Emotions have probably always played an influential role in the daily lives of people and the situations in which they engage. In recent years, much attention has been devoted to what specific roles procrastination and self-awareness have in emotional responses. Procrastination is commonly experienced in both personal and professional arenas and can lead to many negative emotions. For example, Pychyl, Lee, Thibodeau, and Blunt (2000) reported that significantly higher levels of guilt and lower levels of motivation were experienced by students when they reported that they were procrastinating. Further, Scheier and Carver (1977) found that self-focused attention, by use of a mirror, heightened a person’s awareness of and responsivity to both positive and negative affects, therefore possibly amplifying the positive or negative emotion experienced. A better understanding of how procrastination and self-awareness interact to influence the kind and intensity of emotions may help individuals better self-regulate and manage their daily lives.

Procrastination is a problem that is becoming more prevalent amongst college students. It is estimated that up to 70% of college students procrastinate on academic tasks (Schouwenburg, Lay, Pychyl, & Ferrari, 2004). Generally speaking, to procrastinate means to put off something that must be done. Solomon and Rothblum (1984) defined procrastination as “the act of needlessly delaying tasks to the point of experiencing subjective discomfort” (p. 503).

There are many possible reasons for the occurrence of procrastination in college students. Solomon and Rothblum (1984) concluded that there are two distinct reasons for procrastination by college students. First was fear of failure, which incorporates concerns about meeting other people’s expectations, about meeting perfectionist standards, and about lack of self-confidence. Szalavitz (2003) suggested that procrastinators would rather be seen as lacking in effort than as turning in a performance that is not good enough. People who have perfectionist tendencies routinely put things off, which is an activity that is a core-identifying element of procrastination in students, and it can be indicative of the self-handicapping strategy. Ferrari (1991) found that procrastinators had significantly higher levels of public self-consciousness, self-handicapping, and social anxiety, along with lower levels of self-esteem. If people view them-
selves in such negative ways, it likely will have a direct impact on their self-confidence, usually by decreasing it. In turn, this diminished self-confidence can fuel more fear of failure and procrastination. Beck, Koons, and Milgrim (2000) also found that procrastination was linked to self-handicapping, although some of their results show that individuals with high self-esteem might adopt the self-handicapping strategy of procrastination in order to preserve a fragile sense of esteem.

A second reason for college student procrastination is task-aversiveness, which asserts that people will procrastinate when presented with boring or overwhelming tasks (Ferrari, Johnson, & McCown, 1995). Many times, working on a project makes both chronic and less chronic procrastinating students feel anxious or distressed due to anticipated performance evaluation, depression from not meeting their ideals, or boredom by the task. Students may focus on getting rid of the negative emotions by avoiding the project altogether (Baumeister, Heatherton, & Tice, 1994). For example, Pychyl et al. (2000) found that college students who interpreted a task as aversive or overwhelming procrastinated by participating in a less aversive, more enjoyable task, but reported experiencing higher levels of guilt and significantly lower levels of motivation. In addition, Senecal, Köestner, and Vallerand (1995) showed that no matter the importance of a specific course, students were still likely to procrastinate if the course material was not genuinely interesting. Thus, if a task is interpreted as boring, which is generally considered to be an aversive stimulus, a student is likely to procrastinate.

The above summary of procrastination in college students highlights the possible negative consequences of procrastination in less chronic and chronic procrastinators. The categorization of “less chronic procrastinator” encompasses those individuals who procrastinate inconsistently to those who rarely procrastinate. In contrast, “chronic procrastinators” exhibit procrastinating behaviors in a more consistent manner and this categorization includes individuals whom will procrastinate given any opportunity. Procrastination is not limited to college students, so its negative effects can be felt by a variety of individuals. For example, a survey of individuals across North America found that approximately 50% of them reported Internet procrastination (Lavoie & Pychyl, 2001). This type of procrastination takes place when an individual justifies not yet committing to work on an intended task on a computer by participating in more enjoyable computer tasks such as checking email or surfing the web for shorter intervals of time (Silver & Sabini, 1981, as cited in Lavoie & Pychyl, 2001). Quick gratification and the ability to discontinue at will are two key elements found in Internet activities that drive an individual to engage in Internet procrastination.

However, some recent studies have started to acknowledge positive effects of procrastination, at least in individuals who can be classified as active rather than passive procrastinators (Chun Chu & Choi, 2005). Active procrastinators are more like non-procrastinators in that they are goal directed, but they prefer to work under pressure. Using a build-up of pressure fits with the concept of stress as an effective motivator because, at some point, the resultant negative emotions can drive a person to action in order to alleviate the negative feelings. Gmelch (1983) focuses on such an approach in his article, Stress for Success: How to Optimize Your Performance. But unfortunately, with procrastination, a move to action may happen so late there is not enough time to do a thorough job on the task, and the situation as a whole is negative and leads to future aversion. Self-awareness can play a vital role in controlling and manipulating an individual’s awareness of his or her emotions. If a procrastinating person was to become more self-aware, would that increase the emotional intensity, and perhaps motivate the individual to act sooner?

Self-awareness is defined as attention focused inward (Scheier & Carver, 1977). Muraven (2005) defined someone high in self-focused attention as having thoughts that are focused inward at the self, while people low in self-focus attention have thoughts that are directed outward at the environment or situation. One of the most common ways of manipulating self-awareness is through the use of a mirror. For example, Scheier and Carver had participants fill out a questionnaire that assessed the occurrence of either self-focus or world-focus responses while in the presence or absence of a mirror. Their results showed mirror participants made more self-focus responses and fewer world-focus responses than nonmirror participants. They concluded that by focusing attention on oneself, internal states are clarified and emotions should be more intense and obvious to the individual. Thus, it could be hypothesized that negative emotions related to procrastination would be felt more intensely by an individual when he/she is made self-aware. The subsequent impact of the experience of negative emotions then will depend on how a person responds to them, which in part will be influenced by a person’s ability to self-regulate.

Self-regulation is termed as the process by which people control or alter their thoughts, emotions, and behaviors (Oaten & Cheng, 2005). Difficulties with emotional self-regulation often start when a person is exposed to some type of stressor. Oaten and Cheng...
proposed that there is a “psychic cost” of adapting to stress, such that the ability to regulate performance on a task decreased following an external stressor. When adapting to stress, they suggested that some self-regulatory resource was used in the process, leaving a person less of that self-regulatory resource to devote to other tasks. Oaten and Cheng further proposed that many forms of self-regulation break down when people are under any type of stress. In support of this proposed sequence of events, Oaten and Cheng found that people who were under academic stress due to approaching examinations reported breakdowns in regulatory behavior that were not seen in the control group, which consisted of people not subject to approaching examinations. Such breakdowns may not be present in all people, but instead, vary depending upon people’s coping abilities. Struthers, Perry, and Menec (2000) suggested that, while students may be upset by negative events such as academic pressure, those who believed they could cope successfully become motivated to action and, subsequently, often succeeded at the task. Procrastination may be a moderating factor in the type of coping used with procrastinators being less task-oriented. In turn, they may be more susceptible to breakdowns of emotional self-regulation and thus report higher levels of negative emotions than less chronic procrastinators.

In the current experiment, we manipulated several factors in order to induce both procrastination and a moderate amount of stress due to frustration. Participants were asked to complete a set of anagrams, one of which was impossible. Procrastination was encouraged by making the first anagrams very easy and by including an interesting distraction during the time to complete the anagram task. The presence or absence of a mirror allowed us to manipulate self-awareness. We anticipated that chronic procrastinators, as opposed to less chronic procrastinators, would experience greater negative emotions and that this would especially be true when a mirror was present.

**Method**

**Participants**

The sample consisted of 60 college students (41 women, 19 men) who were recruited from the psychology department participant pool at a mid-sized state university in East Texas. In exchange for voluntarily participating in this experiment, participants were given experimental credit to be applied to their classes.

**Design**

The study was a 2 X 2 between-subjects experiment. The first independent variable was self-awareness (high or low), which was operationalized by the presence of a mirror or the presence of a nature poster, respectively. The second independent variable was procrastination (chronic procrastinator or less chronic procrastinator), which was a measured variable using the Aitken Academic Procrastination Inventory (API; Aitken, 1982, obtained from Ferrari et al., 1995). Gender was recorded and analyzed as a possible covariate. The dependent variable was emotional state as measured using the Composite Affect Scale (Diener & Emmons, 1985, as cited in Pychyl et al., 2000).

**Materials**

This experiment used the two standardized scales, five anagrams, visual distractors (mirrors and posters), and a preplanned conversation distraction. Procrastination was operationalized via the API (Aitken, 1982, obtained from Ferrari et al., 1995) to assess whether each individual was a chronic procrastinator or a less chronic procrastinator. The API consists of 19 items rated on a 5-point scale (1 = Always false, 5 = Always true) and assesses an individual’s tendency to procrastinate in academic life. The 19 statements were interspersed throughout a larger body of 50 items. On the API, respondents were asked to rate statements such as: “I am often frantically rushing to meet deadlines”, or “I am careful to return library books on time.” Nine items on the API were reverse scored. In order to shorten testing time, a modified version of the API was used in the current experiment. The modified procrastination scale included 11 of the original 19 questions assessing procrastination (questions 1, 2, 4, 6, 9, 10, 12, 13, 14, 16, and 19). Using the subset of 11 procrastination questions, for our participants, the Cronbach’s alpha was satisfactory with \( \alpha = 0.78 \). This alpha compared relatively well to that obtained by Aitken (1982, as cited in Ferrari et al., 1995) using the full scale (using 120 freshman and sophomore college students, his \( \alpha = 0.82 \)). The current 11 questions were interspersed throughout a larger body of 30 other items. In our modified version of the API, 5 of the 11 items were reverse scored.

Emotional state was measured using Diener and Emmons’ Composite Affect Scale (1985, as cited in Pychyl et al., 2000). This scale consists of nine adjectives which were rated using a 7-point Likert scale (1 = Not at all to 7 = Extremely much). Four adjectives (happy, joyful, pleased and enjoyment/fun) represented positive affect. The other five adjectives (depressed, unhappy, frustrated, angry/hostile and worried/anxious) represented negative affect. For each participant, a positive score was taken from the average of all the positive adjectives. The same was done for the negative adjectives. The two question-
procrastination. The conversation highlighted a specific event that took place at a bachelorette party the previous weekend, and then mentioned also that the groom had gambled away the honeymoon money. The conversation ended with a prediction that the couple was going to have a big fight.

When 8 min were over, the anagram task was collected by the researcher. As the researcher collected the anagram task from each participant, an apology was given by the researcher for the conversation interruption during the experiment. After the collection of anagrams, the researcher distributed Diener and Emmons’ Composite Affect Scale (1985, as cited in Pychyl et al., 2000). At the top of the questionnaire was a place to put the participant’s initials and gender. The researcher also announced that this portion of the experiment was not timed and that when participants were finished, they should come out and give the questionnaire to the researcher.

After turning in the second questionnaire, the participants were given a debriefing form and thanked for their participation. The debriefing form stated that the drawing would be for gift certificates to Domino’s Pizza and Blockbuster Video, rather than a $50 gas card. The debriefing form also made clear that different elements in the experiment were created to build anxiety and that the conversation the participants overheard was fictitious. The debriefing form also stated the true nature of what the surveys used in the experiment were measuring. Also at this time, participants were told that if they were interested in entering the real drawing, they needed to write their e-mail address on a paper, which served as the means of contact for the winner.

Results

Prior to analysis, each of the two questionnaires administered in the experiment was scored. The score of the API (Aitken, 1982, obtained from Ferrari et al., 1995), which measured the participant’s level of procrastination, was the sum of the ratings for the 11 procrastination questions. Scores that fell in the range of 11 to 32 were considered to be an indication of less chronic procrastination while scores falling in the range from 33 to 55 categorized an individual as a chronic procrastinator. The scoring ranges were achieved by a median split between the lowest and highest scores on the questionnaire.

Diener and Emmons’ Composite Affect Scale (1985, as cited in Pychyl et al., 2000) measured the emotional state of the participant and was used to indicate emotional self-regulation. The nine adjectives in the questionnaire were categorized as representing either a positive emotion or a negative emotion. For each participant, a positive score was calculated...
as the average of all the positive adjectives. The same was done for the negative adjectives.

In order to investigate gender as a possible covariate, it was correlated with the average positive and negative emotional state scores, but neither correlated significantly, $r = .02$ and $r = .01$, respectively. Thus, gender was not used as a covariate.

A 2 (Procrastination) X 2 (Self-Awareness) between-subjects ANOVA was performed for both positive and negative emotion scores. There were no significant effects for the positive emotion scores. For the negative emotion scores, there was no significant main effect for self-awareness; however, a trend was found for procrastination $F(1,56) = 2.8, p = .07$. Chronic procrastinators reported higher negative emotions than less chronic procrastinators ($M = 2.8, SD = 1.1$, $M = 2.4, SD = 0.8$, respectively). Procrastination and self-awareness significantly interacted, $F(1,56) = 4.53, p = .04$. Figure 1 shows the means for all conditions. Participants in the high self-aware (mirror) condition showed less negative emotion if they were less chronic procrastinators, but more negative emotion if they were chronic procrastinators. Procrastination type did not influence emotion in the low self-awareness condition, and overall, individuals without a mirror showed levels of negative emotion in between, and not different from, the two groups in the mirror condition.

**Discussion**

As predicted, chronic procrastinators in the high self-awareness condition with a mirror present had the highest negative emotion scores. This result lends support to Scheier and Carver’s (1977) study which asserted that self-focused attention heightens a person’s awareness of and responsivity to both positive and negative affects. Because the experiment created stress due to frustration and thus should have induced negative rather than positive emotions, it is not surprising that there were no significant effects on the positive emotion scores.

With respect to Oaten and Cheng’s (2005) theory of self-regulation, our data trend can be interpreted as follows. The chronic procrastinators in the high self-awareness condition were put in a situation of increasing frustration due to task incompletion, and the presence of the mirror constantly promoted self-awareness of their lack of progress. The resultant negative emotions depleted their regulatory strength more quickly, leading to a breakdown in emotional regulatory behavior and an enhanced experience of negative emotions. When the mirror was not present, the chronic procrastinators were less self-aware, and thus, experienced more moderate negative emotions. Their regulatory resources were not depleted, which left more resources to help regulate and control cognitive and emotional states. In contrast, the less chronic procrastinators should have stayed on task, but because it was impossible to finish all the anagrams, they experienced moderate negative emotions. However, the presence of the mirror promoted self-awareness of their efforts and led to an increased reduction in negative emotions. Future research could explore whether there are ways to slow the depletion of regulatory resources/strength in highly stressful situations, allowing for an increased ability to cope and a less negative emotional state. Relaxation techniques and intermittent breaks are two ways that could possibly aid in slowing the depletion of regulatory strength in a stressful situation. There may also be differences in whether individuals experience consistently high levels of self-awareness (consistent with a trait), or fluctuations of self-awareness more dependent upon the situation (consistent with a state). Those with low trait self-awareness might experience more benefit from external manipulations of self-awareness such as the use of a mirror or relaxation techniques.

The current finding of increased negative emotions by chronic procrastinators supports Pychyl et al. (2000), who found that trait procrastination was positively correlated with negative affect. Additionally, research done by Ferrari (2001) stated that chronic procrastinators compared to less chronic procrastinators held low expectations for success of their per-
formance and were more likely to generalize poor performance expectations to future, similar tasks. However, the current significant interaction between procrastination type and self-awareness suggests that the effects of procrastination type are complex. Chronic procrastinators in the high self-awareness condition were different only from less chronic procrastinators in the high self-awareness condition, with no differences between chronic or less chronic procrastinators in the low self-awareness conditions. Thus, procrastination does not always lead to more negative emotions than nonprocrastination. The existence of two types of procrastinators, active and passive (Chun Chu & Choi, 2005), further supports the complexity of procrastination types. Because we did not classify our participants as active or passive procrastinators, we cannot make conclusions about how these two subtypes of procrastinators might differently respond to our task. However, given the relatively short duration of the experimental procedure, the two types of procrastinators may not have been able to develop meaningfully different responses.

Moving to implications of procrastination for college students, there seem to be two alternate possibilities. First, if procrastinators do not experience increased negative emotions, they may continue to procrastinate on a task. Thus, it might benefit procrastinators to increase self-awareness. This increase could be accomplished through the use of mirrors or through a discussion of their situation with friends. However, the benefit of such a strategy might only be obtained by a subset of procrastinators. A second possibility is that by increasing procrastinators’ self-awareness, the resultant increase in negative emotions would lead them to more strongly avoid the task. Again, this might especially be true for certain types of individuals. Future research should investigate the relationships between different sources/types of self-awareness, different types of procrastinators, and their effects on positive or negative emotional salience. Both of the above possibilities discuss resultant effects of procrastination on behavior as well as emotion. The current study investigated the first component, the effect on emotions. Future research should measure effort on the task as well as the emotions produced by the situation. Additionally, because the current study used a median split to categorize chronic and less chronic procrastinators, the groups may not have been as different as the labels imply. As more normative data becomes available, it might be possible to more accurately categorize individuals as chronic, less chronic, or nonprocrastinators.

Several aspects of the current experiment possibly impacted external validity. First, the participants were young adults in college. Distractions such as Internet activities, texting with friends on cell phones, music, television, and social engagements within the college community are more common to this age group, and may not generalize to common distractions for other age groups. Thus, the current results might not accurately reflect the effects for middle-aged or older adults due to different life pressures. Additionally, this study does not account for life experience. Life experience found in middle-aged and older adults might increase their ability to cope with stressful or frustrating circumstances. Bjorck and Klewicki (1997) found that as participants’ ratings of experiential similarity increased, their ratings of imaginability, coping efficacy, and optimistic flexibility also increased. As a person ages, he/she naturally has more experience in different situations, therefore possibly leading to more positive and confident emotions when dealing with stressful or frustrating situations. The inclusion of a broader age range in future studies would allow an exploration of the possible moderating effects of age on the negative emotions experienced in response to stressful situations.

A second possible threat to internal validity was a loud and intrusive sound coming from the room next to the lab, although it was clearly audible in all testing rooms. The sound was the loudest in the two testing rooms for the high self-awareness condition. It is possible that some of the frustration that participants experienced could have been due to feelings of being annoyed that developed from hearing the obtrusive sound during the experiment. This additional distraction does not negate our findings of the difference between chronic and less chronic procrastinators because both experienced the noise. However, it might have enhanced the difference in the patterns of response between the high and low self-awareness conditions. Further research is needed to explore different kinds of distractions in the environment and to see how certain types of distraction influence a procrastinator’s productivity or emotional state.

The current research supports previous findings of the negative impact of chronic procrastination but additionally suggests that self-awareness can moderate the intensity of the negative emotions experienced. Future research should investigate how other characteristics of the individual interact with the effects of procrastination and self-awareness. In some cases, different relaxation techniques could be developed and taught to students to counteract any negative emotional or psychological effects that result from procrastination. For others, the increase in emotions might more effectively prompt task-oriented coping behavior. By expanding knowledge in these areas,
intervention and counseling techniques can be improved in order to help individuals live healthier and more productive lives.

References


