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Resisting temptation in schools? How to reduce self-control depletion effects

Within the school environment, pupils are required to constantly resist impulses, for example: raising their arm before answering a teacher's question, concentrating on their work rather than talking to a classmate, or making healthy food choices at lunchtime over unhealthy alternatives. In order to resist all of these temptations, individuals are required to exert self-control, a term often referred to as willpower. Within the literature, self-control is defined as the mental capacity of an individual to change, or override, their impulses, desires, and habitual responses (Baumeister, Vohs, & Tice, 2007). That is, whenever a pleasurable proximal goal (e.g., chatting to a classmate) stands in contrast to a distal goal (e.g., completing the work they have been set), an individual is required to exert self-control in order to pursue the distal goal, rather than give in to the proximal goal (Fishbach & Woolley, 2018). Thus, self-control is an individual's indispensable resource needed to override dominant reactions or initiate specific behavioural, emotional, or cognitive responses in order to meet long-term goals and interests.

This review will first explain the importance of self-control across life domains, before focusing on the role of self-control in the school environment. These findings will then be discussed in respect of interventions that could be implemented in schools to enhance self-control and thus academic achievement and pupil well-being.

Self-Control: Implications and Theories

The ability to exert self-control can differ between individuals (i.e., trait self-control), as well as within individuals across situations (i.e.,

state self-control; Tangney *et al.*, 2004). Both facets of self-control have been linked to various health and performance indicators and thus before applying the concept of self-control in school environments, the first section of this review will provide a brief overview of the importance of self-control within other life domains. Given that individuals with high self-control are better able to control their thoughts, regulate their emotions, and inhibit their impulses, compared with people with low self-control (De Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012), it is unsurprising that they enjoy better psychological wellbeing, experience higher levels of achievement and performance, and better interpersonal relationships (Gailliot & Baumeister, 2007; Hagger, Wood, Stiff, & Chatzisarantis, 2010; Tangney *et al.*, 2004). However, the concepts of trait and state self-control hold distinctive characteristics and, as such, the terms should not be used reciprocally (Allom, *et al.*, 2016). The present review focuses on how to reduce the effects of the depletion of state self-control. Readers who are interested in the effectiveness of interventions to improve trait self-control over time are advised to read a recent meta-analysis conducted by Friese, Frankenbach, Job, and Loschelder (2017).

Research examining state self-control has demonstrated that exerting self-control on one task impairs performance on a subsequent, ostensibly unrelated task requiring self-control (Hagger *et al.*, 2010). For example, completing a cognitive task (where participants have to inhibit their natural responses and thus deplete their self-control) has been shown to have negative effects upon subsequent exercise (Boat, Atkins, Davenport, & Cooper, 2018; Englert & Wolff,

2015) and cognitive performance (Friese, Binder, Luechinger, Boesiger, & Rasch, 2013). One widely used theory to describe such effects is the strength model of self-control (Baumeister *et al.*, 2007). According to this model, performance on tasks requiring self-control draws energy from a general resource (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven, Collins, Shiffman, & Paty, 2005). This resource is limited and is consumed by use; therefore, it is vulnerable to becoming depleted over time. Accordingly, after initial acts of effortful control, an individual's capacity to exert further self-control becomes exhausted, leading to decreased performance on subsequent acts of self-control (Hagger *et al.*, 2010). The state of self-control resource depletion is termed 'ego depletion' (Baumeister *et al.*, 1998). Although this resource explanation has been used as the primary model to explain performance decrements following the exertion of self-control, this hypothesis has recently been criticised (e.g., Kurzban, 2010; Lange & Eggert, 2014).

An alternative explanation of self-control depletion is provided by the shifting priorities model (Inzlicht & Schmeichel, 2016; Milyavskaya & Inzlicht, 2016). This model suggests that individuals evaluate their possible choices with regard to their proximal (e.g. pain and discomfort during exercise) and distal (e.g. running a race as fast as possible) goals and thus, assign values to each of the choices. This evaluation process is influenced by attentional and motivational shifts towards one of the choices. Specifically, following the exertion of self-control, the value of exerting further self-control in pursuit of the distal goal reduces, while the value of conceding to the tempting proximal goal is increased (Kool & Botvinick, 2014). In the above example, this would mean that in the state of self-control depletion, individuals 'give in' to the pain in their legs during the race and slow down, ultimately at the expense of their distal goal to complete the race as fast as possible.

A growing body of research has linked reduced self-control to numerous adverse and maladaptive outcomes, including less prosocial behaviour (DeWall, Baumeister, Gailliot, & Maner, 2008; Xu, Bègue, & Bushman, 2012), increased aggressive responding (DeWall, Baumeister, Stillman, & Gailliot, 2007), greater risk taking (Freeman & Muraven, 2010), as well

as decrements in physical stamina (Muraven, Tice, & Baumeister, 1998). Regarding intellectual performance, Schmeichel, Vohs, and Baumeister (2003) found that following self-control exertion, participants did not perform as well on higher order cognitive processing tasks, such as logical reasoning, compared to those participants who did not exert self-control.

Self-Control within the School Environment

As outlined above, self-control is relevant to nearly all forms of behaviour that contribute to a successful and healthy life. Surprisingly, however, a limited amount of research has explored the effects of self-control depletion within young people. To the best of our knowledge, only one study has tested the effects of self-control depletion in the school-aged population. Specifically, Price and Yates (2010) depleted self-control in young people (aged 10.5 – 14.5 years) before asking them to complete an online mathematics exercise on a computer, in which they were able to independently select their own difficulty level. Although self-control depletion did not affect the error rate on the maths task, those students who had previously exerted self-control chose a significantly easier level of difficulty than those participants who had not exerted self-control prior to the maths task (Price & Yates, 2010).

Although easier goals were not related to performance in the Price and Yates study (2010), goal setting theory (Locke & Lotham, 2002) assumes that those depleted children who set themselves easy goals are not only more likely to put less effort into the task, but also perform worse. Hence, those children who may have exerted self-control throughout the day may be less likely to challenge themselves academically later in the day and also less likely to achieve their goals, which may ultimately lead to lower levels of academic achievement. Although the evidence discussed earlier on in this review highlights the importance of self-control across numerous life domains, we currently know very little about the impact of self-control depletion on young people. While emerging research within this area is beginning to shed light on the importance of self-control in young people for academic achievement and development, further research is warranted to confirm these effects and

to develop strategies to ensure the optimisation of self-control in schools, ultimately enhancing academic achievement and well-being.

Recommendations for Educators

Given the high cognitive, behavioural, and attentional demands within the school environment, it is likely that many schoolchildren will become depleted of self-control during the school day. Therefore, it seems reasonable to suggest that educators should be made aware of the implications of self-control within young people, as well as potential strategies to improve self-control within this population. The following section of this review will, therefore, discuss potential methods to counteract the effects of self-control depletion to help ensure optimal academic achievement and development.

Research has suggested that inducing positive emotions and moods is one efficient way to mitigate the effects of self-control depletion (Ren, Hu, Zhang, & Huang, 2010; Tice, Baumeister, Shmueli, & Muraven, 2007). Transferring these findings into school environments, it seems reasonable to suggest that educators should be encouraged to boost pupil's mood. This could be achieved by, for example, positive reinforcement and encouragement throughout the school day (Cushman & Cowan, 2010). In addition, exposing young people to nature may also help to improve mood (e.g., Berg, Koole, & van der Wulp, 2003; Beute & de Kort, 2014). Recent research has shown that exposure to images of nature reduced the effects of self-control exertion on subsequent persistence on an unsolvable task, enhanced performance on a logical reasoning task, and improved impulse control (Beute & de Kort, 2014; Chow & Lau, 2015). Notably, the improvement in logical reasoning may be of particular interest to educators. Logical reasoning resembles one form of high-order cognitive processes, which is imperative for academic success (Brown, 1994; Freund & Holling, 2008). Therefore, incorporating nature in to the school environment (e.g. plants, posters displaying nature, green corners in outdoor spaces with flower beds and trees etc.), may help to reduce the effects of self-control exertion and improve academic performance and development.

Additionally, several cognitive strategies have been found to restore self-control. For example,

Schmeichel and Vohs (2009), showed that an intervention as small as expressing one's core values (e.g., writing a brief essay discussing the reasons as to why a students' top ranked value is important to him or her), a form of self-affirmation, can successfully reduce the effects of self-control exertion and improve subsequent performance. Other intervention studies have identified self-awareness, mindfulness meditation, as well as relaxation strategies as additional effective cognitive strategies to replenish self-control (e.g., Alberts, Martijn, & Vries, 2011; Friese, Messner, & Schaffner, 2012; Schmeichel & Vohs, 2009). From a practical perspective, therefore, educators are advised to integrate mindfulness, self-awareness, and self-affirmation exercises into their schedules, especially at times when pupils may have had to use their self-control (e.g., a challenging maths class where individuals have had to sustain large amounts of attention and concentration). Such intervention strategies may also include mindfulness training whereby pupils learn to attend to sensations and experiences, which one usually does not attend to (Alberts *et al.*, 2011; Friese *et al.*, 2012; Schmeichel & Vohs, 2009).

These interventions can be very brief (and thus could practically be incorporated in the school day); typically, the cognitive intervention strategies discussed above have only lasted up to 6 minutes.

Deriving implications from the shifting priorities model of self-control (Inzlicht & Schmeichel, 2016; Milyavskaya & Inzlicht, 2016), interventions that either reinforce the value of distal goals, or decrease the worth of indulging in proximal goals may also improve self-control. For instance, reminding pupils throughout the day of their motivation for their valued goal (e.g., to complete all work tasks set in each lesson to the best of their ability) may help them to resist competing temptations (e.g., to chat to a friend instead of completing the work tasks). Such techniques may heighten the value of self-control by reducing the effort required to exert self-control, and emphasise the motives in favour of the distal goal (Milyavskaya & Inzlicht, 2016). Similarly, making the valued goal more inherently enjoyable (e.g., including rewards), may lead to successful self-control (Woolley & Fishbach, 2016). Another way to increase the value of the distal goal is to design an

environment in which it is more effortful to pursue the tempting proximal goal. For instance, school canteens could design their buffets in such a way that the healthy food can be reached more easily, compared to the unhealthy options. This may help pupils to resist the temptation of selecting the unhealthy option and similar interventions have been effective in improving dietary habits (e.g., Rozin, Scott, & Dingley, 2011).

Conclusions

Overall, it is clear that self-control has an important role to play in the school setting. Optimising self-control and minimising the depletion of self-control across the school day will lead to improved behaviour and learning, ultimately enhancing academic achievement and pupil well-being. This brief review has suggested numerous interventions that could be used to minimise the impact of self-control depletion, including: mindfulness, self-awareness and self-affirmation exercises, and enhancing mood (through, for example, positive reinforcement and exposing young people to nature). However, it must be noted that the role of self-control in young people, particularly in the school setting, is an emerging area of research and further work is definitely warranted to support these initial exciting and important findings.

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