**Ego Depletion and the Use of Force: Investigating the Effects of Ego Depletion on Police Officers’ Intention to Use Force**

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The current study aims to investigate corresponding self-control and self-control failures that are the result of ego depletion and its impact on police officers’ decision to use force. For that purpose, a total of 200 German police recruits were randomly assigned to either an experimental or control group. Ego depletion was manipulated using the “e” crossing task. Participants then worked through a video-based scenario exercise, in which they encountered a provocative citizen. They were required to indicate the time that they would take to resorting to using force to resolve the situation. Results showed that ego depleted officers intended to use force earlier than controls. This indicates that circumstances that produce ego depletion could lead to the inappropriate use of force by reducing self-control. This has major implications for the police use of force and how we understand police officers’ decision making in response to provocation.

Keywords: Ego depletion, self-control, police use of force, aggression

1. Introduction

Individuals are capable of inhibiting aggressive urges that are associated with negative outcomes in the long run (Finkel, 2014). For example, a colleague may choose to suppress affective behavior and prevent negative repercussions on the relationship with his co-workers, despite the temptation to shout at them in an emotionally intense discussion. Likewise, a police officer may have a strong desire to retaliate for a provocative act against him but resist these urges in order to not exacerbate the situation by using force.

Research in the context of policing has shown that low levels of self-control are associated with police misconduct (Donner & Jennings, 2014). Even for situations, in which the use of force may be legitimate, it has been argued that self-regulation that allows for the use of non-aggressive forms of behavior may prove to be a more effective and less risky option for police officers (Zaiser & Staller, 2015). Despite the ability to achieve compliance, use of force generally results in merely temporary compliance and may ultimately lead to disrespect and violence on the part of the subject (Reisig, McCluskey, Mastrofski, & Terrill, 2004; Sherman, 1993; Tyler & Huo, 2002; Wolfe, 2011). The potential relationship between self-control failure and the use of force is yet to be addressed. A study with German police officers investigating the motivation to use force provided first empirical insights on that matter (Klukkert, Ohlemacher, & Feltes, 2009): Results showed that routine situations of behavioral conflict experienced by police officers are often emotionally driven, in contrast to prescribed behavior, which follows legal and institutional guidelines. The researchers concluded that “the more the officers are drawn into the whirlpool of conflicts between maintaining authority on the one and the fear of escalation on the other hand, the more their actions will be determined by emotions and the higher the probability that legal guidelines will be ignored and that a violent response will serve as a mechanism to resolve the conflict” (p. 199).

In the current study, we aimed to investigate the role of self-control in police officers, specifically the extent to which self-regulation failures may facilitate aggression as displayed by the intention to use force.

1.1 Self-Control, Ego Depletion, and the Use of Force

Humans have the capacity to deliberately control impulses (Ainslie, 1975; Eisenberg et al., 2003; Fujita & Han, 2009) and to direct behavior towards future goals and long-term desirable outcomes (Fishbach & Labroo, 2007; Logue, 2010), without giving in and satisfying immediate urges and temptations (Metcalfe & Mischel, 1999; Mischel, Shoda, & Rodriguez, 1989).

In simple terms, human behavior can be approached between the poles of stimulus control, our sub-conscious reactions to external and internal influences, and cognitive control, our capability of consciously determining thoughts, feelings, and actions (Baumeister, 2002; Burgess & Simons, 2005; Diamond, 2013; Espy, 2004; Miller & Cohen, 2001; Washburn, 2016). Cognitive control, or executive functioning (Diamond, 2013; Washburn, 2016), in police use of force situations includes (i) attentional control towards consciously and sub-consciously perceived threats (in conjunction with mechanisms associated with stimulus control; Corbetta & Shulman, 2002; Dinsmoor, 1985), (ii) working memory to interpret perceived threats, (iii) cognitive flexibility make decisions and take appropriate action, as well as (iv) inhibitory control and self-control (Diamond, 2013; Chan, Shum, Toulopoulo, & Chen, 2008; Staller, Zaiser, & Körner, 2017).

This ability to inhibit, override, or to otherwise circumvent responses that are motivated by short-term rewards at the expense of long-term benefits is commonly referred to as self-control (Casey, 2015; Fujita, 2011; Hofmann, Friese, & Strack, 2009; Mischel, Shoda, & Rodriguez, 1989; Reynolds & McCrea, 2016; Vohs & Heatherton, 2000). Despite such a capacity for self-regulation, there are numerous examples in everyday life in which self-control fails. Risky sexual behavior, overeating, drug and alcohol abuse, and aggression can exemplify consequences of a failure to regulate behavior (Baumeister, Heatherton, & Tice, 1993; Denson, DeWall, & Finkel, 2012; DeWall, Finkel, & Denson, 2011; Finkel, DeWall, Slotter, Oaten, & Foshee, 2009; Quinn & Fromme, 2010; Slotter et al., 2012; Stinson, 2008).

Research into the field of self-regulation showed that such resources can be depleted or exhausted by responding to self-regulatory demands. If demands on self-control are very high, and/or if demands have been satisfied over a prolonged period of time, self-regulatory resources are depleted and subsequent self-control will be impaired. This state of depleted self-control resources has been termed ‘ego depletion’ (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven, Tice, & Baumeister, 1998). Recent investigations have shown that exerting self-control reduces the ability to regulate behavior in a subsequent task, even when self-control tasks are different in nature, domain, or context. It was shown, for instance, that controlling the temptation to eat reduced the ability to regulate aggressive behavior, when responding to negative comments by an experimenter (Stucke & Baumeister, 2006). Furthermore, a study found that ego depletion resulted in increased aggressive responding after being provoked with insults (DeWall, Baumeister, Stillman, & Gailliot, 2007).

Self-control is not energetically dependent as initially proposed (Dang, 2016a; Kurzban, 2010; Molden et al., 2012). For example, recent meta-analytic evidence (Carter & McCullough, 2014; Carter, Kofler, & Foster, 2015; Hagger & Chatzisarantis, 2016) does not support the proposition that self-control relies on a limited resource, when tested in laboratory settings. Likewise, a multilab preregistered replication study (Hagger & Chatzisarantis, 2016) of the ego depletion effect by 23 laboratories (N = 2141), using a common sequential task paradigm, failed to replicate the ego depletion effect. This indicated that, if there is any ego depletion effect, it is close to zero. However, a recent complimentary analysis of the data (Baumeister & Vohs, 2016; Dang, 2016b) suggests that the failure of Hagger’s and Chatzisarantis’ (2016) replication study may result from the ineffectiveness of their manipulation (e-Crossing Task). Analyses of the data sets, where people consider the manipulation as effortful, i.e. depleting, indicates an ego depletion effect (Baumeister & Vohs, 2016; Dang, 2016b).

With regards to aggressive behavior, there are only a few studies that have tested the effect of ego depletion on aggression (Barlett, Oliphant, Gregory, & Jones, 2016; DeWall, Baumeister, Stillman, & Gailliot, 2007; Stucke & Baumeister, 2006; Vohs, Glass, Maddox, & Markman, 2011). For example, Stucke and Baumeister (2006) required participants to resist tempting food or to concentrate on a boring film, while stifling their physical and facial movements (depletion condition). As a result, they reacted more aggressively to an insult by responding to the insulting person with worse feedback than in the control condition. Likewise, Vohs, Glass, Maddox, and Markman (2011) provided evidence that depleted participants elicited more aggressive responses than non-depleted participants, when playing a game, in which unpleasant noise was directed at opponents. Ego depletion was induced by tasking participants to watch disgusting footage from two movies. The depletion group was additionally required to not show any facial expression and to neutralize their innermost feelings. The results also showed that sleep deprivation had no effect on the aggressive responses. Confirming the results of Stucke and Baumeister (2006), DeWall, Baumeister, Stillman, and Gailliot (2007) demonstrated that aggression was highest when participants were provoked and ego depleted. However, if participants were not insulted and the urge to aggress was relatively weak, ego depletion did not increase aggressive behavior. In a recent study, Barlett, Oliphant, Gregory, and Jones (2016) tested aggression change as a function of ego depletion and provocation systematically. They found that aggression was highest for ego depleted participants, who were provoked. Yet, since previous studies only measured aggression indirectly (i.e. rated by the experimenter), with non-physical forms of aggression (i.e. through noise blast or hot sauce), or in the absence of the addressee of the aggressive behavior, it has yet to be shown that ego depletion can also result in physical manifestations of aggression and defensive behavior.

Inhibition plays a crucial role in the display of aggression (Finkel, 2007; Finkel et al., 2012). Depending on the context, a cessation of inhibition may sometimes be functional (Reynolds & McCrea, 2016). In policing, the display of aggression and defensive behavior is warranted in situations of immediate threat and in situations where compliance cannot be achieved in any other way. Yet, the interpretation of ‘cannot be achieved in any other way’ varies. As Klukkert, Ohlemacher, and Feltes (2009) indicated, emotional cognitions concerned the fear of losing authority, and the fear of escalation may trigger aggression towards initially non-compliant citizens. Even if exhibiting aggression too early in police-citizen encounters is covered by law and institutional guidelines, it may impose costs for the officer at a later point, for instance through an increased risk to the officer’s physical integrity following a suspect resisting arrest (Reisig, McCluskey, Mastrofski, & Terrill, 2004; Sherman, 1993; Tyler & Huo, 2002; Wolfe, 2011; Zaiser & Staller, 2015). However, it is unclear whether ego depletion leads to a cessation of inhibition of offensive aggression during police-citizen encounters.

Therefore, the current study aimed at investigating potential effects of ego depletion on offensive aggression of police officers. Based on the results of previous research, we predicted that the depletion of self-regulatory capacity would reduce inner restraints against aggression and, hence, cause police officers to display the intention to aggression in response to provocation sooner.

2. Methods

2.1 Participants

A total of 200 recruits of a German state police force took part in the study. Participants were randomly assigned to either the experimental or the control group. For descriptive statistics on the full sample and the split by condition, see Table 1. Groups were balanced on age and gender. However, the groups differed significantly with regards to experience, *t*(198) = -6.29, *p* < .001, *d* = 0.89.

[INSERT TABLE 1 HERE]

2.2 Materials

We manipulated self-regulatory strength by using a cognitive depletion task that required participants to break a habitual, behavioral pattern and that was used in previous research and that is known as the “e” crossing task (Baumeister, Bratslavsky, Muraven, & Tice, 1998; DeWall, Baumeister, Stillman, & Gailliot, M, 2007). The measure for aggressive behavior consisted of a video of a scenario, which was filmed from the perspective of a plain-clothes officer. The officer (first person perspective) and his partner (who can be seen in the video) are called to a bike theft and search the area for the perpetrator. The officers see a male person in the perimeter and decide to ask the potential suspect for identification. The video starts from the moment the partner contacts the person. The potential suspect displays provoking behavior against the police officers throughout the clip. The participant (working with the officer of the first person perspective) has to passively watch the scenario and to decide when to offensively aggress in order to help his partner through using force. The time from the beginning of the scenario until the reaction of the participant established the dependent variable of the experiment.

2.3 Procedure

Participants arrived at a large classroom in groups of 15 to 25 officers. They expected to participate in an experiment that investigated attention and performance in police settings. The groups were randomly assigned to the experimental or control condition. After providing informed consent, participants were given the ego depletion manipulation task, which involved crossing out instances of the letter “e” on a printed text, following a certain set of rules. The text was taken form a German article about statistical methods in linguistics and was used to focus participants’ attention on completing the task instead of paying attention to the content of the text itself.

All participants (experimental and control group) were first asked to cross out all instances of the letter “e” on the printed text. Following this practice task, participants in the control group were given a new sheet of paper with text from the same article and were told to continue the task of crossing out all “e”s. The experimental group was also given another sheet of paper with text from the statistics article but was instructed to change their behavior according to a new set of rules. They were then asked to cross out all “e”s except for “e”s that were followed by a vowel or “e”s that appeared in a word with a vowel two letters prior to the “e”. Hence, the ego depletion condition required participants first to form a habit (first text) before breaking and overriding it (second text; Baumeister, Bratslavsky, Muraven, & Tice, 1998; DeWall, Baumeister, Stillman, & Gailliot, 2007).

Participants of both groups were then shown the video clip (as detailed above) with a total length of 9 minutes and 24 seconds. The actions of the suspect are displayed in Table 2.

[INSERT TABLE 2 HERE]

The provocations of the suspect were designed in a way that their actions did not breach the law, leaving the decision how to respond to the officer’s discretion. The video displayed a time code on the bottom right on the screen (see Fig 1). Participants were asked to note the time, when they would intervene and use force in order to achieve compliance by the potential suspect. Since the experiment was conducted in a classroom setting, the chosen procedure provided the best way to collect the data simultaneously from participants. The experimenter emphasized that there is no right or wrong time to intervene and that the decision is subjective and up to them. Participants did not know the total length of the video clip. They were asked to fill out a form with demographic data and the time of intervention, when they were debriefed afterwards.

[INSERT FIGURE 1 HERE]

**Fig 1.** **Screenshot of the video.** The time code is displayed on the bottom.

Statistical Analysis

A Shapiro-Wilk’s test (Razali & Wah, 2011; Shapiro & Wilk, 1965) and a visual inspection of histograms, normal quantile-quantile plots and box plots (Doane & Seward, 2011) indicated that the data was not normally distributed. The data set was bootstrapped to allow for robust testing (independent *t*-tests) of the data. A significance level of *p* < .05 was set. The data were analyzed using SPSS version 24.0.

3. Results

The results showed that, on average, the participants from the experimental group indicated their intention to use force earlier (*M* = 172.33 seconds, *SE* = 9.53) than those of the control group (*M* = 393.54 seconds, *SE* = 14.97). This difference, -221.21, BCa 95% CI [-254.53, -189.01], was significant and had a large effect size, *t*(198) = -12.38, *p* < .001, *d*= 1.76. The results are displayed in Fig 2.

[INSERT FIGURE 2 HERE]

Fig 2. Time when participants indicated their decision to aggress. Means and 95% confidence intervals are displayed in seconds.

These findings indicate that ego depleted participants are potentially more prone to aggress sooner than non-depleted participants.

4. Discussion

In the current study, we provided evidence that ego depletion results in earlier displays of the intention to aggress in police officers. This finding adds to the growing body of evidence, which suggests that ego depletion affects aggressive behavior (Barlett, Oliphant, Gregory, & Jones, 2016; DeWall, Baumeister, Stillman, & Gailliot, 2007; Stucke & Baumeister, 2006; Vohs, Glass, Maddox, & Markman, 2011). Since there is evidence that self-control performance varies across contexts (Cohen & Lieberman, 2010; Cortes, Kammrath, Scholer, & Peetz, 2014), the current results are important for the police use of force domain. Since ego depletion may negatively affect the actual behavioral response in police-citizen encounters, it would be beneficial to focus on different strategies in order to mitigate these effects. First, making law enforcement officers aware of these effects and educating them about the underlying mechanisms would help them understand that their capacity of self-control could be contingent on how well rested they are, or what stressors they were exposed to at home prior to reporting on duty, and other factors, for example. Second, the individual tolerance level can be bolstered by training (Denson, Capper, Oaten, Friese, & Schofield, 2011; Denson, DeWall, & Finkel, 2012; Miles et al., 2016). Denson, DeWall, and Finkel (2012), for instance, showed that students who practiced self-control for 2 weeks by using their non-dominant hand for everyday tasks showed reduced anger, when subsequently provoked by a fictitious fellow student. Likewise, in line with the argument of training under operational constraints in order to foster skill transfer (Driskell, Salas, Johnston, & Wollert, 2008; Staller, Zaiser, & Körner, 2017; Wollert, Driskell, & Quali, 2011), training under ego depleted conditions may provide the individual with the experience to cope with this internal state while displaying optimal behavior. Second, strategies aimed at reducing post-depletion aggression such as mindfulness practices (Yusainy & Lawrence, 2015) could be learned by police officers in order to reduce behavioral aggression following a depleting task. Third, reducing the inhibitory effort and reducing its accumulation via adapting to common self-regulatory tasks that require self-control as shown by Dang, Dewitte, Mao, Xiao, & Shi (2013) may also prove fruitful. For police officers, this would mean identifying self-regulatory tasks in their daily routine and designing programs that aim to adapt to these demands. Fourth, procedural guidelines and tactics should account for the prevention of the accumulation of inhibitory effort by changing the role of the communicating officer in a police-citizen interaction in accordance with previous amounts of self-regulatory effort. For example, if a police officer had to suppress pain during a shift, his partner may initiate and be in charge of the communication in the subsequent encounter with a citizen. In light of context specificity, future studies should focus on validating these counter-measures to the ego depletion effect for the police use of force domain.

With regards to ego depletion and aggression in police use of force incidents, there are three main lines of further research that are practically relevant. First, studies could examine different ego depletion manipulations, aiming to replicate the effect with a more naturalistic demand and a higher ecological validity than the cold pressor task from the policing perspective. Second, studies could cover potential training procedures, which could reduce the effect of ego depletion in police-citizen encounters. Denson, DeWall, and Finke (2012) showed, for example, that self-control training could help overcome aggressive impulses in individuals high on trait aggressiveness. It would be valuable to replicate these findings with police officers in the current naturalistic setting. Finally, the influence of impelling factors on the enactment of aggression against a provocative citizen, such as trait aggressiveness, could be subject to future investigations.

4.1 Limitations

Limitations to this study stem from theoretical and methodological considerations. As for theory, the current experiments did not focus on impelling factors of aggression, such as trait aggressiveness, to determine possible interaction effects as proposed by theories of aggression (Finkel, 2014). Corresponding influential factors under the umbrella of trait aggressiveness that may favor excessive use of force under ego depletion could include cop culture, hyper vigilance, and threatened egotism. Cop culture refers to the values and behavioral patterns that determine the way law enforcement officers perform their duty, which are associated with a warrior mindset with demonstrated propensity towards often excessive use of force (Klein, Klein, Lande, Borders, & Whitacre, 2015; Rahr & Rice, 2015; Stoughton, 2016; Weber, 1999). Hypervigilance refers to a learned perceptual set of training and stressful job experiences that changes the ways in which they evaluate, interpret, and interact with their environment. Seemingly neutral situations and agents are perceived to be potentially dangerous, which may result in a higher risk of conflict that law enforcement officers resolve with the use of force (Gilmartin, 1986). Ego depletion may inhibit critical counter-measures and allow an emotionally driven survival response to perceived threats to materialize, un-checked by an officer’s capacity of self-control. Highly favorable views of themselves may cause law enforcement professionals to direct anger at offenders and civilians instead of critically reviewing their self-concept (Baumeister, Smart, & Boden, 1996; Bushman, 1998). As a result, they may end up using excessive force beyond self-control. Both hypervigilance and threatened egotism appear to constitute and/or be results of cop culture. Future studies could benefit from focusing on these interaction effects in police use of force settings.

Methodological limitations include the lack of ecological validity. The observation of an unfolding situation on a video screen and indicating the intention to use force is different from experiencing a conflict situation at first hand. However, by measuring only when subjects indicated that they would use force, the design of the study allowed us to gauge the decision making of a large number of participants, without them having to actually execute their decisions. Given the demanding time-table of recruits, another experimental design with individual testing was not possible. With aggression operationalized by the intention to use force, future studies could investigate the reaction itself (e.g. takedown, punch, use of baton). Furthermore, along with the recent contestation of the resource depletion model and ego depletion effect discussed in the literature review above, the sequential task paradigm used in this study accounts for a limited validity of its findings. Lee, Chatzisarantis, and Hagger (2016) criticize the methodology that they found had been used in almost all ego depletion studies in two major ways: a) the tacit assumption that individuals in the control group are sufficiently motivated to put an ego depleting level of effort into the first task (Hagger & Chatzisarantis, 2016; Lee, Chatzisarantis, & Hagger, 2016; Wegner & Zanakos, 1994), and b) the neglected consideration of the duration of the first task as a moderator of the ego depletion effect (Boksem & Tops, 2008; Hagger, Wood, Stiff, C, & Chatzisarantis, 2010; Lee, Chatzisarantis, & Hagger, 2016).

5. Conclusion

The management of aggression in the context of policing remains an important issue. While conflict can be resolved without the use of force, there will be instances that require it. In these instances it is expected that police officers will act within the applicable legal and institutional frameworks. This study investigated the effects of ego depletion on offensive aggression of police officers. The results indicated that ego depleted police officers’ intent to use force earlier when provoked. From a practical point of view, mastering self-control and reducing the effects of ego depletion seem fruitful avenues of further investigation in order to reduce unwarranted aggressive behavior by police officers.

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