Does Self-Regulatory Resource Depletion Reduce Or Enhance Creativity?

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This research investigates under what circumstances self-regulatory resource depletion is beneficial versus harmful to creative cognition. Evidence from three studies reveals that, although depletion of self-regulatory resources jeopardizes creative performance in domains where convergent thinking is essential, it enhances creative performance in domains where divergent thinking is important.

[to cite]:

[url]:
http://www.acrwebsite.org/volumes/1020202/volumes/v43/NA-43

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New Insights into Creative Cognition

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SESSION OVERVIEW

Creativity permeates today’s consumption environment. Consumers increasingly engage in various creative activities, from co-creating with companies to consuming creative products (Burbroughs and Mick 2004; Dahl and Moreau 2007). Thus, it is critical to understand what factors enhance consumer creativity and what downstream consequences engaging in creative thinking engender. This session seeks to provide new insights into creative cognition.

The first paper, by Sellier and Dhal, examines the effect of an ethical mindset versus a moral mindset on creativity. In contrast to prior work suggesting a bidirectional positive relationship between creativity and dishonesty, this research proposes that creativity can also be positively associated with morality. Results show that compared to a moral mindset and a neutral mindset, an ethical mindset facilitates individual creativity through elevating autonomy. In contrast, when a creativity task requires teamwork, a moral mindset enhances creative performance as compared to an ethical mindset because it fuels group cohesion during the creativity production process. The second paper, by Tian and Häubl, examines when self-regulatory resource depletion helps versus hinders creativity. They posit that while resource depletion has been documented to be maladaptive and harmful, it can be beneficial under certain circumstances by facilitating creative ideation. Results demonstrate that resource depletion enhances creativity in terms of divergent thinking by weakening cognitive inhibition and promoting a broad search of individuals’ associative networks. Conversely, resource depletion jeopardizes creativity in terms of convergent thinking, which calls for a strongly constrained search process and cognitive inhibition. The third paper, by Xu and Mehta, investigates downstream effects of creative engagement on prosocial behavior. Reconciling conflicting predictions suggested by prior literature, they show that whether creative engagement increases or decreases prosocial behavior depends on the thinking style adopted in a creative task. Specifically, engaging in a creative task involving divergent thinking promotes prosocial behavior by activating a deliberative mindset that triggers open-mindedness, whereas engaging in a creative task involving convergent thinking hinders prosocial behavior by activating an implemental mindset that decreases open-mindedness.

Unified by a focus on creativity yet built on diverse theoretical bases, the three papers deepen our understanding of creativity by providing new, interdisciplinary insights into its causes and consequences. This session echoes the theme of ACR 2015 by connecting creativity with seemingly unrelated factors and providing academics, consumers, marketers, and public policy makers with suggestions for promoting and making good use of creativity.

The Light Side of Creativity: Moral Reminders Can Boost Creativity

EXTENDED ABSTRACT

Considerable consumer research has established that a critical area of study is the investigation of contextual factors that enable consumers to be creative (e.g., Moreau and Dahl 2005). Alarming-ly, recent research documented that creativity can negatively affect ethical behavior (e.g., Gino and Ariely 2012; Gino and Wiltermuth 2014). This research flips this perspective to show that creators reminded of moral intuitions can enjoy greater creativity (study 1 and 2). We further show that reminding creators of the moral law can similarly serve as a creative boost (study 3). In sum, “good” can increase creativity.

We examine how contextually reminding creators of their moral intuition (e.g., being good) versus the moral law (e.g., following a dogma) shapes subsequent creative cognitive processing. Prior research pinpointed constraints as a critical antecedent of creativity (e.g., Dahl and Moreau 2007). Both moral intuitions and the moral law constrain the creative process in that they both increase the salience of a set of moral rules that are internally (moral intuitions) versus externally produced (moral law). Further, reminding creators of moral intuitions increases their perceived autonomy, because moral intuitions allow the internal justification of one’s actions. By contrast, the moral law stifles autonomy—it is the law. For these reasons, we expect that reminders of moral intuitions will foster individual creativity more than reminders of the moral law and than a non-constraining, neutral mindset.

We tested this prediction in a first study in which 92 students (45 men, age = 20.1 years) completed creative tasks after having been primed with moral intuition-related, moral law-related, or neutral words. They were told that they would take part in two studies. The first study was a word search task. We varied the list of words, so that most of the words either related to moral intuitions, the moral law, or were neutral. Participants subsequently reported how creative, original, novel, inspired, artistic, and innovative they perceived their alien to be (1-7; not at all/very), their mood, and other measures. Next, participants participated in an ostensibly unrelated creativity study. Their first task was to be as creative as possible in drawing an alien (Ward 1994). Next, they were given the Duncker candle task, for which only one solution exists.

Once all data from creators were collected, 16 peers independently rated each alien’s creativity, indicating how creative, original, novel, inspired, artistic, innovative (1-7; not at all/very; α for the averaged creativity score across peers = .99) the aliens were. Subsequently, they rated each alien’s attractiveness (6 items, all α’s > .85). Seven participants did not follow the study instructions, and were therefore excluded from the sample. We report our analyses for the remaining 85 participants. We computed a self-perceived creativity index by averaging creators’ creativity ratings (α = .91), and subjected this index to an ANOVA. We found a significant impact of Mindset, F(1, 85) = 3.15, p < .05, r2 = .04, such that creators reminded of moral intuitions perceived their aliens to be significantly more creative than creators reminded of the moral law (Mmorals intuitions > Mmoral law).
Next, we computed an objective creativity index by averaging peers’ creativity ratings (all αs > .85). An ANOVA using this index as the dependent variable showed a significant impact of Moral Prime, F(1, 85) = 3.16, p < .05, r^2 = .04, such that the moral intuitions aliens were judged more creative than the moral law aliens, M = 3.77, t(82) = 2.27, p < .05, r = .06; and than the control aliens, M = 3.81, t(82) = 1.94, p = .05, r^2 = .04. Moral and control aliens were rated as equally creative, t < 1.

Focusing on the Dunker candle problem, we found that 54% of participants reminded of moral intuitions found the correct answer, a greater performance than participants reminded of the moral law (29% solved correctly, χ^2 = 3.62, one-tail p < .03), and than control participants (30%, χ^2 = 3.24, one-tail p < .04). We found no influence of mood or peers’ alien attractiveness ratings on our results, all p’s > .08. In a second study, we replicated the creativity findings in study 1 with a different task, one in which creators were asked to develop a new product solution for eating while at the wheel. In addition, study 2 demonstrates that the process through which creators reminded of moral intuitions have a creative advantage over creators reminded of the moral law is because reminders of moral intuitions activate creators’ autonomy.

A third study examines when reminders of the moral law can boost creativity above and beyond reminders of moral intuitions. Following research in moral psychology (Haidt 2007), we suggest that the moral law (vs. moral intuitions) will foster greater creativity when creators work in groups, because it activates group cohesion and facilitation processes during the creative process. In contrast, because they boosts autonomy, reminders of moral intuitions compromise group cohesion. We primed 90 participants with moral intuitions or the moral law as in study 1, before they worked on designing a new product as in study 2. Subsequently, they rated the extent to which they felt the group worked well and enjoyed cohesion. We found that moral law groups produced more creative products than the moral intuitions groups, p < .05. Further, we found that groups’ ratings of how well they worked together mediated this effect.

Together, our results suggest that, if creativity can lead to dishonesty, honesty can also produce a creative advantage.

Does Self-Regulatory Resource Depletion Reduce or Enhance Creativity?

EXTENDED ABSTRACT

Consumers often have to engage in self-control in order to attain their virtuous goals by overriding impulsive responses that are immediately gratifying yet deleterious in the long run. Prior research suggests that all acts of self-control rely on a common, limited pool of resources, which can be temporarily depleted after an initial exertion of self-control, thus undermining subsequent self-control endeavors (Baumeister et al. 1998; Muraven, Tice, and Baumeister 1998). It is well documented that self-regulatory resource depletion gives rise to a variety of undesirable consequences, including overeating (Vohs and Heatherton 2000), increased impulse buying (Vohs and Faber 2007), impaired task performance (Schmeichel, Vohs, and Baumeister 2003), reduced prosocial behavior (DeWall et al. 2008), inappropriate sexual responses (Gailliot and Baumeister 2007), ineffective self-presentation (Vohs, Baumeister, and Ciarocco 2005), and heightened unethical behavior (Gino et al. 2011). However, recent work (Lisjak and Lee 2014) suggests that self-regulatory resource depletion may not always be harmful or maladaptive. This raises the question of how, given the prevalence of depletion in daily life, consumers might take advantage of, as opposed to merely avoiding falling prey to, a depleted state? The present research tackles this question in the domain of creative cognition, and it does so by examining under what circumstances self-regulatory resource depletion promotes (vs. hinders) creativity.

Prior research indicates that self-control acts and other acts of executive function (e.g., decision-making) draw on the same finite pool of resources (Pocheptsova et al. 2009; Schmeichel 2007; Vohs et al. 2008). Thus, acts of self-regulation deplete a common resource that is required for the exercise of various executive functions. This suggests that, cognitive inhibition, an important executive function, may be weakened after self-regulatory resource depletion. Cognitive inhibition refers to the capacity to withhold (seemingly) irrelevant, distracting information from ongoing mental processes (Bjorklund and Harreshfeiger 1995), and it is central to selective attention and working memory functioning (Hasher and Zacks 1988). Consequently, reduced cognitive inhibitory functioning is accompanied by impaired ability to ignore unrelated or peripheral information and to selectively attend to information most pertinent to dealing with current tasks, thereby leading to divided or diffuse attention. According to prior research on creativity, creative individuals are characterized by a lack of cognitive inhibition (Eysenck 1993; Carson, Peterson, and Higgins 1999; Martindale 1999), and diffuse attention is associated with creative ideation (Kasof 1997; Rawlings 1985; Takeuchi et al. 2011). Thus, resource depletion that decreases cognitive inhibition may lead to diffuse attention and a broadened attention span, thereby lifting unnecessary constraints imposed on individuals’ thinking process and promoting a broad search of their associative networks. As a result, depletion may facilitate divergent thinking, a key aspect of creativity, which involves flexible switching among a broad range of categories (Nijstad, De Dreu, and Rietzschel 2010) and allows people to generate as many target-related responses as possible (Guilford 1967). Specifically, we propose that self-regulatory resource depletion boosts creativity in terms of divergent thinking, and that this effect is the result of reduced cognitive inhibition. However, creativity can also be driven by convergent thinking, which involves following a particular set of logical steps to arrive at a single correct solution to a problem (Guilford 1967). As this is a constrained search process, convergent thinking requires cognitive inhibitory abilities and therefore consumes executive resources. Thus, we posit that self-regulatory resource depletion undermines creativity in terms of convergent thinking.

Evidence from three studies provides support for these propositions. Study 1 examines whether resource depletion facilitates divergent thinking. It has been shown that resolving trade-offs in choices depletes self-control resources (Wang et al. 2010). First, participants made a series of product choices involving either difficult trade-offs (depletion condition) or no trade-offs (control condition). Then, participants performed a divergent thinking task (Alternate Uses Task [AUT], Guilford 1967), in which they were asked to identify as many unusual (yet feasible) uses of a brick. As hypothesized, depleted participants generated significantly more unusual uses of a brick (M = 4.76) than non-depleted participants (M = 3.84; F(1, 144) = 4.07, p < .05).

Study 2 provides a conceptual replication of the creativity-enhancing effect of resource depletion using a different depletion manipulation, and it sheds light on the mental process underlying this effect. Participants first completed an essay-writing task that served as a self-control depletion manipulation (Schmeichel 2007), and then
performed the same divergent thinking task as in study 1. In the writing task, participants were instructed to write about what they had done the previous day without using any words containing the letters “A” or “N” (depletion condition) or “X” or “Z” (control condition). As predicted, participants in the depletion condition generated significantly more creative uses of a brick (M = 5.89) than those in the control condition (M = 4.39; F(1, 91) = 4.77, p < .05). Moreover, the results reveal that reduced cognitive inhibition fully mediates this effect (95% CI [.0525, 1.1878]).

Study 3 contrasts the effect of resource depletion on creativity in domains where divergent versus convergent thinking is required. After making a series of product choices as in study 1, participants performed either a divergent thinking task (AUT) or a convergent thinking task (Remote Associates Test (RAT), Mednick 1962). As hypothesized, depleted participants demonstrated greater divergent thinking (M = 4.25) than non-depleted participants (M = 3.55; F(1, 118) = 4.24, p < .05), whereas depleted participants exhibited less convergent thinking (M = 5.63) than non-depleted participants (M = 6.67; F(1, 118) = 4.48, p < .05), indicating that depletion facilitates divergent thinking but inhibits convergent thinking.

This research presents the first empirical investigation of the influence of self-regulatory resource depletion on creativity. Our findings bridge the self-control literature and the literature on creativity by demonstrating that depletion can either enhance or hinder creativity, depending on whether divergent thinking or convergent thinking is required by a creativity task. Moreover, these findings deepen our understanding of self-regulatory resource depletion by showing that depletion does not necessarily lead to maladaptive behaviors, and that it can instead be beneficial—under certain, predictable circumstances.

Good or Bad? Exploring Differential Effects of Creativity on Pro-social Behavior

EXTENDED ABSTRACT

Previous research examining the effects of being creative on social behaviors has produced conflicting results. A part of research has shown positive effects of being creative, like enhancement of sense of autonomy and competence (Dahl and Moreau 2007), prevention of automatic stereotyping (Sassenberg and Moskowitz 2005), and conflict resolution (Gruber 2000). Yet another stream of research suggests just the opposite and demonstrates negative effects of being creative on personal and social behaviors, like threatening of social connection and relationships (Ardnt et al. 1999), and increased dishonest behaviors (Gino and Ariely 2012).

The present work aims to resolve this existing inconsistency in the literature by illuminating the cognitive processes through which creative engagement may affect social behaviors in general and pro-social behaviors in particular. Specifically, we propose that the style of creative thinking (i.e., divergent versus convergent thinking; Guilford 1957; Cropley 2006; Runco 2003) consumers adopt during creative engagement uniquely affects their pro-social behavior. We suggest that engaging in divergent versus convergent thinking induces competing mindsets, which in turn differentially impact subsequent pro-social behaviors. In particular, thinking divergently (convergently) while engaged in a creative task, we propose, induces a deliberative (implemental) mindset that in turn enhances (reduces) pro-social behaviors (Gollwitzer and Bayer 1999).

Divergent thinking requires individuals to engage in broad cognitive search in different directions and being receptive to all available information (Guilford 1959; Chermahini and Hommel 2012). Such cognitive processes that require broad search and deliberation of information induces a deliberative mindset (Gollwitzer 1990). On the other hand, convergent thinking requires individuals to engage in a constrained information processing and focus on the implementation of potential solutions, which we propose induces an implemental mindset (Chermahini and Hommel 2010; Cropley 2006). Further, we argue that when a deliberative (implemental) mindset is activated, individuals are more open-minded (closed-minded), which allows them to take perspective of others and be more empathic to others (Nelson 2009), and positively affects their pro-social behavior (Eisenberg and Miller 1987). We test our hypothesis in a set of five studies as detailed next.

Study 1A and B tested our focal hypothesis, that is, whether engaging in different thinking styles differentially affects one’s pro-social behavior. In study 1A participants completed either a divergent thinking task (draw an alien; Ward 1994), or a comparable control task (draw a human). In study 1B participants completed either a convergent thinking task (Remote Associates Test; Mednick 1962), or a comparable control task (proofreading; Mehta and Zhu 2009). After completing the subject tasks, participants in both studies were presented with an advertisement seeking donations and asked to indicate their likelihood of donating money at that moment in time. Supporting our hypothesis, one-way ANOVA revealed a significant main effect of thinking style on pro-social behavior in both the studies. In study 1A participants in the divergent thinking condition (M = 4.55) indicated higher likelihood to donate as compared to those in the control condition (M = 3.46; F(1,44) = 4.28, p < .05). In study 1B, however, participants in control condition indicated higher likelihood to donate (M = 4.75) as compared to those in the convergent thinking condition (M = 3.81; F(1,61) = 5.99, p < .05).

Study 2 directly examined the effect of the two different creative thinking styles on pro-social behavior. For the thinking style manipulation, participants were presented with the shoe-shine problem (Burroughs and Mick 2004) and asked to either come up with as many creative solutions as possible (divergent thinking) or one most creative solution (convergent thinking). The participants then indicated an amount they would be willing to donate in response to a donation appeal. As hypothesized, those who engaged in divergent thinking (M = 11.52) reported higher donation amounts than those who engaged in convergent thinking (M = 5.38; F(1,47) = 4.03, p = .05).

Study 3 tested for the proposed mechanism. Participants engaged in either divergent thinking (they were presented with one word and were asked to come up with at least three words that were related to the mentioned word) or convergent thinking (they were presented with three words and were asked to come up with one word that was related with all other words) and completed deliberative versus implemental mindset measures (adapted from Magee 2009). All participants then responded to four scenarios measuring pro-social behavior (Rushton, Chrisjohn, and Fekken 1981). People thinking divergently indicated marginally higher willingness to engage in pro-social behavior than those thinking convergently (M_{divergent} = 4.32 vs. M_{convergent} = 3.84; F(1,98) = 6.03, p = .07). More importantly, mediation analysis revealed that indeed deliberative vs. implemental mindset mediated this relationship (CI = [.05, .51]).

Study 4 manipulated both thinking style (divergent vs. convergent thinking) and mindset (deliberative vs. implemental mindset; Büttner et al. 2014) and found a significant two-way interaction between the two for willingness to donate measures (F(1,157) = 6.44, p = .01), with all four contrasts being either significant or marginally significant.

To sum, this research promises to make several contributions. First, it offers to reconcile an apparent inconsistency in the litera-
ture on how being creative affects pro-social behaviors. Next, this research adds to the limited literature aimed at understanding the consequences of being creative and further illuminates the processes through which being creative may influence social behaviors. This current work also advances the creativity literature by providing new insights on divergent and convergent thinking; on how these two types of creative thinking may induce competing mindsets and thus differentially impact subsequent social behaviors. Finally, this research adds to the mindset literature by suggesting type of creative thinking as an antecedent of deliberative versus implemental mindset.

REFERENCES


