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Framing effortful strategies as easy enables depleted individuals to execute complex tasks effectively☆

Mauro Giacomantonio [a,*], Femke S. Ten Velden [b], Carsten K.W. De Dreu [c,d]

[a] Social and Developmental Psychology Department, University of Rome Sapienza, Italy
[b] Work and Organizational Psychology, University of Amsterdam, The Netherlands
[c] Center for Experimental Economics and Political Decision Making (CREED), University of Amsterdam, The Netherlands
[d] Social and Organizational Psychology, Leiden, University, The Netherlands

HIGHLIGHTS

- We argue that depleted individuals prefer strategies framed as easy.
- Adoption of easy strategies should reduce conservation of energies for future needs.
- When an easy strategy was assigned, depleted individuals had a good performance.

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ABSTRACT

It is argued that depleted individuals are concerned with conserving energy and therefore prefer strategies framed as easy. When such easy strategies can be adopted, the concern with conserving energy is reduced, and subsequent task performance restored. Indeed, Experiment 1 showed that adopting a strategy framed as easy but suboptimal (vs. difficult but optimal) reduced the need to conserve energy, and this enabled depleted individuals to perform as well as non-depleted individuals. Experiment 2 showed that when an objectively optimal negotiation strategy was framed as easy (rather than difficult), depleted negotiators were more likely to adopt the strategy and therefore achieved better outcomes. We conclude that depleting executive functions leads to a preference for an easy strategy and that when framing strategies as easy, the need to conserve energy is alleviated and task performance is maintained.

"If you have a difficult task, give it to a lazy man — he will find an easier way to do it."
Hlade's Law

1. Introduction

To survive and prosper, individuals engage executive functions to successfully perform various tasks that require reasoning and decision making (Kane et al., 2004; Miyake, Friedman, Emerson, Witzki, & Howerter, 2000). Indeed, executive functioning benefits academic achievement (Best, Miller, & Naglieri, 2011), facilitates the inhibition of socially inappropriate behaviors (Von Hippel & Gonsalkorale, 2005), promotes compliance with dietary restraints (Hofmann, Gschwendner, Friese, Wiers, & Schmitt, 2008), and sustains fidelity in romantic relationships (Pronk, Karremans, & Wigboldus, 2011). At first blush, it thus seems that effective and operative executive functions have largely beneficial effects, and that impairments of executive functioning undermine both concurrent and subsequent task performance.

Here we propose a more nuanced perspective that builds on recent theorizing and findings that executive functions are based on limited resources that can be depleted by previous exertion of executive control (Baumeister & Vohs, 2007; Hofmann, Schmeichel, & Baddeley, 2012; Inzlicht & Schmeichel, 2012; Kaplan & Berman, 2010; Schmeichel, 2007). We argue and show that depleting executive functioning and the concomitant need to conserve energy (Baumeister & Vohs, 2007) creates a preference for easy-to-implement, low-effort task strategies, and that adopting such strategies reduces the depleted individual's concern for energy conservation. Precisely therefore, the depleted individual can and will perform subsequent tasks at relatively high levels of effectiveness. Only when depleted individuals are unable to adopt easy, low-effort task strategies, or are forced to pursue subsequent tasks using difficult-to-implement, high-effort strategies, will the concern for energy conservation de-motivate and impair effective

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* Corresponding author at: Mauro Giacomantonio, Social and Developmental Psychology Department, University of Rome Sapienza, Via dei Marsi 78, 00185, Rome, Italy
E-mail address: mauro.giacomantonio@uniroma1.it (M. Giacomantonio).

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performance on subsequent tasks. In two experiments we tested this conservation of energy explanation of strategic preference following depletion. Our results reveal when and why taxing executive functioning does, versus does not, hamper performing relatively complex, ill-defined tasks that involve creative ideation and multi-issue negotiation.

2. Depletion impairs executive functioning and motivates energy conservation

According to the strength model of self-control (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven & Baumeister, 2000; Muraven, Tice, & Baumeister, 1998), self-regulation requires the calibrated use of limited resources. Exerting self-control in one situation therefore undermines self-control performance in subsequent situations. Indeed, such "ego-depletion" affects the ability to suppress impulses and override dominant responses (Hagger, Wood, Stiff, & Chatzisarantis, 2010). For example, ego depleted individuals are less willing to taste unpleasant substances (Vohs et al., 2008), and less persistent on unknowingly unsolvable tasks (Wan & Sternthal, 2008).

Building on these and related findings, Schmeichel (2007) argued that a process similar to the depletion of self-regulatory resources applies to executive functioning more generally, and therefore to human performance in general. Exerting executive control depletes (mental) resources and this in turn impairs subsequent executive functioning. When individuals were instructed to ignore irrelevant information appearing on their screen during a presentation, they performed worse on a subsequent task measuring working memory capacity, than individuals who only watched the presentation. Similarly, executive functioning decreased when individuals were previously asked to inhibit dominant writing tendencies (Schmeichel, 2007). Other works revealed similar effects: Exerting executive control, whether by regulating emotions, engaging working memory, or inhibiting impulses, depletes subsequent executive functioning (Inzlicht, Schmeichel, & Macrae, 2014).

Effects of depleting mental resources on subsequent reductions in (cognitive) performance are often explained in terms of reduced executive functioning and reduced mental capacity to perform. For example, Gailliot et al. (2007) suggested that engaging in a depleting impulse-control task reduces the physical resources needed to engage full executive control in subsequent tasks. They presented results showing that restoring glucose-levels through a sugar-rich (versus sugar-free) drink enabled depleted individuals to engage executive control again and to perform relatively well in subsequent tasks. Apart from the fact that impulse-suppression tasks may not deplete the metabolic energy needed for executive control (Wagner, Tennen, & Wolpert, 2012), the empirical support for the "glucose-account" has met with some criticism (Kurzban, 2010), and may be explained too in terms of the subjective experience of being energized (Cole & Balcetis, 2013; Job, Walton, Bernecker, & Dweck, 2013). Rather than elevating blood-level glucose, sugar-rich drinks may exert its effects through activation of motivational reward circuitries in the brain (Molden et al., 2012; also see Carter, Jeukendrup, & Jones, 2004; Chambers, Bridge, & Jones, 2009).

That effects of depletion on subsequent task performance are in part motivational points to a conservation of energy account of ego-depletion effects. Following self-control tasks, individuals may be less willing to deploy energy in subsequent tasks, so as to conserve energy for future needs (Inzlicht & Schmeichel, 2012; Muraven, Shmueli, & Burkley, 2006). Indeed, following depletion, individuals perform poorly on self-control tasks, but only when they expect to exert self-control thereafter again, in a subsequent third task (Muraven et al., 2006). Likewise, when individuals believe that self-control is a matter of motivation rather than energy, performance on a typical self-control task (i.e., squeezing a handgrip) remains unaffected by ego-depletion (Job, Dweck, & Walton, 2010). Finally, Clarkson, Hirt, Chapman, and Jia (2011) showed that when individuals attributed their experienced depletion to external cues, they actually displayed increased self-regulation ability and had increased rather than decreased working memory capacity. It thus appears that depletion undermines subsequent executive functioning because of increased motivation to conserve energy and to actively monitor available resources. Metaphorically, exerting depleting self-control creates a lazy rather than exhausted individual.

3. Depletion and task-strategy preferences

Much of the work on exerting self-control and depleting resources implicitly or explicitly assumes that "depleted" individuals will, on subsequent tasks, show poorer performance than non-depleted individuals, either because they do not have enough resources for a good performance or because they are motivated to conserve energy for subsequent performance (Inzlicht & Schmeichel, 2012; Inzlicht et al., 2014). What has not been considered, however, is that when facing new tasks, individuals have more or less discretion with regard to the strategy they employ to perform that task. For example, when preparing for an upcoming exam, a student may decide to study all textbook chapters or, alternatively, focus on those chapters that were discussed during lectures. While the latter strategy is less likely to generate high performance, it certainly is less effortful and easier to implement.

It stands to reason that depleted individuals prefer easy-to-implement, low-effort strategies more than difficult, high-effort strategies despite the fact that low-effort strategies more likely result in sub-optimal performance. The energy-depletion account (Gailliot & Baumeister, 2007) suggests that depleted individuals have such a preference for easy strategies because they cannot engage in difficult task-strategies. The presently advanced conservation of energy account suggests, however, that such a preference for easy, low-effort strategies is motivated by depleted individuals' heightened concern about conserving mental energy. In contrast to the energy-depleting account, the conservation of energy account implies that when depleted individuals are enabled to adopt low-effort, easy strategies, their concern with conserving energy is reduced. Ironically, perhaps, this means that depleted individuals may be motivated again to expend resources on new tasks and perform relatively well. This idea is consistent with work from Janssen, Fennis, and Pruyn (2010), showing that concern for saving energy, inferred by performance on a Stroop task, was lower when depleted participants did not expect to be the target of a persuasive attempt – which requires effortful counterpersuasion – as compared to when they were forewarned of such attempt. In the latter case, conservation of resources was functional and consequently Stroop performance was hindered.

Extending these findings, we propose that a beneficial reduction of conservation needs can be obtained not only by varying anticipation of the task following the critical task as done by Muraven et al. (2006) or Janssen et al. (2010), but rather also by changing the expectancy about the modalities required to perform the critical task. This could be a central mechanism to effectively counteract depletion in a large number of situations in which varying expectations about what will follow the critical task, could be impracticable or ineffective.

The idea that providing easy strategies reduces depleted individuals' concern with conserving energy, allowing them to pursue new tasks in a motivated and relatively effortful manner, resonates with work showing that when individuals progress towards a goal, the initial commitment to that goal decreases and attention can be directed to other goals (Amir & Ariely, 2008; Fishbach & Dhar, 2005). For example, Fishbach and Dhar (2005) found that among individuals concerned with physical shape, expectation of future workout led to increased willingness to consume fat food. Other studies showed that when an important goal is pursued, individuals seek out others that are instrumental for that focal goal, but when goal progress is good, such preferences for instrumental others are weakened (Fitzsimons & Fishbach, 2010; see also Fishbach, Dhar, & Zhang, 2006).

Taken together, we conjecture that energy conservation is a primary goal among depleted individuals, and the assignment of an easy strategy serves as a cue that energy will not be depleted further, and that effort can thus be expended on other, unrelated or even competing activities. If our reasoning holds, the *subjective* experience of ease should matter more than the actual ease of the adopted, or to be adopted, task-strategy. Merely anticipating the use of an easy strategy, even when that strategy is actually quite effortful and difficult, should alleviate depleted individuals' concern with conserving energy, thereby enabling individuals to engage executive control and to pursue the new task in a motivated and relatively effective manner.

4. Hypotheses and overview

The conservation of energy account of depletion effects predicts depleted individuals to perform better on new tasks that require executive control when they can pursue these new tasks through low-effort, easy strategies compared to when they have to rely on high-effort, difficult strategies. This is because when individuals believe they will be using easy strategies, the concern with conserving energy is reduced more than when they believe difficult strategies will be used. Put differently, we predicted that (1) if enabled to adopt a task-strategy framed as easy, concerns with conserving energy are reduced, so that (2) depleted individuals perform complex tasks relatively well (i.e., the performance-gap with non-depleted individuals becomes smaller).

We tested these hypotheses in two experiments. In both studies we manipulated depletion (or not) by asking (or not) participants to perform tasks intended to inhibit dominant responses, and measured performance on a subsequent task. The subsequent tasks were ill-defined and complex, involving creative ideation (Experiment 1), and multi-issue negotiation (Experiment 2). In Experiment 1, the task-strategy that participants were asked to use was framed as either difficult with probably high performance outcomes, or as easy with probably suboptimal outcomes, and we predicted that depleted individuals would perform better when the task-strategy is framed as easy rather than difficult. In Experiment 2 we framed an objectively difficult and optimal (versus objectively more easy and sub-optimal) negotiation strategy as either difficult or as easy, and predicted that depleted individuals would achieve high quality negotiated agreements when the objectively difficult negotiation strategy was framed as easy rather than as difficult.

5. Experiment 1

Experiment 1 was designed to test whether the mere availability of an easy strategy to mentally depleted individuals reduces the detrimental effects of depletion on performance. Following a manipulation of depletion, participants performed a creative ideation task which required them to come up with as many ideas as possible using a persevering strategy that was described as either high-effort and optimizing, or as low-effort and suboptimal. Earlier work revealed that a persevering strategy in brainstorming requires executive functioning and working memory capacity (De Dreu, Nijstad, Baas, Wolsink, & Roskes, 2012; Oberauer, Süß, Wilhelm, & Wittman, 2008), and should thus be more difficult for depleted individuals. However, if our conservation of energy reasoning is correct, describing persevering as a low-effort, easy strategy should alleviate mentally depleted individuals' concern with energy conservation, and allow them to perform at levels similar to those of non-depleted individuals.

We examined creative production in terms of the number of unique ideas being generated, and explored the originality of generated ideas (externally rated; Baas, De Dreu, & Nijstad, 2008; Guilford, 1967).

5.1. Method

5.1.1. Participants and design

Participants ($N = 112$; $M = 21.78$ years; 36 males) received course credit, or were paid €7, and were randomly assigned to a 2 (depletion vs. no depletion) × 2 (perseverance described as difficult vs. easy) between-subjects design. Sample size was based on comparable studies in the field (see for example Ainsworth, Baumeister, Ariely, & Vohs, 2014; Bertrams, Baumeister, Englert, & Furley, 2015). Our main dependent variable was creative production.

5.1.2. Procedure and depletion manipulation

Participants were seated in separate cubicles behind computers, which displayed all materials and registered responses. They were asked to participate in two different and independent studies. In the first task (used to manipulate depletion), participants wrote a short essay, in 4 min, about a place they visited recently. In the depletion condition, they were asked to write the story without using the letters U and K (see Schmeichel, 2007; Schmeichel & Vohs, 2009). In the no depletion condition, participants did not receive this restriction.

Next, participants read instructions for an Unusual Uses Task (Guilford, 1967) and were asked to write down as many different possible uses for a cord that were neither typical nor virtually impossible. Thereafter, participants responded to a brief questionnaire and were fully debriefed.

5.1.3. Framing of task-strategy and dependent variables

Strategy description was manipulated and explained that creativity can be achieved through inspiration or through perseverance, and for each strategy some examples were given. Participants were further told that they would be randomly allocated to use the first, or the second strategy. However, all participants were asked to use perseverance. Half of the participants read that perseverance was difficult-but-optimal for creativity (*difficult strategy condition*). The other half read that perseverance was easy-but-suboptimal for creativity (*easy strategy condition*). We deliberately introduced information about the effectiveness of each strategy so as to provide, within each strategy condition, descriptors that could motivate and de-motivate engagement, thereby confronting participants with an inherent tradeoff between optimizing outcomes on the one hand, and investing energy in the task on the other.

A trained coder, blind to the study's design and hypotheses, counted the number of unique ideas participants generated. To check the depletion manipulation, participants filled out a three-item questionnaire (e.g., I found the storytelling task tiring, 1 = *completely disagree* to 7 = *completely agree*, Cronbach's $\alpha = .77$).

5.2. Results

5.2.1. Manipulation checks

A 2 (depletion vs. no depletion) × 2 (perseverance framed as difficult vs. easy) ANOVA revealed that participants in the depletion condition found the storytelling task more tiring ($M = 3.92$, $SD = 1.23$), than participants in the no depletion condition ($M = 2.60$, $SD = 1.20$), $F(1108) = 33.39$, $p < .001$, $\eta^2 = .24$. No other effects were significant.

5.2.2. Creative production

A 2 × 2 ANOVA revealed, first of all, a main effect for depletion, indicating that depleted individuals generated less ideas ($M = 9.40$, $SD = 5.64$) than non-depleted individuals ($M = 12.44$, $SD = 7.34$), $F(1108) = 6.03$, $p = .016$ $\eta^2 = .05$. This effect was qualified by the expected interaction with framing of the task-strategy, $F(1108) = 4.52$, $p = .036$, $\eta^2 = .05$. Fig. 1 shows that among non-depleted individuals, framing did not affect creative production, $F(1108) = 0.48$, $p = .491$. However, depleted individuals generated more ideas when persevering

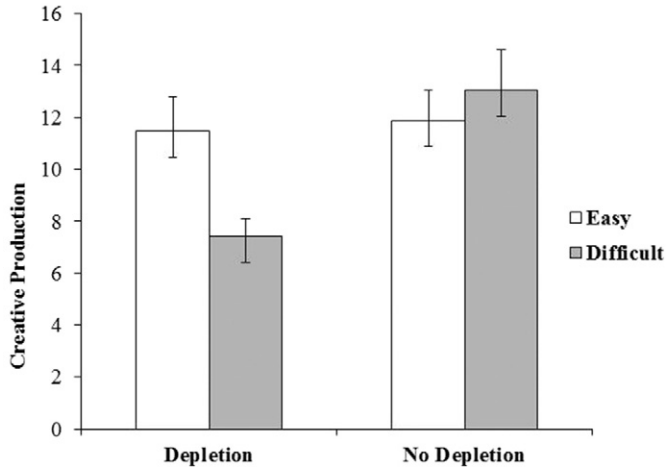

Fig. 1. Creative production as a function of depletion and strategy framing (Exp. 1).

was framed as easy ($M = 11.46$, $SD = 6.72$), rather than difficult ($M = 7.41$, $SD = 3.44$), $F(1108) = 5.17$, $p = .025$, $\eta^2 = .05$. Interestingly and importantly, when persevering was framed as easy, there were no differences between depleted and non-depleted ($M = 11.87$, $SD = 6.29$) individuals, $F(1108) = 0.05$, $p = .816$.[1] An *a posteriori* analyses on creative production yielded a power of 0.67.

Consistent with studies showing that executive functioning benefit creative ideation (De Dreu et al., 2012; Oberauer et al., 2008), Experiment 1 showed that depleted individuals performed less well than non-depleted individuals. Importantly, however, this detrimental effect of depletion was present only when depleted individuals were told to approach the creativity tasks through perseverance strategy described as difficult. Effects of depletion were fully neutralized when depleted individuals were told to approach the creative production task through perseverance described as easy.

6. Discussion and introduction to Experiment 2

An intriguing implication of our findings, and the conservation of energy account in general, is that when an objectively suboptimal strategy is described as difficult, and an objectively optimal strategy is described as easy, depleted individuals may actually outperform their non-depleted counterparts. That is, when a strategy that actually is counterproductive is framed as difficult-but-optimal, depleted individuals should be less likely to adopt such an objectively counterproductive strategy and even when they do, implement it halfheartedly and thus experience its counterproductive effects less than non-depleted individuals. Vice versa, because of their preference for easy strategies and willingness to engage when such strategies can be used, depleted individuals should be more likely to adopt and fully implement an objectively difficult but productive strategy when it is framed as easy, and thus experience its productive effects more than non-depleted individuals (who should be more wary of implementing strategies framed as easy-but-suboptimal).

Experiment 2 was designed to test this intriguing possibility. We did so in the context of an interpersonal, multi-issue negotiation with integrative potential. Integrative potential means that, unknowingly to negotiators, agreements that satisfy both parties' aspirations more than simple fifty–fifty compromises are possible (Pruitt & Lewis, 1975). To exploit the integrative potential, and achieve such "win–win" solutions, parties need to engage in logrolling, a strategy which involves the simultaneous consideration of several negotiation issues (Pruitt & Lewis, 1975). Such a simultaneous strategy is cognitively taxing and difficult and, therefore, negotiators often resort to a low-effort, sequential strategy in which they discuss each issue separately (De Dreu, Giacomantonio, Shalvi, & Sligte, 2009; Weingart, Bennett, & Brett, 1993). If they do, however, they are far less able to uncover the integrative potential and exploit it to their mutual benefit. Put differently, in integrative negotiations a simultaneous strategy is difficult and optimal, and a sequential strategy is easy and suboptimal (De Dreu, Beersma, Steinel, & Van Kleef, 2007).

In Experiment 2 we framed the simultaneous (sequential) strategy to participants as being easy and suboptimal (difficult and optimal), or as being difficult and optimal (easy and suboptimal). Participants were free to choose which strategy they would use. If framing the simultaneous strategy as easy alleviates the need to conserve energy and enables proper task engagement, we should see more integrative agreements among depleted individuals when the simultaneous strategy is described as easy, rather than difficult. Likewise, if non-depleted individuals have relatively stronger preferences for difficult-but-optimal strategies, we should see that their performance is weakened when the simultaneous strategy is framed as easy rather than difficult.

6.1. Method

6.1.1. Design and participants

Students ($N = 120$) were randomly assigned to 60 dyads, and dyads were randomly assigned to a 2 (depletion vs. no depletion) × 2 (sequential-is-easy vs. simultaneous-is-difficult strategy description) between-dyads design. The sample size of thirty participants per condition exceeds the typical number used in comparable studies on interpersonal processes (see for example Stern & West, 2014) and negotiation research (De Dreu, Beersma, Stroebe, & Euwema, 2006; Galinsky, Leonardelli, Okhuysen, & Mussweiler, 2005; Haselhuhn, Wong, Ormiston, Inesi, & Galinsky, 2014; Olekalns, Kulik, & Chew, 2014; Sinaceur, 2010). Two dyads were excluded because their members exchanged the payoff schedule thus contravening experimenter's instructions.[2] To avoid inflated p-values due to within-dyad statistical interdependence, analyses were performed at the dyadic rather than individual level of analysis (Kenny, Kashy, & Bolger, 1998).

6.1.2. Procedure and negotiation task

Upon arrival in the laboratory, participants were assigned the role of a union (management) representative to negotiate with a management (union) representative about an employment contract and received written instructions. The negotiation task (see De Dreu, Giebels, & Van de Vliert, 1998; Pruitt & Lewis, 1975) involved five issues, and participants could obtain points for each of the options within the five issues (participants received their own, but not their counterpart's payoff-schedule). Each negotiator could reach an outcome between 0 (total victory for the counterpart) and 360 (total defeat of the counterpart). Because some issues were more valuable (i.e., provided more points) than others, negotiators could make tradeoffs that resulted in higher joint gain than a middle-of-the-road compromise (total of 360 points per dyad) on each of the five issues. However, because individuals did not receive their counterpart's payoff-schedule and were told not to exchange these payoff-schedules, they were unaware of this integrative potential, and thus had to uncover possibilities for trade-off and high-joint gain through negotiation (also see De Dreu et al., 2007).

[1] All generated ideas were rated (1 = *not original at all* to 5 = *very original*). A 2 × 2 ANOVA on originality showed no main effects for depletion or strategy framing, and no interaction, $Fs < 1.54$, $ps > .218$.

[2] The pattern of results remained unchanged when the two dyads were included in the analyses, with the predicted two-way interaction between depletion and strategy description being significant, $F(1, 56) = 4.42$, $p = .040$, $\eta^2 = .07$.

6.1.3. Manipulation of depletion and strategy

After participants had read the negotiation instructions, depletion was manipulated by asking participants to list their thoughts on a sheet of paper for the subsequent 5 min. Following Muraven et al. (1998), in the *no depletion* condition participants were explicitly told that they could think about anything they wanted including a white bear. In the *depletion* condition, in contrast, participants were instructed to think about anything they wanted except a white bear. This thought suppression task depletes mental resources and lowers subsequent self-control performance (Vohs, Baumeister, & Ciarocco, 2005; Vohs & Schmeichel, 2003).

Strategy description was manipulated through instructions explaining that in negotiation, two strategies are commonly used — a simultaneous strategy which involves discussing two or more issues at the same time, or a sequential strategy, which involves discussing one issue at a time. In the simultaneous-is-difficult condition, the simultaneous strategy was described as optimal for reaching agreement, but rather demanding and difficult, and the sequential strategy as easy to be carried out but suboptimal for reaching agreement. In the sequential-is-difficult condition, the description of the two approaches was reversed. To make sure participants understood the manipulation we asked which of the two strategies was easier to perform but suboptimal, and which one was more optimal but difficult. All participants understood the instructions and correctly answered these questions.

6.1.4. Dependent variables

Joint outcome was obtained by summing the outcomes reached by both negotiators. As did past work, dyads who did not reach an agreement received the lowest joint outcome reached by any dyad (i.e., 310 points; Pruitt & Lewis, 1975). We assessed strategy preferences with six items, a higher score indicating a stronger preference for a simultaneous approach (e.g., "During the negotiation we discussed multiple issues at the same time", all 1 = *hardly ever*, to 6 = *almost always*; Cronbach's $\alpha = .73$; De Dreu et al., 2009).

Because simultaneous issue consideration emphasizes interrelations among issues which, in turn, facilitates logrolling (giving up on less valuable issues to maximize outcomes on the most valuable issue), we measured logrolling with three items (e.g., "During negotiation I exchanged concessions on low priority issues"; 1 = *hardly ever*, to 6 = *almost always*; Cronbach's $\alpha = .71$).

6.2. Results and discussion

6.2.1. Joint outcome

A 2 × 2 (depletion × strategy description) ANOVA on joint outcome showed the predicted interaction between depletion and strategy description, $F(1,54) = 7.76$, $p = .007$, $\eta^2 = .12$, (see Fig. 2). Simple effects showed that when the simultaneous strategy was framed as easy (and sequential as difficult), depleted participants achieved higher joint outcomes ($M = 384.67$, $SD = 37.29$) than those in the no-depletion condition ($M = 361.15$, $SD = 27.5$), $F(1,54) = 3.82$, $p = .055$. The opposite pattern of results emerged when the sequential approach was framed as easy (and simultaneous as difficult). Now, non-depleted dyads earned higher joint outcome ($M = 396.40$, $SD = 22.1$) than depleted dyads ($M = 374.06$, $SD = 34.5$), $F(1,54) = 3.93$, $p = .052$. An *a posteriori* analysis yielded a power of 0.79 for joint outcome.

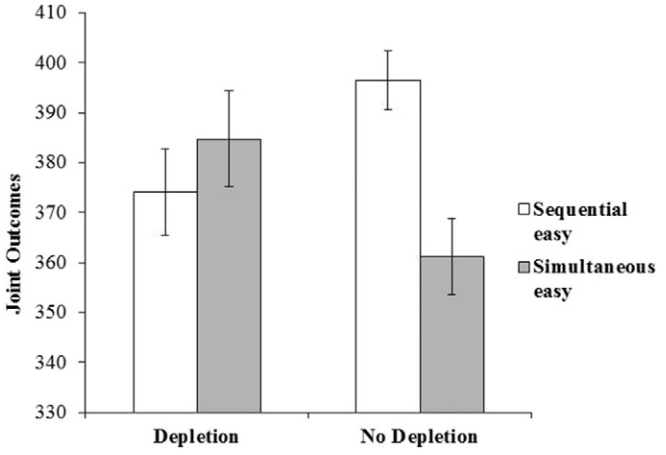

Fig. 2. Joint outcomes as a function of depletion and strategy framing (Exp. 2).

6.2.2. Simultaneous approach

Unexpectedly, a 2 × 2 ANOVA on preference for simultaneous approach only yielded a significant main effect of strategy description, $F(1,54) = 4.13$, $p = .047$, $\eta^2 = .07$ (interaction $F(1,54) = .38$, $p = .540$). Regardless of depletion, dyads reported a stronger preference for the simultaneous strategy when it was framed as difficult ($M = 3.95$, $SD = 1.98$) rather than easy ($M = 3.03$, $SD = 1.43$). For *logrolling*, however, a 2 × 2 ANOVA revealed a significant two-way interaction, $F(1,54) = 6.33$, $p = .015$, $\eta^2 = .11$. Simple effects analysis showed that when the sequential strategy was framed as easy, non-depleted participants reported more logrolling ($M = 4.24$, $SD = 0.63$) than depleted participants ($M = 3.70$, $SD = 0.55$), $F(1,54) = 4.98$, $p = .030$. When the simultaneous strategy was framed as easy, depleted participants reported (non-significantly) more logrolling ($M = 3.96$, $SD = 0.74$) than non-depleted participants ($M = 3.67$, $SD = 0.54$), $F(1,54) = 1.51$, $p = .200$.

Logrolling was positively associated with joint outcome, $r = .40$, $p = .002$. We proceeded to test whether logrolling mediated the effect of the interaction between our independent variables on joint outcomes. A mediated moderation analysis with 95% bias-corrected bootstrapped confidence interval (CI) based on 5000 bootstrap samples was performed via PROCESS (Model 8, Hayes, 2013). The analysis revealed a significant indirect effect of the two-way interaction on joint outcome through logrolling, point estimate = −13.32, $SE = 8.46$, $95\%CI = [-34.79, -1.53]$. Logrolling was thus responsible, at least in part, for the combined effect of depletion and strategy description on joint outcome.

7. General discussion

Humans need executive functioning to perform well, and solid evidence suggests that depleting mental resources can undermine the motivation to perform subsequent (complex) tasks (Schmeichel, 2007; Inzlicht & Schmeichel, 2012). Here, building on a conservation of energy account, we proposed (i) that depletion reduces subsequent task performance when and because individuals become concerned with conserving (mental) energy, and (ii) that alleviating such concerns by framing tasks as easy rather than difficult enables mentally depleted individuals to engage in subsequent tasks and to perform relatively well. We showed that when strategies framed as easy were made available or enforced, mentally depleted individuals immersed themselves in the subsequent task and produced outcomes that were as good as those of their non-depleted counterparts. Importantly, we further showed that the subjective feeling of low-effort and ease is more important than whether the task-strategy is actually easy or difficult. Specifically, in Experiment 2 we showed that mentally depleted negotiators adopted an objectively difficult and high-effort strategy when this strategy was framed as easy, and accordingly reached mutually beneficial, integrative agreements.

7.1. Theoretical implications

Current results shed new light on earlier work on ego-depletion and self-control in general, and on our thinking about the role of motivation in particular (Baumeister & Vohs, 2007; Inzlicht & Schmeichel, 2012; Muraven et al., 2006; Schmeichel, 2007). Positioning the motivation to

conserve energy as a primary goal among depleted individuals (Muraven et al., 2006; Inzlicht & Schmeichel, 2012), we elucidated that depleted individuals may have or adopt a preference for easy rather than difficult task strategies, even if the latter seems to lead to better performance. Our findings cannot be accounted for by an energy-depletion account (Gailliot et al., 2007), which would predict that mentally depleted individuals can only restore subsequent performance when their metabolic energy is replenished. It is difficult to see how framing an objectively difficult, high-effort strategy as easy, as was done in Experiment 2, replenishes metabolic energy. Furthermore, the energy-depletion account would have difficulty explaining why simple framing of a task-strategy as easy versus difficult has such important effects on mentally depleted individuals' performance on subsequent, complex tasks.

Our findings resonate better with a motivational account of mental depletion, yet also provide some important qualifications and new insights. Depleted individuals are sometimes depicted as "motivational misers", that is de-motivated (rather than incapacitated) to perform new, complex tasks. Our findings fit this account but only when mentally depleted individuals were given a task-strategy framed as high-effort and difficult. When they were given a strategy framed as low-effort and easy, we did not see such de-motivation. In fact, we saw that mentally depleted individuals became motivated again and performed subsequent tasks at relatively high level. We surmise that this increase in task-motivation came about because depleted individuals felt relieved in their concern to conserve energy. Thus, mental depletion increases the salience and importance of conserving energy, and reduces the importance of performing complex new tasks well. Reducing the concern with conservation of energy allows the goal of executing new tasks well to gain prominence, and to attract motivation and resources. Rather than creating motivational misers, mental depletion makes people motivational choosy (for a similar view see Inzlicht & Schmeichel, 2012; Inzlicht et al., 2014).

A novel aspect of the present research resides in the focus on selection of task-strategy as an intermediate step between depletion and subsequent task performance. Earlier work neither conceptualized nor examined this possibility. In most studies, participants had to perform a task such as persevere in an uncomfortable course of action (e.g., keep their hand in ice cold water), or make a decision between two or more options (e.g., candy bar vs. fruit). In addition, even if previous work dealt with reducing conservation needs (Janssen et al., 2010), this was accomplished by varying forecast of self-control engagement or, more in general, energetic expenditure after the critical performance. We conjecture that in most situations, however, individuals have some discretion as to how they would like to pursue future tasks. By incorporating task execution preferences and selection, we increase ecological validity of research and theory on depletion, and expand the domain of application. For one, incorporating task execution preferences and selection allows us to conclude here that depletion influences performance via changes in how people approach new tasks, and that this depends on whether the need for conserving energy is being thwarted or relieved.

The present studies engaged well-established manipulations of depletion, such as thought-suppression and related impulse-inhibition tasks (Hofmann et al., 2012). Earlier work showed that exercising self-control depletes both self-control related functioning and executive functioning (Baumeister & Vohs, 2007; Robinson, Schmeichel, & Inzlicht, 2010). Here we uncovered that exercising self-control may be depleting executive functioning, but not up to a point where task performance suffers. In fact, we rarely found that depleted individuals performed worse than their non-depleted counterparts, which is rather surprising given that our tasks were relatively complex, requiring analytical and creative thinking, and generally taken to require executive control. Our preferred explanation, for which we observed some support, is that exercising self-control shifts the preference to easy strategies, and that such a shift in preference accounts for the sometimes lower (and sometimes equal or higher) performance among depleted individuals.

The fact that we did not observe straightforward main effects of depletion on task performance adds to the current debate about the existence of the classical depletion effect (Carter, Kofler, Forster, & McCullough, 2015; Carter & McCullough, 2014; Hagger & Chatzisarantis, 2014; Inzlicht, Gervais, & Berkman, 2015). Consequences of an initial act of self-control, indeed, may go undetected or may even go in counterintuitive directions when individuals are let free to adjust the strategies to deal with a certain task. As we found in Experiment 2, under specific circumstances, depletion could even promote performance. Thus, to ascertain the real consequences of exerting self-control we need to gain a deeper understanding of the psychological processes that emerge following depletion and when and how such psychological processes lead to either reduced or increased effort expenditure and task performance (see also, Dewitte, Bruyneel, & Geyskens, 2009; Tuk, Zhang, & Sweldens, 2015).

7.2. Conclusion

Fatigue and depletion may be adaptive. Kaplan and Berman (2010), for example, pointed out that overriding impulsive tendencies (e.g., having sex with different mates or overeating) might not always be functional for the individual organism and its collective. Similarly, experience of fatigue can play a key role in changing and assigning priorities to different activities (Inzlicht et al., 2014). Consistent with such a functionalist view, we suggest that depletion serves as a signal that resources are declining and need to be efficiently managed. Grounded in a conservation of energy account, we argued and showed that preference for easy strategies following depletion can be functional to preserve efforts and performance, thus allowing individuals to maneuver themselves well through multiple tasks, to remain analytical and creative, and to manage interpersonal conflicts in a mutually beneficial manner.

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