Does counting to ten increase or decrease aggression? The role of state self-control (ego-depletion) and consequences

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Abstract

In this investigation, we experimentally test the interaction of ego-depletion (low state self-control), consequences, and decision-making time on aggressive responses to an insult from a confederate. The results indicate that ego-depleted participants respond more quickly and aggressively to an insult from a confederate. However, when a 30- second decision-making delay is imposed, ego-depleted participants reduce their aggression, but only if there are external consequences to being aggressive. In the absence of such consequences, ego-depleted participants become more aggressive following a delay. Additionally, if a distracting cognitive load disrupts the 30- second delay, aggression levels do not change significantly, even if there are consequences. These results suggest people respond to aggressive triggers more impulsively when ego-depleted.

There is an adage that one should "count to ten" before responding to an anger-invoking provocation. However, psychological science is ambivalent on this technique; noting that although it is sometimes effective, in other cases, it is known to backfire. We suggest that when self-control is compromised, individuals respond more quickly to aggressive triggers, and thus, fail to fully consider consequences. This more rapid and impulsive decision making may partially explain why individuals respond more aggressively when they are experiencing low self-control. Thus, when self-control is low, a brief delay may help reduce aggression, but only if the delay assists the individual to identify consequences.

Self-control and aggression

Although, the experimental study of how self-control relates to aggression is relatively young, considerable progress has been made (see Denson, DeWall, & Finkel, 2012). In general, researchers have studied how self-control suppresses aggressive urges or helps regulate the negative emotions that contribute to the desire to aggress (e.g., DeWall, Finkel, & Denson, 2011). A recent study that implicated self-control failure in aggression used a manipulation called ego-depletion (Baumeister, Bratslavsky, Muraven, & Tice, 1998), which involves temporarily reducing individuals' motivation to exert self-control by having them engage in a task that strongly taxes self-control. In that study, DeWall, Baumeister, Stillman, and Gailliot (2007) found that ego-depleted participants responded more aggressively than controls to an insult from a confederate. Relatedly, others have found that providing participants with a high-glucose snack, a manipulation believed to neutralize the effects of ego-depletion (see Gailliot & Baumeister, 2007; for counter-perspective, see Kurzban, 2009) decreases aggression (Denson, Von Hippel, Kemp, & Teo, 2010). Moreover, training self-control decreases aggression over time (Denson, Capper, Oaten, Friese, & Schofield, 2011). Denson (2009) and Denson, Pedersen, Friese, Hahm, and Roberts (2011) extended these findings by identifying angry rumination as an important mediator of the relationship between ego-depletion and aggression.

Unfortunately, other than rumination, most mechanisms of the relationship between ego-depletion and aggression are largely unexamined. Indeed, prior research has primarily investigated how ego-depletion reduces the ability or motivation to inhibit aggression. An alternative explanation, investigated here, is that ego-depleted individuals usually retain sufficient ability to inhibit aggression, but respond to triggers too quickly to adequately consider consequences. Moreover, most prior research has used experimental procedures that remove any possibility of consequences for aggression, which is highly unrealistic. In our experiment, we test a heretofore-unexamined mediator (reaction time) as it relates to a novel mechanism (the consideration of consequences) in explaining the effect of ego-depletion on aggression.

Several major models of aggression (Beis, Tripp, & Kramer, 1997; DeWall et al., 2011; Slotter & Finkel, 2011) suggest that the decision to vengefully aggress begins with a trigger (e.g., an insult). This is immediately followed by initial aggressive impulses and subsequently influenced by factors that "heat-up" aggression and factors that restrain or "cool-down" aggression.

According to these models, initial urges in response to a trigger are very "hot" and aggressive and much experimental research supports this notion (see Beis et al., 1997; Beis & Tripp, 1995). For example, Finkel, DeWall, Slotter, Oaten, and Foshee (2009) found that participants responded more aggressively to their partner's hypothetical infidelity if forced to respond immediately than if made to wait 10 seconds. According to these models, "heating-up" and "cooling-down" processes follow initial aggressive urges. "Heating-up" processes are those that make aggression more likely, such as angry rumination and personal attributions of the sparking event. "Cooling-down" processes are those that make aggression less likely, such as distraction and thinking about risks and consequences associated with aggressing.

An important hallmark of these models is that "cooling-down" factors take place after initial (aggressive) cognitions and emotions (urges) and their influence depends on moving past these initial emotions and cognitions, which requires time. If individuals respond to provocations more quickly and impulsively when ego-depleted, then they might respond with their initial hot and aggressive urges before they have had time to fully consider the negative consequences of aggressing. Indeed, prior research has demonstrated that low self-control and ego-depletion are linked to reacting more quickly to an emotional urge (e.g., Baumeister, 2002; Evenden, 1999). Thus, ego-depletion may cause people to take less time considering their options before aggressing following a trigger. If so, ego-depleted people might respond more quickly with their initial "hot" emotions and cognitions. This means that they would be less influenced by cooling-down processes or situational inhibitors such as external consequences to aggressing. We should, therefore, expect that some of the increase in aggression observed following ego-depletion is mediated by the shorter amount of time ego-depleted participants use thinking about the decision to aggress.

In other words, delaying the initial response is critical to preventing aggressive behavior, especially in those low in self-control, as they tend to respond to emotional urges more quickly. With a brief time-delay, ego-depleted individuals will be able to move past their initial aggressive urges long enough to think about the potential consequences to being aggressive, which should motivate them to reduce their aggression. Indeed, much prior research has demonstrated that training individuals to engage in consequence-focused thinking reduces aggression in low self-control individuals

(Larson, 2005). For example, "think-first" programs have been used to successfully train aggressively impulsive children to think about the consequences of their actions prior to aggressing (Larson & Lochman, 2013).

Conversely, if a brief delay were helpful in reducing aggression following ego-depletion because it allows individuals to consider consequences to aggressing, then we should not expect a brief delay to reduce aggression in the absence of consequences. In fact, under such conditions, the passage of extra time might actually increase aggression as rumination and other "heating-up" factors would continue to influence behavior (Beis et al., 1997; Denson, 2009). Indeed, the implications of some prior theory suggest that ego-depletion may increase susceptibility to angry rumination (see Denson, 2009) and compromise emotion regulation (Vohs & Heatherton, 2000). However, this additional rumination effect is not the main focus of the present investigation, and thus, not directly tested. Finally, we would not expect a brief delay to strongly influence the aggression of nondepleted individuals, as they already take longer thinking about their initial decisions so the extra brief delay should not add much influence.

Thus, our theory specifies that the aggression-reducing effects of a brief delay following ego-depletion may occur if the delay allows individuals to think about the consequences of being aggressive. This would suggest that disrupting ones ability to think during the delay, such as by administering an additional cognitive load (e.g., remembering a string of numbers), should reduce the effect of the brief delay on aggression. Indeed, prior experimental research has found that imposing a cognitive load increases aggression (Vasquez, 2009), but the interplay between cognitive load and ego-depletion has not been considered.

Overall, there is experimental and theoretical justification to predict a three-way interaction of ego-depletion, consequences, and decision-making delay on aggression. In sum, ego-depleted participants respond more quickly and emotionally to an aggressive provocation. Consequently, they are more likely to respond with their initial aggressive urges and with less consideration of consequences. Therefore, if the aggressive responses of ego-depleted participants are delayed long enough to consider consequences, then their aggression should decrease, but only if there are consequences to being aggressive. In the absence of consequences, this delay would not provide any aggression-reducing effects (and may even increase aggression, as previously discussed). Conversely, nondepleted participants typically take longer in selecting their aggressive response. Thus, they are more likely to identify consequences of being aggressive and factor this into their initial decision. Having already considered consequences, the extra brief delay should offer little or no additional aggression-reducing benefits to nondepleted individuals, as it would likely be too short to quell anger.

Finally, if delaying a response to a provocation is useful, the time between provocation and response should predict aggression. People who respond more quickly should also respond more aggressively. Moreover, if depletion makes people more impulsive, then it should lead to faster responding to the provocation. In other words, reaction time to the provocation should mediate the relationship between depletion and aggressive responding. Thus, in line with our theory we put forth three specific hypotheses.

Hypotheses

Hypothesis 1. A brief, imposed decision-making delay should reduce aggression for ego-depleted participants, but only if there are consequences to aggressing.

Hypothesis 2. The aggression-reducing effects of the delay with consequences should diminish if the ability to think about consequences is disrupted by cognitive load during the delay (remembering numerical digits).

Hypothesis 3. How long participants spend considering their decision to aggress will mediate the effect of ego-depletion on aggression when there are consequences to aggressing.

Methods

Participants

Three hundred and twelve participants (55% female; mean age: 18.7; 51% Caucasian, 18% African-American, 14% Asian-American, 9% Hispanic/Latino, 8% other) from an introductory psychology class at a large university in the northeastern United States participated in this experiment. Data collection continued uninterrupted until the closure of the academic subject pool at the completion of the academic calendar. Nine participants were excluded from analyses because they either reported being aware of the deception in postexperimental interviews (seven participants), did not provide a response for the main dependent variable measure (one participant), or did not speak English and, thus, did not understand major aspects of the study (one participant).

Procedure

Participants were seated alone in a private room, where they gave informed consent and learned the study's cover story. Participants were told that they were participating in a study on virtual teamwork and that they would complete activities with another participant via computer. Participants were then told that as one of the activities, they would be writing and sharing personal essays and feedback on those essays with the other participant (confederate). They were told that as a second activity, they would select the length of time that the other participant would perform a memory-card task

involving the use of loud blasts of noise (see "Measures" section below). All participants were then instructed to write a personal essay about their favorite childhood television show and to provide feedback on an essay ostensibly written by the other participant (on a fake TV show called "Alphabet Soup"). Participants were told that they would read the feedback provided by the other participant on their essay as well as decide for how long the other participant must perform the memory card task activity in a few moments, but first they were to complete an "attention task."

Experimental design

At this point, the study took on a 2 (ego-depletion/no-depletion) × 2 (consequences/no-consequences) × 2 (no wait-delay/wait-delay) design with a subset of the "wait-delay" + "consequences" participants administered an additional cognitive load (asked to remember seven numbers during the delay). All conditions in the design are reported here. The manipulations were administered as follows. At the end of the experiment, all participants were probed for suspicion and administered a debriefing.

Ego-depletion

Participants randomly assigned to the ego-depletion condition completed a 5-minute white-bear thought suppression task while the remaining participants completed a set of basic arithmetic problems as a nondepleting control activity. The white bear thought suppression activity (Wegner, Schneider, Carter, & White, 1987) is a widely validated self-control task used in ego-depletion research (e.g., Muraven, Shmueli, & Burkley, 2006; Hagger, Wood, Stiff, & Chatzisarantis, 2010). It involves instructing the participant to write a stream-of-consciousness essay for 5 minutes while not thinking about a white bear. The basic arithmetic task is a common nondepleting control activity in ego-depletion research. It involves participants working on a set of basic multiplication problems by hand for a period of 5 minutes. Although difficult, this task requires less self-control than the white-bear activity. Indeed, much prior research has used this combination of depleting activity (white bear) and nondepleting control (arithmetic) (e.g., Baumeister, Gailliot, DeWall, & Oaten, 2006; Baumeister, Muraven, & Tice, 2000; Muraven et al., 2006; Muraven, Collins, & Neinhaus, 2002; Osgood & Muraven, 2015).

Consequences manipulation

Before being given the feedback on their personal essay that had ostensibly been written by the "other participant," those randomly assigned to the consequences manipulation were told that after they made their memory card task-decision for the other participant, the confederate would be informed of their decision and would then make decisions on their

(the real participants') behalf that would effect how long the participant would have to perform an experimental task; thus, introducing the possible threat of retaliation by the confederate for very aggressive responses. Those in the no-consequences condition were told that the confederate would have to make this decision *prior* to being informed of the participant's decision; thus, ensuring that participants believe that the confederate would not be able to retaliate. Participants were not given any personally identifying information about the confederate such as age, gender, or race. They were only told that the confederate is another student at their university.

Participants were then provided with the feedback on their essay that had been ostensibly written by the confederate. In truth, the feedback was a standard letter provided to every participant, which read: "This is one of the dumbest essays I have ever read. Only an idiot would say something like that, I can't believe you are even in college." Participants then made their decision regarding the amount of time the confederate must perform the memory card task.

Delay manipulation

Participants receiving the "no-delay" instructions were presented with the decision-making screen immediately and allowed to make their decision as quickly (or slowly) as they wanted while the computer secretly recorded how much time they used. Participants in the "wait-delay" condition viewed a loading screen that lasted for 30 seconds and told the participants that they could make their decision in "just a moment" before being taken to the decision-making screen. Thirty seconds was chosen because it is insufficient time to recover from depletion (Tyler & Burns, 2008) and is unlikely enough time to cool-off from an aggressive desire based solely on the passage of time (Blanchard & Blanchard, 1984) but should be enough time to think about the immediate consequences of aggressing.

Cognitive load

A subset of the participants assigned to the "wait-delay" + "high-consequences" condition were randomly assigned to also receive a cognitive load during the wait-delay. Participants were told this was meant to test their memory. The load involved remembering seven numbers without being able to write them down or use other external aids. The load was given immediately before reading the confederates feedback, and participants had to remember the numbers until after they had made their decision on behalf of the confederate. Prior research (Vasquez, 2009) found that maintaining a load from before the experience of the provocation until after the aggressive decision maximizes the aggressing-enhancing effect of the load. All participants were

successful in recalling at least five of the numbers in the correct order.

Measure

Aggressive behavior was measured with the amount of an unpleasant activity (memory card task) participants assigned to the confederate. The memory card task was described to participants as following: "For the amount of time you select, the other participant will play the card game "Memory" where they must remember the locations of face-down cards so to match them correctly." Each time the participant makes a mistake they will receive a loud noise blast in their ears via headphones. Each mistake will result in increased noise-blast volume. This game has been described as very unpleasant and disruptive by previous participants." Participants could choose any 1-minute interval from 0 minute (no activity) to 10 minutes or type a custom amount (between 0 and 20 minutes). The 20 minutes cap was imposed to prevent extreme responses/outliers. Our measure was created for this study and should not be confused with a similar paradigm used by Bushman and Baumeister (1998) where participants had to select the intensity of noise blast, a confederate would receive. In our paradigm, participants selected the duration that the confederate must potentially be subjected to noise blasts. Nevertheless, our task was described to participants as "very unpleasant" and "disruptive" and participants were given the option to not require the confederate perform the task at all (select 0 minutes). Thus, it is reasonable to conclude that assigning many minutes of this task captures an intention to harm others who wants to avoid that harm.

Results

Aggression-overall[1]

Aggression was measured as the duration of the unpleasant memory card task the participant assigned to the confederate. Means and standard errors for each condition are reported on Table 1 and displayed on Figure 1.

Participants were generally less aggressive when there were consequences; this main effect was significant, $F(1, 246) = 3.979$, $p = .047$, $\eta_p^2 = .016$. Although, ego-depleted participants were generally more aggressive than nondepleted participants, the main effect for ego-depletion did not quite reach traditional levels of significance, $F(1, 246) = 3.584$, $p = .060$, $\eta_p^2 = .014$. No main effect was observed for wait-delay, $F(1, 246) = .296$, $p = .587$, $\eta_p^2 = .001$. The two-way interaction of wait-delay $\times$ consequences fell slightly short of

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[1]The results presented in this section are excluding those participants who received the additional cognitive load. The results for those participants who received the additional cognitive load are presented separately in the following section.

Table 1 Means and SEM for Minutes of Unpleasant Memory Card Task Assigned to Confederate

	Thought suppression		Arithmetic		
	No-delay	Delay	No-delay	Delay	Overall
No-consequences	5.7 (1.87)	8.0 (1.27)	5.6 (1.18)	5.1 (.92)	6.3 (.64)
Consequences	6.6 (.67)	3.9 (.52)	4.6 (.51)	4.2 (.56)	4.8 (.29)
With cognitive load	–	5.3 (.74)	–	6.0 (.91)	5.7 (.59)
Overall	6.4 (.64)	5.8 (.48)	4.9 (.50)	4.5 (.43)	
	5.8 (.38)		4.7 (.33)		

traditional levels of significance, $F(1, 246) = 3.722$, $p = .055$, $\eta_p^2 = .015$. In other words, a wait-delay was effective in reducing aggression so long as the delay could be used to think about the consequences of being aggressive. Neither the two-way interaction of wait-delay × ego-depletion [$F(1, 246) = .031$, $p = .861$, $\eta_p^2 = .000$], nor the two-way interaction of consequences × ego-depletion [$F(1, 246) = .271$, $p = .603$, $\eta_p^2 = .001$] were near statistical significance. As predicted, the three-way interaction of ego-depletion × consequences × wait-delay on aggression was significant, $F(1, 246) = 4.181$, $p = .042$, $\eta_p^2 = .017$.[2] With a significant interaction, we proceeded to test the specific *a priori* effects and interactions outlined in our hypotheses.

As predicted, the two-way wait-delay × consequences interaction was significant for depleted participants, $F(1,121) = 6.123$, $p = .015$, $\eta_p^2 = .048$. Simple effects analyses revealed that ego-depleted participants were less aggressive following a delay with consequences, (mean difference = −2.72 minutes, 95% CI [−4.49, −.95], $p = .003$), whereas they were actually more aggressive following a delay with no consequences, although this nonpredicted effect was not statistically significant, (mean difference = 2.26 minutes, 95% CI [−.916, 5.43], $p = .163$). However, following a delay, ego-depletion participants without consequences were significantly more aggressive than ego-depletion participants with consequences (mean difference = 4.06 minutes, 95% CI [1.95, 6.18], $p < .001$). The interaction of wait-delay X consequences for nonego-depleted participants was not significant, $F(1, 125) = .009$, $p = .925$, $\eta_p^2 = .000$. No simple effects within this two-way interaction were significant. In other words, the effect of a delay was most profound following ego-depletion. After ego-depletion, a brief delay that helped participants think about consequences significantly decreased aggression. Conversely, when there were no consequences, ego-depleted people were actually more aggressive following a brief delay.

Cognitive load and aggression

Consistent with hypothesis two, when a cognitive load accompanied the wait-delay, ego-depleted participants who had consequences were no longer significantly less aggressive than ego-depleted participants who had not waited (mean difference = −1.28 minutes, 95% CI [−3.42, .860], $p = .240$). In other words, the cognitive load counteracted the effect of the 30-second delay for ego-depleted participants. Furthermore, even the nondepleted participants who had consequences were more aggressive while under a cognitive load than nondepleted participants who had consequences but were not under a cognitive load. Overall, participants who had consequences and whose wait was accompanied by a cognitive load were more aggressive than participants who had the wait-delay and consequences but no cognitive load (mean difference = −1.63 minutes 95% CI [−2.96, −.298], $p = .017$, $d = .42$).

Ego-depletion and reaction times to aggressive trigger

As predicted in hypothesis 3, *without* an extra wait-delay of 30 seconds, ego-depleted participants who had consequences spent less time (fewer seconds) making their decision on how much to aggress ($M = 9.89$, $SD = 7.03$) than control participants ($M = 16.20$, $SD = 13.34$; $t(72) = 2.81$, $p = .006$, $d = .69$. Furthermore, this difference in decision-making time mediated the effect of ego-depletion on aggression for participants who had consequences (see Figure 2). This mediation (indirect effect) was significant using the Preacher and Hayes (2004) bootstrapping method, 95% CI [.0591, 1.153] with 5,000 resamples. This suggests that depletion leads to quicker responding and less consideration of the consequences, thereby increasing aggression.

Discussion

In lay terms, our results suggest that ego-depletion makes people respond more quickly with their "gut" reactions (immediate urges/impulses), whereas nondepleted people seem to move past their "gut" reactions and consider the

[2]Including the participants who were given an additional cognitive load, $F(1, 295) = 4.685$, $p = .031$, $\eta_p^2 = 0.016$.

situation more carefully before responding. Indeed, in our study, ego-depleted participants responded much more quickly to an aggressive trigger than nondepleted participants; this difference mediated the effect of ego-depletion on

Figure 1 Minutes of unpleasant memory card task assigned to confederate. Error bars represent standard errors.

aggression. Similarly, without an extra delay, ego-depleted participants were aggressive regardless of consequences, whereas nondepleted participants were less aggressive with consequences. With an imposed wait-delay, ego-depleted people move past their "gut" reactions and think more carefully about how they would like to respond. One could imagine that this could either result in an increase or decrease in aggression (as both heating-up and cooling-down processes would be at work).

On the one hand, if there are consequences to aggressing, a more thoughtful reaction will probably be less aggressive. Indeed, in our study, ego-depleted participants were less aggressive following a wait-delay when there were consequences to aggressing. This also suggests that ego-depleted people may retain the capability to suppress aggression, at least in response to the relatively low-intensity triggers used in this experiment. Additionally, a more thoughtful response may involve an attempt to downregulate ones negative emotions using emotion regulation. On the other hand, more thinking may heat-up aggression. For example, people may ruminate on the offense or fail at emotion regulation, which could make them even angrier. We might expect this to be particularly true of ego-depleted people as ego-depletion
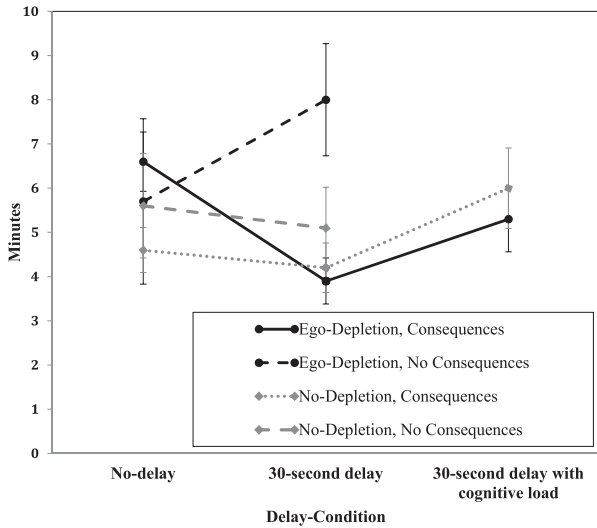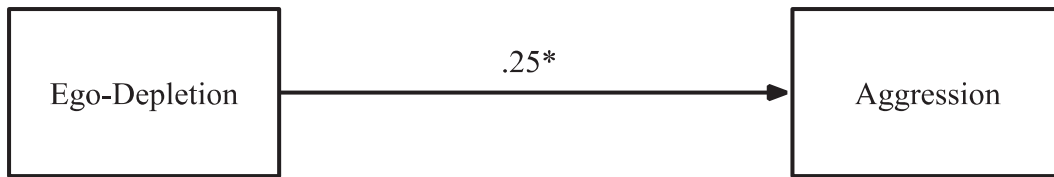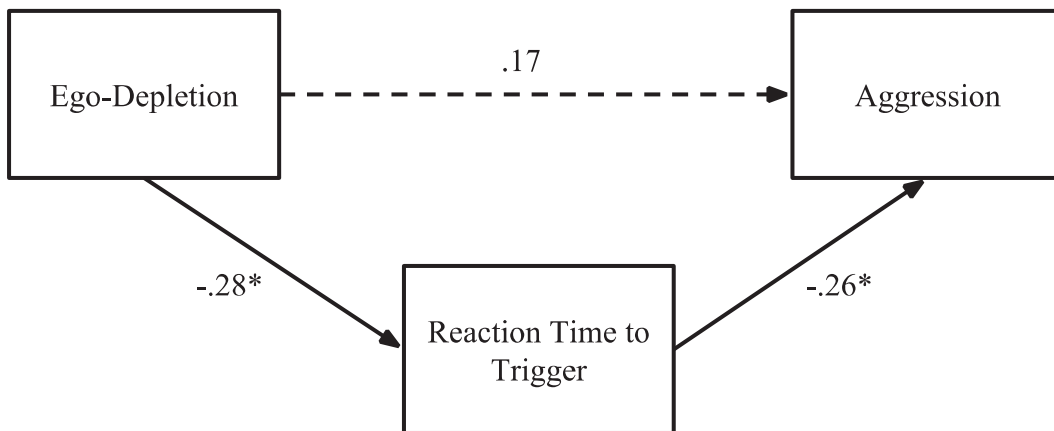

a.   Direct Pathway

Figure 2 Mediation of reaction time to trigger on ego-depletion and aggression. Model only includes participants who had consequences and no extra wait-delay imposed. Coefficients are standardized beta-weights. * indicates $p < .05$.

undermines emotion regulation (Vohs & Heatherton, 2000) and may increase susceptibility to rumination (see Denson et al., 2011). Indeed, without consequences, ego-depleted participants in our study were actually more aggressive following an extra wait-delay. However, the intensifying effects of a delay on aggression following ego-depletion were not the focus of the present investigation. As such, future research should explore this additional effect more carefully.

Thus, whether a brief delay decreases or increases aggression seems to depend on the individuals' current amount of self-control, as well as the relative breakdown of factors that either heat-up or cool-down aggression. A brief delay appears to help reduce aggression if it enables people to think more carefully about consequences or other cooling-down factors. Our results support this interpretation. When the ability to think during the wait-delay was disrupted by a cognitive load, the delay no longer significantly reduced aggression for ego-depleted participants with consequences. Similarly, non-depleted participants with consequences were more aggressive while under cognitive load. These findings suggest that the delay is helpful because it enables ego-depleted individuals to consider cooling-down factors such as consequences. However, it is possible that the cognitive load may have disrupted some other "cooling-down" process that we did not investigate.

In general, our results show that when self-control is low, people are more affected (both positively and negatively) by an imposed wait-delay, whereas people with higher state self-control seem to stay the same following an imposed wait-delay. We suggest two reasons for this: First, people with higher state self-control are less likely to respond with their "gut" reactions in the first place (Baumeister, 2002; Evenden, 1999). Instead, they respond more slowly, using more time to think. For this reason, their initial decisions may already consider factors like consequences (and blame) and possibly some attempt at emotion regulation. Second, people with higher state self-control are likely better able to resist the emotionally heating influence of rumination and are, thus, less likely to increase their aggression following a brief delay and less aggressive in general.

This finding has important applied implications. Most importantly, this research demonstrates when and how imposing a brief delay may help reduce aggression. Another applied implication is that programs aimed at reducing aggression in low self-control individuals (e.g., highly impulsive school children) may not succeed with strong deterrents alone (e.g., harsher penalties for aggressing) as these individuals are not likely to fully consider those deterrents prior to aggressing anyhow. Indeed, a plethora of past research suggests that stiffer penalties (over moderate ones) for aggressing tend to not yield meaningful results in low self-control children. In clinical settings, practitioners working with low self-control individuals may use this research to support techniques aimed at training patients to delay their responses before responding to an aggressive trigger. Moreover, our observation that a cognitive load reversed the effect of the brief delay suggests that very brief distractions are not likely effective methods for reducing aggression. Although, it may be possible that lengthy distractions may be helpful (Bushman, 2002). Finally, this research suggests that all people must be careful to not respond too quickly to aggressive triggers whenever they are ego-depleted.

This research is not without limitations. First, although, we had a relatively large sample size, reasonable caution should always be taken when interpreting results based on a single study. Second, we did not directly measure with self-reports the degree to which participants thought about the potential consequences of being aggressive. However, self-report measures are often unreliable. Moreover, this limitation does not diminish the applied significance of our finding. Nevertheless, in light of this limitation, it is important to consider alternative explanations.

The main alternative explanation is that the delay simply gave ego-depleted participants extra time to suppress an aggressive response but that participants would only choose to do so if they had previously identified consequences. In other words, the delay did not help depleted participants to think about consequences more carefully, but enabled them to act on those cognitions. However, this does not seem as likely, as it would suggest that without the delay, ego-depleted participants did fully consider the consequences but chose to aggress anyway. In sum, we find that the most parsimonious explanation for all of these effects is our hypothesis that depleted participants are often more aggressive because they respond too quickly to adequately consider the consequences.

We hope future research will investigate the generalizability of our effects to other methods of ego-depletion, measures of aggression, and manipulations of consequences. For example, in most real world situations, the consequences of aggression are likely interpersonal rather than physical. More broadly, our finding that ego-depleted participants reacted more quickly to an aggressive trigger may suggest that ego-depletion decreases the amount of time people use making decisions following an emotional trigger in general. If so, this may have important implications beyond aggression. For example, perhaps ego-depletion effects on impulsive shopping, overeating, and alcohol consumption can be explained by acting quickly before fully considering ones options and consequences. Indeed, prior research suggests that low self-control is related to drinking without actively considering consequences (Osgood & Muraven, in press).

Finally, it is important that we provide some perspective on these results. First, even after the identification of consequences, aggressive urges and heating-up factors will

continue to motivate the individual to aggress. Therefore, an effortful suppression of that decision may still require self-control and fail if either the motivation to aggress is very strong or the individuals' self-control is much compromised. However, in most day-to-day situations, the motivation to avoid consequences (e.g., losing one's job) is likely to outweigh the desire to aggress (to "tell-off" a rude customer). Second, ego-depleted people may think about the consequences of aggressing but not *fully* or *adequately* do so. For example, people may simply discount delayed consequences more immediately following ego-depletion, but less so with a delay. This would still fit with our overall model (that ego-depleted people do not fully consider consequences) but would suggest that they were considering them somewhat, but perhaps at a different level of construal, not as carefully, or less so than instigating factors. Finally, if ego-depleted participants respond quickly to triggers, this would mean that they would also fail to engage in other "cooling-down" processes, such as considering the mitigating circumstances or attributing the offense to something nonpersonal. Future research should investigate this. Our findings also reveal other areas that will also require future research. For example, it is still not clear why ego-depleted participants respond more quickly in the first place. One possibility is that they are less able or motivated to suppress their immediate urge to aggress to move on to "cooling-down" factors. Yet another possibility may be related to recent work (Schmeichel, Harmon-Jones, & Harmon-Jones, 2010) suggesting that ego-depletion increases approach motivation and reward sensitivity. Ultimately, future research is needed to elucidate this and other important details surrounding the relationship between self-control and aggression. However, in the end, it would seem that there might be some qualified utility in counting-to-ten after all.

Acknowledgments

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