# The effects of implicit and explicit self-control on self-reported aggression☆

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## ARTICLE INFO

## ABSTRACT

Aggression and violence have a large impact on society. Researchers have highlighted the need to incorporate impulsive processes into models of aggression. The current research is the first to investigate the role of self-control, measured by both explicit questionnaires and an implicit association test, on trait aggression. Results indicated that higher levels of implicit self-control were associated with lower levels of anger, and physical and verbal aggression, but not hostility while higher levels of explicit self-control were related to lower levels of all types of aggression. We also investigated the role of gender in the current study and showed that gender was associated with aggressive tendencies, such that males had higher levels of trait aggression on three out of four outcomes, and the relationship between explicit self-control and physical aggression differed according to gender whereby the relationship between these variables was stronger among males. The current findings provide the first indication that both implicit and explicit self-control have roles in aggressive tendencies.

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## 1. Introduction

Aggressive tendencies have been reported in a range of contexts including in schools (Robers, Zhang, & Truman, 2012), at sporting events and among athletes (Reza, 2012), and towards hospital staff (Mullan & Badger, 2007). Research into aggression has focused on a range of aetiological factors or predictors of aggression (Hawkins et al., 2000). This research is typically split between studies that take a behavioural approach to measurement of aggression (See Eagly & Steffen, 1986 for review), and those which use self-report measures (Garcia-Forero, Gallardo-Pujol, Maydeu-Olivares, & Andres-Pueyo, 2009). Self-report measures may reflect more trait-type aggression (Denson, DeWall, & Finkel, 2012). Focusing on the trait-type approach to aggression, longitudinal studies have indicated several predictors of aggression (Farrington, 1989, 1991; Moffitt, 1993).

Self-control, the ability to control emotions or impulses in order to attain goals (Baumeister, Vohs, & Tice, 2007), has been highlighted as a possible variable that is related to an individual's tendency to act aggressively (Bluemke, Friedrich, & Zumbach, 2010; Bluemke & Teige-Mocigemba, 2014; Denson et al., 2012; Garcia-Forero et al., 2009; Schmidt, Zimmerman, Banse, & Imhoff, 2015; Sofia & Cruz, 2015). The capability to exert self-control is fundamental to adaptive functioning and goal attainment (Tangney, Baumeister, & Boone, 2004). Deficits or breakdowns in self-control are central to maladaptive behaviours and psychopathology, such as antisocial personality disorder (Krueger & South, 2009). Furthermore, situations in which self-control is diminished or depleted typically lead to more overt and extreme aggressive behaviours (Matthias, Monika, & Joerg, 2010; Richetin, Richardson, & Mason, 2015; Rothbart & Sheese, 2007; Schmidt et al., 2015; Simons, Wills, Emery, & Spelman, 2015). Additionally, there has been a recent increase in the integration of self-control in theoretical models of aggression (Denson et al., 2012). The I[3] theory (Finkel et al., 2012) outlines inhibition- a facet of the broader construct of self-control- as one of the three processes that underpin aggression. The current study develops these trends in the literature by focusing on self-reported, trait-like aggression, similar to Garcia-Forero et al. (2009), rather than behavioural approaches (e.g., Eagly & Steffen, 1986).

It is unclear why some individuals are better able to control their aggression than others. Recent conceptualisations of the role of self-control in outcomes such as aggression that take a dual process approach (Hofmann, Friese, & Strack, 2009; Strack & Deutsch, 2004) may offer some explanation. Dual process approaches highlight the role of both reflective (e.g., conscious action towards a goal) and impulsive (e.g., non-conscious automatic tendencies) processes. For example, in Strack and Deutsch's (2004) Reflective-Impulsive Model, the reflective system is typified as effortful control, goal-oriented planning, and conscious deliberations. The impulsive system is closely linked to emotion-based action tendencies, associative processes, and is relatively fast acting or automatic. In terms of self-control and aggression, people

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may feel an impulse to behave aggressively at the cost of a long-term goal (e.g., avoiding punishment). In order to resist temptation and choose the long-term goal, self-control is needed (Hofmann et al., 2009; Strack & Deutsch, 2004). Therefore, higher levels of self-control are likely to allow people to curb aggressive tendencies. While the necessity to incorporate impulsive processes into models and theories of aggression has been outlined, there remains a lack of research in this area (Bluemke & Teige-Mocigemba, 2014; Bluemke et al., 2010). The studies that have incorporated impulsive processes, have focused on developing an implicit association test (IAT; Greenwald & McGhee, 1998) to measure aggression (Banse, Messer, & Fischer, 2014; Richetin et al., 2015), rather than attempting to determine how these processes interact to influence aggressive tendencies.

Assessing self-control using both explicit and implicit measures may capture the reflective and impulsive processes associated with aggression (Perugini, Richetin, & Zogmaister, 2010). A multitude of self-report measures that tap explicit self-control exist and have been shown to relate to behavioural outcomes (for review, see: de Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012). The Tangney brief self-control scale (BSCS) has shown the most validity in terms of predicting a variety of self-control outcomes and behaviours (Maloney, Grawitch, & Barber, 2012; Tangney et al., 2004). In terms of impulsive processes, the IAT (Greenwald & McGhee, 1998) has been repeatedly used as a proxy measure of the impulsive system (Keatley, Clarke, & Hagger, 2012). In this task, participants are required to pair target and category exemplars. Faster target-category pairings are said to reflect greater impulsive tendencies towards the concepts represented by these associations (Keatley et al., 2012). For example, pairing of aggression with 'good' faster than with 'bad' may suggest an implicit tendency towards aggression. While the IAT has been modified previously to measure aggression, the task has not been modified to implicitly measure self-control in the context of aggression. Given that impulsive processes are likely to determine aggressive tendencies, an implicit measure of self-control, which captures impulsive processes, may elucidate why some individuals tend to be more aggressive than others. Further, there is evidence to suggest that explicit measures of self-control and other measures of this construct do not necessarily overlap, and may capture unique variance in self-control outcomes (Allom, Panetta, Mullan, & Hagger, 2016).

The aim of the current research was to investigate the role of impulsive and reflective self-control processes, as assessed by implicit and explicit measures respectively, in self-reported aggression. This is the first study, to the authors' knowledge, to develop an implicit measure of self-control and test it in the domain of aggression. Based on previous research in the area (Bluemke & Teige-Mocigemba, 2014; Bluemke et al., 2010; Hofmann et al., 2009), a series of hypotheses were developed. The first hypothesis was that individuals with higher implicit self-control would have lower aggressive tendencies, based on research showing the role of self-control in inhibiting aggression (Schmidt et al., 2015; Simons et al., 2015). Similarly, a second hypothesis was that individuals self-reporting higher levels of explicit self-control would have lower aggressive tendencies. Given that males and females typically show different forms of aggression (Archer, 2004; Eagly & Steffen, 1986; Strüber, Lück, & Roth, 2008) and levels of self-control (Chapple, Vaske, & Hope, 2010) we investigated the effects of gender in the current study.

## 2. Materials and methods

### 2.1. Participants

An online sample ($N = 320$, females $= 206$; $M_{age} = 31.11$, $SD = 10.88$, Range: 18–71) participated in the current study. Participants were part of an international online pool recruited through SocialSci (73% Caucasian/White; 12% Asian/Pacific Island; 6% Black; 4% Hispanic; 5% others). A 2USD inconvenience allowance was administered in return for participation in the study. There were no restrictions on who could take part, aside from fluency in English. The study protocol was approved by the University HREC.

### 2.2. Materials

#### 2.2.1. Implicit Association Test – Self-control (IAT-SC)

Implicit self-control was measured using the IAT (Greenwald & McGhee, 1998). Words representing 'self-control' (controlled, cautious, planned, disciplined, consider) and 'impulsivity' (impulsive, free, careless, spontaneous, hasty) were taken from explicit self-report measures of self-control and impulsivity (Maloney et al., 2012; Tangney et al., 2004). Once several explicit scales had been sourced, a group of four experts in the area independently reviewed the chosen words and agreed on their use as being appropriate to represent the two constructs. Words pertaining to 'self' (I, me, my, mine, self) and 'others' (others, they, them, their, theirs) were adopted from previous research in the literature (Keatley, Clarke, & Hagger, 2013a, 2013b; Keatley et al., 2012). The label 'others' was adopted as it has been shown to be easier to distinguish from 'self' than 'not-self', and was clearly defined to participants as being 'not-self', rather than a more generalised social comparison category. The standard five-step IAT was used, in which blocks 1, 2, and 4 were practice blocks consisting of 20 trials, and test blocks 3 and 5 comprised 20 practice trials and 40 test trials. Test blocks were counterbalanced. The IAT score was calculated in accordance with the improved $D$-score algorithm (Greenwald & Nosek, 2003). IAT scores were calculated such that higher scores indicated higher levels of implicit self-control.

#### 2.2.2. Brief self-control scale (BSCS)

The BSCS (Maloney et al., 2012; Tangney et al., 2004) is a measure of dispositional self-control. The scale comprises 13 items, rated on a 5-point Likert type scale ($1 = not at all like me$ to $5 = very much like me$). Example: "People would say I have iron self-discipline". The scale demonstrate good reliability in the current sample, $\alpha = 0.70$.

#### 2.2.3. Aggression

Participants completed the Buss-Perry Aggression Questionnaire (Anderson & Dill, 2000; Buss & Perry, 1992), which is a 29 item measure of an individual's physical aggression, verbal aggression, anger, and hostility. Items such as "if someone hits me, I hit back" (physical aggression, $\alpha = 0.81$); "I often find myself disagreeing with people" (verbal aggression, $\alpha = 0.83$); "When frustrated, I let my irritation show" (anger, $\alpha = 0.78$); "At times I feel I have gotten a raw deal out of life" (hostility, $\alpha = 0.89$) were measured on a 7 point Likert-type scale ($1 = extremely uncharacteristic of me$ to $7 = extremely characteristic of me$).

### 2.3. Procedure

Participants were recruited online, where they were provided with study information and indicated their consent to participate by clicking the 'I agree' option. The order of presentation was randomised, such that the IAT appeared either before or after the self-report measures, which were also randomised. Participants progressed through the study at their own pace, typically lasting approximately 15 min. Completion of the IAT took approximately 5 min. While the IAT was administered online, it was set-up to download and run itself using participants' own operating systems; therefore, there were no issues relating to internet speed or lag.

## 3. Results

### 3.1. Preliminary analyses

All participants were included in the analysis as none met exclusion criteria specified in the improved scoring algorithm of the IAT. Initial