



## FlashReport

## Too tired to tell the truth: Self-control resource depletion and dishonesty

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## ARTICLE INFO

## Article history:

Received 3 November 2008

Revised 18 December 2008

Available online 20 February 2009

## Keywords:

Dishonesty

Self-control

Motivation

Prosocial behavior

## ABSTRACT

The opportunity to profit from dishonesty evokes a motivational conflict between the temptation to cheat for selfish gain and the desire to act in a socially appropriate manner. Honesty may depend on self-control given that self-control is the capacity that enables people to override antisocial selfish responses in favor of socially desirable responses. Two experiments tested the hypothesis that dishonesty would increase when people's self-control resources were depleted by an initial act of self-control. Depleted participants misrepresented their performance for monetary gain to a greater extent than did non-depleted participants (Experiment 1). Perhaps more troubling, depleted participants were more likely than non-depleted participants to expose themselves to the temptation to cheat, thereby aggravating the effects of depletion on cheating (Experiment 2). Results indicate that dishonesty increases when people's capacity to exert self-control is impaired, and that people may be particularly vulnerable to this effect because they do not predict it.

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## Introduction

When given the opportunity to profit from a dishonest act, what determines whether people cheat or remain honest? Such opportunities present a motivational conflict between taking short-term, selfish gain and acting in virtuous ways that presumably bring long-term rewards that include social acceptance. Resolving such dilemmas may be one of the core functions of self-control.

Self-control is defined as the capacity to alter one's responses, such as by overriding some impulses in order to bring behavior in line with goals and standards (Baumeister, Heatherton, & Tice, 1994; Carver & Scheier, 1981). Brains evolved to serve the organisms that house them, and so amoral selfishness is normal and natural in the animal kingdom. Social life, however, requires some curtailing of selfishness for the sake of harmony and effective group functioning. Human social life (culture) features a great many rules and standards, including moral rules to which individuals must conform if they are to maintain membership in the group and the group is to function. Self-control, as the capacity to overcome selfish impulses so as to act in socially desirable ways, has therefore been called the "moral muscle" (Baumeister & Exline, 1999). Dramatic support for the importance of self-control for moral, prosocial behavior comes from evidence that low self-control may be the single most important factor in producing criminal, antisocial behavior (Gottfredson & Hirschi, 1990).

If honesty depends on self-control, then the situational state of one's capacity for self-control should determine how people respond to opportunities for cheating. Research suggests that all acts of self-control draw on a common resource that becomes depleted with use (e.g., Muraven, Tice, & Baumeister, 1998; Vohs and Heatherton, 2000). Thus, following one act of self-control, people tend to perform relatively poorly on a subsequent, ostensibly unrelated self-control task (see Baumeister, Vohs, & Tice, 2007). In effect, the moral muscle loses some of its strength after exertion.

The hypothesis for the present work was that dishonest behavior should increase when resources for self-control have been depleted by prior exertion. In the present studies, self-control resources were manipulated by having some participants engage in a first task that required overriding of responses. Then they were given a second unrelated test with a monetary incentive and an opportunity to increase their pay by claiming more correct answers than they actually had. The prediction was that participants who had exerted self-control to override responses on the first task would (falsely) claim more correct answers than other participants on the second test.

## Experiment 1

## Method

Eighty-four (40 female) undergraduates were randomly assigned among four conditions. Self-control resource depletion

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was manipulated using Schmeichel's (2007) procedure: All participants were asked to write a short essay without using words that contained either the letters A and N (depletion condition) or the letters X and Z (no-depletion condition). Following this task, participants self-reported their mood on the PANAS (Watson, Clark, & Tellegen, 1988).

Ostensibly as a separate experiment, participants were then given a sheet with 20 number matrices, each containing 12 3-digit numbers (e.g., 4.69; see Mazar, Amir, & Ariely, 2008). We instructed participants to find the two numbers in each matrix that summed to 10.00. Instructions and an example were printed at the top of the page. Participants were told they would earn \$.25 for each correct solution.

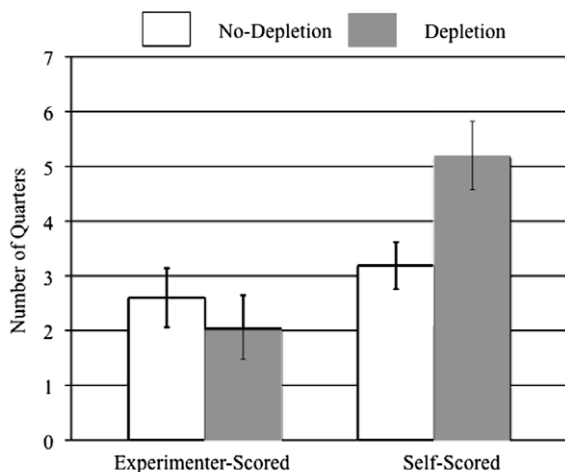
After 5 min, participants in the experimenter-scored conditions gave their worksheets to the experimenter, who scored their task and paid them accordingly. Performance in this condition provided a baseline assessment of how many matrices participants could complete in 5 min when they did not have the opportunity to cheat.

Participants in the self-scored conditions (cheating-possible) simply checked a box below the matrix when they identified two numbers in the matrix that summed to 10. After 5 min, participants counted how many matrices they had checked, recycled (destroyed) their worksheets, and paid themselves for their performance. We orchestrated an opportunity for participants to misrepresent their performance by placing two envelopes on the desk prior to their arrival: one envelope contained 20 quarters and the other was empty. Participants were instructed to keep one quarter for every matrix they solved correctly, and to transfer the remaining quarters to the empty envelope and leave it on the desk. The dependent measure was the number of quarters taken.

### Results and discussion

In two conditions, participants paid themselves for their performance, whereas in two additional conditions, the experimenter paid participants according to their actual performance. To assess dishonesty, we compared the number of quarters taken by participants in the self-scored condition to the number of quarters earned by participants in the experimenter-scored condition.

A 2 (depletion vs. no-depletion)  $\times$  2 (self-scored vs. experimenter-scored) ANOVA yielded the predicted results. First, participants in the self-scored conditions took more quarters than what participants in the experimenter-scored conditions were able to earn in the same amount of time,  $F(1,80) = 11.52$ ,  $p = .001$ ,



**Fig. 1.** Number of quarters taken by participants for performance on a matrix task as a function of depletion condition and cheating condition (Experiment 1). Error bars represent standard errors.

$h_p^2 = 0.13$ . This main effect was qualified by the predicted depletion condition  $\times$  scoring condition interaction,  $F(1,80) = 5.40$ ,  $p = .023$ ,  $h_p^2 = 0.06$  (see Fig. 1).

Non-depleted participants claimed 25% more correct answers in the self-scored than in the experimenter-scored condition, which is implausible and suggests some dishonesty. Among depleted participants, the discrepancy (and by implication the dishonesty) was considerably greater, at 104%. A planned contrast confirmed that depleted participants in the self-scored condition took more quarters than their non-depleted counterparts,  $F(1,80) = 7.09$ ,  $p = .009$ ,  $h_p^2 = 0.08$ .

Depletion (prior self-control) did not alter actual performance, as shown in the experimenter-scored condition ( $t < 1$ ). Nor did it affect positive or negative mood ( $t < 1$ ). In sum, results indicated that self-control resource depletion led to dishonest behavior.

### Experiment 2

Outside the laboratory, people can sometimes choose whether to enter, leave, or avoid situations that contain the temptation to indulge inappropriate or antisocial impulses. Knowing that depleted resources could weaken one's resistance to temptation, people may avoid opportunities to cheat. On the other hand, diminished resources might make people less effective at such proactive self-regulation as avoiding temptation. Experiment 2 tested the effects of depletion on both whether people exposed themselves to temptation and how they responded if they were tempted to cheat.

### Method

Seventy-eight undergraduates (50 female) participated. Participants in the depletion condition completed 20 incongruent trials of the Stroop task (e.g., Gailliot et al., 2007). On each trial, participants had to name the color of the ink, which demands self-control to suppress the meaning of the word (e.g., *blue* printed in red). In the no-depletion condition, the words matched the ink colors, so self-control was not needed. A bogus debriefing supposedly ended the study.

Shortly thereafter, participants were approached by another experimenter with a 25-question quiz about the university. All agreed to participate and were then offered \$.10 per correct answer. The experimenter told them to circle their answers on the question sheet, and that they would later transfer their answers to a bubble sheet after finishing.

When participants finished the quiz, they were told that the experimenter had only 2 bubble sheets left, one of which already had the correct answers lightly marked on it, but the participant could still mark his or her chosen answers. The experimenter said she hoped to run yet another participant that day, but the participant could use either sheet. The experimenter then collected the bubble sheet, tallied the number of correct answers, and paid the participant accordingly.

### Results and discussion

Our first dependent measure was the type of bubble sheet chosen. As predicted, depleted participants (74%) were more likely than non-depleted participants (40%) to choose the pre-marked bubble sheet,  $\chi^2(1, N = 78) = 7.67$ ,  $p = .006$ . Thus, depleted participants were more likely than non-depleted participants to expose themselves to the temptation to cheat.

Our second dependent measure was the number of correct answers claimed. Every participant answered all 25 questions. The unmarked (no-opportunity) test enabled accurate scoring of per-

formance, and thereby provided a baseline measure of performance. If participants with pre-marked sheets claimed more correct than the baseline, the implication was that they changed their answers to the pre-marked correct ones (i.e., cheating). As expected, participants who chose the pre-marked sheets claimed more correct answers than those who chose the unmarked sheets,  $F(1,74) = 92.32$ ,  $p < .0001$ ,  $h_p^2 = .56$ . More important, the interaction between self-selected bubble sheet and depletion condition was significant,  $F(1,74) = 4.16$ ,  $p = .045$ ,  $h_p^2 = .053$  (see Fig. 2a).

A planned contrast indicated that depleted participants who chose the pre-marked answer sheet answered more questions correctly than their non-depleted counterparts,  $F(1,74) = 15.76$ ,  $p < .0001$ ,  $h_p^2 = .18$  (see Fig. 2a). Given that performance on the task did not differ between depleted and non-depleted participants in the unmarked condition ( $F < 1$ ), it is likely that the elevated performance by depleted participants in the pre-marked condition was the result of cheating.

Not only were depleted participants more likely to put themselves in a situation that enabled cheating, they also cheated to a greater extent than non-depleted participants once they were in the situation that enabled cheating. We depict the aggregation of these two effects in Fig. 2b. Using the weighted mean of partici-

pants with the unmarked sheets as the baseline, we found that the total amount of over-claiming of correct answers (and money) was 197% higher in the depleted than in the non-depleted condition. Thus, cheating levels were considerably amplified by the combined effect of depletion increasing participants' propensity of placing themselves in a situation that enabled cheating, and then cheating to a greater degree than others once in that situation.

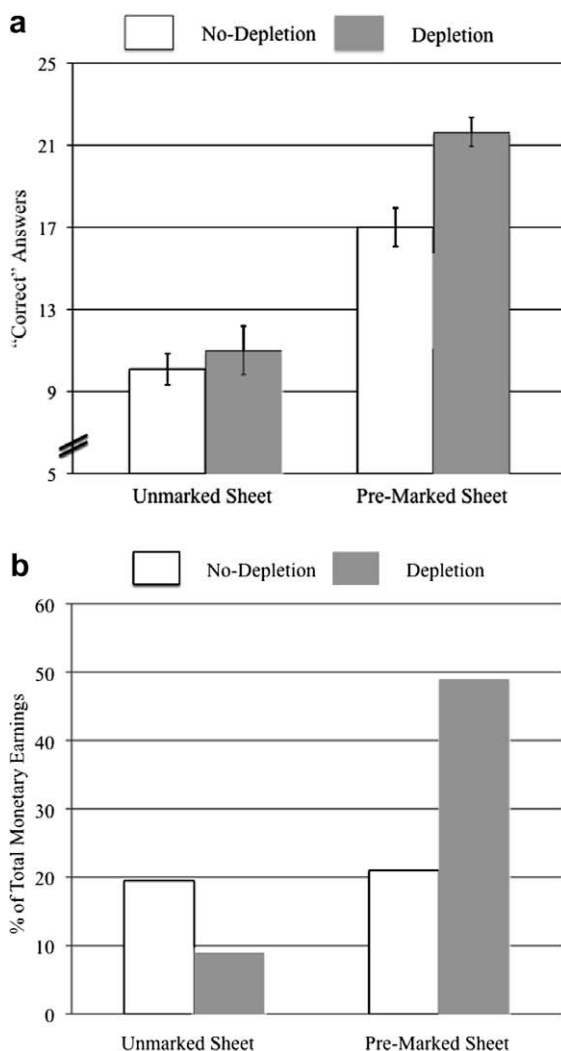
Although depleted participants put themselves in a situation that facilitated cheating, it was still not clear whether they were able to recognize the implications of depletion on dishonesty. It might have been that participants were perfectly aware of the effects of depletion on cheating, but that they did not care. To test intuitions about depletion and cheating, we asked 40 undergraduates (20 female) to complete the congruent (no-depletion) or incongruent version (depletion) of the Stroop task (see Experiment 2). Next, participants were given a description of Experiment 2, including the general knowledge quiz and the two types of bubble sheets. They then indicated the likelihood that they would choose the pre-marked bubble sheet over the blank bubble sheet (1 = *not very likely*; 7 = *very likely*). Subsequently, we asked participants to imagine that they had been given the pre-marked bubble sheet and to estimate the likelihood they would transfer their answers from the quiz sheet to the bubble sheet honestly (i.e., without changing the answers; 7-point scale). Consistent with the idea that individuals have little intuition about the role of depletion on their cheating behavior, the likelihood of choosing the pre-marked bubble sheet ( $t < 1$ ) and completing the task honestly ( $t < 1$ ) did not differ as a function of depletion condition. These results suggest that depleted participants did not recognize that they would have a difficult time overcoming the temptation to cheat.

## General discussion

The present findings link self-control to cheating. When people's self-control resources have been taxed by a prior act of self-control, cheating increases. In Experiment 1, depleted participants claimed more answers (and hence took more money) than did non-depleted participants. In Experiment 2, depleted participants were more likely than others to expose themselves to the temptation to cheat – and they were also more likely to succumb to that temptation, thus again claiming more correct answers and more money than they were entitled to claim. In that study, the combined effect of exposing themselves more to temptation and then also succumbing to the temptation to cheat at a higher rate entailed that depleted participants cheated three times as much as non-depleted participants.

Although these results were consistent with our hypotheses, several alternative explanations warrant mention. One might suggest that depleted participants took more money than non-depleted participants in Experiment 1 because they felt that they deserved more money for their heightened effort on the first task. Two pieces of evidence suggest that this is unlikely. First, there were no differences in positive or negative affect as a function of the depletion manipulation. Second, the depletion task and matrix task were presented as two separate experiments that were in the same session merely out of convenience.

An alternative explanation for the results of Experiment 2 might hold that depleted participants chose the pre-marked bubble sheet to help the experimenter. Again two facts speak against this. First, helpfulness cannot account for the cheating itself. If participants were trying to be helpful by choosing the pre-marked sheet, they should have been less likely to misrepresent their work, rather than more likely to misrepresent their work. By misrepresenting their work, they could hardly hope to help the experimenter, and indeed it would potentially invalidate their responses. The helpful-



**Fig. 2.** (a) Average number of "correct" answers on the general knowledge quiz as a function of depletion condition and self-selected answer sheet (Experiment 2). Error bars represent standard errors. (b) Percentage of total monetary earnings as a function of depletion condition and self-selected answer sheet (Experiment 2).

ness explanation thus lacks parsimony and consistency. Second, previous work suggests that depletion reduces helpfulness rather than increasing it (DeWall, Baumeister, Gailliot, & Maner, 2008).

In the present studies, as in many social situations, honesty required individuals to sacrifice selfish gain. Society benefits from such sacrifices, insofar as trust, fairness, and similar patterns make cultural and economic relations possible. It is not surprising that human beings sometimes are torn between taking what they can get away with and doing what is socially valued and appropriate. The capacity for self-control may be a vital psychological organ for enabling people to choose the latter course and thereby to make human culture possible. Selfish impulses may however continue to lurk beneath the surface of civilized behavior, and when self-control has been weakened by depletion of its resources, selfish and dishonest behavior may readily ensue.

### Acknowledgments

We thank Alexis Santos and Elizabeth Mervis for their assistance with data collection and two anonymous reviewers for their helpful suggestions. We greatly appreciate the support of a Doctoral Fellowship from the Social Sciences and Humanities Research Council of Canada (NM), grants from National Institute of Health (1RL1AA017541) and the Templeton Foundation (RB), and the Center for Behavioral Economics at Duke University (DA).

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