UNIVERSITYOF BIRMINGHAM

When do normative beliefs about aggression predict aggressive behavior? An application of I3 theory

Li, Jian-Bin; Nie, Yan-Gang; Boardley, Ian; Dou, Kai; Situ, Qiao-Min

[Link to publication on Research at Birmingham portal](#)

Running head: I³ THEORY AND AGGRESSION

When do normative beliefs about aggression predict aggressive behavior? An application of

I³ theory

Jian-Bin Li[*]

Department of Developmental Psychology and Socialization, University of Padua, Italy

Yan-Gang Nie[*]

School of Education, Guangzhou University, P. R. China

Psychological and behavioral research center of Guangzhou, P. R. China

Ian D. Boardley

School of Sport, Exercise, & Rehabilitation Sciences, University of Birmingham, UK

Kai DOU

School of Management, Jinan University, P. R. China

Qiao-Min Situ

Business College, Guangzhou Vocational College of Technology and Business, P. R. China

* Corresponding author:

Jian-Bin Li, ljb_psy@163.com

Yan-Gang Nie, niezi66@21cn.com

MANUSCRIPT TO APPEAR IN *AGGRESSIVE BEHAVIOR*

Abstract

I^3 theory assumes that aggressive behavior is dependent on three orthogonal processes (i.e., *Instigator*, *Impellance*, and *Inhibition*). Previous studies showed that *Impellance* (trait aggressiveness, retaliation tendencies) better predicted aggression when *Instigator* was strong and *Inhibition* was weak. In the current study, we predicted that another *Impellance* (i.e., normative beliefs about aggression) might predict aggression when *Instigator* was absent and *Inhibition* was high (i.e., the perfect calm proposition). In two experiments, participants first completed the normative beliefs about aggression questionnaire. Two weeks later, participants' self-control resources were manipulated either using the Stroop task (study 1, $N = 148$) or through an "e-crossing" task (study 2, $N = 180$). Afterwards, with or without being provoked, participants played a game with an ostensible partner where they had a chance to aggress against them. Study 1 found that normative beliefs about aggression negatively and significantly predicted aggressive behavior *only* when provocation was absent and self-control resources were not depleted. In Study 2, normative beliefs about aggression negatively predicted aggressive behavior at marginal significance level *only* in the "no-provocation and no-depletion" condition. In conclusion, the current study provides partial support for the perfect calm proposition and I^3 theory.

Keywords: aggression; self-control; normative beliefs about aggression; provocation; I^3 theory.

When do normative beliefs about aggression predict aggressive behavior? An application of

I^3 theory

INTRODUCTION

Normative beliefs about aggression – one's attitudes about the acceptability of

aggression in a specific context – are an important factor that may influence aggressive

behavior (Amjad & Wood, 2009). If people view aggression as being unacceptable, they are

less approving of it (i.e., high normative beliefs about aggression) and aggress less, whereas

people who believe aggression is acceptable (i.e., low normative beliefs about aggression) are

more likely to aggress (Huesmann & Guerra, 1997). In this sense, high normative beliefs

about aggression should be negatively related to aggression[1].

An increasing number of studies have investigated the association between

normative beliefs about aggression and aggressive outcomes. For example, Huesmann and

Guerra (1997) used a longitudinal design to study the predicted effect of normative beliefs

about aggression on peer-nominated aggression in children, finding that normative beliefs

about aggression serve as a significant predictor of aggressive behavior in older children.

Similarly, other research has indicated that adolescents' normative beliefs about aggression

are significantly related to self-reported and other-reported aggression (Amjad & Skinner,

2008; Werner & Nixon, 2005), cyberbullying (Ang, Tan, & Mansor, 2011), and mobile-phone

aggression (Nicol & Fleming, 2010). These findings indicate a fairly robust relationship

between normative beliefs about aggression and different types of aggressive behavior.

---

[1] Normative beliefs about aggression are often assessed as the acceptability of aggression and thus it should be positively related to aggressive behavior (e.g., Huesmann & Guerra, 1997). However, in this study, our scoring system for normative beliefs about aggression was the opposite of that used by Huesmann and Guerra (1997). Therefore, currently higher normative beliefs about aggression indicated people were less accepting of aggression and thus should be negatively related to aggressive behavior.

However, previous studies have demonstrated that the strength of the relationship between personality traits (e.g., normative beliefs about aggression) and aggressive behavior is influenced by environmental factors (e.g., provocation, for a review, see Bettencourt, Talley, Benjamin, & Valentine, 2006). Appreciative of this issue, the I³ model was proposed as an explanatory framework for the factors influencing the occurrence of aggression (Finkel, 2014; Slotter & Finkel, 2011). In this model, the occurrence of aggression is jointly dependent on three processes, described in the next section. Based on this guiding conceptual framework, the current studies aimed to investigate the conditions under which normative beliefs about aggression predict aggressive behavior.

Overview of I³ theory

The I³ model (pronounced "I-cubed model") is a metatheory that provides a guiding framework for the prediction of social conduct such as aggressive behavior (Finkel, 2014; Slotter & Finkel, 2011). According to this model, all behavior emerges from a combination of three orthogonal processes: *Instigation*, *Impellance*, and *Inhibition*. *Instigation* refers to the effect of exposure to a specific object in a particular context that normally motives aggressive behavior. For example, the various circumstances covered by the term provocation provide examples of instigation. *Impellance* refers to situational or stable factors which enhance the likelihood that the person will enact the behavior motivated by an instigator. To illustrate, people high in trait aggressiveness have a stronger tendency to respond aggressively to provocation than those whose trait aggressiveness is low. *Inhibition* refers to situational or stable factors that enhance the likelihood an individual will override the effects of *Instigation* and *Impellance* and decrease the likelihood of the aggressive response. For instance, people

with considerable self-control are more likely to inhibit the tendency to aggress than those whose self-control resources are depleted or who are low in trait self-control.

Among these three processes, *Instigation* and *Impellance* are the push forces that drive people to enact a certain behavior, whilst *Inhibition* is the pull force which prevents people doing that behavior. These three factors generate several paths that address how one or more processes can potentially lead to a certain behavior (i.e., three main effects, three two-way interactions, and one three-way interaction; Slotter & Finkel, 2011). According to the "perfect storm" proposition (Finkel, 2014; Finkel et al., 2012; Slotter & Finkel, 2011), the likelihood and intensity of a behavior are highest when both *Instigation* and *Impellance* are strong and when *Inhibition* is weak. As such, individual behavior may be more accurately predicted by the interaction of these three processes than it can by investigating the effects of the processes independently of one another.

Although several alternative theories also propose the co-effect of push and pull factors on individual behavior using different terminology (e.g., Lewin's formula $B = f(P, E)$, system 1 and system 2, etc.), I³ theory is different from existing theories in that it includes three processes rather than two. Also, of greater importance is that it cross-cuts the two processes in all dual-process models, and as such, I³ theory is considered to be a distinct theory – rather than an extension of – extant dual-process theories (for a review, see Finkel, 2014).

Previous studies investigating aggressive behavior have provided support for the main tenets of I³ theory. For example, with respect to the main effects of the three processes, prior studies have found the presence of an *Instigator* (e.g., provocation, social exclusion),

and strong *Impellance* (e.g., high dispositional aggressiveness), or weak *Inhibition* (e.g., low levels of trait self-control, self-control resource depletion) have a direct positive effect on aggressive behavior (DeWall, Baumeister, Stillman, & Gailliot, 2007; Finkel et al., 2012; Li, Nie, Boardley, Situ, & Dou, 2014; Twenge, Baumeister, Tice, & Stucke, 2001, for a review, see Denson, DeWall, & Finkel, 2012; DeWall, Finkel, & Denson, 2011). Regarding two-way interactions between the three processes in the I³ model, research has shown that people are more likely to aggress when either *Instigator* (e.g., provocation) or *Impellance* (e.g., dispositional aggressiveness) is strong and *Inhibition* (e.g., self-control resources, executive control) is weak (e.g., DeWall et al., 2007; Finkel et al., 2012). As for three-way interactions, to our knowledge few studies have so far incorporated all three processes when investigating aggression. In one study, Finkel and his colleagues (2012) studied how *Instigator* (i.e., provocation), *Impellance* (i.e., dispositional aggressiveness), and *Inhibition* (i.e., self-reported fatigue, self-control depletion, executive control, and self-reported stress) jointly determined intimate partner violence (IPV). The study demonstrated that dispositional aggressiveness predicted IPV more robustly when the *Instigator* was strong and *Inhibition* was weak. In another study, it was also found that IPV was more likely to occur when provocation and dispositional retaliatory tendencies were high and commitment to the partner was low (Slotter et al., 2012). These findings suggest that I³ theory is a refined framework that allows scholars to consider key interacting determinants of individual behavior.

The present research

In the present research, we sought to investigate the conditions under which normative beliefs about aggression predict aggressive behavior. Given that normative beliefs

about aggression represent attitudes about the acceptability of aggression (Amjad & Wood, 2009), they could be viewed as an individual factor representing a form of *Impellance* within the confines of I^3 theory. In addition, provocation and self-control resources may serve as *Instigator* and *Inhibition*. Based on relevant literature, we assumed that normative beliefs about aggression may better and more consistently predict lower aggressive behavior when *Instigator* is weak and *Inhibition* is strong[2].

First, according to the reflective-impulsive model (Strack & Deutsch, 2004), individual's behavior is supposed to be guided by impulsive and reflexive systems. These involve respectively (1) automatic affective and approach-avoidance reactions, and (2) moral standards and deliberate evaluation. The predictive validity of these two systems depends on a number of boundary factors such as self-control resources. For instance, one's behavior would be dominantly predicted by the impulsive system when self-control resources are depleted and the reflective system would better predict behavior when such resources are intact (Hofmann, Friese, & Strack, 2009). In this study, we see normative beliefs about aggression as a reflective precursor and contend that beliefs about aggression may be more influential in guiding behavior when self-control resources are intact than when depleted, because the reflective system is assumed to be powered by self-control resources (Hofmann et al., 2009; Vohs, 2006). To be more specific, Vohs (2006) suggested the schemata in the reflective system need a source of energy to reach the threshold needed for activation, and that self-control resources are important as they push the reflective system schemata above the required threshold. This view is supported by research by Friese, Hofmann, and Wänke

---

[2] As noted above, due to our scoring system for normative beliefs about aggression was the opposite of that used by Huesmann and Guerra (1997), high normative beliefs about aggression would predict lower aggressive behavior.

(2008), who found that people's explicit attitudes significantly predicted their food choice

and consumption behavior only when self-control resources were not depleted. Thus, when

peoples' self-control resources are heightened, their reflective system may be more likely to

be activated which should in turn generate behavior that is in accordance with their personal

standards. In line with this idea, normative beliefs about aggression should predict aggressive

behavior better when self-control resources are full.

      Second, we expect that beliefs about aggression may be more likely to predict

aggressive behavior when provocation is absent rather than present. A previous

laboratory-based study did not find a significant effect of direct and indirect aggressiveness

(assessed explicitly using the Conflict Response Questionnaire) on aggressive behavior

following provocation. In attempting to explain this unexpected finding, the authors

suggested "explicit measures would predict aggressive behavior when higher-order cognitive

processes are activated, modifying and controlling aggression-related tendencies, and thus

response to provocation is likely to be spontaneous rather than controlled" (Richetin,

Richardson & Mason, 2010, p.32). In this sense, provocation may be more influential in

guiding peoples' automatic – as opposed to controlled – responses. As such, controlled

responses may be more likely under conditions of non-provocation, leading us to expect that

beliefs about aggression would be more likely to negatively predict aggressive behavior when

people are not provoked.

      Based on this, our hypothesis was that beliefs about aggression would predict

aggressive behavior more accurately when provocation is not present, and when self-control

resources are complete. Whereas the "perfect storm" thesis depicts a scenario in which

aggression is most likely to occur – when *Instigator* and *Impellance* are strong and *Inhibition* is weak (Finkel et al., 2012; Slotter et al., 2012) – presently we aim to test an alternative scenario, one in which aggression is least likely to occur. This "perfect calm" thesis proposes this to be when *Instigator* and *Impellance* are weak and *Inhibition* is strong. Through investigation of this issue, we aim to extend the predictive value of I^3 theory by demonstrating that it may not only explain when aggression is most likely to happen, but also when aggression is least likely to take place.

Two experiments were carried out to examine our hypotheses. In both studies, the *Instigator* (i.e., provocation) was manipulated by an ostensible partner giving or not giving participants insulting feedback on a paper they had written. In turn, *impellance* (i.e., normative beliefs about aggression) was assessed explicitly. Further, *inhibition* (i.e., self-control resources) was manipulated by requiring participants to perform a depleting task (study1: Stroop test; study 2: e-crossing task). Finally, participants played a reaction game with a partner in which they had the opportunity to aggress against them. To reduce the possibility that completing the assessment of normative beliefs about aggression might influence aggressive reactions, this assessment was carried out two weeks before the main experiment.

Study 1

Method

Participants

One hundred and forty eight Chinese university students (62 male, 86 female, M_{age} = 19.13 years; SD =.79 years) recruited via flyers participated in this study in exchange for 30

Yuan (approximately 5 U.S. dollars). No participant reported any psychiatric history or having ever participated in a similar study.

Experimental design

Two between-subjects variables were experimentally manipulated, each having two levels (i.e., provocation vs. no-provocation; self-control depletion vs. self-control intact) alongside the assessment of one within-subjects individual-difference variable (i.e., normative beliefs about aggression). Accordingly, participants were randomly assigned to one of four conditions (i.e., provocation + depletion; provocation + no-depletion; no-provocation + depletion; and no-provocation + no-depletion) before participation in the reaction time game.

Measures[i]

Normative beliefs about aggression. We adapted the Normative Beliefs about Aggression Scale (Huesmann & Guerra, 1997) to assess participants' beliefs regarding the acceptability of aggression. This scale consists of 20 items assessed on a 4-point scale ranging from "1 = it's perfectly OK" to "4 = it's really wrong". Higher scores indicate respondents are less accepting of aggression. Sample items are "Suppose a boy hits another boy, John, do you think it's wrong for John to hit him back?" and "In general, it is wrong to hit other people". This measure has been shown to be reliable in past research with children and adults (Amjad & Skinner, 2008; Amjad & Wood, 2009); the Cronbach's α in the present study was .85.

Aggressive behavior. The Taylor Competitive Reaction Time game was used to measure participants' aggressive behavior. This task has been frequently used and proved to

be a valid measure of aggression (Anderson, Lindsay, & Bushman, 1999). In this task, participants play a game with an ostensible partner for five rounds. Participants are informed that "at the beginning of each round, you and your partner should mutually choose the duration of a loud and annoying noise to each other, and the loser of the round will hear the noise of the corresponding duration set by the other one." Participants were asked to respond by pressing the corresponding directional key (i.e., "←" & "→") as presented on the screen as quickly and accurately as they can. There were 10 levels of duration, from "1 = 0.5 seconds" to "10 = 5 seconds", with 0.5 seconds between adjacent levels. According to past research (DeWall et al., 2007), the response for the first trial is the best indicator of aggression because participants have not yet received aversive noise from their partner. Therefore, only the duration in the first trial was recorded and served as the measure of aggressive behavior; increased duration indicated greater aggressive behavior.

Suspicion. After the test finished, we probed suspicion by asking participants to write down anything they doubted about the aim and processes of the study. No participants reported any suspicions about the study related to aggression.

Manipulations

Self-control resource depletion. Self-control resources were manipulated using the Stroop task. In this task, several words are presented in fonts of different color, such as the word "red" is presented in blue font; and participants are required to speak loudly of the color instead of the word. This task requires people to override their dominant response of naming the word to naming the color of the word, and therefore it needs self-control resources to complete this task. Participants in the depletion condition were asked to complete 300

incongruent trials (i.e., the word and the color were mismatched) while those in the

non-depletion condition completed 300 congruent trials (i.e., the word and the color were

matched). In order to examine whether the manipulation was successful, participants

answered two items on a 7-point scale following completion of the task. The first item was

"How fatigued are you feeling now?", and was assessed on a 7-point scale ranging from "1 =

not fatigued at all" to "7 = very much fatigued". The second item was "How much effort did

you put into naming the color of the presented word?", again assessed using a 7-point scale,

this time ranging from "1 = did not put in any effort at all" to "7 = put in all of my effort".

The Stroop task has been used widely in past research to successfully manipulate individual

self-control resources (e.g., DeWall et al., 2007; Li, Nie, Zeng, Huntoon, & Smith, 2013).

Provocation. We manipulated provocation by giving or not giving insulting results

and comments on participants' writing. We asked participants to write a short passage

discussing "do you think the advantages of smart phones outweigh disadvantages or their

disadvantages outweigh advantages". The experimenter then explained to participants that

their papers – and those of their partners – would be scored and commented on by their

partners. In the provocation condition, participants' writing was given a very low score (5 out

of 20) and insulting comments ("this is one of the worst papers I have ever read and I

seriously doubt the ability of the author") by the experimenter regardless of the actual

performance, whereas in the no-provocation condition, we did not give any results or

comments on participants' writing. This procedure has been used successfully to evoke

provocation in prior studies (e.g., DeWall et al., 2007).

Procedures

The study consisted of two stages. In the first stage, participants provided their

written consent and completed the measure of normative beliefs about aggression in the

laboratory. Once complete, participants were told by the experimenter that they would be

required to complete another task in the near future. The second stage followed two weeks

later, when upon arrival at the laboratory participants were informed that the aim of the study

was to investigate the relationships between writing ability and reaction speed and that they

would finish this study with another same-sex participant they had met before. Subsequently,

participants were asked to write a short paper and were informed that their papers would be

scored and commented on by their partners, and that they would do the same for their

partner's paper. When the paper was finished, participants assigned to the depletion condition

and non-depletion condition, respectively, completed an incongruent or congruent Stroop task

before completing the manipulation check. Concurrently, the experimenter claimed to take

the paper to the other participant to score, but actually each paper was scored and commented

on by the experimenter in the adjacent room regardless of actual performance. Momentarily,

the experimenter returned with a pre-written paper for the participant to score and comment

upon. This paper matched the participant's attitude about smart phones (e.g., if participant

favored the advantages of smart phones, then the paper presented to participant was also in

favor of the advantages of smart phones) and the handwriting was matched to the

participant's gender (e.g., if participant was a male, then a paper prewritten by another male

was presented); both measures were aimed to maximize the believability of the process. After

participants finished scoring their partner's paper and providing comments, the experimenter

took the scored paper to the adjacent room and returned with the participant's own paper a

few seconds later. Then, participants allocated to the provocation condition played the

reaction time game on the computer after reading the score and comments supposedly given

by their "partner" and those in the no-provocation condition did not receive the feedback on

their papers. Finally, when the game was over participants were thanked and paid, and

subsequently debriefed through e-mail to the true nature of the study once data collection was

complete.

Data analyses

In order to clearly explain the combined effects of normative beliefs about

aggression (centered), self-control resources depletion, and provocation on aggressive

behavior, several statistics were carried out to analyze our data. Specifically, we first

examined whether the three-way interaction involving all variables was significant. Second,

we examined the two-way interaction between normative beliefs about aggression and

self-control resources for provocation vs. no-provocation conditions to judge these

conditional effects (i.e., the slope test) on a third variable (i.e., provocation). Subsequently,

the four one-way associations between normative beliefs about aggression and aggressive

behavior for the four conditions were examined. Hayes's (2013) PROCESS macro (version

2.13) embedded in SPSS 18.0 was used to conduct all these analyses.

<div align="center">Results</div>

Manipulation check

Participants in the self-control resources depletion condition felt more fatigue ($M =$

2.91, $SD = 1.11$) than did those in non-depletion condition ($M = 2.46$, $SD = 1.11$), $t(146) =$

2.44, $p = .016$, $d = .40$). Moreover, depleted participants had put more effort into the Stroop

task ($M = 4.34$, $SD = 1.54$) than had the non-depleted participants ($M = 3.53$, $SD = 1.85$),

$t(146) = 2.90$, $p = .004$, $d = .48$, suggesting the manipulation of self-control resources

depletion was successful.

**Examination of the joint effect of normative beliefs about aggression, provocation, and
self-control depletion on aggressive behavior**

Means and standard deviations for normative beliefs about aggression and

aggressive behavior for the entire sample and the four experimental groups are displayed in

Table 1. To examine whether the three independent variables, or any of the four interaction

terms predicted aggressive behavior, a multiple regression analysis was conducted.

Controlling for gender, the resultant model was significant, $R^2 = .132$, $F(8,139) = 2.643$, p

$= .010$, and the three-way interaction term was found to be a significant predictor of

aggressive behavior, $B = -2.669$, $S.E. = 1.211$, $t(139) = -2.229$, $p = .027$ (see Table 2).

[INSERT TABLE 1 & 2 ABOUT HERE]

Subsequent simple slopes analyses demonstrated the "normative beliefs about

aggression × self-control resources" interaction was not significant when provocation was

present, $B = 1.057$, $S.E. = .886$, $t(139) = 1.192$, $p = .235$, but that it was when provocation

was absent, $B = -1.642$, $S.E. = .825$, $t(139) = -1.991$, $p = .048$. Furthermore, a slope difference

test found that these two slopes were significantly different, $t(144) = 2.22$, $p = .028$[3].

Breaking down the "normative beliefs about aggression × self-control resources"

interaction for the no-provocation condition, the simple slope of the association between

normative beliefs about aggression and aggressive behavior was stronger for the no-depletion

---

[3] Throughout the paper, differences in slope were tested on http://www.danielsoper.com/statcalc3/calc.aspx?id=103

condition, $B = -1.507$, $S.E. = .545$, $t(139) = -2.766$, $p = .006$, than for the depletion condition,

$B = .135$, $S.E. = .620$, $t(139) = .217$, $p = .828$ (Table 3 and Figure 1). A slope difference test

found that these two slopes were significantly different, $t(70) = 1.99$, $p = .050$. As an

auxiliary analysis, we carried out an independent t-test to investigate whether the key

predicted means (adjusted predicted value) for the "high normative beliefs about aggression +

no-provocation + depletion" condition and "high normative beliefs about aggression +

no-provocation + no-depletion" condition differed from each other. The mean in the former

condition ($M = 1.22$, $SD = .17$) was significantly higher than the one in the latter condition

($M = .73$, $SD = .18$), $t(13) = 5.149$, $p < .001$. Collectively, the results from study 1 supported

the perfect calm proposition and contradicted the perfect storm prediction.

[INSERT TABLE 3 & FIGURE 1 ABOUT HERE]

Study 2

The aim of study 2 was twofold. First, we aimed to conceptually replicate the

findings of study 1 using an alternative self-control depletion task (i.e., the "e-crossing" task).

Second, whereas in study 1 we used just the initial trial of the experimental task as our

measure of aggression, we aimed to determine whether normative beliefs about aggression

could also predict the average levels of aggression across all trials. Whilst we expected to

replicate the findings from study 1 when the initial trial was used as the indicator of

aggression we did not anticipate detecting a significant effect when the average trial was used.

These disparate outcomes were anticipated based upon the contention that perceived

aggression from opponents in trials two onwards can influence the levels of aggression

observed, making them difficult to interpret (e.g., DeWall et al., 2007).

Method

Participants

One hundred and eighty four Chinese university students recruited via flyers participated in this study in exchange for 30 Yuan (approximately 5 U.S. dollars). Four participants were deleted due to technical issues with the software program used in the experiment to record the dependent variable, leaving 180 participants (74 male, 106 female, M_{age} = 19.71 years; SD =.88 years) for data analyses. No participant reported any psychiatric history or having participated in a similar study previously.

Experimental design

The experimental design of study 2 was identical to that from study 1.

Measures

Normative beliefs about aggression. The adapted version of the Normative Beliefs about Aggression Scale (Huesmann & Guerra, 1997) used in Study 1 was again employed to assess beliefs about aggression in Study 2; Cronbach's α in Study 2 was .81.

Aggressive behavior. Aggressive behavior was assessed using the same methods as used in Study 1. However, in addition to using trial 1 (i.e., aggressive behavior $_{trial\ 1}$) as the sole dependent variable as in study 1, we also created an alternative dependent variable by averaging the results of all five trials (i.e., aggressive behavior $_{average}$) in order to examine whether normative beliefs about aggression could predict the aggressive outcome generated by all the trials. Across the five trials, we artificially assigned that participants would win three times and lose twice, with outcomes occurring at random. When participants lost the trial, they experienced a predetermined noxious noise (a harmless noise of 70 DB for 1.5

seconds) through the headphones.

Suspicion. Suspicion was probed using the same method as in study 1.

Manipulations

Self-control resource depletion. Self-control resources were manipulated using the "e-crossing" task. This task consisted of two stages. In the first stage, participants were required to cross out the letter "e" each time it appears in a passage for a period of five minutes. In the second phase, using a separate passage participants in the depletion condition were asked to cross out the letter "e" except when they are next- or one-letter-adjacent-to a vowel, again for five minutes. In contrast, participants in the non-depletion condition follow the same rules as in the first stage. The first phase of the task is designed to encourage participants to establish a habitual response, whereas the second phase is intended to either break (depletion condition) or maintain (non-depletion condition) this habituated response. This manipulation is based on the premise that breaking habitual responses requires self-control, and has been used successfully to manipulate self-control resources in previous studies (e.g., DeWall et al., 2007; Friese, Messner, & Schaffner, 2012).

Provocation. Provocation was manipulated in the same manner as in study 1.

Procedures

With the exception of replacing the "Stroop" task with the "e-crossing" task, the procedures in study 2 were identical to those followed in study 1. Questions posed to participants following completion of the experiment again revealed that no participants interpreted the experiment to be about aggressive behavior, or doubted the authenticity of their partner. Finally, all participants were thanked and paid, and debriefed as to the true

nature of the experiment via e-mail once all data collection was complete.

Data analyses

The statistical analyses were identical to those in study 1.

Results

Preliminary analyses

Regarding the manipulation of self-control resources, participants in the self-control

resource depletion condition felt more fatigue ($M = 3.97$, $SD = 1.35$) than did those in the

non-depletion condition ($M = 2.58$, $SD = 1.33$), $t(178) = 6.96$, $p < .01$, $d = 1.04$. Moreover,

depleted participants reported putting more effort into the "e-crossing" task ($M = 4.91$, $SD = $

1.46) than non-depleted participants ($M = 3.93$, $SD = 1.43$), $t(178) = 4.54$, $p < .01$, $d = .68$,

suggesting that the manipulation of self-control resources was successful.

Examination of the joint effects of normative belief about aggression, provocation, and

self-control depletion on aggressive behavior

Means and standard deviations for normative beliefs about aggression and

aggressive behavior for the entire sample and the four experimental groups are displayed in

Table 4. To examine whether the three independent variables, or any of the four interaction

terms predicted aggressive behavior $_{trial 1}$, a multiple regression analysis was conducted.

Controlling for gender, the resultant model was significant, $R^2 = .139$, $F(8, 171) = 3.452$, p

$= .001$. As shown in Table 5, the three-way interaction was a significant predictor of, $B = $

-3.398, $S.E. = 1.175$, $t(171) = -2.893$, $p = .004$. Furthermore, simple slopes analyses for the

"normative beliefs about aggression × self-control resources" interaction demonstrated that

such interaction was not significant when provocation was present, $B = 1.243$, $S.E. = .787$,

$t(171) = 1.581$, $p = .116$, but that it was when provocation was absent, $B = -2.155$, $S.E. = .867$,

$t(171) = -2.485$, $p = .014$. Additionally, a slope difference test showed that these two slopes

were significantly different, $t(176) = 2.902$, $p = .004$. Breaking down this interaction for the

no-provocation condition, the simple slope of the association of normative beliefs about

aggression with aggressive behavior was stronger for the no-depletion condition, $B = -1.294$,

$S.E. = .687$, $t(171) = -1.83$, $p = .061$, than for the depletion condition, $B = .861$, $S.E. = .525$,

$t(171) = 1.640$, $p = .103$ (Table 6 and Figure 2). A slope difference test found that these two

slopes were significantly different from one another, $t(87) = 2.492$, $p = .015$. As an auxiliary

analysis, we carried out an independent t-test to investigate whether the key predicted means

(adjusted predicted value) for the "high normative beliefs about aggression + no-provocation

+ depletion" condition and "high normative beliefs about aggression + no-provocation +

no-depletion" condition differed from one another. Results of this analysis showed that the

mean in the former condition ($M = 2.18$, $SD = .18$) was significantly higher than that in the

latter condition ($M = .91$, $SD = .25$), $t(11) = 10.77$, $p < .001$.

    As shown in Figure 2, the slope for the "provocation + depletion" condition

demonstrated a similar effect to that for the "no-provocation + no-depletion" condition. As a

result, we tested for differences between these two slopes, and found that they were not

significantly different from one another, $t(87) = .450$, $p = .654$. This suggested that although

the perfect calm scenario was supported to some degree in Study 2. The effect was not unique

because except the slope for the "no-provocation and no-depletion" condition, slopes for all

other conditions were similar to those in Study 1.

[INSERT TABLE 4, 5, & 6 ABOUT HERE]

[INSERT FIGURE 2 ABOUT HERE]

This regression analysis was then repeated with aggressive behavior $_{average}$ as the dependent variable. In this analysis, the model was again significant, $R^2 = .147$, $F(8, 171) = 3.680$, $p = .001$. Further, as shown in Table 4, the three-way interaction was again significant, $B = -2.710$, $S.E. = 1.222$, $t(171) = -2.216$, $p = .028$. Subsequent simple slopes analyses for this interaction indicated that the slope for the interaction was not significant when provocation was present, $B = 1.275$, $S.E. = .818$, $t(171) = 1.558$, $p = .121$, or absent, $B = -1.435$, $S.E. = .902$, $t(171) = -1.590$, $p = .114$. Also, the one-way slopes of the four conditions were not significant (Table 6). Therefore, no further analyses were undertaken.

General discussion

In two studies, the present research, guided by I³ theory, investigated the combined effect of normative beliefs about aggression, provocation, and self-control resources depletion on aggressive behavior. The effect of normative beliefs about aggression on aggression has been intensively studied using designs that employ subjective informant (i.e., self-reported and other-reported) measures of aggression and correlational designs (e.g., Amjad & Skinner, 2008; Ang et al., 2011; Werner & Nixon, 2005). Building upon and extending the findings of these studies, the present work employed a behavioral experiment methodology to investigate the effect of normative beliefs about aggression on aggressive behavior. The findings of both studies suggest that normative beliefs about aggression only predict aggressive behavior (as assessed by Taylor's competitive reaction time task and indicated by the first trial) in laboratory conditions when provocation is not present, and self-control resources are intact. In other words, the ability of normative beliefs about

aggression to predict aggressive outcomes appears to be dependent on other boundary variables.

Guided by the I³ theory, previous studies have demonstrated that an *Impellance* (e.g., trait aggressiveness and retaliation tendencies) better predict aggression when the *Instigator* is strong and *Inhibition* is weak (Finkel et al., 2012; Slotter et al., 2012). These *impelling* factors could be seen as impulsive precursors. People high in trait aggressiveness or retaliation tendencies may have formed automatic aggressive/retaliatory cognitive and affective reactions. Such precursors may become dominant factors that guide behavior when triggered and self-control fails (Hofmann et al., 2009). Therefore, previous studies have supported the presence of a "perfect storm" scenario for the occurrence of aggression. However, our findings suggest that the highest levels of aggression occurred in Study 1 when participants with strong anti-aggressive norms were assigned to the "Provocation + No-depletion" condition, which apparently contradicted the perfect storm proposition. In contrast, in Study 2 participants with weak anti-aggressive norms assigned to the "Provocation + Depletion" condition displayed the highest levels of aggression, which supports the perfect storm proposition. At this point we are unable to explain this inconsistency across the two studies, and encourage future research to further investigate the perfect storm scenario guided by I³ theory, which may help elucidate this unexpected finding.

In contrast with the "perfect storm" proposition, the present study provided initial support for the existence of a "perfect calm" scenario through the investigation of a deterrent *impelling* factor (i.e., normative beliefs about aggression) on aggressive behavior. As noted above, normative beliefs about aggression are viewed as a reflective precursor, and

maintaining one's attitudes and beliefs requires self-control (Baumeister et al., 2007; Vohs, 2006). Reflective precursors may therefore predict one's behavior when self-control resources are intact (Hofmann et al., 2009) and provocation is not present (Richetin et al., 2010). As such, the current study investigated and provided evidence supporting a "perfect calm" scenario for aggression. Due to the difference in nature of the *Impellance* examined in previous studies (Finkel et al., 2012; Slotter et al., 2012) and the current study, we assume that a "perfect storm" may occur when the *impelling* factor is an impulsive precursor (e.g., trait aggressiveness) and a "perfect calm" may transpire when the *impellor* is a reflective precursor (e.g., normative beliefs about aggression). In this sense, the I³ theory can be used to help understand conditions under which people are less likely to aggress, as well as when people are most likely to.

It is important to note that the "perfect calm" proposition was only partially – and not uniformly – supported. First in Study 2 the slopes for "Provocation + Depletion" and "No-provocation + No-depletion" were not significantly different from one another. Further, the slope of normative beliefs about aggression in the "no-provocation + no-depletion" was only marginally significant. Nevertheless, overall the current results are in more favor of the "perfect calm" proposition. However, clearly both the "perfect calm" and "perfect storm" theses require further investigation as there are few studies examining the three-way interaction of the I³ theory, with the current study being the first to find the "perfect calm" as far as we are aware. Nevertheless, the current study demonstrates that the effect of personality variables on aggressive behavior may be better understood when *Instigators* and *Inhibitors* are accounted for.

As anticipated, the study hypotheses were only supported when the first trial of the aggressive task was used as the dependent variable, and not when the average level of all trials served as the dependent measure. However, it is important to note (see Table 6) that three out of four slopes were similar for the first trial analyses when compared to the equivalent slopes from the average trial analyses, with the slopes for the "no-provocation + no-depletion" condition being the exception. Thus, although our main prediction was tested using the first trial but not the average trial, we are aware that the current results do not unambiguously discount the use of the average trail as an indicator of aggression given the clear similarities for three of the four conditions. In past research, it was assumed that the first trial of an aggressive task is the response caused by antecedent factors (e.g., provocation, self-control depletion, DeWall et al., 2007) and that subsequent trials may be difficult to interpret because they are also affected by additional factors. However, some studies have demonstrated the utility of using the average trial as the dependent variable when using Taylor's competitive reaction game (e.g., Anderson & Dill, 2000). Given that in the current study only five trials were included, and win/loss outcomes occurred at random, we cannot rule out the possibility that using the average trials as the dependent variable may have proved more successful when testing the study hypotheses if more trials had been used and/or the win/loss pattern had been fixed. As such, further research is needed to investigate this possibility.

High normative beliefs about aggression (i.e., disapproval of aggression) should be negatively related to aggression. However, results from both studies demonstrate that under certain circumstances (e.g., "no-provocation + depletion") normative beliefs about aggression

may be positively related to aggressive behavior. We are not aware of any plausible theoretical reasons for these slopes to be positive. Also, there is a lack of research addressing the predictive validity of normative beliefs about aggression on aggressive behavior in such settings. As such, it is difficult to interpret the meaning of these findings at present, or to conclude that they were the result of measurement error given that the slopes were not statistically significant. However, we encourage researchers to investigate this topic further to help understand the mechanisms that may lead to this situation-specific effect.

The current study has implications for social-cognitive models of aggression (e.g., the General Aggression Model, GAM, Anderson & Bushman, 2002; Anderson & Huesmann, 2003) regarding the role of self-control. The current study supported the existence of a "perfect calm" scenario which helps indicate when human aggression may be least likely to occur. This suggests that social-cognitive models of aggression can also be useful in guiding investigations into the non-occurrence of aggression. Such research has the potential to promote and inform intervention programs targeting aggression that not only seek to suppress the effects of potential risk factors (e.g., trait aggressiveness), but also look to facilitate likely preventive factors (e.g., normative beliefs about aggression).

As with any research, the current research has limitations. First, the chosen indicator of aggressive behavior was relatively mild and indirect in comparison to some indicators (e.g., physical fighting), and this may have precluded the inhibition of aggression. For example, a previous study found that even when people had high levels of moral disengagement (i.e., the conditional endorsement of aggressive behavior; Bandura, 1991), the predicted effect of trait self-control on physical aggression was still significant (Li et al., 2014). This may be because

people are unlikely to engage in aggressive behavior if it has the potential to cause physical

harm (c.f., Slaby & Guerra, 1988; Slotter & Finkel, 2011), even if they have the potential to

rationalize such conduct through moral disengagement. As such, the joint effect of

provocation, normative beliefs about aggression and self-control resource depletion on

aggressive behavior may have differed if we had chosen an indicator of aggression with more

serious consequences for the recipient. Therefore, future research should attempt to replicate

the current findings with more intensive dependent variables (within appropriate ethical

boundaries). In addition, the current study sampled only Chinese university students, which

limits the generalizability of the current findings to other populations. Therefore, we

encourage researchers to attempt to replicate the present findings using alternative

populations.

Despite its limitations, this study makes some important contributions to the

literature. First, it demonstrates that normative beliefs about aggression serve as a predictor of

aggressive behavior under laboratory conditions only under specific conditions. More

specifically, although previous studies have demonstrated that normative beliefs about

aggression predict aggressive behavior in laboratory settings (Levinson, Giancola, & Parrott,

2011), the current study extends research in this area by showing that such effects may only

be valid when provocation is absent and self-control resources are not depleted. Second,

although I³ theory provides a general framework to explain aggression, to date it has been

more theoretical than empirical (Finkel, 2014; Finkel et al., 2012). To our knowledge – prior

to the current research – very few studies have employed this theory to investigate the

three-way interaction between *Instigation*, *Impellance* and *Inhibition* for aggression (i.e.,

Finkel et al., 2012; Slotter et al., 2012). As such, this study provides much needed empirical support for this contemporary theory. Third, the perfect storm thesis proposed in the I[3] theory considers when aggression is most likely to occur. The current study of a perfect calm scenario – when aggression may be least likely to occur – may also be explained through I[3] theory.

To conclude, although aggressive behavior is clearly very complicated, the present study adds to our ever-evolving understanding of such behavior. It does so by identifying conditions under which normative beliefs about aggression are most likely to prevent aggressive behavior. We encourage future researchers to conduct research attempting to replicate the "perfect storm" and/or "perfect calm" propositions by investigating alternative boundary factors when investigating the effect of dispositional variables on aggression.

Acknowledgement

References

Amjad, N., & Skinner, M. (2008). Normative beliefs about aggression and retaliation: Association with aggresive behaviour and anticipatory self-censure. *Journal of Behavioral Science, 18*, 53–73.

Amjad, N., & Wood, A. M. (2009). Identifying and changing the normative beliefs about aggression which lead young Muslim adults to join extremist anti-semitic groups in Pakistan. *Aggressive Behavior, 35*, 514–519. doi:10.1002/ab.20325

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53*, 27–51. doi:10.1146/annurev.psych.53.100901.135231

Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology, 78*, 772–790. doi.org/10.1037/0022-3514.78.4.772

Anderson, C. A., & Huesmann, R. L. (2003). Human aggression: A social-cognitive view. In M. A. Hogg & J. Cooper. *The Sage Handbook of Social Psychology* (pp. 296–323). Thousand Oaks, CA: Sage Publication, Inc.

Anderson, C. A., Lindsay, J. J., & Bushman, B. J. (1999). Research in the psychological laboratory: Truth or triviality? *Current Directions in Psychological Science, 8*, 3–9. doi:10.1177/1745691611432343

Ang, R. P., Tan, K. A., & Mansor, A. T. (2011). Normative beliefs about aggression as a mediator of narcissitic exploitativeness and cyberbullying. *Journl of Interpersonal Violence, 26*, 2619–2634. doi:10.1177/0886260510388286

Bandura, A. (1991). Social cognitive theory of moral thought and action. In W. M. Kurtines

& J. L. Gewirtz (Eds.), *Handbook of moral behavior and development* (Vol. 1, pp. 45–103). Hillsdale, NJ: Erlbaum.

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science, 16*, 351–355. doi:10.1111/j.1467-8721.2007.00534.x

Bettencourt, B. A., Talley, A., Benjamin, A. J., & Valentine, J. (2006). Personality and aggressive behavior under provoking and neutral conditions: A meta-analytic review. *Psychological Bulletin, 132*, 751-777. doi:10.1037/0033-2909.132.5.751

Bosson, J. K., Swann Jr., W. B., & Pennebaker, J. W. (2000). Stalking the perfect measure of implicit self-esteem: The blind men and the elephant revisited? *Journal of Personality and Social Psychology, 79*, 631–643. doi:10.1037/0022-3514.79.4.631

Denson, T. F., DeWall, C. N., & Finkel, E. J. (2012). Self-control and aggression. *Current Direcetsions in Psychological Science, 21*, 20–25. doi:10.1177/0963721411429451

DeWall, C. N., Baumeister, R. F., Stillman, T. F., & Gailliot, M. T. (2007). Violence restrained: Effects of self-regulation and its depletion. *Journal of Experimental Social Psychology, 43*, 62–76. doi:10.1016/j.jesp.2005.12.005

DeWall, C. N., Finkel, E. J., & Denson, T. F. (2011). Self-control inhibits aggression. *Social and Personality Psychology Compass, 5*, 458–472. doi:10.1111/j.1751-9004.2011.00363.x

Finkel, E. J. (2014). The I³ model: Metatheory, theory, and evidence. *Advances in experimental social psychology, 49*, 1–104. doi:10.1016/B978-0-12-800052-6.00001-9

Finkel, E. J., DeWall, C. N., Slotter, E. B., McNulty, J. K., Pond, Jr. R. S., & Atkins, D. C.

(2012). Using I3 theory to clarify when dispositional aggressiveness predicts intimate

partner violence perpetration. *Journal of Persoanlity and Social Psychology, 102*, 533–

549. doi.org/10.1037/a0025651

Friese, M., Hofmann, W., & Wänke, M. (2008). When impulses take over: Moderated

predictive validity of explicit and implicit attitude measures in predicting food choice

and consumption behaviour. *British Journal of Social Psychology, 47*, 397–419.

doi:10.1348/014466607X241540

Friese, M., Messner, C., & Schaffner, Y. (2012). Mindfulness meditation counteracts

self-control depletion. *Consciousness and Cognition, 21*, 1016–1022.

doi:10.1016/j.concog.2012.01.008

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the

implicit association test: I. An improved scoring algorithm. *Journal of Personality and

Social Psychology, 85*, 197–216. doi.org/10.1037/0022-3514.85.2.197

Hofmann, W., Friese, M., & Strack, F. (2009). Impulse and self-control from a dual-system

perspective. *Perspectives on Psychological Science, 4*, 162–176.

doi:10.1111/j.1745-6924.2009.01116.x

Huesmann, L. R., & Guerra, N. G. (1997).Children's normative beliefs about aggression and

aggressive behavior. *Journal of Personality and Social Psychology, 72*, 408–419.

doi.org/10.1037/0022-3514.72.2.408

Karpinski, A., & Steinman, R. B. (2006). The single category implicit association test as a

measure of implicit social cognition. *Journal of Personality and Social Psychology, 91*,

16–32. doi.org/10.1037/0022-3514.91.1.16

Levinson, C. A., Giancola, P. R., & Parrott, D. J. (2011). Beliefs about aggression moderate

  alcohol's effects on aggression. *Experimental and Clinical Psychopharmacology, 19*,

  64–74. doi: 10.1037/a0022113

Li, J. B., Nie, Y. G., Boardley, I. D., Situ, Q. M., & Dou, K. (2014). Moral disengagement

  moderates the predicted effect of trait self-control on self-reported aggression. *Asian

  Journal of Social Psychology, 17*, 312–318. doi:10.1111/ajsp.12072

Li, J. B., Nie, Y. G., Zeng, M. X., Huntoon, M., & Smith, J. L. (2013). Too exhausted to

  remember: Ego depletion undermines subsequent event-based prospective memory.

  International Journal of Psychology, 48, 1303–1312.

  doi:10.1080/00207594.2012.762778

Nicol, A., & Fleming, M. J. (2010). "I h8 u": The influence of normative beliefs and hostile

  response selection in predicting adolescents' mobile phone aggression---A pilot study.

  Journal of School Violence, 9, 212–231. doi:10.1080/15388220903585861

Richetin, J., Richardson, D. S., & Mason, G. D. (2010). Predictive validity of IAT

  aggressiveness in the context of provocation. *Social Psychology, 41*, 27–34.

  doi.org/10.1027/1864-9335/a000005

Slaby, R. G., & Guerra, N. G. (1988). Cognitive mediators of aggression in adolescent

  offenders: I. Assessment. *Developmental Psychology, 24*, 580–588.

  doi.org/10.1037/0012-1649.24.4.580

Slotter, E. B., & Finkel, E. J. (2011). I3 theory: Instigating, impelling, and inhibiting factors

  in aggression. In M. Mikulincer, & P. R. Shaver (Eds.), *Human aggression and violence:

  Causes, manifestations, and consequences* (pp. 35–52). Washington: American

Psychological Association.

Slotter, E. B., Finkel, E. J., DeWall, C. N., Pond Jr., R. S., Lambert, N. M., Bodenhausen, G.

V., & Fincham, F. D. (2012). Putting the brakes on aggression toward a romantic partner:

The inhibitory influence of relationship commitment. *Journal of Personality and Social*

Psychology, 102, 291–305. doi.org/10.1037/a0024915

Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior.

Personality and Social Psychology Review, 8, 320–347.

doi:10.1207/s15327957pspr0803_1

Teige, S., Schnabel, K., Banse, R., & Asendorpf, J. B. (2004). Assessment of multiple

implicit self-concept dimensions using the extrinsic affective simon task (EAST).

European Journal of Personality, 18, 495–520. doi:10.1002/per.531

Twenge, J. M., Baumeister, R. F., Tice, D. M., & Stucke, T. S. (2001). If you can't join them,

beat them: Effects of social exclusion on aggressive behavior. *Journal of Personality*

and Social Psychology, 81, 1058–1069. doi.org/10.1037/0022-3514.81.6.1058

Vohs, K. D. (2006). Self-regulatory resources power the reflective system: Evidence from

five domains. *Journal of Consumer Psychology, 16*, 217–223.

doi.org/10.1207/s15327663jcp1603_3

Werner, N. E., & Nixon, C. (2005). Normative beliefs and relational aggression: An

investigation of the cognitive bases of adolescent aggressive behavior. *Journal of Youth*

and Adolescence, 34, 229–243. doi:10.1007/s10964-005-4306-3

Table 1 Descriptive statistics for normative beliefs about aggression and aggressive behavior in Study 1

	Full sample (N = 148)	Provocation + Depletion (N = 37)	Provocation + No-depletion (N = 37)	No-provocation + Depletion (N = 37)	No-provocation + No-depletion (N = 37)
NBAGG	3.23 ± .31	3.19 ± .29	3.21 ± .30	3.22 ± .30	3.30 ± .34
Aggressive behavior	1.60 ± 1.17	1.93 ± 1.39	1.89 ± 1.40	1.28 ± .82	1.31 ± .88

Note: NBAGG = normative beliefs about aggression.

Table 2 Examination of the joint predicted effect of normative beliefs about aggression, provocation, and depletion on aggressive behavior in Study 1

	B	S.E.	t	p
Gender	-.131	.190	-.689	.492
NBAGG (centered)	-.266	.637	-.417	677
Provocation	-.62	.26	-2.33	.021*
Self-control resources	.006	.264	.023	.981
NBAGG × Provocation	.400	.887	.452	.652
NBAGG × Self-control resources	1.057	.886	1.192	.235
Provocation × Self-control resources	.118	.375	.316	.753
NBAGG × Provocation × Self-control resources	-2.699	1.211	-2.229	.027*

Note: dependent variable: selected duration of annoying noise; NBAGG = normative beliefs about aggression; Provocation = 0, No-provocation = 1; Self-control resources: Depletion = 0, No-depletion = 1; gender: male = 1, female = 2;

* $p < .05$.

Table 3 Slopes of normative beliefs about aggression for the four conditions in Study 1

	B	S.E.	t	p
Provocation + Depletion	-.266	.637	-.417	.677
Provocation + No-depletion	.791	.621	1.274	.205
No-provocation + Depletion	.135	.620	.217	.828
No-provocation + No-depletion	-1.507	.545	-2.766	.006

Table 4 Descriptive statistics for normative beliefs about aggression and aggressive behavior in Study 2

	Full sample (N = 180)	Provocation + Depletion (N = 45)	Provocation + Non-depletion (N = 44)	Non-provocation + Depletion (N = 45)	Non-provocation + Non-depletion (N = 46)
NBAGG	2.92 ± .30	2.95 ± .31	2.95 ± .32	2.92 ± .33	2.87 ± .25
Aggressive behavior $_{trial 1}$	1.58 ± 1.22	2.01 ± 1.38	1.10 ± .65	1.70 ± 1.47	1.49 ± 1.04
Aggressive behavior $_{average}$	1.64 ± 1.27	2.08 ± 1.40	1.12 ± .66	1.88 ± 1.58	1.49 ± 1.07

Note: NBAGG = normative beliefs about aggression.

Table 5 Examination of the joint predicted effect of normative beliefs about aggression, provocation, and depletion on aggressive behavior in Study 2

	Aggressive behavior $_{trial\ 1}$				Aggressive behavior $_{average}$			
	B	*S.E.*	*t*	*p*	*B*	*S.E.*	*t*	*p*
Gender	-.296	.180	-1.641	.103	-.450	.188	-2.402	.017[*]
NBAGG (centered)	-.894	.565	-1.581	.116	-.908	.588	-1.453	.125
Provocation	-.357	.245	-1.460	.146	-.265	.255	-1.039	.300
Self-control resources	-.949	.246	-3.857	< .001[**]	-1.003	.256	-3.915	< .001[**]
NBAGG × Provocation	1.755	.772	2.274	.024[*]	1.675	.803	2.086	.038[*]
NBAGG × Self-control resources	1.243	.787	1.581	.116	1.275	.818	1.558	.121
Provocation × Self-control resources	.618	.348	1.774	.078[†]	.500	.362	1.379	.170
NBAGG × Provocation × Self-control resources	-3.398	1.175	-2.893	.004[**]	-2.710	1.222	-2.216	.028[*]

Note: dependent variable: selected duration of annoying noise; NBAGG = normative beliefs about aggression; Provocation = 0, No-provocation = 1; Self-control resources: Depletion = 0, No-depletion = 1; gender: male = 1, female = 2;

† *p* < .10; * *p* < .05; ** *p* < .01.

Table 6 Slopes of normative beliefs about aggression for the four conditions in Study 2

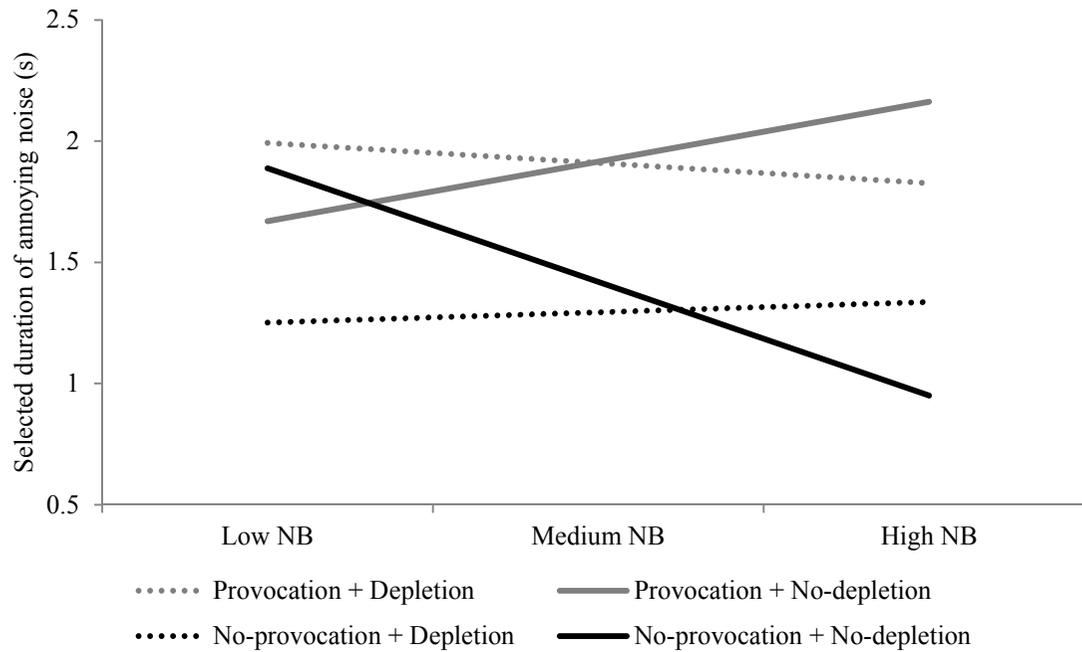|	Aggressive behavior $_{trial\ 1}$				Aggressive behavior $_{average}$			
	B	*S.E.*	*t*	*p*	*B*	*S.E.*	*t*	*p*
Provocation + Depletion	-.894	.565	-1.581	.116	-.908	.588	-1.543	.125
Provocation + No-depletion	.350	.547	.640	.523	.367	.569	.645	.520
No-provocation + Depletion	.861	.525	1.640	.103	.767	.546	1.404	.162
No-provocation + No-depletion	-1.294	.687	-1.883	.061[†]	-.668	.715	-.934	.352

Note: † *p* < .07.

Figure 1 Provocation, normative beliefs about aggression, self-control resources, and aggressive behavior (Study 1)

Note: Low NB: low normative beliefs about aggression (-1 SD); Medium NB: medium normative beliefs about aggression (-1 SD ~ +1 SD); High NB: high normative beliefs about aggression (+1 SD)
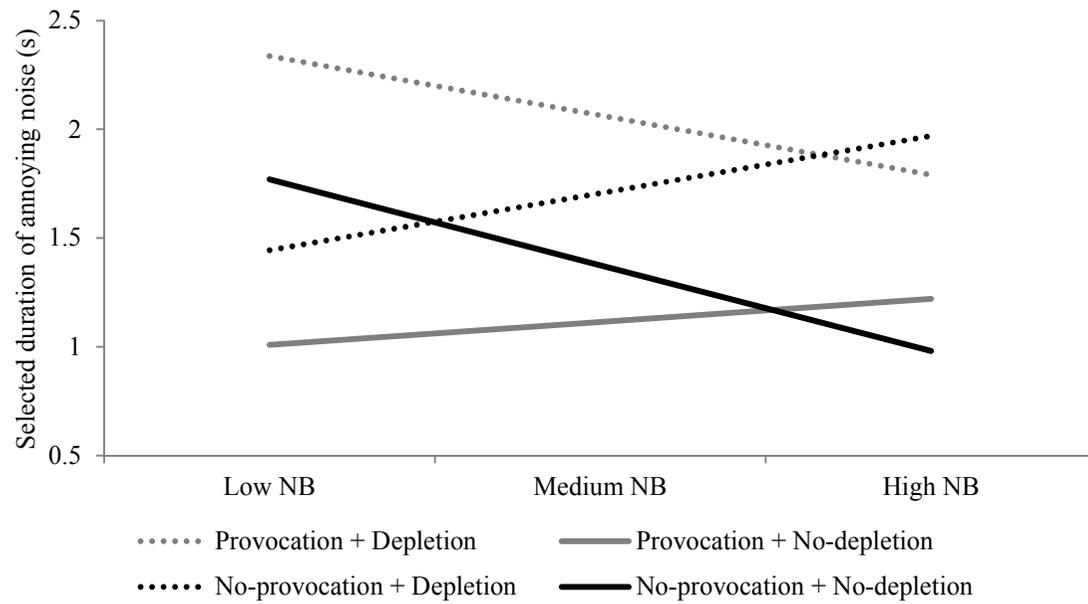
Figure 2 Provocation, normative beliefs about aggression, self-control resources, and aggressive behavior (Study 2)

Note: Low NB: low normative beliefs about aggression (-1 SD); Medium NB: medium normative beliefs about aggression (-1 SD ~ +1 SD); High NB: high normative beliefs about aggression (+1 SD)

---

[i] **Implicit aggressiveness.** In our original study, we also employed the single-target implicit association test (ST-IAT) to investigate participants'

implicit aggressive tendency (as another potential Impellor). This test included three target words describing the self (e.g., me), and six attribute

words describing aggressiveness (e.g., revenge, retaliation) and another six attribute words describing peace (e.g., benevolence, mercy). The

attribute words were initially assessed by 324 college students on a 7-point scale ranging from "1 = not aggressive / peaceful at all" to "7 =

most aggressive / peaceful" in a pilot test. The top six words for each attribute (all mean scores higher than 5.5) were selected as being most

representative of aggressiveness / peace. The ST-IAT included three blocks. In the first block, participants indicated which category (aggression

/ peace) each word presented on the screen belonged to as accurately and quickly as they could. In the second block, participants pressed the "E"

button to respond to "aggressive" and "the self" words, and the "I" button for "peaceful" words. In the third block, participants pressed the "E"

button to respond to "aggressive" words and the "I" button for "peaceful" and "the self" words. The ratio of pressing "E" and "I" was 3:2 in the

second block and 2:3 in the third block. In order to avoid a possible order effect, the second and third blocks were counterbalanced. The

D-algorithm (Greenwald, Nosek, & Banaji, 2003) was utilized to indicate respondents' implicit aggressive tendency. This test was administered

in the first session of the study two weeks before the manipulation. However, we calculated the internal consistency reliability of the ST-IAT

using every fourth trial of D scores, finding that the reliability was extremely low (< .40). Although some studies have demonstrated that the

implicit test is a reliable measure (e.g., Karpinski & Steinman, 2006), other studies argue that its level of reliability does not represent that

needed to indicate satisfactory psychometric properties (e.g., Bosson, Swann Jr., & Pennebaker, 2000; Teige, Schnabel, Banse, & Asendorpf,

2004). Based on the low levels of reliability for the ST-IAT in the current study, we decided not to report the findings obtained using the implicit

measure.