

Spring 2016

# Understanding Workday Ego Depletion and the Role of Gratitude Recovery Techniques

Alexandria Steele

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UNDERSTANDING WORKDAY EGO DEPLETION AND THE ROLE OF GRATITUDE  
RECOVERY TECHNIQUES

by

ALEXANDRIA STEELE

(Under the Direction of Shauna Joye)

ABSTRACT

Everyday activities require the use of self-control resources to regulate behaviors. Ego depletion is the idea that the use of self-control resources on one task results in reduced self-control resources for subsequent tasks. The current study aims to examine ego depletion as a result of a simulated workplace task, design a gratitude recovery technique for workplace ego depletion, and observe child punishment as a potential outcome of workplace ego depletion. A dual-task procedure in which participants completed a complex logic assessment while also listening to a background narrative mimicked workplace environments. Gratitude recovery consisted of recalling people, items, or events, for which participants were grateful. Child punishment was assessed by asking participants to view a video of a child misbehaving and then assign a punishment. Results showed workplace environments that involve doing multiple unrelated tasks can induce ego depletion. The gratitude recovery technique in the current study did not prove more useful than a control group, and participants who experienced gratitude recovery actually punished children more harshly than those in the control condition. Gratitude recovery techniques that involve savoring may prove more useful. Other alternate explanations such as priming, may help to explain child punishment outcomes.

INDEX WORDS: Ego depletion, Recovery, Gratitude, Positive Affect, Self-control, child punishment

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ALEXANDRIA STEELE

B.S., Mercer University 2014

A Thesis Submitted to the Graduate Faculty of Georgia Southern University in Partial  
Fulfillment of the Requirements for the Degree

MASTER OF SCIENCE

STATESBORO, GEORGIA

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Electronic Version Approved:  
May 2016

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## CHAPTER 1

### INTRODUCTION

People use self-control every day to regulate their reactions and impulses (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998; Baumeister, Vohs, & Tice, 2007). Self-control refers to the ability to avoid giving in to our impulses (Baumeister, 2002). We use self-control to follow a diet, make decisions to purchase specific products, communicate with others, prevent procrastination, avoid binge drinking, go to work each day, and complete a number of other activities. Levels of self-control vary across and within individuals due to an interaction between temperament and the social environment (Dvorak & Simons, 2009). We often give in to our impulses, which can lead to various negative implications as insignificant as ruining a diet or as substantial as violent crime (Baumeister, et al., 1998).

The strength model of self-control (Baumeister, et al., 2007) suggests that self-control resources exist in a store or well. When a person engages in an act that requires self-control, the self-control well is depleted. In this way, the self-control well is analogous to the action of a muscle. With use, the muscle becomes tired and unable to function to full capacity. As more self-control is required, the well continues to diminish, or the muscle continues to become weaker. In the short term, future acts that require self-control will have fewer resources from which to draw, resulting in decreased performance. Also like exercising a muscle, individuals may be able to strengthen their self-control over time with repeated use (Baumeister et al., 2007).

The concept of self-control as a limited resource that can be depleted over time has been coined “ego depletion” (Baumeister et al., 1998). Ego depletion is a widely accepted phenomenon used to explain reduced self-control capabilities from one task to the next (Hagger, Wood, Stiff, & Chatzisarantis, 2010). Numerous tasks have been deemed ego depleting and are

used to study the wide-ranging effects of reduced self-control capacity. Research has also expanded to include recovery techniques to restore the well of self-control resources. The purpose of the current study is to examine the concept of workplace ego depletion, institute a gratitude recovery intervention to overcome ego depletion, and examine one potential real-world outcome of workplace ego depletion.

### **Individual Differences**

Ego depletion has been shown to occur across many domains, but individual differences may play a role in ego-depletion outcomes (Dvorak & Simons, 2009; Gaillio, Schmeichel, & Maner, 2007). Dvorak and Simons (2009) found that overall “good” self-control diminishes the effect of ego depletion on persistence in later tasks. Trait self-control is a general ability to control oneself, independent of a current situation; it is consistent and persists across all situations (Tangney, Baumeister, & Boone, 2004). Trait self-control is stable. Gaillio, Schmeichel, and Maner (2007) found that trait self-control moderated the effect of ego depletion on follow-up assessments, such that participants with low trait self-control performed worse on follow up self-control tasks, whereas individuals with high trait self-control did not.

Current research on trait self-control suggests that individuals with high trait self-control may not actually show a greater ability to resist temptations and persist but instead may have an increased ability to avoid being placed in an environment where temptation may occur (Ent, Baumeister, & Tice, 2015). For example, individuals high in trait self-control are more likely to choose practical, less distracting versions of an online test as opposed to a distracting, more visually appealing version. These same individuals are also more likely to choose to complete work in distraction-free areas like a library instead of crowded areas where more stimuli are present. Ego-depletion literature suggests that individuals high in trait self-control will perform

better in ego-depleting environments (Gaillio et al., 2007) but does not consider that individuals high in trait self-control may find unique ways to avoid temptations in self-control tasks.

### **Measuring Ego Depletion**

Ego depletion is characterized by a reduction in self-control resources; therefore, almost any task that requires self-control can be used both to induce and measure ego depletion (Hagger et al., 2010). As a general rule, tasks that use self-control resources require persistence, impulse suppression, and a high demand for executive functioning, resulting in the temptation to quit due to difficulty, complexity, or both (Baumeister, 2002). Some commonly used ego-depletion tasks include letter crossing (Baumeister et al., 1998; Tice, Baumeister, Shmueli & Muraven, 2007), resisting temptation (Baumeister et al., 1998; Vohs et al., 2008), and solving anagrams (Park, Glaser, & Knowles, 2008). Letter-crossing tasks require participants to follow a series of complex and difficult rules to cross out letters from a narrative. Resisting temptation tasks ask participants to do an unpleasant activity (e.g., eating radishes) in the presence of a more pleasant option (e.g., chocolate chip cookies). Anagram tasks require participants to solve as many anagrams as possible in an allotted time. All of these tasks are simple and relatively easy to use. Other tasks commonly used to induce ego depletion such as emotion-suppression and attention-control activities are more complicated.

Ego depletion is commonly measured using a follow-up task that requires self-control but is unrelated to the initial ego-depletion procedure. It has also been found that more challenging ego-depletion tasks result in increased feelings of anxiety, stress, and overall decreased happiness (Wright et al., 2007). Therefore, mood and stress are good secondary or proxy indicators of ego depletion following a task requiring high levels of self-control resources.

**Emotion suppression.** Emotion-suppression tasks deplete self-control resources by asking participants to intentionally conceal emotions while engaging in an activity that provokes a strong emotion. Most emotion-suppression activities involve watching a video clip or movie that is specifically selected to draw on emotions (e.g., comedy, tragedy). Baumeister and colleagues (1998) used both funny and depressing video clips to induce ego depletion. Participants were randomly assigned to watch popular movie clips of either a comedy show or a tragic scene of a mother dying of cancer. Within each video condition, half of the participants could express emotion freely and the other half was instructed to try not to show or feel any emotions during the movie clip. Participants in the suppress-emotion condition for both types of video reported exerting greater amounts of self-control and performed significantly worse on a follow-up ego-depletion task.

A follow-up study (Schmeichel, Vohs, & Baumeister, 2003) employing the emotion-suppression technique to induce ego depletion required participants to regulate emotions while watching a video depicting emotional scenes of the harmful effects of environmental pollution on animals. Participants in the emotion-suppression condition performed worse on a follow-up intelligence test than participants in a control condition. Schmeichel (2007) showed that ego depletion through emotion suppression may impair a person's ability to reason and extrapolate information.

**Attention control.** Attention-control tasks require participants to focus attention on a specific area of a video and attempt to avoid the distraction of other stimuli appearing on screen (e.g., Schmeichel et al., 2003). One of the most commonly used attention control tasks in the ego-depletion literature requires participants to watch a short silent video clip, usually six minutes, of a person being interviewed by an off-camera interviewer. While the video is playing,

one-syllable words appear at the bottom of the screen in black letters with a white background. Participants in attention-control conditions are instructed not to look at or read any of the words at the bottom of the screen; control participants are not given any specific instructions. Participants in attention-control conditions have typically reported increased difficulty following instructions (Baumeister et al., 1998; Gailliot et al., 2007; Schmeichel et al., 2003), performed significantly worse on follow-up working memory assessments (e.g., operation and sentence span; Schmeichel, 2007), scored lower on GRE reading comprehension and other intellectual performance measures (Schmeichel et al., 2003), and used more blood glucose (Gailliot & Baumeister, 2007) than participants in control conditions.

**Complex tasks.** Many commonly used ego depletion tasks, such as those reported above, adapt simple techniques requiring effortful suppression or focused attention. When difficult enough, complex tasks that draw on executive functioning and require high cognitive demand can induce ego depletion (e.g., Johns, Inzlicht, & Schmader, 2008; Park et al., 2008, Vohs et al., 2008).

Some complex tasks that have induced ego depletion include instituting stereotype threat, engaging in regulatory tasks such as the incongruent Stroop, and making consumer choices while shopping. Participants exposed to stereotype threat employ executive resources and extensive cognitive resources to ensure their success on a given task. For example, Johns et al. (2008) found that women who were exposed to the stereotype that women perform worse than men on standardized tests used increased executive and cognitive resources to attempt to avoid validating this stereotype when asked to take a standardized assessment, as evidenced by reduced performance on a word recall working memory task. In the incongruent Stroop (Stroop, 1992), individuals are presented with the names of colors printed in a different color than the word. For

example, a person might see the word “green” written in blue ink and have to inhibit the initial incorrect response, green, while reporting the correct response, blue. The incongruent Stroop task is ego depleting because reading the word is the more automatic response than saying the color of the word (Dewall, Baumeister, Stillman, & Gaillio, 2007). When purchasing consumer products, participants may have to inhibit an initial response to purchase a product with attractive advertising while also using cognitive demand to calculate which product would be of greater value (Bruyneel, Desitte, Vohs, & Warlop, 2006; Vohs et al., 2008). These complex ego-depletion tasks are more likely to mimic tasks or events that could occur in daily life, adding ecological validity to ego-depletion literature.

**Workday depletion.** One area of daily life that may result in decreased self-control capacity is the workplace. The ego-depletion literature has yet to examine the effects of workday demands on self-control resources. Similar to ego-depletion tasks, the workday is often characterized by highly dynamic situations that require individuals to engage in multiple tasks at one time, make complex decisions, plan, organize, and engage in many other activities that require executive functioning and create cognitive demand. Similar to tasks that are ego depleting, Schmidt, Neubach, and Heuer (2007) suggest that self-control demand serves as an additional stressor in the workplace. Employees are faced with demands to be flexible, anticipate others’ needs, take on various roles in the workplace, solve problems, and meet both individual and employer goals. All of these requirements call for self-control at work. Through an extensive series of self-report items, Schmidt and colleagues (2007) found that self-control demands and cognitive-control deficits are key contributors to burnout in the workplace. Wallace, Edwards, Shull and Finch (2009) have also found that suppressing emotions in the work place leads to less

focus and reduced task performance in the work place. In other words, employee demands in workplace environments may induce ego depletion.

### **Implications of Ego Depletion**

Recall that a reduction in self-control capacity in one domain can reduce self-control in other domains. Therefore, the negative impact of ego depletion can be wide-ranging and lead to deficits in everyday tasks. Given that numerous tasks such as suppressing emotions, controlling attention, and daily work activities may induce ego depletion, it is of critical importance to understand the implications of daily activities on ego depletion. In addition to reducing self-control capacity, individuals who experience ego depletion may also show deficits in decision-making (e.g., Baumeister et al., 1998, Bruyneel et al., 2006; Vohs et al., 2008), reduced cognitive abilities (Schmeichel et al., 2003; Wright et al., 2007; Wright, Stewart, & Barnett, 2008), decreased prosocial behaviors (e.g., Dewall et al., 2008), and increased aggression (e.g., Dewall et al., 2007).

Dewall and colleagues (2007) propose that limited self-regulation resources make people less capable of regulating when impulses arise. Specifically, it is proposed that one potential cause of aggression is a failure in self-control to restrain and regulate action. The authors found that participants that experienced previous self-regulation tasks such as resisting tempting foods, focusing on a silent speech instead of the words on a screen, or completing the incongruent Stroop were more aggressive when provoked. Aggression was expressed in multiple forms, either by adding hot sauce to food, using a louder white noise blast in a game, or even giving negative job candidate evaluations. The authors found that aggression occurred following ego depletion, particularly when preceded by provocation. Provocation occurred in the form of negative essay evaluations and negative interview evaluations for the current study, however; it



may be possible that in a real-world setting provocation may occur in many environments and from multiple sources.

### **Depletion Recovery**

Because of ego depletion's wide-ranging negative effects that influence everyday activities, psychologists continue to examine techniques to aid in recovery from ego depletion. Some convenient ways of replenishing self-control resources cited in the literature are glucose intake (e.g., Gaillio et al., 2007; Gaillio & Baumeister, 2007) and rest or relaxation (e.g., Tyler & Burns, 2008; Oaten, Williams, Jones, & Zadro, 2008). Blood glucose levels have been shown to decrease after experiencing ego depletion, and the simple act of eating a sugary substance or taking a sugar pill has been shown to replenish blood glucose levels and restore self-control resources, leading to improvement on subsequent self-control tasks. However, eating sugar to counteract the effects of ego depletion may come with additional health considerations (e.g., weight gain, cavities).

Rest or relaxation periods have been shown to reduce the effects of ego depletion. Tyler and Burns (2008) found that the rest period is proportional to the self-control recovery, with a 10-min interval of filler questionnaires sufficient to recovery self-control similar to non-depleted participants. However, when participants were instructed to relax as much as possible while listening to soothing music, a rest interval as short as 3 minutes was sufficient to recover self-control resources. Focused efforts of relaxation may induce a positive emotional state that helps to reduce the effects of ego depletion on regulatory abilities.

**Gratitude.** The reflection on personal values as an ego-depletion recovery technique may provide evidence for reflecting on other areas that lead to positive affect, such as the reflection of events or people for which we are grateful. Gratitude has not yet been used as a recovery

technique from ego depletion; however, positive affect (Tice, et al. 2007) and self-affirmation (Schmeichel & Vohs, 2009) have both been shown to be effective for recovering self-control resources diminished through ego depletion. Gratitude typically involves positive affect for both the self and toward others, though positive affect alone does not explain the relationship between increased gratitude and overall increased well-being (Wood, Froh, & Geraghty, 2010). Gratitude may be present for generally positive life events and may allow for maintaining a positive perspective on negative life events because these negative events may have led to other outcomes for which the person may be thankful. In a sense, a person may find a benefit in the difficulties, typically in the form of personal growth (Davis, Nolen-Hoeksema, & Larson, 1998).

Gratitude allows individuals to not only maintain a positive perspective, but also allows for a positive perspective on negative life events, suggesting that gratitude may not only contribute to overall positive affect and well-being, but may contribute to flourishing, making gratitude a particularly useful strategy for recovery from ego depletion. Grateful responses to life circumstances are adaptive strategies that help individuals to savor elements of their life, positively interpret experiences, and improve overall well-being (Emmons & McCullough, 2003). Gratitude may serve as an effective strategy for overcoming ego depletion due to its ability to induce positive affect, allow for positive interpretation of events, and allow for savoring of positive life experiences.

### **Current Study**

The current study aimed to examine the role of ego depletion in the workplace and a potential gratitude recovery technique for workplace ego depletion. Workday ego depletion was assessed using mood and stress as proxies for ego depletion. Additionally, based on previous

research linking ego depletion and aggression, we examined one real-world consequence of workday ego depletion: child punishment.

Participants completed an ego-depletion task designed to mimic a stressful work experience. The task required participants to complete a logic problem about project planning while also listening to a background narrative. Participants were then assigned to either a gratitude recovery condition (recalling five people, items, or events for which they were grateful and how each impacted them) or a control condition (recalling five things learned in the last week and how each was useful). Afterward, all participants watched a short video of a child misbehaving and completed a follow-up assessment on how they might punish the child in the video. Research shows that those high in trait self-control are more resilient to ego depletion and that trait gratitude may lead to overall flourishing, so these variables were used as covariates.

Hypotheses for the current study focused on three primary goals: establishing workday ego depletion, instituting a gratitude recovery technique, and using a potential real-world outcome to assess recovery.

*Hypothesis 1:* We hypothesized that our ego-depletion task would result in overall increased stress and reduced happiness, indicating that ego depletion was induced.

*Hypothesis 2:* We hypothesized that participants would have reduced stress and increased happiness following gratitude recovery, and participants in the control condition would maintain post-depletion mood and stress scores.

*Hypothesis 3:* We hypothesized that participants who experienced gratitude recovery would punish a misbehaving child less aggressively on qualitative assessments (i.e., be less likely to use physical force) and with less intensity on quantitative assessments (i.e.,

assign shorter time-out periods) than participants who did not experience gratitude recovery.

## CHAPTER 2

### METHOD

#### **Participants**

We recruited 60 participants (20 men and 40 women) through our university's online recruitment system. Ages ranged from 18 to 30 years old, with an average age of 19 ( $SD = 1.95$ ). Mostly first-year ( $n = 29$ ) and sophomore ( $n = 21$ ) students participated in the study, and the demographic make-up consisted of mainly Caucasian students ( $n = 32$ ) followed by African American students ( $n = 24$ ). Participants received 1.5 research credits for their participation that could be applied to psychology course requirements.

#### **Materials**

**Mood and stress (Appendix A).** All participants completed baseline, post ego depletion, and post recovery mood and stress assessments. Participants marked a line 150 millimeters long with an X to indicate their current mood and stress ranging from *very high stress* to *very little stress* and *very unhappy* to *very happy*.

**LSAT logic and reasoning assessment.** The Law School Admission Test (LSAT) is a standardized measure of reading and verbal reasoning skills designed for law school admissions. Because of their complexity, LSAT items require executive resources. In this study, one logic scenario with approximately six questions was selected from Kaplan LSAT 2014 study materials (Kaplan, 2013). The LSAT requires high cognitive demand and reasoning skills and served as one task in a dual-task procedure to increase ego depletion. .

**Recorded narrative.** The narrative was an audio clip of a The Brothers Grimm fairytale, "The Four Clever Brothers" (Grimm Brothers, 1905). This narrative was selected because of its complexity, length, and unrelated nature to logic and reasoning questions. The recorded narrative

served as a second task in a dual-task procedure to induce ego depletion. The narrative requires auditory and cognitive focus to respond to follow-up questions, making it an effective method to induce ego depletion in combination with the LSAT.

**Misbehavior video.** A video clip of a misbehaving child was selected from YouTube (Parsons, 2010). The video was 1:39 in length and depicted a young boy whining for an iPad. The video can be found at <https://www.youtube.com/watch?v=Aly3SqrfK7g>.

**Gratitude protocol (Appendix B).** Participants were given 5 min to recall and write the names of five people, events or things for which they are grateful and why. This task was modified from Dewall, Lambert, Pond, Kashdan, and Fincham (2012) gratitude protocol.

**Learning recall protocol (Appendix C).** Participants were asked to use 5 min to recall and write down five things they learned in class in the last week and how each thing was useful. The learning protocol served as a control procedure.

**Punishment assessment (Appendix D).** This assessment was designed specifically for the current study. The first item of the punishment assessment asks participants to describe how they might punish the child in the video and allows for a written response. The second item limited punishment to a time-out period, and participants were asked how many minutes of time out they would assign to the child. In asking the question two different ways, both qualitative and quantitative data were obtained.

**Trait Self-Control Scale (TSC Scale).** Participants completed a modified short version of the TSC scale (Tangney et al., 2004). The TSC scale consisted of 20 items that assess how a person typically responds to self-control scenarios using a Likert scale with anchors 1 (*not at all*) and 5 (*very much*) for whether or not that behavior describes him/her. Internal consistency is reported at  $\alpha = .89$ .

**Trait Gratitude Inventory (GQ-6).** The GQ-6 assesses gratitude disposition and grateful cognitions using an inventory consisting of six items (McCullough, Emmons, & Tsang, 2002). Responses for each item use a Likert scale with anchors from 1 (*strongly disagree*) to 7 (*strongly agree*). Internal consistency is reported at  $\alpha = .82$ .

**Flourishing Scale.** The Flourishing Scale consists of eight items that measure social-psychological prosperity (Diener et al., 2009). The Flourishing Scale assesses the need for competence, relatedness, and self-acceptance using a Likert scale with anchors from 1 (*strongly disagree*) to 7 (*strongly agree*). Internal consistency is reported at  $\alpha = .87$ .

**Brief Resilience Scale (BRS).** The BRS consists of five items that assess an individual's ability to bounce back using a Likert scale with anchors from 1 (*strongly disagree*) to 5 (*strongly agree*) for whether or not that trait describes him/her (Smith et al., 2008). Internal consistency ranges from  $\alpha = .80 - .91$ .

**Demographics form (Appendix E).** We asked participants to report their gender, age, year in school, race, and childhood experience with corporal and other types of punishment.

## **Procedure**

Participants were told they will be completing two different studies, the first to examine the effects of cognitive intelligence and everyday life events, and the second to assess a YouTube video for future use. Participants began by rating their current mood and stress. Following these ratings, participants were instructed to complete the logic and reasoning assessment while also listening to the recorded narrative, a task designed to mimic workplace ego depletion. They were informed that both responses on the logic and reasoning assessment as well as follow-up questions about the narrative will be assessed for accuracy but were not be given any other incentive. Participants then completed mood and stress scales again. Pilot data on the chosen

tasks showed that the depletion task significantly increased stress [ $t(21) = 2.93, p < .001$ ] and marginally decreased mood [ $t(21) = 1.77, p = .087$ ]. Difference scores (post-test minus pre-test) indicated that ego-depleted participants had increased stress ( $M = 1.62, SD = 2.02$ ) and lower mood ( $M = -1.69, SD = 2.69$ ) than those in the control condition (stress:  $M = 0.80, SD = 1.87$ ; mood:  $M = -0.10, SD = .99$ ).

Next, participants in the gratitude-recovery condition were asked to spend 5 min writing down five things or events for which they were grateful and why. Participants in the control condition spent 5 min writing down five things they learned in class in the last week and how each might be useful. All participants then completed the brief mood and stress assessment again.

Next, all participants were instructed to watch the child misbehavior video. Following the video, participants completed the punishment assessment. Lastly, participants completed demographic, trait self-control, flourishing, resilience, and trait gratitude scales. Prior to leaving the laboratory participants were debriefed that the study was not two studies but a single study and asked if they had any questions.



## CHAPTER 3

### RESULTS

#### **Preliminary Analysis**

All variables were examined for outliers. One participant's data was removed from primary analysis because the assigned length of time out (180 minutes) was more than 3 *SD* above the mean for that variable ( $M = 24.52$ ,  $SD = 18.40$ ). Descriptive statistics for all dependent variables and covariates are shown in Table 1. Mood and stress scores for baseline, post-depletion, and post-recovery are displayed in Table 2. Across both tables, data are provided by group (gratitude,  $n = 30$ ; and control,  $n = 30$ ) as well as for the entire sample. Note that in cases with missing data, sample size was adjusted in these tables.

#### **Ego Depletion Assessment**

To determine if the dual-task procedure designed to mimic workday ego depletion was effective at inducing ego depletion, paired samples *t*-tests (baseline to post-ego depletion) were conducted for mood and stress collapsed across groups (gratitude vs. control). There was a significant decrease in mood scores from baseline to post ego depletion,  $t(59) = -4.18$ ,  $p < .001$ . Stress also significantly increased from baseline to just after the ego-depletion task,  $t(59) = 4.70$ ,  $p < .001$ . Means and standard deviations are reported in Table 2.

#### **Examination of Covariates**

We considered several variables as potential covariates in the primary analysis by calculating bivariate correlations between these variables and post-recovery mood and stress. Potential covariates included trait self-control, trait gratitude, flourishing, resilience, baseline mood, and baseline stress (see Table 3). Significant bivariate correlations for post-recovery mood

included baseline mood, flourishing, and resilience as covariates. Significant bivariate correlations for post-recovery stress included only baseline stress.

### **Gratitude Recovery**

The effectiveness of gratitude as an ego depletion recovery technique compared to the learning control was assessed using 2 (time: post depletion, post recovery) x 2 (group: gratitude, control) mixed model ANCOVAs for mood and then for stress. For mood with baseline mood, flourishing, and resilience as covariates, the main effect of time was not significant, indicating that mood did not improve over the recovery period,  $F(1, 54) = .26, p = .609$ . The main effect of group was also not significant, indicating that gratitude as an ego-depletion recovery technique did not result in overall better mood than the control condition,  $F(1, 54) = 1.53, p = .221$ . Time and group did not interact to affect mood,  $F(1, 54) = 2.24, p = .141$ . For stress with baseline stress as a covariate, the main effect of time was significant, indicating that stress significantly decreased following recovery,  $F(1, 57) = 13.51, p = .001$ . However, the main effect of group was not significant, indicating that stress did not decrease more for the gratitude recovery compared to the control condition,  $F(1, 57) = .756, p = .388$ . Time and group did not interact to affect stress,  $F(1, 57) = .96, p = .128$ . Recall that means and standard deviations related to these analyses are reported in Table 2.

### **Child Punishment**

Child punishment was assessed in two ways. First, a chi square test of independence showed no relationship between condition and the choice to use physical punishment as described in written description of punishment,  $\chi^2(1, N = 60) = .88, p = .347$ . In the gratitude condition, 26.67% of participants chose to use physical punishment, and in the control condition 16.67% of participants chose to use physical punishment.

A one-way ANCOVA was used to determine group differences in child punishment with trait gratitude and baseline mood as covariates. Covariates were determined by calculating bivariate correlations between time out length and other potential variables. Bivariate correlations are reported in Table 3. Contrary to hypothesized results, participants in the gratitude group gave longer time-out periods (in minutes) than those in the control condition,  $F(1, 52) = 6.31, p = .015$ . Means and standard deviations are available in Table 1.

## CHAPTER 4

### DISCUSSION

The primary goals of the current study were to determine if a task that mimics workday experiences was ego depleting, to assess the effectiveness of a gratitude recovery technique for workday ego depletion, and to understand potential real world implications of ego depletion on child punishment.

#### **Ego Depletion**

Using mood and stress as proxy indicators of ego depletion, we found that the workday dual-task paradigm induced ego depletion (i.e., increased stress and decreased happiness). The ego-depletion task used in this study was specifically designed to mimic common workplace tasks. Our task was similar to an office environment in which an employee must complete tasks while also navigating distractions such as visitors to his/her office, phone calls, or background noise. The notion that tasks people experience at high rates on a daily basis in the workplace can induce ego depletion has important implications. The current study required participants to focus not only on a challenging planning and logic puzzle but also asked participants to pay close attention to a background narrative. We noted several participants who even demonstrated verbal frustration in the laboratory during this task, which was reflected in the quantitative changes in their mood and stress.

Our results were similar to those of Schmeichel (2007), who determined that tasks of higher difficulty that required increased cognitive demand ultimately resulted in increased ego depletion and limited self-control resources on follow-up tasks. Tice, Bratslavsky, and Baumeister (2001) found that frustrating ego-depletion tasks that required high cognitive demand induced an overall negative affect. Wright and colleagues (2007) also found that more

challenging ego-depletion tasks resulted in increased physiological responses including high blood pressure, increased feelings of anxiety and stress, and decreased happiness. Although physiological responses were not measured in the current study, results did show increased perceived stress and decreased happiness. It is quite likely that physiological responses were also present.

Individuals who experience increased rates of ego depletion are more likely to be aggressive when provoked (Dewall, et al., 2007), more likely to make impulsive decisions (Vohs, et al., 2008), and are less likely to perform to potential on later tasks (Schmeichel, et al., 2003). If workday ego depletion exists unchecked, it is possible that workers could become more irritable, increasingly frustrated, have higher blood pressure, and have more negative affect, which could potentially reduce workplace productivity.

Improvements on the workday ego-depletion assessment might involve incorporating a pre-screening process to determine some of the most common tasks involved in various workplaces. It may then be possible to determine what tasks are most ego depleting and develop interventions to buffer against the negative effects of ego depletion. One such intervention might be teaching employees to use gratitude as a way to unwind.

### **Gratitude Recovery**

Our second hypothesis was that participants who engaged in 5 min of gratitude recovery would have better mood and stress scores than participants in the control learning condition and that mood and stress scores for participants in the gratitude recovery would be better than baseline assessment scores. This hypothesis was partially supported in that stress (but not mood) levels did improve after the intervention (i.e., main effect of time). However, mood and stress did not differentially improve based on condition (i.e., main effect of condition). Both the gratitude

and the control group had reduced stress following the 5-min recovery period. Tyler and Burns (2008) previously found that a time period up to 10 min with only rest and relaxation allowed for a recovery from the effects of ego depletion, but time periods as short as 1 to 3 minutes did not allow for ego-depletion recovery. Using this logic, simply a rest period approximately 10 min may suffice as a recovery technique. Improving recovery above and beyond that of a rest period would require a simple, quick, and robust method to improve mood and stress.

Previous research indicates that inducing positive affect helps to replenish self-control resources following ego depletion. Tice and colleagues (2007) found that watching a comedy clip induces positive affect and reduces the effects of ego depletion on follow-up tasks. Grateful thinking induces positive affect by allowing for savoring of positive experiences and events (Sheldon & Lyubomirsky, 2006). Maintaining a positive mood robust enough to combat the highly stressful ego-depletion task may require significantly more effort than is possible in the short 5-min time frame of the current study allowed.

Improvements in the gratitude recovery may involve more focus on savoring positive experiences as opposed to simply listing people, events, or things toward which the participant feels gratitude. The simple gratitude recovery task used in this study involved examining gratitude for external events or people. Often the expression of gratitude for the self involves personal reflection and contributes to savoring (Sheldon & Lyubomirsky, 2006), which may contribute to larger improvements in affect.

### **Child Punishment**

Our final hypothesis aimed to examine one potential negative outcome of ego depletion. We hypothesized that participants who experienced gratitude recovery from ego depletion would assign less severe punishments, as measured by being less likely to use physical force and

assigning shorter time-out periods. Contrary to hypothesized results, participants who experienced the gratitude recovery technique assigned longer time out periods than participants in the control condition. Gratitude has been shown to decrease aggression (Dewall, et al, 2007) and increase overall positive affect (Emmons & McCullough, 2003), making the results particularly surprising. The impact of gratitude on aggression and happiness suggests that individuals experiencing gratitude would be more lenient in assigning a punishment to a misbehaving child.

One possible explanation for the unexpected outcome is that the gratitude-recovery task may have primed participants to seek behaviors that show gratitude, and a video of a child whining for an object may depict exactly the opposite of gratitude. The video used in this study in particular depicted a child standing and crying to have an iPad back after it was taken away. This particular video may show behavior that is nearly opposite of feelings of gratitude that participants expressed just prior to watching the video. Evidence suggests that primes may induce certain behaviors or thoughts (Loersh and Payne, 2011); perhaps gratitude primes for behaviors showing appreciation, happiness, and an ability to overcome obstacles. The stark contrast between these primes and misbehavior of the child may explain the more severe punishments assigned. Future research using similar outcome assessments may want to consider various interpretations of videos prior to use, along with other limitations of real-world applications to a phenomena previously examined primarily in a laboratory setting.

### **Limitations**

General limitations to the current study include applying real-world applications to a laboratory study. Examining workplace ego depletion in a true workplace environment will contribute to practical applications for ego-depletion recovery. Additionally, the gratitude

recovery and control conditions may have used overlapping constructs. The control condition required participants to examine what they learned in the last week and how it was useful. In a college setting students may benefit from a task like this, and it may contribute to their overall positive affect, possibly overlapping with the gratitude construct. Using a waitlist control may show greater differences in the control and gratitude recovery conditions. Additionally, the current sample consisted of mainly of 18-19 year old undergraduates with few children of their own. We may see a very different pattern of results among a sample of individuals who have children. Finally, the current study was limited by reduced power with a smaller sample size than desired. Power may be increased by using a larger number of participants according to power analysis (Cohen, 1992).

### **Conclusions and Future Directions**

We sought to expand on ego-depletion literature in three ways. First, we created a task that mimics a common real-world environment that could induce ego depletion. Ego depletion is primarily assessed in laboratory settings using laboratory techniques. Examining areas that ego depletion may exist outside of the laboratory allows for a more comprehensive understanding of the phenomena and provides increased relevance to this line of research in other settings. The workplace is one particular area that could be relevant for ego-depletion research. Future research may improve by directly examining a workplace environment and assess for ego depletion outside of the laboratory.

Second, we examined a new potential recovery technique from ego depletion. The gratitude recovery technique expanded on positive affect recovery techniques from ego depletion. Our task, though it did improve mood and stress after ego depletion, was not more successful than our control task. To improve upon the gratitude recovery technique, future



research could emphasize savoring specific experiences as opposed to a more broad gratitude focus. Additionally, ego-depletion recovery should be short and easy to implement in multiple settings.

Last, we examined the potential effect of workday ego depletion on child punishment. We found that our gratitude-recovery technique contributed to more severe punishments. Although mood and stress were potentially positively impacted by expressing gratitude, depending on the situation, individuals might be *more* severe in child punishment when primed with gratitude. We need to consider the multiple facets of ego depletion and ego-depletion recovery. Although better mood and lower stress are good goals, if the real-world consequence is harsher child punishment, we may want to consider alternative techniques for parents to use when commuting home from a stressful workday.

Using real-world outcomes for ego-depletion recovery studies brings ego-depletion literature increased external validity. Overall, understanding the ego-depletion phenomena in settings other than the laboratory may provide marked improvements in the field. Understanding realistic settings may show multiple areas where ego depletion affects everyday life providing increased importance for this field of research.

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Table 1

*Descriptive Statistics for Dependent Variables and Potential Covariates*

Measure	<i>N</i>	Mean	(SD)	Range
<b>Time Out Length (min)</b>				
Control	29	19.38	(15.76)	3.00-60.00
Gratitude	27	30.04	(19.69)	1.00-60.00
Total	56	24.52	(18.40)	1.00-60.00
<b>Trait Self-Control</b>				
Control	26	67.69	(7.82)	54.00-86.00
Gratitude	29	66.62	(7.60)	51.00-83.00
Total	55	67.13	(7.65)	51.00-86.00
<b>Trait Gratitude</b>				
Control	30	37.53	(4.26)	24.00-42.00
Gratitude	30	35.40	(6.52)	23.00-42.00
Total	60	36.47	(5.56)	23.00-42.00
<b>Flourishing</b>				
Control	30	46.60	(5.15)	31.00-56.00
Gratitude	30	46.63	(6.08)	33.00-56.00
Total	60	46.62	(5.58)	31.00-56.00
<b>Resilience</b>				
Control	30	3.29	(0.60)	2.17-4.50
Gratitude	29	3.26	(0.59)	1.50-4.50
Total	59	3.27	(0.59)	1.50-4.50



Table 2

*Descriptive Statistics for Mood and Stress Over Time*

	Mood				Stress			
	<i>N</i>	Mean	(SD)	Range	<i>N</i>	Mean	(SD)	Range
Baseline								
Control	30	106.37	(32.76)	5.00-145.00	30	61.67	(35.45)	0.00-140.00
Gratitude	30	117.07	(26.83)	55.00-150.00	30	73.07	(45.36)	0.00-150.00
Total	60	111.72	(30.17)	5.00-150.00	60	67.37	(40.77)	0.00-150.00
Post Depletion								
Control	30	94.27	(36.31)	5.00-145.00	30	76.67	(32.97)	6.00-130.00
Gratitude	30	102.77	(28.56)	47.00-150.00	30	86.00	(38.47)	0.00-150.00
Total	60	98.52	(32.67)	5.00-150.00	60	81.33	(35.83)	0.00-150.00
Post Recovery								
Control	30	95.77	(34.07)	5.00-142.00	30	64.73	(36.48)	6.00-134.00
Gratitude	30	111.90	(23.55)	65.00-150.00	30	65.77	(37.39)	0.00-150.00
Total	60	103.83	(30.15)	5.00-150.00	60	65.25	(36.63)	0.00-150.00

Table 3

*Bivariate Correlations for All Possible Covariates With Each Dependent Variable*

Dependent Variable	Baseline Mood	Baseline Stress	Trait Self-Control	Trait Gratitude	Flourishing	Resilience
<b>Time Out Length</b>						
Pearson's <i>r</i>	.34	.10	-.08	-.29	-.21	-.19
<i>p</i> -value	.012	.466	.562	.032	.128	.169
<i>N</i>	56	56	51	56	56	56
<b>Post Recovery Mood</b>						
Pearson's <i>r</i>	.73	-.01	.15	.12	.38	.31
<i>p</i> -value	<.001	.951	.290	.380	.003	.017
<i>N</i>	60	60	55	60	60	59
<b>Post Recovery Stress</b>						
Pearson's <i>r</i>	-.17	.87	.14	.02	.05	.03
<i>p</i> -value	.191	<.001	.325	.904	.690	.841
<i>N</i>	60	60	55	60	60	59

APPENDIX A  
MOOD AND STRESS

Overall my current mood is:

Very Unhappy	_____	Very Happy
0		150

Overall my current stress is:

Very Little Stress	_____	Very High Stress
0		150

## APPENDIX B

## GRATITUDE PROTOCOL

Please take the next five minutes to write down five things for which you are grateful and how each of these has helped you grow as a person. If you finish before time is up, please spend that time reflecting on your list.

<b>Person, item, or event for which you are grateful.</b>	<b>How have you grown as a person?</b>
1.	
2.	
3.	
4.	
5.	

## APPENDIX C

## MEMORY PROTOCOL

Please take the next five minutes to recall five things you have learned in class in the last week and how it may be useful. If you finish before time is up, please spend that time reflecting on your list.

<b>What you learned.</b>	<b>How might this be useful?</b>
1.	
2.	
3.	
4.	
5.	

APPENDIX D  
PUNISHMENT ASSESSMENT

How would you punish the child in the video?

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Your punishment is limited to a period of time out. How many minutes of time out would you give this child?

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