (M = 8.50, SD = 6.52) than those in the neutral mood induction condition (M = 6.86, SD = 6.07). This difference was significant, $t(223) = -1.93$, p = .05, 95% CI [-3.30, 0.02]. See Figure C2 for a histogram of the distribution of FHS scores for the entire sample.

It is possible that the difference in FHS scores between the two mood induction groups may have been influenced by the mood induction as the FHS was answered later in the experiment after participants had already undergone the mood induction. Thus, to examine for differences between FHS scores at prescreen and during the experiment, a paired samples *t*-test was conducted. Results indicate that FHS scores at prescreen were higher (M = 8.73, SD = 6.74) than FHS scores during the experiment (M = 7.75, SD = 6.35). This difference, 0.98, was significant, $t(223) = 2.95$, $p = .003$, 95% CI [0.33, 1.63].

Due to the significant difference between FHS scores at the two time points, we examined the main effect of time on FHS scores at prescreen and during the experiment with a repeated measures 2 (between-subject: mood induction condition) x 2 (within-subject: FHS scores) mixed ANOVA. There were 105 participants in the neutral mood induction condition and 119 participants in the positive mood induction condition. Beyond the aforementioned difference in pre- and post-FHS scores, the main effect of mood induction condition was not significant, $F(1,222) = 2.21$, $p = .14$, $\eta_p^2 = .01$, observed power = .32, and the interaction of time x mood induction condition was also not significant, $F(1,222) = 1.37$, $p = .24$, $\eta_p^2 = .01$, observed power = .21.

AAT Duration

The duration of pulling and pushing the joystick for both positive and neutral stimuli was assessed for normality. The median duration of pulling for neutral stimuli (skewness = 0.594; kurtosis = -0.505), pulling for positive stimuli (skewness = 0.676; kurtosis = -0.245), pushing for neutral stimuli (skewness = 0.558; kurtosis = -0.287), and pushing for positive stimuli (skewness = 0.637; kurtosis = -0.302) were all within normal parameters. See Table B5 for a list of means for each duration. Additionally, see Table B6 for the correlations between all dependent variables in these analyses.

The median duration for pulling the joystick for positive stimuli and neutral stimuli were separately calculated and used as the dependent variable in the following analyses. To examine the main effect of mood induction condition on the duration of pulling the joystick for positive and neutral pictures, we conducted a 2 (between-subjects: mood induction) x 2 (within-subjects: stimuli) mixed design ANCOVA with FHS entered as a covariate and the full factorial model was stipulated. There were 82 participants in the neutral mood induction condition and 85 participants in the positive mood induction condition. Results indicated that the main effect of stimuli was not significant, $F(1,163) = 3.35$, $p = .07$, $\eta_p^2 = .02$, observed power = .44. The interactions were not significant (stimuli x mood induction condition: $F(1,163) = 0.37$, $p = .54$, $\eta_p^2 = .00$, observed power = .09; stimuli x FHS, $F(1,163) = 3.04$, $p = .08$, $\eta_p^2 = .02$, observed power = .41; stimuli x mood induction condition x FHS: $F(1,163) = 0.31$, $p = .58$, $\eta_p^2 = .00$, observed power = .09).

The between-subjects effect of mood induction condition, $F(1,163) = 3.09$, $p = .08$, $\eta_p^2 = .02$, observed power = .42, and FHS, $F(1,163) = 0.86$, $p = .36$, $\eta_p^2 = .01$, observed power = .15, on stimuli were not significant. The interaction of mood induction condition x FHS, $F(1,163) = 1.52$, $p = .22$, $\eta_p^2 = .01$, observed power = .23, was also not significant. See Figure C3 for the pulling duration means.

Because the stimuli x FHS interaction was not significant but evidenced a trend, a difference score was calculated by subtracting the duration for pulling neutral stimuli from the duration for pulling positive stimuli. This allowed for examination of whether this trend was in the expected direction. This difference score was assessed for normality (skewness = -0.999; kurtosis = 4.289) and was within normal parameters. We then correlated FHS and the difference score. Results indicate that there is a marginally significant relationship between FHS and the difference score, $r = -.14$, $p = .08$, such that as FHS scores increased, duration of pulling for positive (in comparison to neutral) stimuli decreased. See Figure C4 for the difference score means.

The median duration for pushing the joystick for positive stimuli and neutral stimuli were separately calculated and used as the dependent variable in the following analyses. To examine the main effect of mood induction condition on the duration of pushing the joystick for positive and neutral pictures, we conducted a 2 (between-subjects: mood induction) x 2 (within-subjects: stimuli) mixed design ANCOVA with FHS entered as a covariate and the full factorial model was stipulated. Results indicated that the main effect of stimuli, $F(1,167) = 0.16$, $p = .69$, $\eta_p^2 = .00$, observed power = .07, was not significant. The interactions were also not significant (stimuli x mood induction condition: $F(1,167) = 0.01$, $p = .94$, $\eta_p^2 = .00$, observed power = .05; stimuli x FHS: $F(1,167) = 0.81$, $p = .37$, $\eta_p^2 = .01$, observed power = .15; stimuli x mood induction condition x FHS: $F(1,167) = 0.05$, $p = .82$, $\eta_p^2 = .00$, observed power = .06).

The between-subjects effects of mood induction condition, $F(1,167) = 0.53$, $p = .47$, $\eta_p^2 = .00$, observed power = .11, and FHS, $F(1,167) = 0.40$, $p = .53$, $\eta_p^2 = .00$, observed power = .10, on stimuli were not significant. The interaction of mood induction condition x FHS, $F(1,167) = 0.32$, $p = .57$, $\eta_p^2 = .00$, observed power = .09, was also not significant. See Figure C5 for the pushing duration means.

Overall, the duration results for pulling the joystick suggest that the interaction between stimuli, mood induction condition, and FHS was not significant. We followed up these results by examining the difference between duration of the stimuli as a separate variable. The interaction was also not significant; although, it evidenced a trend. Follow-up analyses determined that this trend was in the predicted direction. This finding provided partial support for our hypothesis that higher FHS scores would be associated with a shorter duration for pulling the joystick for positive stimuli than neutral stimuli, although mood condition did not play a factor. Lastly, duration for pushing the joystick for positive and neutral stimuli did not differ.

AAT Reaction Times

The reaction times (RTs) of pulling and pushing the joystick for both positive and neutral stimuli were assessed for normality. After cleaning the data as stated previously, the median RTs of pulling for neutral stimuli (skewness = 1.264; kurtosis = 1.709), pulling for positive stimuli (skewness = 1.341; kurtosis = 2.566), pushing for neutral stimuli (skewness = 1.514; kurtosis = 3.568), and pushing for positive stimuli (skewness = 1.384; kurtosis = 2.687) were all within normal parameters. See Table B7 for a list of means for each duration. Additionally, see Table B8 for the correlations between all dependent variables in these analyses.

The median reaction times for pulling the joystick for positive stimuli and neutral stimuli were separately calculated and used as the dependent variable in the following analyses. To examine the effect of mood induction condition on the RT of pulling the joystick for positive and neutral pictures, we conducted a 2 (between-subjects: mood induction) x 2 (within-subjects: stimuli) mixed design ANCOVA with FHS entered as a covariate and the full factorial model was stipulated. There were 101 participants in the neutral mood induction condition and 115 participants in the positive mood induction condition. Results indicated that the main effect of stimuli, $F(1,212) = 1.17$, $p = .28$, $\eta_p^2 = .01$, observed power = .19, was not significant. The interactions were also not significant (stimuli x mood induction condition: $F(1,212) = 0.01$, $p = .94$, $\eta_p^2 = .00$, observed power = .05; stimuli x FHS: $F(1,212) = 0.13$, $p = .72$, $\eta_p^2 = .00$, observed power = .07; stimuli x mood induction condition x FHS: $F(1,212) = 0.97$, $p = .33$, $\eta_p^2 = .01$, observed power = .17).

The between-subjects effects of mood induction condition, $F(1,212) = 1.74$, $p = .19$, $\eta_p^2 = .01$, observed power = .26, and FHS, $F(1,212) = 0.12$, $p = .73$, $\eta_p^2 = .00$, observed power = .06, on stimuli were not significant. The interaction of mood induction condition x FHS, $F(1,212) = 0.37$, $p = .55$, $\eta_p^2 = .00$, observed power = .09, was also not significant. See Figure C6 for RT pulling means.

The median RTs for pushing the joystick for positive stimuli and neutral stimuli were separately calculated and used as the dependent variable in the following analyses. To examine the main effect of mood induction condition on the RT of pushing the joystick for positive and neutral pictures, we conducted a 2 (between-subjects: mood induction) x 2 (within-subjects: stimuli) mixed design ANCOVA. FHS was treated as a covariate in this design. Results indicated that the main effect of stimuli, $F(1,212) = 0.31$, $p = .58$, $\eta_p^2 = .00$, observed power = .09, was not significant. The interactions were also not significant (stimuli x mood induction condition: $F(1,212) = 0.92$, $p = .34$, $\eta_p^2 = .00$, observed power = .16; stimuli x FHS: $F(1,212) = 0.13$, $p = .72$, $\eta_p^2 = .00$, observed power = .07; stimuli x mood induction condition x FHS: $F(1,212) = 0.69$, $p = .41$, $\eta_p^2 = .00$, observed power = .13).

The between-subjects effects of mood induction condition, $F(1,212) = 2.44$, $p = .12$, $\eta_p^2 = .01$, observed power = .34, and FHS, $F(1,212) = 0.08$, $p = .78$, $\eta_p^2 = .00$, observed power = .06, on stimuli were not significant. The interaction of mood induction condition x FHS, $F(1,212) = 0.40$, $p = .53$, $\eta_p^2 = .00$, observed power = .10, was also not significant. See Figure C7 for the RT pushing means.

The pulling RT findings did not support our hypothesis, which stated that higher FHS scores would be associated with longer RTs for pulling joystick for positive stimuli than neutral stimuli. The current findings, however, are consistent with the results in another study that examined RTs with depressed and control groups (Bartoszek & Winer, 2015), and thus this hypothesis was exploratory in nature. We also investigated the RTs of pushing the joystick and found that the interaction between stimuli, mood induction condition, and FHS was also not significant.

CHAPTER IV

DISCUSSION

We will initially discuss the seeming lack of change in emotion resulting from the mood induction and lack of differences in fit ratings due to either the mood induction or fear of happiness. Then we will further unpack the findings that emerged as predicted, which include fear of happiness being discriminantly associated with (a) implicit happiness endorsement and (b) duration of pulling on the AAT for positive versus neutral stimuli.

Mood Induction

We were surprised to find that the mood induction did not impact responses on fit ratings or the IMDES. Results from a study piloting this induction on 34 participants suggested that participants who received the positive mood induction ($N = 17$; $M = 7.06$, $SD = 1.48$) gave higher ratings for the video being pleasant than participants who received the neutral mood induction ($N = 17$; $M = 5.41$, $SD = 1.87$), $t(32) = -2.85$, $p = .008$, $d = .98$. Additionally, there were more participants in the positive mood induction who endorsed happiness among anger, fear, sadness, and no emotion ($N = 10$) than participants in the neutral mood induction. Thus, we expected that the mood induction would be effective. Unfortunately we did not assess the same face-valid questions that were included in the pilot as part of the main study because we did not want to reveal the intention of our hypotheses, so it is possible that the differences we saw in our pilot merely did not replicate or it is possible that the mood induction did cause a change in participants' mood that we were unable to capture.

One potential reason for the lack of differences is due to the uneven distribute of fear of happiness scores in each conditional cell. At both prescreen and during the experiment, fear of happiness was higher in the positive mood induction group than in the neutral mood induction group, making it more difficult to find an interactive effect. These subjects were randomly assigned to condition and thus this difference occurred by chance.

Fit Ratings

There were also null findings in regard to changes in fit ratings related to the mood induction. As noted above, these could be attributed to a lack of mood change or simply due to a lack of an effect. However, as noted above, our main fit rating hypotheses involved interactions with mood and fear of happiness, so similar limitations as to the mood induction section apply.

Fear of Happiness and Implicit Happiness

One finding replicating a growing body of evidence on the IMDES, was that an individual difference factor relevant to how positivity is processed (i.e., fear of happiness) was associated with implicit endorsement of happiness. Moreover, this was a discriminant finding such that *only* implicit happiness was associated with fear of happiness, not implicit endorsement of anger, fear, or sadness. Although we anticipated that this relationship would interact with mood condition such that it would be most exaggerated after exposure to a positive mood manipulation, this finding is in line with our hypotheses and provides further evidence of avoidance of processing of positivity occurring outside of awareness (Bartoszek & Cervone, 2016; Peckham et al., 2010; Winer & Salem, 2016). Indeed, although there was not a full-factorial interaction, the constellation of findings suggests a reversal relationship. First, the grand mean for implicit happiness was higher than the grand means of all other emotions. So, there was an overall tendency for all participants to implicitly endorse happiness above all other emotions. Second, there was a negative association between fear of happiness and tendency to implicitly endorse happiness. So, individuals higher in fear of happiness endorsed the opposite tendency than did participants overall.

Duration

We also found a trend between fear of happiness and the pull difference such that as fear of happiness increased, the duration for pulling positive stimuli decreased in comparison to neutral stimuli, providing partial support for our prediction. This finding is also in line with our hypotheses and also provides further evidence of avoidance of processing of positivity occurring outside of awareness (Winer & Salem, 2016), though the latter claim is more complicated, than with the fear of happiness/IMDES findings. Examining this difference within the duration of pulling the joystick suggests that, whereas individuals initially approached the stimuli, they were less likely to sustain that approach (Gilbert, McEwan, Catarino, Baiao, & Palmeira, 2014; Gilbert et al., 2012; McMakin et al., 2011). This has generally been interpreted in the literature as a lack of approach motivation (Frewen et al., 2008; Gotlib, McLachlan, & Katz, 1988). However, as noted in the introduction with regard to why reward devaluation theory would predict this finding in the AAT, these interpretations overlook that what appears as a lack of an approach-related tendency may in fact be an aversive response (i.e., a freezing) to positivity (Shane & Peterson, 2007).

These pulling results evidenced a similar pattern to Bartoszek and Winer (2015) in which depressed individuals pulled the joystick for a shorter amount of time for positive stimuli than neutral stimuli. However our study differs from theirs on several aspects. First, we examined fear of happiness instead of depressive symptoms in the present analyses. Additionally, we did not preselect individuals based on their FHS scores and thus examined our individual differences variable continuously instead of in low and high groups. Thus, considering that (a) Bartoszek and Winer's results are the first and as yet the only examination of duration on the AAT, (b) we replicated a discriminant pattern of findings specific to the duration of pulling positive versus neutral stimuli (in comparison to the other 7 potential cells wherein approach/avoidance changes could occur), and (c) we extended this finding to show that it is not merely due to depression but to an individual difference marker of avoidance of positivity (i.e., the theoretical reason that this effect would occur according to reward devaluation theory; Winer & Salem, 2016), these findings constitute an incremental advance despite the surprising null findings related to the mood induction.

Limitations

We aimed to recruit between 122 and 400 participants for this study; data collection ceased at 255 participants. An a priori power analysis indicated that we would need approximately 122 participants to examine the same effect that Bartoszek and Winer (2015) found when examining duration for the depressed group versus the neutral group. Although Bartoszek and Winer (2015) found significant effects for duration with 104 participants, they had explicit groups (i.e., control and depressed). However, we did not preselect for fear of happiness and thus the observed power in some of these analyses was limited.

Power to find an effect was also limited unexpectedly due to the uneven distributions of fear of happiness scores between the two mood induction conditions. This was occurred by chance as we assigned participants to groups randomly; however, future studies examining fear of happiness should consider matching fear of happiness distributions by group.

Lastly, and most apparent to the study, our mood induction, despite a pilot study suggesting otherwise, did not clearly induce a difference in positive versus neutral mood. Thus, future assessment of the mood induction used in the current study should examine explicit responses to positivity. We were unable to do so due to the constraints of the current paradigm, but this future study would be able to more clearly assess the merits of the mood induction

Conclusion

Although our mood induction did not function as our pilot data would have predicted, the combined findings that those higher in fear of happiness are less likely to (a) endorse happiness implicitly and (b) approach positive (in comparison to neutral) stimuli behaviorally, provides further evidence that those who fear positivity process their immediate environment in a manner that devalues reward. Future studies can further investigate the extent to which reward devaluation is impacted by domain-specific emotional experiences.

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APPENDIX A

IMDES MANOVA ANALYSES

To examine the main effect of the mood induction condition on the for each Δemotion score, we conducted a MANOVA. The results suggest the main effects of mood induction condition was not significant, $F(4,215) = 0.34$, $p = .85$, $\eta_p^2 = .01$, observed power = .13. There were also no individual main effects of mood induction on the individual Δemotion.

To examine the main effect of the mood induction on each Δemotion with FHS as the covariate, we conducted a MANCOVA. The results suggest the main effect of mood induction condition, $F(4,215) = 0.73$, $p = .57$, $\eta_p^2 = .01$, observed power = .23, and FHS, $F(4,213) = 0.75$, $p = .56$, $\eta_p^2 = .01$, observed power = .24, were not significant. The interaction of mood induction condition x FHS was also not significant, $F(4,213) = 0.94$, $p = .44$, $\eta_p^2 = .02$, observed power = .13. There were also no individual main effects of mood induction or FHS on the individual Δemotion. The interaction of mood induction x FHS on the individual Δemotion was also not significant.

To examine the main effect of the mood induction condition on the post score for each emotion, we conducted a MANOVA. The results suggest that the main effect of mood induction condition on post scores was not significant, $F(4,213) = 2.12$, $p = .08$, $\eta_p^2 = .04$, observed power = .62. There were also no individual main effects of mood induction on the individual post scores for each emotion.

To examine the main effect of the mood induction on the post scores for each emotion with FHS as a covariate, we conducted a MANCOVA. Results of the MANCOVA suggest that the main effects of mood induction condition, $F(4,213) = 1.63$, $p = .17$, $\eta_p^2 = .03$, observed power = .50, and FHS, $F(4,213) = 1.92$, $p = .11$, $\eta_p^2 = .04$, observed power = .58, on post scores were not significant. The interaction of mood induction condition x FHS was not significant, $F(4,213)$

= 0.57, p = .68, η_p^2 = .01, observed power = .19. The main effect of FHS on the post score for happiness was significant, F(1,216) = 5.52, p = .02, η_p^2 = .03, observed power = .65. The main effects of mood induction condition on all post scores were not significant. The main effects of FHS on the other post scores were also not significant. The interactions of mood induction condition x FHS for all post scores of emotion were not significant.

To further examine the significant main effect of FHS on the post score for happiness, a correlation between the two variables was conducted. Results indicate that there is a negative relationship between FHS and the post score for happiness, r = -0.17, p = 0.01.

To examine the main effect of the mood induction condition on the pre score for each emotion. We conducted a MANOVA. The results suggest that the main effect of mood induction condition was not significant, F(4,215) = 1.53, p = .19, η_p^2 = .03, observed power = .47. The main effect of mood induction condition on the pre score for fear was significant, F(1,218) = 3.84, p = .05, η_p^2 = .02, observed power = .50, such that individuals in the neutral mood induction had higher post scores for fear. There were no main effects of mood induction condition on the other pre scores.

To examine the main effect of the mood induction condition on the pre scores for each emotion with FHS as a covariate, we conducted a MANCOVA. Results of the MANCOVA suggest that the main effects of mood induction condition, F(4,213) = 0.30, p = .88, η_p^2 = .01, observed power = .12, and FHS, F(4,213) = 1.89, p = .11, η_p^2 = .03, observed power = .57, were not significant. The interaction of mood induction condition x FHS was also not significant, F(4,213) = 0.28, p = .89, η_p^2 = .01, observed power = .11. The main effects of mood induction condition and FHS were not significant for all pre scores. The interactions of mood induction condition x FHS for all pre scores were not significant.

APPENDIX B

TABLES

Table B1

Means of Main Variables for Each Mood Induction Condition

	Neutral		Positive	
Variable	*M*	*SD*	*M*	*SD*
FHS	6.86	6.07	8.50	6.52
FHS Prescreen	8.29	6.52	9.11	6.93
FHS Diff	-1.39	4.37	-0.61	5.40
Fit 1	5.11	0.96	5.34	1.12
Fit 2	4.81	1.13	4.87	1.40
Fit 3	2.78	1.39	3.01	1.55
Fit 4	4.92	1.10	5.05	1.28
Pre Anger	0.20	0.08	0.20	0.11
Pre Fear	0.21	0.07	0.19	0.08
Pre Happiness	0.29	0.09	0.27	0.10
Pre Sadness	0.21	0.07	0.21	0.07
Post Anger	0.20	0.08	0.20	0.09
Post Fear	0.21	0.08	0.20	0.08
Post Happiness	0.28	0.10	0.26	0.10
Post Sadness	0.23	0.08	0.21	0.08

Note. Means for all participants in the study (Neutral: *N* = 105-106; Positive: *N* = 115-119). FHS = Fear of Happiness Scale; FHS Prescreen = Fear of Happiness Scale during prescreen; FHS Diff = difference score calculated by subtracting FHS scores at prescreen from FHS scores during the experiment; Fit 1 = "How good of a fit do you think this study is for you?"; Fit 2 = "Please rate how strongly you would to participate in this study"; Fit 3 = "Please rate how strongly you would NOT like to participate in this study"; Fit 4 = "How effective do you think this study would be for you?"; Pre Anger = frequency of anger chosen during pre-IMDES; Pre Fear = frequency of fear chosen during pre-IMDES; Pre Happiness = frequency of happiness chosen during pre-IMDES; Pre Sadness = frequency of sadness chosen during pre-IMDES; Post Anger = frequency of anger chosen during post-IMDES; Post Fear = frequency of fear chosen during post-IMDES; Post Happiness = frequency of happiness chosen during post-IMDES; Post Sadness = frequency of sadness chosen during post-IMDES

Table B2

Summary of Intercorrelations for FHS, FHS Prescreen, FHS Diff, IMDES Scores, and Fit Ratings

Measure	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. FHS	--	-.45**	.58**	.63**	.05	.-01	.-02	.05	.08
2. FHS Prescreen	.72**	--	-.69**	-.56**	.05	-.15*	.01	.05	.02
3. FHS Diff	.31**	-.69**	--	.66**	.01	.11	.01	-.11	-.01
4. Pre Anger	-.02	-.56**	.66**	--	-.01	.07	.03	-.09	-.00
5. Pre Fear	-.10	.05	.01	-.01	--	-.31	-.32	-.35	-.24**
6. Pre Happiness	-.14*	-.15*	.11	.07	-.37**	--	-.14*	-.20**	-.19**
7. Pre Sadness	-.01	.01	.01	.30	-.32**	-.14*	--	-.17*	-.32**
8. Pre None	.18**	.05	-.11	-.09	-.35**	-.20**	-.17*	--	-.23**
9. Post Anger	-.04	.02	-.01	-.00	-.24**	-.19**	-.32**	-.23**	--
10. Post Fear	-.04	.09	-.07	.06	.48**	-.20**	-.06	-.14*	-.18**
11. Post Happiness	-.18**	-.12	.06	-.04	-.20**	.65**	-.07	-.17*	-.11
12. Post Sadness	.08	-.11	.07	.11	-.16**	-.18**	.50**	-.10	-.04
13. Post None	.09	.05	-.04	-.10	-.31**	-.10	-.20**	.66**	-.00
14. Change Anger	-.02	.05	.00	-.08	-.08	.00	-.21	-.14	.44
15. Change Fear	.10	.06	-.09	.06	-.39**	.07	.22**	.16**	.02
16. Change Happiness	-.04	.05	-.07	-.13*	.16*	-.51**	09	.06	.11
17. Change Sadness	.08	-.12	.07	.08	.16*	-.04	-.49**	.06	.28**
18. Change None	.09	-.02	.11	.02	.11	.16*	-.01	-.56**	.30**
19. Fit 1	.08	.03	.01	-.07	.16*	.19**	.14*	.11	-.62
20. Fit 2	.08	.11	-.01	-.09	.04	.02	-.04	-.05	.02
21. Fit 3	-.10	-.17**	.07	.15*	-.12	.06	-.01	.13*	-.03
22. Fit 4	.03	-.10	.07	.08	.09	.08	-.04	.10	-.02

Table B2 (continued)

Measure	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*
1. FHS	.09	-.08	.09	-.02	-.14*	.04	-.09	.11	-.08
2. FHS Prescreen	.09	-.12	-.11	.05	.05	.06	.05	-.12	-.02
3. FHS Diff	-.07	.06	.07	-.04	.00	-.09	-.07	.07	.11
4. Pre Anger	.06	-.04	.11	-.10	-.08	.06	-.13*	.08	.02
5. Pre Fear	.48**	-.20**	-.16*	-.31**	-.08	-.39**	.16*	.16*	.11
6. Pre Happiness	-.20**	.65**	-.18**	-.10	.00	.07	-.51**	-.04	.16*
7. Pre Sadness	-.06	-.07	.50**	-.20**	-.21**	.22**	.09	-.49**	-.01
8. Pre None	-.14	-.17*	-.10	.66**	-.14*	.16*	.06	.06	-.56**
9. Post Anger	-.18**	-.11	-.04	-.00	.44**	.02	.11	.28**	.30**
10. Post Fear	--	-.35**	-.37**	-.46**	-.39**	.62**	-.15*	-.30**	-.32**
11. Post Happiness	-.35**	--	-.19**	-.10	-.07	-.19**	.32**	-.12	.11
12. Post Sadness	-.37**	-.19**	--	-.12	-.26**	-.24**	.01	.51**	-.01
13. Post None	-.46**	-.10	-.12	--	-.01	-.20**	.00	.07	.26**
14. Change Anger	-.39**	-.07	-.26**	-.01	--	-.34**	-.08	-.06	.16*
15. Change Fear	.62**	-.19**	-.24**	-.20**	-.34**	--	-.30**	.46**	-.43**
16. Change Happiness	-.15*	.32**	.01	.00	-.08	-.30**	--	-.09	-.07
17. Change Sadness	-.30**	-.12	.51**	.07	-.06	-.46**	-.09	--	-.00
18. Change None	-.32**	.11	-.01	.26**	.16*	-.43	-.07	-.00	--
19. Fit 1	-.17*	.05	-.09**	-.01	.44**	-.32**	-.18**	-.33**	-.15*
20. Fit 2	-.03	.08	-.07	-.04	.09	-.07	.06	-.03	.02
21. Fit 3	.11	.02	-.12	.06	-.11	.22**	-.05	-.11	-.10
22. Fit 4	.09	.08	-.18**	-.03	-.04	.18**	-.01	-.14*	-.10

Table B2 (continued)

Measure	*19*	*20*	*21*	*22*
1. FHS	-.05	-.06	.08	.03
2. FHS Prescreen	.03	.11	-.17**	-.10
3. FHS Diff	.01	-.01	.07	.07
4. Pre Anger	-.07	-.09	.15*	.08
5. Pre Fear	.16*	.04	-.12	-.09
6. Pre Happiness	.19**	.02	.06	.08
7. Pre Sadness	.14*	-.04	-.01	-.04
8. Pre None	.11	-.05	.13*	.10
9. Post Anger	-.62**	.02	-.03	-.02
10. Post Fear	-.14*	-.03	.11	.09
11. Post Happiness	.05	.08	.02	.08
12. Post Sadness	-.19**	-.07	-.12	-.18**
13. Post None	-.01	-.04	.06	.03
14. Change Anger	.44**	-.09	-.11	-.04
15. Change Fear	-.32**	-.07	.22**	.18**
16. Change Happiness	-.18**	.06	-.05	-.01
17. Change Sadness	-.33**	-.03	-.11	-.14*
18. Change None	-.15*	.02	-.10	-.10
19. Fit 1	--	.06	-07	-.02
20. Fit 2	.06	--	-.44**	.31**
21. Fit 3	-.07	-.44**	--	.72**
22. Fit 4	-.02	.31**	.72**	--

Note. Intercorrelations for all participants ($N = 222\text{-}223$). FHS = Fear of Happiness Scale; FHS Prescreen = Fear of Happiness Scale during prescreen; FHS Diff = difference score calculated by subtracting FHS scores at prescreen from FHS scores during the experiment; Pre Anger = frequency of anger chosen during pre-IMDES; Pre Fear = frequency of fear chosen during pre-IMDES; Pre Happiness = frequency of happiness chosen during pre-IMDES; Pre Sadness = frequency of sadness chosen during pre-IMDES; Pre None = frequency of no emotion chosen during pre-IMDES; Post Anger = frequency of anger chosen during post-IMDES; Post Fear = frequency of fear chosen during post-IMDES; Post Happiness = frequency of happiness chosen during post-IMDES; Post Sadness = frequency of sadness chosen during post-IMDES; Post None = frequency of no emotion chosen during post-IMDES; Change Anger = difference between frequency of anger chosen during pre-IMDES from post-IMDES; Change Fear = difference between frequency of fear chosen during pre-IMDES from post-IMDES; Change Happiness = difference between frequency of happiness chosen during pre-IMDES from post-IMDES; Change Sadness = difference between frequency of sadness chosen during pre-IMDES from post-IMDES; Change None = difference between frequency of no emotion chosen during pre-IMDES from post-IMDES; Fit 1 = “How good of a fit do you think this study is for you?”; Fit 2 = “Please rate how strongly you would to participate in this study”; Fit 3 = “Please rate how strongly you would NOT like to participate in this study”; Fit 4 = “How effective do you think this study would be for you?”

*$p < .01$

**$p < .001$

Table B3

Intercorrelations of IMDES Variables and FHS in the Hierarchical Multiple Regression Analyses (One-Tailed)

Measure	*1*	*2*	*3*	*4*	*5*
1. FHS	--	-.07	-.05	.07	-.16*
2. Anger	-.07	--	.02	-.08	-.28**
3. Fear	-.05	.02	--	-.05	-.06
4. Sadness	.07	-.08	-.05	--	-.18*
5. Happiness	-.16*	-.28**	-.06	-.18*	--

Note. $N = 220$.

*$p < .01$

**$p < .001$

Table B4

Hierarchical Multiple Regression Analyses Predicted FHS from IMDES Emotions

Predictor	ΔR^2	β
Step 1	.01	
Anger		-.06
Fear		-.05
Sadness		.07
Step 2	.03*	
Anger		-.12
Fear		-.06
Sadness		.03
Happiness		-.19*
n	220	

*$p < .05$

Table B5

Means of Main Variables for Each Mood Induction Condition for AAT Duration Analyses

Variable	Neutral		Positive	
	M	*SD*	*M*	*SD*
FHS	7.02	6.27	8.22	6.40
NeutPull Dur	373.39	234.93	429.75	239.36
PosPull Dur	391.44	249.56	434.06	242.21
NeutPush Dur	371.88	230.41	424.73	225.69
PosPush Dur	381.79	238.00	426.74	239.49
Pull Diff	9.86	91.72	3.21	111.35

Note. Means for participants with valid AAT duration data (Neutral: N = 81-93; Positive: N = 86-96). FHS = Fear of Happiness Scale; NeutPull Dur = duration of pulling for neutral stimuli; PosPull Dur = duration of pulling for positive stimuli; NeutPush Dur = duration of pushing for neutral stimuli; PosPush Dur = duration of pushing for positive stimuli.

Table B6

Summary of Intercorrelations for FHS and Dependent Variables for AAT Duration Analyses

Measure	*1*	*2*	*3*	*4*	*5*	*6*
1. FHS	--	-.02	-.10	-.09	-.05	-.14
2. NeutPull Dur	-.02	--	.91*	.88*	.88*	-.15
3. PosPull Dur	-.10	.91*	--	.90*	.92*	.28*
4. NeutPush Dur	-.09	.88*	.90*	--	.92*	.12
5. PosPush Dur	-.05	.88*	.92*	.92*	--	.15
6. Pull Diff	-.14	-.15	.28*	.12	.15	--

Note. Intercorrelations for participants with valid AAT duration data (*N* = 163-167). FHS = Fear of Happiness Scale; NeutPull Dur = duration of pulling for neutral stimuli; PosPull Dur = duration of pulling for positive stimuli; NeutPush Dur = duration of pushing for neutral stimuli; PosPush Dur = duration of pushing for positive stimuli; Pull Diff = difference score calculated by subtracting duration of pulling for neutral stimuli from duration of pulling for positive stimuli.

*$p < .001$

Table B7

Means of Main Variables for Each Mood Induction Condition for AAT RT Analyses

	Neutral		Positive	
Variable	*M*	*SD*	*M*	*SD*
FHS	7.13	6.16	8.28	6.43
NeutPull RT	499.54	127.28	532.60	149.43
PosPull RT	511.95	128.26	528.73	141.74
NeutPush RT	502.28	124.66	531.09	143.20
PosPush RT	506.00	124.21	538.34	147.87

Note. Means for participants with valid AAT RT data (Neutral: *N* = 101-102; Positive: *N* = 116-117). FHS = Fear of Happiness Scale; NeutPull RT = reaction time of pulling for neutral stimuli; PosPull RT = reaction time of pulling for positive stimuli; NeutPush RT = reaction time of pushing for neutral stimuli; PosPush RT = reaction time of pushing for positive stimuli.

Table B8

Summary of Intercorrelations for FHS and Dependent Variables in AAT RT Analyses

Measure	*1*	*2*	*3*	*4*	*5*
1. FHS	--	.04	.01	.02	.03
2. NeutPull RT	.04	--	.87*	.87*	.85*
3. PosPull RT	.01	.87*	--	.87*	.85*
4. NeutPush RT	.02	.87*	.87*	--	.90*
5. PosPush RT	.03	.85*	.85*	.90*	--

Note. Intercorrelations for participants with valid AAT RT data (N = 163-167). FHS = Fear of Happiness Scale; NeutPull RT = reaction time of pulling for neutral stimuli; PosPull RT = reaction time of pulling for positive stimuli; NeutPush RT = reaction time of pushing for neutral stimuli; PosPush RT = reaction time of pushing for positive stimuli.

*p < .001

APPENDIX C

FIGURES

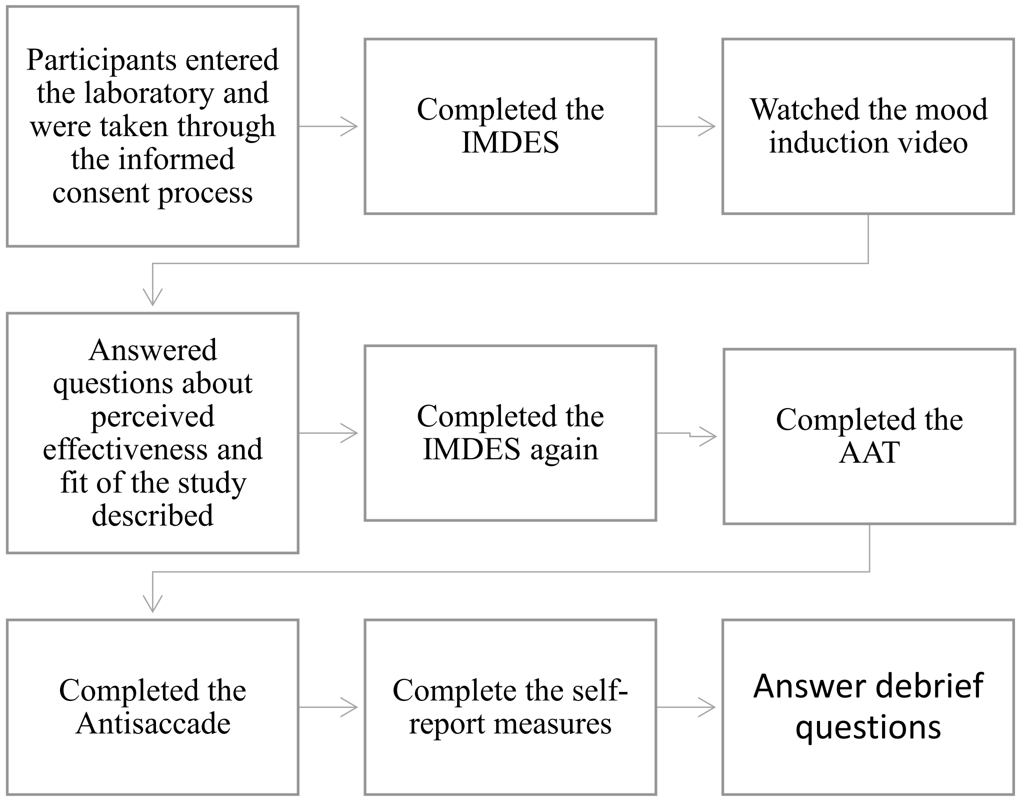

Figure C1. Session Flow Chart

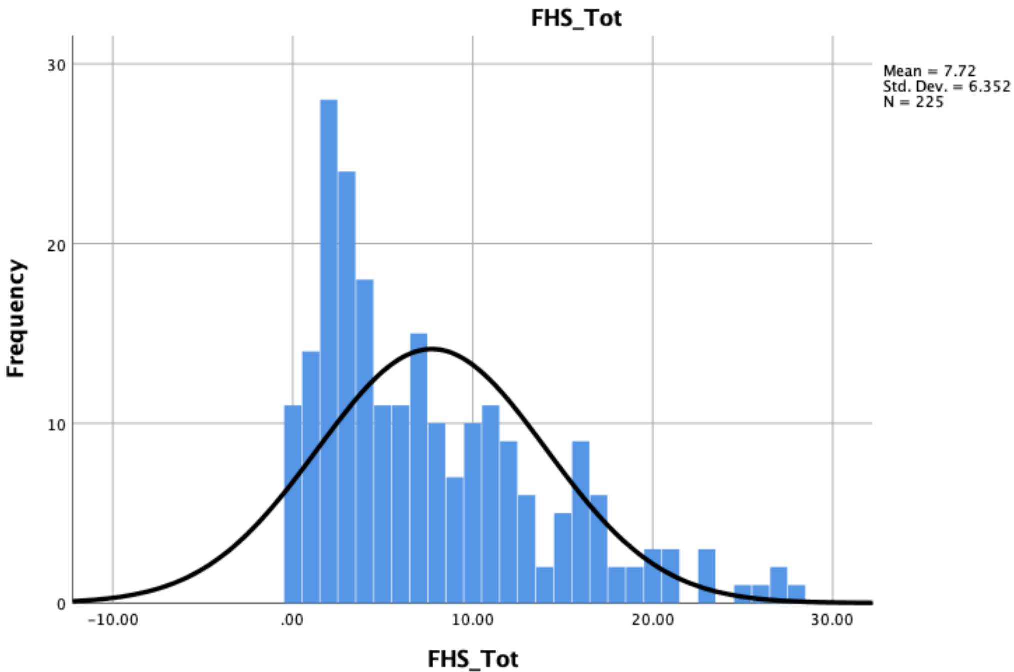

Figure C2. Histogram of FHS Distribution

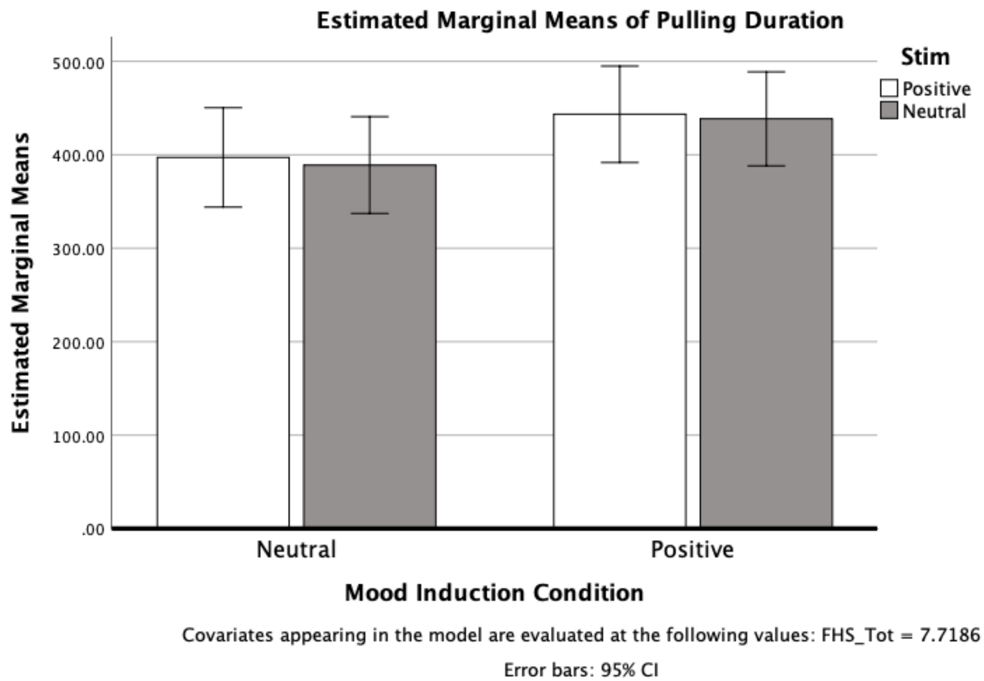

Figure C3. Mean Duration of Pulling the Joystick

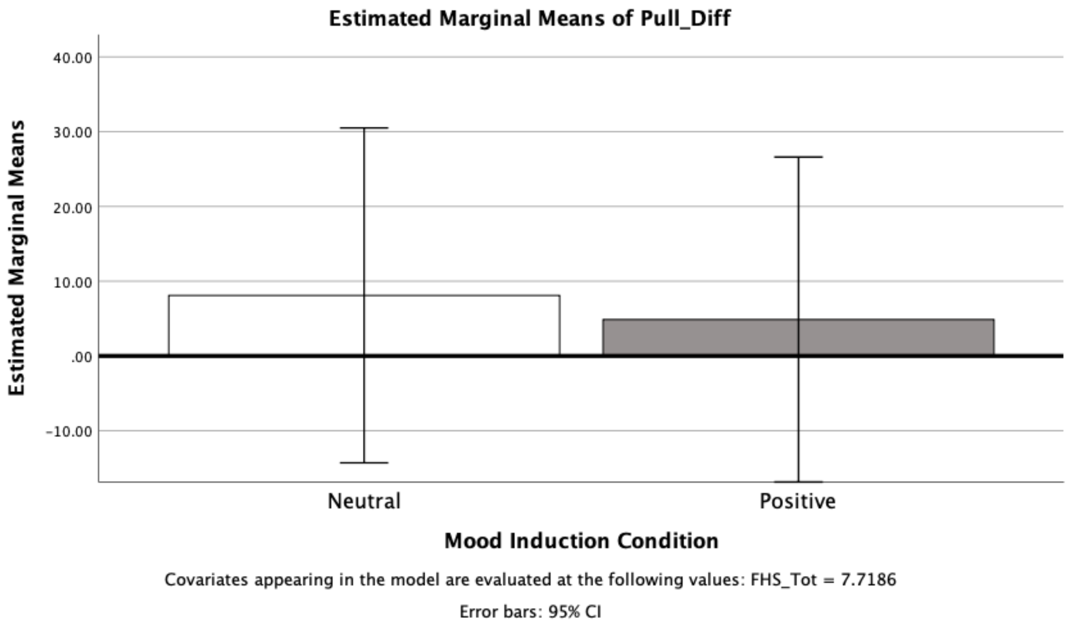

Figure C4. Mean Difference Score for Duration of Pulling the Joystick

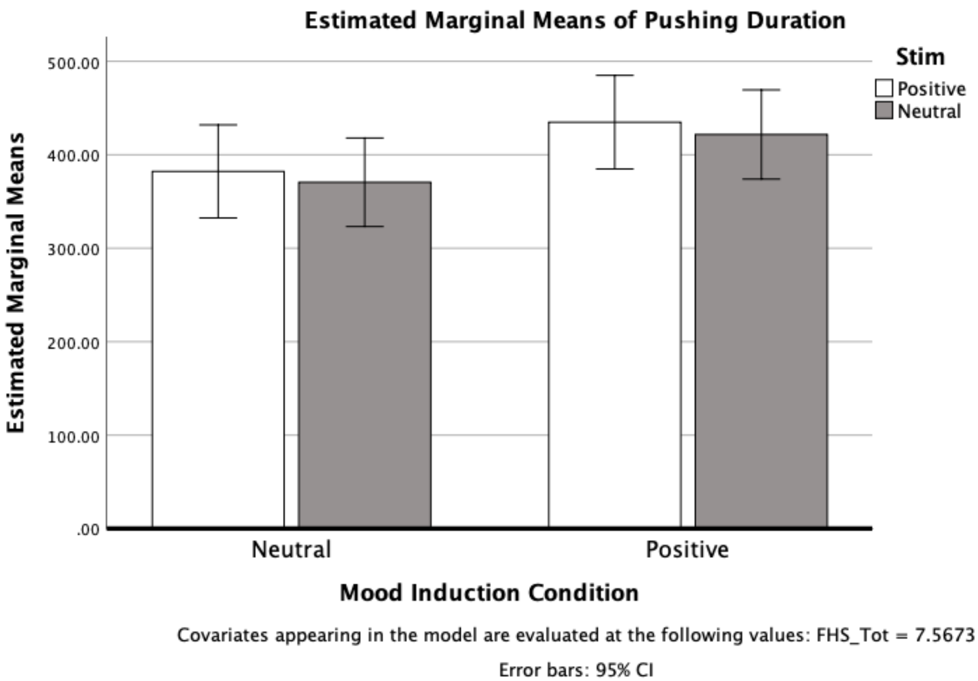

Figure C5. Mean Duration of Pushing the Joystick

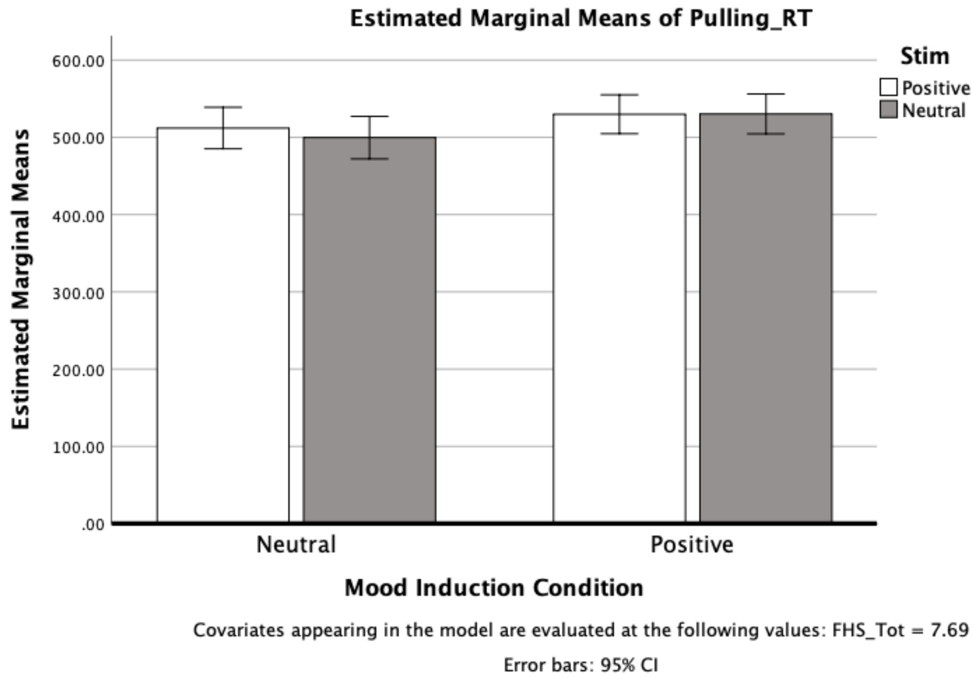

Figure C6. Mean Reaction Times for Pulling the Joystick

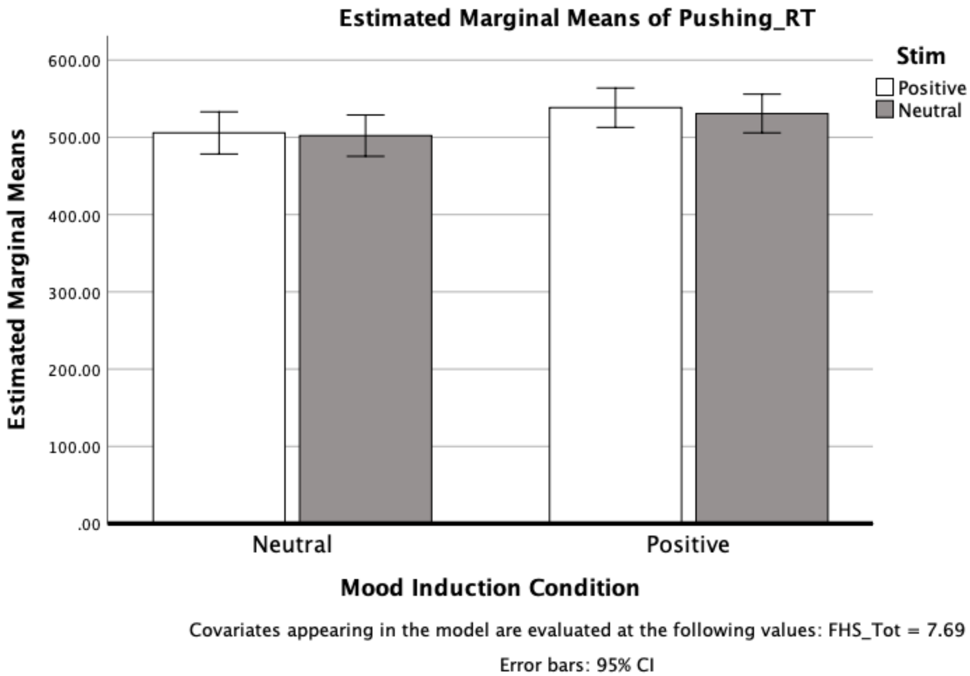

Figure C7. Mean Reaction Times of Pushing the Joystick

APPENDIX D

MOOD INDUCTION INSTRUCTIONS

Positive:

In this next task, you have the opportunity to learn about a new study being developed. You will watch a short film that describes the overview of the study, which includes strategies that may help you improve your experience of positive emotions in your daily life. While watching the film, you should imagine yourself participating in this study and engaging in the strategies being described to you. After the film ends, you will answer questions regarding the study's fit and effectiveness for you. Please wear these headphones while watching the film and be sure to pay close attention to the strategies described in the film as you may be invited to participate in this study later in the semester for additional course credit if eligible.

Neutral:

In this next task, you have the opportunity to learn about a new study being developed. You will watch a short film that describes the overview of the study, which includes strategies that may help you maintain the current emotions that you are experiencing in your daily life. While watching the film, you should imagine yourself participating in this study and engaging in the strategies being described to you. After the film ends, you will answer questions regarding the study's fit and effectiveness for you. Please wear these headphones while watching the film and be sure to pay close attention to the strategies described in the film as you may be invited to participate in this study later in the semester for additional course credit if eligible.

APPENDIX E

QUESTIONNAIRES

Fear of Happiness Scale

FHS

Below are a series of thoughts and feelings that people sometimes have. Read each statement carefully and check one of the boxes next to the statement that best describes how much the statement is true for you.

	Not at all like me	A little bit like me	Moderately like me	Quite a bit like me	Extremely like me
I worry that if I feel good something bad could happen.					
Feeling good makes me uncomfortable.					
I find it difficult to trust positive feelings.					
Good feelings never last.					
When you are happy you can never be sure that something is not going to hit you out of the blue.					
If you feel good you let your guard down.					
I don't let myself get too excited about positive things or achievements.					
I feel I don't deserve to be happy.					
I am frightened to let myself become happy.					

Fit Ratings

How good of a fit do you think this study is for you?

1	2	3	4	5	6	7
Not a good fit at all			Neutral			A very good fit

Please rate how strongly you would like to participate in this study:

1	2	3	4	5	6	7
Weak			Neutral			Strong

Please rate how strongly you would **NOT** like to participate in this study:

1	2	3	4	5	6	7
Weak			Neutral			Strong

How effective do you think this study would be for you?

1	2	3	4	5	6	7
Not effective at all			Somewhat effective			Very effective

APPENDIX F

APPROVAL FOR HUMAN SUBJECTS RESEARCH

BULLY MAIL powered by Google

Amanda Collins <ac1587@msstate.edu>

Approval Notice for Study # IRB-18-370, Evaluation of a video project and joystick game

2 messages

nrs54@msstate.edu <nrs54@msstate.edu> Tue, Oct 16, 2018 at 10:32 PM
To: sw1388@msstate.edu, ac1587@msstate.edu, kja3@msstate.edu, lka22@msstate.edu

Protocol ID: IRB-18-370
Principal Investigator: Eric Winer
Protocol Title: Evaluation of a video project and joystick game
Review Type: EXPEDITED
Approval Date: October 16, 2018
Expiration Date:September 15, 2019

The above referenced study has been approved. To access your approval documents, log into myProtocol and click on the protocol number to open the approved study. Your official approval letter can be found under the Event History section. For non-exempt approved studies, all stamped documents (e.g., consent, recruitment) can be found in the Attachment section and are labeled accordingly.

If you have any questions that the HRPP can assist you in answering, please do not hesitate to contact us at irb@research.msstate.edu or 662.325.3994.

nrs54@msstate.edu <nrs54@msstate.edu> Wed, Oct 17, 2018 at 10:19 AM
To: sw1388@msstate.edu, ac1587@msstate.edu, ajr444@msstate.edu, anl410@msstate.edu, beb418@msstate.edu, cla270@msstate.edu, dgj44@msstate.edu, ic288@msstate.edu, jkk99@msstate.edu, jts724@msstate.edu, kac325@msstate.edu, kja3@msstate.edu, klc901@msstate.edu, lj818@msstate.edu, lka22@msstate.edu, mkf167@msstate.edu, mo533@msstate.edu, tmw384@msstate.edu, tw1467@msstate.edu

Protocol ID: IRB-18-370
Principal Investigator: Eric Winer
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Approval Date: October 17, 2018
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