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Forgiveness as a mechanism of self-regulation : an ego-depletion model

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Abstract

Revenge is the natural human response to interpersonal transgressions. However, given the benefits of forgiveness, it is important to consider how forgiveness can be facilitated. Many factors have been shown to be associated with forgiveness, ranging from situational factors (e.g., perception of the transgression) to dispositional factors (e.g., personality traits). This study aims to extend research on the factors that are associated with forgiveness, and determine the processes on which forgiveness relies. To demonstrate that forgiveness requires self-regulation, Study 1 examines if ego-depletion decreases willingness to forgive, and Study 2 examines if glucose consumption can negate this ego-depletion effect. Results supported the ego-depletion model of forgiveness.

Forgiveness as a Mechanism of Self-Regulation: An Ego-Depletion Model

Transgressions are inevitable aspects of interpersonal relationships (Worthington, Sharp, Lerner, & Sharp, 2006). Therefore, considering the fundamental role of interpersonal relationships in the development of personal identity, it is important to understand the process of forgiveness and its role in relationship maintenance (Leary, Tambor, Terdal, & Downs, 1995). In general, forgiveness is often defined as the "reduction of negative motivations" and the "re-establishment of positive motivations" towards a transgressor (Bono, McCullough, & Root, 2008). Researchers have also conceptualized forgiveness as a "transformation of motivation," in which individuals devalue their immediate self-interest and act on the basis of broader considerations such as personal values, long-term goals, and concern for the transgressor's well-being (Karremans, Van Lange, Ouwerkerk, & Kluwer, 2003). Alternatively, forgiveness can be understood as "the victim's resumption of pre-betrayal behavioral tendencies," suggesting that a victim pretends that the transgression never even happened (Finkel, Rusbult, Kumashrio, & Hannon, 2002). Despite these various approaches to the concept of forgiveness, one aspect remains constant no matter which definition you choose to endorse; in all instances, the victim chooses to behave in a positive manner toward the transgressor, as opposed to obeying his or her immediate impulses for vengeance and retribution.

Many benefits of forgiveness have been demonstrated by past research including physiological benefits such as lower heart rate and blood pressure, as well as psychological benefits such as reduced depressive symptoms, decreased levels of stress, improved relationships, and increased levels of altruism (Karremans, Van Lange, Ouwerkerk, & Kluwer, 2003; Lawler et al., 2003; Lawler et al., 2005). However, based on interdependence theory, our

immediate reactions to betrayal rarely involve forgiveness; victims tend to have a natural impulse for revenge, making forgiveness a challenging process that requires some sort of self-control (Finkel, Rusbult, Kumashiro, & Hannon, 2002). A plethora of research has examined what factors might predict individuals' willingness to forgo revenge in favor of forgiveness; a recent meta-analysis on forgiveness literature suggests three main types of predictors: (a) cognitive factors, (b) affective factors, and (c) relationship constraints (Fehr, Gelfand, & Nag, 2010).

Predictors of Forgiveness: A Three-Part Model

Cognitive factors refer to how victims make sense of transgressions and their perpetrators. Certain situational cognitive factors have been found to be negatively associated with forgiveness, such as perpetrator responsibility, perpetrator intent, harm severity, and rumination (Fehr et al., 2010). In other words, a victim is less likely to forgive when the perpetrator is perceived to be responsible for the transgression, when the transgression is perceived as intentional and severely harmful, and when the victim adopts a ruminative coping style. However, when the perpetrator offers an apology, victims are significantly more likely to forgive (Fehr et al., 2010). In addition, dispositional, stable personality traits, such as agreeableness and perspective-taking have all been found to be positive predictors of forgiveness, suggesting that forgiveness is more likely to occur when the victim is the type of person who tends to get along well with others, consider others' points of view, and forgives across situations and time (Fehr et al., 2010).

Victims' affect has also been found to influence willingness to forgive. State empathy has been found to be positively associated with forgiveness, suggesting that feelings of warmth towards the perpetrator can help promote forgiveness (Fehr et al., 2010). On the other hand, state

anger and negative mood have been found to be negatively associated with forgiveness (Fehr et al., 2010). In addition, various dispositional affective factors such as neuroticism, trait anger, and depression have all been found to be negatively associated with forgiveness, suggesting that predispositions to such negative affectivities can hinder forgiveness processes (Fehr et al., 2010). Conversely, empathic concern has been found to be positively associated with forgiveness, suggesting that a dispositional tendency to connect emotionally with other people can influence greater forgiveness (Fehr et al., 2010).

Constraints, which refer to the implications of *unforgiveness*, or the perceived consequences of *not* forgiving, have also been found to be associated with forgiveness (Fehr et al., 2010). For example, relationship closeness has been found to predict forgiveness, suggesting that closeness fosters a long-term orientation that enhances victim motivation for relationship preservation, thus making unforgiveness an unattractive option (Fehr et al., 2010). Relationship commitment has also been found to predict forgiveness; participants high in relationship commitment tend to exhibit more positive emotional, cognitive, and behavioral reactions to transgressions, whereas those who are less committed show fewer forgiveness tendencies (Finkel et al., 2002). This suggests that since relationship maintenance is an inherent goal of a committed relationship, unforgiveness becomes an obstacle in achieving that goal, thus making forgiveness the optimal choice (Fehr et al., 2010). Additionally, forgiveness is also positively associated with relationship satisfaction, which has been found to decrease victims' responsibility attributions, increase empathy, and decrease negative affect (Fehr et al., 2010). Socio-moral constraints of religiosity and social desirability have also been found to be positively associated with forgiveness, suggesting that victims are motivated to forgive to adhere to religion and to maintain a socially desirable image (Fehr et al., 2010).

The current study aims to understand predictors of forgiveness from a different perspective not contingent on the three-part forgiveness model mentioned above. I intend to examine self-regulation as another key theoretical perspective for understanding what makes forgiveness more attainable. Specifically, I draw on self-regulation theories to explore willingness to forgive. Before moving into the conceptualization of the current paper, I first elaborate on theories of self-regulation in general.

Self-Regulation: Ego-Depletion

Self-regulation is essentially another word for self-control, or the "systematic effort" to direct one's thoughts, feelings, and actions toward the achievement of a specific goal (Zimmerman, 2000). However, since not all of our goals in life are consistent, our ability to self-regulate can become compromised. For example, a college student's goal to achieve good grades may clash with their goal to maintain an exciting social life. The student must "force" him or herself to self-regulate in one domain (e.g., stay in and study on a Saturday night instead of attending a friend's party) in order to achieve their goal in the academic domain. In other words, it takes a significant amount of effort to sacrifice one goal for another (Baumeister, Bratslavsky, Muraven, & Tice, 1998).

The ego-depletion model of self-regulation asserts that all forms of self-regulation rely on one limited energy source, meaning that engagement in one act of self-regulation can impair subsequent attempts at self-control (Baumeister et al., 1998). A large portion of self-regulation research has focused on different factors that might affect an individual's ability to self-regulate, especially since individuals are often not consciously aware of the effects of depleting tasks as they experience them (Finkel, Campbell, & Brunell, 2006). For example, studies have found that coping with stigma can impair self regulation in unrelated domains (Inzlicht, McKay, &

Aronson, 2006). Other studies suggest that self-presentation under challenging conditions can lead to ego-depletion (Vohs, Baumeister, & Ciarocco, 2005). Self-regulation can also be weakened by social exclusion; for example, participants who were primed to anticipate a lonely future were less able to make themselves consume a healthy, bad-tasting beverage (Baumeister, DeWall, Ciarocco, & Twenge, 2005). In addition, participants who were told that no one else in their group wanted to work with them ate more cookies that those who were not told this, demonstrating a lack of self-control (Baumeister et al., 2005). Excluded participants also quit sooner on frustrating tasks and performed worse on attention regulation tasks (Baumeister et al., 2005). This is consistent with other studies that indicate the role of emotions in our ability to self-regulate; whereas positive emotions have been found to facilitate self-regulation, negative emotions tend to impair self-regulation (Tice, Baumeister, & Zhang, 2004).

In addition to the various factors that can lead to impaired self-regulation, studies have also found that self-regulation itself can impact a variety of domains. For example, physiological domains are susceptible to the effects of ego-depletion; research shows that an affect-regulation exercise caused subsequent decrements in endurance at squeezing a handgrip (Muraven, Tice, & Baumeister, 1998). Persistence on unsolvable tasks is also vulnerable to ego-depletion; for example, participants who engaged in a thought-control gave up more quickly on a subsequent anagram task (Muraven et al., 1998). Ego-depletion can also contribute to greater temptation to drink; low levels of self-regulation predict heavy episodic drinking and alcohol-related problems (Quinn & Fromme, 2010). Depleted individuals are less able to practice sexual restraint (Gailliot & Baumeister, 2007), more likely to engage in impulse buying (Vohs & Faber, 2007), less likely to engage in helping behaviors (DeWall, Baumeister, Gailliot, & Maner, 2008), and less able to suppress stereotypes (Gordijn, Hindriks, Koomen, Dijksterhuis, & Van Knippenberg, 2004).

Self-Regulation: Replenishment

Another large portion of self-regulation research focuses on possible ways in which this resource can be replenished. For example, self-regulation impairments have been shown to be preventable through emotion manipulation. Depleted participants who received a small gift from the researcher drank the same amount of a bad-tasting drink as those who were not depleted, suggesting that positive emotions elicited from receiving gifts can help negate the effects of ego-depletion (Tice, Baumeister, Shmueli, & Muraven, 2007). This study also found that participants who had watched a comedic video clip persisted longer on subsequent unsolvable self-regulation tasks than those who had watched a neutral video clip (Tice et al., 2007). Similarly, ego-depletion effects in rejected individuals can be eliminated by offering monetary incentive or by increasing self-awareness, suggesting that even when we are capable of self-regulation, we do not necessarily make the effort to employ it (Tice et al., 2007).

Time is another factor that has been found to contribute to replenishment of self-regulation. When depleted participants received a 10-minute period between regulatory tasks, their performance on a subsequent regulatory task was equal to the performance of non-depleted participants (Tyler & Burns, 2008). Additionally, when participants were given only a 3-minute period between regulatory tasks, depletion effects were avoided when the participants were told to relax as much as possible as they listened to classical music, showing that even a brief interval may help to replenish the self when the importance of relaxation is emphasized.

The formation of implementation intentions (the specific plans made in advance to attain a self-assigned goal) have been shown to help overcome ego-depletion as well (Webb & Sheeran, 2003). Participants who verbalized to themselves how to solve the Stroop Task by stating, “As soon as I see the word I will ignore its meaning,” did not show depletion effects in

the subsequent self-regulatory task (an unsolvable tracing puzzle). Furthermore, depleted participants who formed implementation intentions completed the Stroop task quicker and with fewer errors than those who had not, also suggesting that implementation intentions offset the effects of ego-depletion on performance (Webb & Sheeran, 2003).

In addition to positive emotions, time, and implementation intentions as forms of replenishment, glucose consumption has been found to buffer against ego-depletion. Given that acts of self-regulation can contribute to reduced levels of blood glucose, which in turn predict poor performance on subsequent self-regulation tasks, consumption of glucose after initial depletion has been shown to eliminate the usual impairments of self-regulation (Gailliot et al., 2007). Other studies have indicated a correlation between blood glucose and internal states. Specifically, low blood glucose levels have been found to be associated with negative mood states, while high blood glucose levels have been found to be associated with positive mood states (Gonder-Frederick, Cox, Bobbitt, & Pennebaker, 1989). However, glucose is not the only physiological component that is associated with self-regulation. Participants who were told to eat carrots and resist cookies had greater heart rate variability (HRV) that those who were told to eat cookies and resist carrots (Segerstrom & Nes, 2007). The fact that this persistence at a subsequent self-regulation task after depletion was positively correlated with higher baseline heart rate variability (HRV) suggests that HRV can not only provide an index of self-regulation, but can be manipulated in order to facilitate self-regulation. Other theories argue that replenishment depends on an individual's level of self-regulatory strength; according to the muscle-metaphor model of self-regulation, regular self-regulatory "exercise" can produce broad improvements, making people less vulnerable to ego-depletion (Baumeister, Gailliot, DeWall, & Oaten, 2006).

The Present Study

Given that ego-depletion can moderate the effects of many traits on behaviors in domains such as dieting, stereotype suppression, temptation to drink, sexual infidelity, social interactions, and self-presentation (Baumeister et al., 2006), it is expected that other areas associated with interpersonal interaction involve self-regulation as well (Fitzsimones & Finkel, 2010). Specifically, this study aims to demonstrate the role of self-regulation in forgiveness processes. According to the ego-depletion model, all forms of self-control rely on a limited energy source, which means that engagement in one act of self-control impairs other attempts at self-control, and because forgiveness involves the repression of innate emotional responses like anger and resentment, it requires self-control and self-regulation (Baumeister, Bratslavsky, Muraven, & Tice, 1998). This is consistent with interdependence theory which states that our immediate reactions to betrayal are often antithetical to forgiveness; suggesting that forgiveness involves the repression of innate emotional responses like anger and resentment and therefore requires self-regulation (Finkel, Rusbult, Kumashiro, & Hannon, 2002). In other words, forgiveness involves a transformation of motivation, which allows us to act on the basis of broader goals (e.g., maintenance of a romantic relationship).

Furthermore, I build on the glucose model of self-control to examine the role of sugar in negating the depletion effects on forgiveness. For example, recent research has indicated that higher type 2 diabetic symptoms were negatively correlated with a dispositional tendency to forgive (DeWall, Pond, & Bushman, 2010). Considering that diabetes involves irregular blood glucose levels, this is consistent with the findings that blood glucose levels drop during self-regulatory tasks, and therefore not only suggests that self-regulation plays a role in willingness to forgive, but that forgiveness can possibly be replenished by adjustment of blood glucose levels.

Namely, in the current study, based on past self-regulation theorizing, I hypothesize that (1) willingness to forgive will be lower for depleted participants compared to non-depleted participants, and (2) willingness to forgive will not differ between depleted and non-depleted participants when glucose has been consumed post-depletion.

Method

Study 1

Participants. I recruited undergraduate students (N = 67; women = 47) with varying ages (M = 19.49, SD = 1.36, range = 5) from the University of Richmond; participants either received class credit toward their introductory psychology class or $5.00 compensation for their participation. Approximately 60% of the participants were White (12% Asian American, 15% Black or African American, 6% Hispanic or Latino, 7% other). I told all participants that they were participating in a study on interpersonal relationships.

Procedure. Participants were assigned to one of two experimental conditions: control/no depletion or depletion. Participants ("Players") completed a 3-5 minute collaborative computerized maze task with a confederate ("Coach"). The task required the Player to use the verbal instructions from the Coach to navigate an imaginary maze. If the Player was assigned to the depletion condition, then the Coach would give confusing, hard-to-follow directions. If the Player was assigned the control condition, then the Coach would give clear, easy-to-follow directions.

Next, participants completed an "unrelated survey about interpersonal relationships." The survey was designed to measure willingness to forgive and included the Positive Affect /Negative Affect Scale (PANAS: Watson et al., 1988) and the Romantic Dissatisfaction

Resolution Scale (ENVL: Rusbult et al., 1982). The PANAS consists of a 20-item questionnaire (e.g., on a scale from 1-5, indicate how strongly you feel the following emotion at this moment: irritable). The negative affect subscale exhibited good reliability, $\alpha = .84$, as did the positive affect subscale, $\alpha = .89$. The ENVL scale consists of a 12-item accommodation questionnaire (e.g., on a scale from 0-8 indicate how likely you are to react to the hypothetical incident: "During an argument, your partner says, 'sometimes I think I'd be better off without you'") (Rusbult et al., 1982). For the analyses, I examined item 3 of the ENVL scale, which states, "Your partner promises to return some books to the library for you, but he/she forgets to return them and then says he/she has more important things to do than run your errands." For this specific item, the ENVL exhibited adequate reliability, $\alpha = .64$.

Study 2

Participants. We recruited undergraduate students (N = 81; women = 54) with varying ages (M = 18.94, SD = 1.29) from the University of Richmond; 46 participants received credit toward their introductory psychology class, 14 received credit toward their introductory leadership class, and the remaining 11 participants received $5.00 compensation for their participation. Approximately 89% of participants were White (10% Asian American, 1% Black or African American). I told all participants that they were participating in a study on thirst and memory.

Procedure. I used a 2 (Depletion/No Depletion) X 2 (Sugar/Sugar-free) design. Thus, I randomly assigned participants to one of four conditions (1=No Depletion/Sugar, 2= No Depletion/Sugar-free, 3=Depletion/Sugar, 4=Depletion/Sugar-free). In all conditions, participants first watched a 6-minute videotape (without audio) of a woman being interviewed by

a person located off-camera. In addition, a series of common one-syllable words (e.g., tree) appeared at the bottom of the screen for 10 seconds each. However, those in the depletion conditions were told "not to read or look at any words that may appear on the screen" and to redirect their gaze immediately if they caught themselves looking at the words instead of the woman's face. Those in the non-depletion condition were not given any instructions about the words. After watching the video, participants drank a 6 oz. cup of lemonade (sugar or sugar-free, depending on the predetermined condition) and completed a brief thirst scale and memory questionnaire. They were told that they had exactly 5 minutes to complete the questionnaire and drink the entire cup of lemonade and to wait patiently if they finished before the 5 minutes were up. After 5 minutes, participants were told that since there was still about 15 minutes left, their extra time would be greatly appreciated in order to help Dr. Richardson from Virginia Tech University gather data for his relationships study. It was specified that this study was separate from the study in which they just participated. They were asked to open up a minimized link on their computer screens, instructed to enter their given ID number, and then told to continue the survey until they reached the end.

The survey was designed to measure willingness to forgive and included the Positive Affect /Negative Affect Scale (PANAS: Watson et al., 1988) and the Romantic Dissatisfaction Resolution Scale (ENVL: Rusbult et al., 1982). The negative affect subscale of the PANAS exhibited good reliability, $\alpha = .89$, as did the positive affect subscale, $\alpha = .83$. For the analyses, I examined item 3 of the ENVL scale ("Your partner borrows something of yours, ruins it, and seems to shrug it off"), although this item exhibited low reliability, $\alpha = .37$. After all participants were finished, they were debriefed and either reimbursed for their time or given the appropriate course credit.

Results

Study 1

An independent sample t-test indicated that depleted individuals (M = 1.36, SD = 0.45) did not differ from non-depleted individuals (M = 1.55, SD = 0.57) on negative affect, t(65) = -1.46, p = 0.15. An independent sample t-test also indicated that depleted individuals (M = 2.28, SD = 0.81) did not differ from non-depleted individuals (M = 2.54, SD = 0.70) on positive affect, t(65) = -1.39, p = 0.17.

Participants' reactions to hypothetical incidents of transgression as assessed by the ENVL scale served as the dependent measure. My primary prediction was that depleted participants' level of accommodation in their reactions would indicate a depletion effect; specifically, depleted participants would react with less accommodation than those who were not depleted. As expected, an ANCOVA analysis revealed that the self-regulation condition significantly influenced forgiveness F(1, 64) = 9.92, p = .002; depleted participants were less likely to forgive (M = 3.16, SD = 1.50) than non-depleted participants (M = 4.35, SD = 1.57) even after controlling for negative and positive affect.

Study 2

ANOVA analyses indicated no significant differences in affect by condition or their interaction. Specifically, there was no significant effect of depletion, F(77) = 1.59, p = .21, no significant effect of sugar F(77) = .34, p = .56, and no significant effect of their interaction, F(77) = 1.55, p = .22, on positive affect. There was also no significant effect of depletion, F(77) = .07, p = .80, no significant effect of sugar, F(77) = .16, p = .69, and no significant effect of their interaction F(77) = 2.22, p = .14 on negative affect.

As expected, ANCOVA analyses indicated a main effect of depletion on forgiveness, $F(77) = 3.93$, $p = .05$, where depleted participants were less likely to forgive ($M = 3.56$) than non-depleted participants ($M = 4.16$). There was no main effect of sugar on forgiveness, $F(77) = 1.43$, $p = .24$, indicating that participants who consumed the sugar lemonade ($M = 4.04$) did not differ in forgiveness from those who consumed the sugar-free lemonade ($M = 3.68$). Finally, also as expected, the interaction (see Figure 1) between self-regulation condition and sugar condition was significant, $F(77) = 4.73$, $p = .03$; depleted participants who received sugar lemonade were more likely to forgive ($M = 4.08$) than depleted participants who received sugar-free lemonade ($M = 3.04$). Also as expected, non-depleted participants who received sugar lemonade ($M = 4.01$) did not differ in forgiveness from non-depleted participants who received sugar-free lemonade ($M = 4.32$). Both the significant main effect of depletion and the significant interaction effect were observed for item 7 of the ENVL scale.

Discussion

Overall, the results supported my main hypotheses. In Study 1, participants who were depleted were less likely to forgive than those who were not depleted, suggesting that forgiveness is a mechanism of self-regulation. Study 2 also demonstrated this depletion effect on forgiveness, in addition to a replenishment effect. Specifically, depleted participants who consumed sugar lemonade were not any less likely to forgive than non-depleted participants, suggesting that consumption of sugar post-depletion prevents the depletion effect on forgiveness.

However, only certain items of the ENVL scale exhibited these effects for each study. In Study 1, these effects were only significant for item 3 of the forgiveness measure, which states, “Your partner promises to return some books to the library for you, but he/she forgets to return

them and then says he/she has more important things to do than run your errands." Forgiveness may have been most susceptible to ego-depletion for this specific scenario since it is a situation that is highly prevalent for college students and therefore something with which most participants of this study would have been able to identify. Furthermore, participants may have been more likely to have experienced this hypothetical situation in real life, which may have better enabled them to assess the degree to which they would react since they would have been able to base their responses on their actual past reactions.

In Study 2, only item 7 of the ENVL scale exhibited significance; item 7 states, "Your partner borrows something of yours, ruins it, and seems to shrug it off." It is unknown why this specific item would have been the most susceptible to ego-depletion; however, given most participants were first-year college students who had never lived in such close quarters with a significant other beforehand, it is possible that perhaps the notion of "lending" was not as common for them as it now may be in college. This would suggest that participants may have been especially sensitive to a situation in which one's partner ruins a borrowed item, and therefore less likely to forgive when depleted.

Given prior depletion research suggests that ego-depletion can be buffered through glucose consumption (Gailliot et al., 2007), it is therefore suggested that forgiveness is a process of self-regulation. These results support the strength model of self-regulation; namely, that self-control relies on a limited energy source. Like a muscle, self-control becomes fatigued by exertion and therefore less able to function (Muraven & Baumeister, 2000). Furthermore, this muscle metaphor of self-control also suggests that in the same way a muscle can be strengthened through regular exercise, so can one's ability to exert self-control. Given the present findings that demonstrate forgiveness as a mechanism of self-control, this suggests that one's ability to be

forgiving can be increased through repetition. The self-regulation model of forgiveness is also supported by the fact that forgiveness was replenished by glucose consumption (given past research that suggests self-control depends on glucose).

These findings are consistent with past research that suggests cognitive processes consume energy in the same way that physical action does (Gailliot et al., 2007). According to the "last-in, first-out" rule, cognitive abilities that are the last to develop are the first to become impaired when resources are compromised (Gailliot et al., 2007). Based on this theory, the fact that small acts of self-control can impair subsequent self-control suggests that self-control is therefore a relatively "new" human characteristic. Thus, given the fact that the present findings suggest forgiveness is susceptible to this depletion effect as well, it is likely that forgiveness is also a relatively "new" phenomenon. As a non-instinctive process, forgiveness perhaps only developed as interpersonal relationships became more important for survival.

Finally, it is important to note that the present findings were not driven by negative or positive affect, suggesting that ego-depletion played the main role in effect on forgiveness. Given past research on the role of emotions in self-regulation, such that positive emotions can have a replenishing effect themselves, it was important to control for this variable in order to show that the sugar was in fact the actual mode of replenishment.

Limitations/Future Research

However, it is possible that there are other variables besides affect that might moderate or mediate the depletion effect on forgiveness. Based on the three-part forgiveness model, affective factors are only one type of predictor of forgiveness (Fehr et al., 2010). Future research should control for cognitive factors, such as whether or not the victim perceives the transgression as intended, as well as relationship constraints, such as relationship closeness and commitment.

Future research should also focus on the role of self-regulation in other interpersonal processes besides forgiveness. For example, with respect to interpersonal conflict, processes of apologizing, blaming, transgressing, or retaliating can be tested in the same way that this study looked at processes of forgiveness. The role of self-regulation is still unknown for many different behaviors, such as willingness to confide in others, tendencies for co-rumination, and even one's ability to offer constructive advice to a friend.

The role of one's implicit theories of self-regulation should also be studied in relation to forgiveness. Given studies that have found implicit theories about willpower can affect performance on subsequent self-regulation tasks (Job, Dweck, & Walton, 2010), it would be expected that implicit theories would also influence forgiveness. Specifically, whether a person believes that self-regulation is a fixed trait versus a malleable trait may mediate the effect of depletion on willingness to forgive.

Finally, this study may have been limited by its measures. Firstly, item 7 of the ENVL scale exhibited low reliability for Study 2, indicating inadequate consistency of the ENVL. In addition, according to affective and behavioral forecasting literature, people are generally poor predictors of their future feelings and/or behaviors (De Cremer, Pillutla, & Folmer, 2011); therefore, it is possible that the ENVL scale, as a self-report questionnaire, was not able to accurately assess participants' true willingness to forgive. For these reasons, this study should be replicated to assess forgiveness in real-life transgressions, as opposed to hypothetical transgressions.

Conclusion

In summary, I found partial support for my two primary hypotheses. Namely, forgiveness is less likely to occur when an individual is depleted, but this willingness to forgive can be

replenished through the consumption of sugar. These findings were driven by ego-depletion rather than negative or positive affect, suggesting forgiveness, as a mechanism of self-regulation, is an expendable resource. Future work should continue to consider applications of the current work, such as other modes of replenishment and other interpersonal domains that may also rely on self-regulation.

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Appendix A:

PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to the word. Indicate to what extent you feel this way at this moment. Use the following scale to record your answers.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

____ interested	____ irritable
____ distressed	____ alert
____ excited	____ ashamed
____ upset	____ inspired
____ strong	____ nervous
____ guilty	____ determined
____ scared	____ attentive
____ hostile	____ jittery
____ enthusiastic	____ active
____ proud	____ afraid

Appendix B:

ENVL SCALE

We list four possible reactions to each of the following hypothetical incidents. Please use the following scale to describe the degree to which you would react in each way. For each incident, please record a rating for all possible responses (i.e. indicate how likely you are to react in each way). Imagine that your current or most recent romantic partner committed the following offenses:

0	1	2	3	4	5	6	7	8
Not at all likely to react this way				*Somewhat likely to react this way*				*Extremely likely to react this way*

1) During an argument, your partner says, "sometimes I think I'd be better off without you."

_____ I would say something like "that could be easily arranged" and storm away.
_____ I would ask my partner what was bothering him/her that led to such a remark.
_____ I wouldn't think much of it, assuming that my partner was just in a bad mood.
_____ I would be silently upset and think that my partner was being a real jerk.

2) Your partner cancels plans he/she has made with you in order to spend time with friends.

_____ I would be okay with it and just go out with my friends instead.
_____ I would say nothing, realizing that couples need time apart from each other.
_____ I would say nothing but think about possible ways to annoy my partner later.
_____ I would say that if my partner wants to act that way, I'd be happier alone.

3) Your partner promises to return some books to the library for you, but he/she forgets to return them and then says he/she has more important things to do than run your errands.

_____ I would feel concerned that my partner must be having a very bad day.
_____ I would think about what an inconsiderate jerk my partner has been lately.
_____ I would tell my partner that I thought he/she was incredibly thoughtless.
_____ I would apologize for even asking at all, since I knew how busy he/she was.

4) Your partner shows up two hours late for a date that the two of you had made together.

_____ I would give my partner the "cold shoulder" and act unpleasantly on the date.
_____ I would tell my partner how furious I was and call him/her "unreliable."
_____ I would say that I was upset, but that I'm sure that there is a good explanation.
_____ I would not complain at all, happily noting that at least we are together now.

ENVL SCALE (continued)

0	1	2	3	4	5	6	7	8
Not at all likely to react this way				*Somewhat likely to react this way*				*Extremely likely to react this way*

5) You and your partner have just finished engaging in an activity together when your partner says he/she doesn't want to do the activity with you anymore because you aren't a fun partner.

_____ I would try to hurt my partner's feelings by saying something unpleasant in return.
_____ I would ask if my partner could think of something else we might do together instead.
_____ I would be quiet and think about other nice things we could do together.
_____ I would frown and walk away, thinking nasty things about my partner.

6) Your partner yells at you for your conduct at a recent social event with your mutual friends.

_____ I would apologize, saying that I had no idea my behavior upset him/her.
_____ I would feel sorry that I had upset him/her and quietly try to improve my behavior.
_____ I would be secretly angry with him/her and think about how unfair he/she was being.
_____ I would act openly angry with him/her for the criticism and criticize them in return.

7) Your partner borrows something of yours, ruins it, and seems to shrug it off.

_____ I would quietly forgive my partner and chalk it up as an accident.
_____ I would be silently angry about the thoughtlessness and stop loaning him/her things.
_____ I would be openly angry with him, criticizing him/her for the thoughtlessness.
_____ I would tell him/her that I was upset, but that I understand how accidents occur.

8) While out to dinner with another couple, your partner is fully involved in conversation with the other couple but he/she is excluding you from the conversation.

_____ I would not say anything but act very cold to my partner for the rest of the evening.
_____ I would start actively ignoring my partner and devote all my attention to the other couple.
_____ I would pull my partner aside to communicate my feelings to him/her.
_____ I would simply be pleased that my partner was enjoying their company.

ENVL SCALE (continued)

0	1	2	3	4	5	6	7	8
Not at all likely to react this way				*Somewhat likely to react this way*				*Extremely likely to react this way*

9) Your partner refuses to spend any time with your friends.

_____ I would tell my partner that if he/she had couldn't learn to like my friends, I guess he/she can choose to opt out of my life.
_____ I would try to resolve the problem with my partner, perhaps reaching a happy medium.
_____ I would cut down on the time I spent with my friends without discussing the issue.
_____ I would not say anything, but I would become pretty angry with my partner.

10) You and your partner go out to a party and he/she ignores you all night.

_____ I would be happy that my partner was having fun and look forward to spending time together later on.
_____ I would happily make an extra effort to include myself in my partner's good time.
_____ I would become angry with my partner, but I wouldn't bother to let him/her know this.
_____ I would confrontationally ask my partner why he/she is being such a jerk.

11) Your partner forgets to ask you about an important event in your life.

_____ I would not worry about it, assuming that he/she has other important things going on.
_____ I would not mention anything at all, but I'd think he/she was being a jerk.
_____ I would aggressively tell him/her how thoughtless he or she had been.
_____ I would bring the topic of the event up and let him/her know how everything went.

12) In a conversation with mutual friends, your partner discloses one of your embarrassing secrets.

_____ I would assume that he/she is inconsiderate and I that I'd better not share personal things with him/her anymore.
_____ I would step into the room and openly criticize my partner for his/her behavior.
_____ I would later ask my partner to sit down and discuss why I was upset with him/her.
_____ I would assume that he/she didn't mean to embarrass me and shrug the incident off.

Figure 1

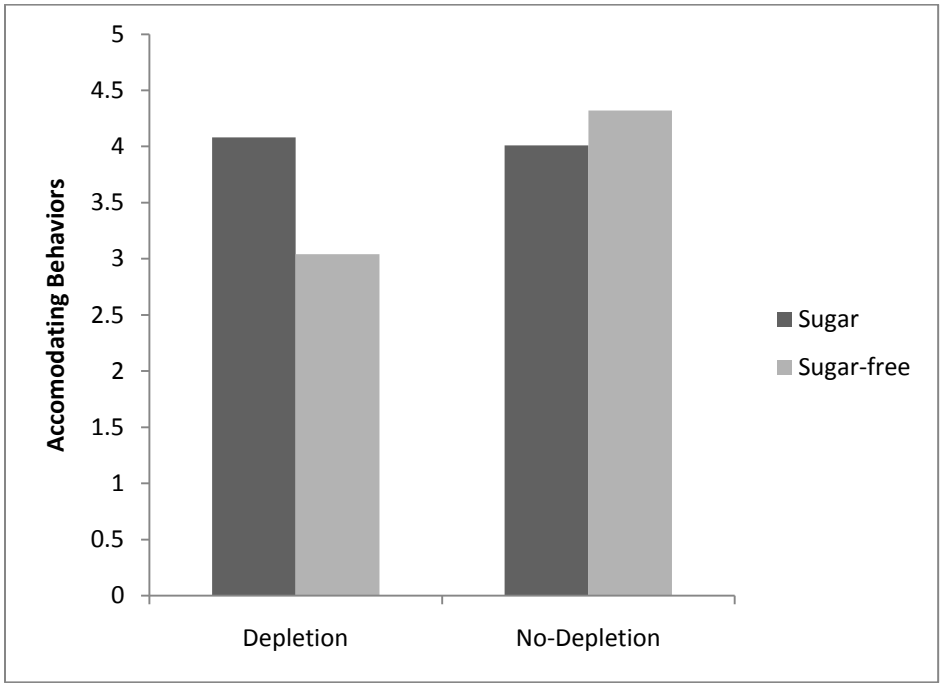

Figure 1. Mean accommodation scores by experimental condition (Study 2).