Beyond Effortful Inhibition: Self-Control Strategies and Their Usage Mechanisms

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Abstract

Accumulating evidence suggests that self-control is not merely about effortfully inhibiting impulses; individuals also proactively adopt various self-control strategies to promote successful self-control. Strategies proposed based on the self-control process model are believed to encompass the majority of self-control strategies; however, the hypothesis posited by this model—that early-stage strategies are more effective than late-stage strategies—requires further empirical investigation. In daily life, people typically employ at least one strategy to resist desires, selecting different strategies according to desire type and situational context; the effectiveness of strategy use also varies as a function of individual differences, desire type, and situational factors. Future research should thoroughly explore the flexibility and variability of self-control strategy use, the mechanisms underlying the combined use of multiple strategies, emphasize investigating the relationship between self-control strategy use and the enhancement of self-control capacity, and strengthen intervention studies on self-control strategy use.

Full Text

More Than Effortful Inhibition: Self-Control Strategies and Their Mechanisms of Use

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Abstract
Accumulating evidence demonstrates that self-control involves more than effortful inhibition of impulses; individuals actively employ various self-control strategies to promote successful self-regulation. The process model of self-control is

considered to encompass the majority of self-control strategies, though its hypothesis that early-stage strategies are more effective than late-stage strategies requires further empirical investigation. In daily life, people typically use at least one strategy to resist desires, selecting different strategies based on desire type and situational context. The effectiveness of strategy use varies according to individual differences, desire characteristics, and situational factors. Future research should explore the flexibility and variability of self-control strategy deployment, the mechanisms underlying multiple strategy use, the relationship between strategy use and self-control capacity enhancement, and strengthen intervention studies on self-control strategies.

Keywords: self-control, self-regulation, inhibition, self-control strategies
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1. Introduction

When striving to achieve goals, individuals frequently encounter temptations or impulses that hinder goal attainment—craving delicious cake while trying to maintain a slim figure, seeking entertainment while facing academic tasks, or scrolling through social media despite needing sleep. Goal achievement thus requires self-control to resist these temptations. Traditionally, self-control has been conceptualized as the capacity to effortfully inhibit short-term, gratifying impulses to attain more valuable long-term goals (Baumeister et al., 2007; de Ridder et al., 2012; Hofmann et al., 2012; Li & Huang, 2012; Yu et al., 2013). Extensive evidence indicates that individuals with high self-control, compared to their low self-control counterparts, better regulate their thoughts, emotions, and impulses (Baumeister et al., 1998), enjoying superior academic performance, interpersonal relationships, and physical and mental well-being (de Ridder et al., 2012; Tangney et al., 2004). Conversely, low self-control correlates with problematic behaviors such as impulsive purchasing (Baumeister, 2002), financial debt (Gathergood, 2012), and unhealthy eating patterns (Elfhag & Morey, 2008).

For decades, self-control research has predominantly viewed effortful inhibition as its core feature, encompassing the suppression of unwanted thoughts, feelings, and behaviors (Baumeister & Heatherton, 1996; Hofmann et al., 2009). This perspective is central to major self-control theories, including the strength model, which posits that self-control relies on limited internal resources or energy (Hagger et al., 2010; Muraven & Baumeister, 2000). Effortful inhibition rapidly depletes these finite resources, leading to a state of "ego depletion" where further impulse suppression becomes difficult and self-control failure likely (Baumeister, 2003; Tan et al., 2012; Zhan & Ren, 2012). For instance, individuals who force themselves to eat radishes instead of chocolate persist for less time on subsequent unsolvable puzzles compared to those who exert no self-control (Baumeister et al., 1998). Ego depletion also promotes impulsive decision-making (Dou et al., 2014), undermines ethical behavior (Gino et al., 2011; Nie et al., 2018), and may lead to antisocial conduct (Ren et al., 2014). Another influential framework, the

dual-systems model, conceptualizes self-control as comprising an impulsive system that rapidly generates behavioral impulses toward immediate stimuli, particularly high-temptation cues, and a deliberative system that slowly considers potential outcomes to effortfully inhibit or override impulses, making prudent choices aligned with long-term goals (Hofmann et al., 2009; Tangney et al., 2004). The deliberative system also depends on control resources (Milyavskaya et al., 2015). Both models thus emphasize effort and inhibition as defining characteristics of self-control.

This predominant focus on effortful inhibition has shaped over two decades of research, with scholars emphasizing self-control failure and strategies to enhance willpower (Baumeister et al., 2007; Hagger et al., 2010). The implicit assumption has been that learning to suppress impulses and say "no" to temptations is the key to success. However, emerging research reveals that successful self-control in daily life requires more than situational impulse suppression (Fujita, 2011; Gillebaart & de Ridder, 2015; Hofmann & Kotabe, 2012). Individuals actively avoid temptations (Duckworth, Gendler et al., 2016; Ent et al., 2015; Hofmann et al., 2012), modify their thoughts about temptations (Fujita & Han, 2009), and precommit before encountering temptations (Ladouceur et al., 2012). The dual-motive model frames self-control dilemmas as conflicts between distal, abstract motivations and proximal, concrete motivations, positioning effortful inhibition as merely one of many possible strategies to promote distal goals (Fujita, 2011). Some researchers argue that self-control operates through two pathways: inhibiting impulsive behaviors and initiating behaviors consistent with long-term goals (De Ridder & Gillebaart, 2017). Others suggest that highly self-controlled individuals actually resolve self-control conflicts not through effortful inhibition but through relatively effortless strategies aligned with long-term goals (Galla & Duckworth, 2015; Gillebaart & de Ridder, 2015; Hennecke et al., 2019; Hofmann et al., 2012). A recent review characterizes self-control as a "toolbox" of strategies, with successful self-control hinging on effective deployment of various techniques (Fujita et al., 2020). Self-control strategies are defined as ways individuals actively modify their cognitive, motivational, emotional, or behavioral responses to self-control challenges to facilitate goal attainment (Hennecke et al., 2019). Recent scholarship thus broadens the conceptual scope of self-control beyond effortful inhibition, showing growing interest in everyday strategy use.

Based on this evolving perspective, this study reviews recent theoretical and empirical research on self-control strategies, analyzing and summarizing their types and underlying mechanisms of use to inform interventions aimed at enhancing individual self-control capacity.

2.1 Strategies in the Self-Control Process Model

The self-control process model (Duckworth et al., 2014; Duckworth et al., 2019), building upon the emotion regulation process model (Gross, 1998), describes the gradual unfolding of impulse generation and regulation. The model assumes

four stages of impulse emergence: first, entering a situation; second, attending to specific features of the situation; third, forming subjective evaluations of the situation; and fourth, these evaluations generating response tendencies. Once a response tendency becomes sufficiently strong, it is enacted. Corresponding self-control strategies target these stages.

First, **situational selection** involves proactively placing oneself in environments that support long-term goals and resist temptations (Duckworth, Gendler et al., 2016). For example, a student seeking to study seriously chooses a quiet, well-lit library that facilitates concentration, or a dieter avoids walking past favorite restaurants on their way home.

Second, **situational modification** involves actively altering the current situation when selection is impossible, thereby enhancing goal-promoting impulses or reducing interference from tempting stimuli. For instance, a student puts their phone in airplane mode to prevent distractions while studying, or someone places their alarm clock far from the bed to force themselves to get up to turn it off (Duckworth, Gendler et al., 2016). Both situational selection and modification are **situational strategies** that prevent self-control conflicts by distancing oneself from temptations. These early-stage strategies are considered the most proactive.

Third, **attentional deployment** applies when neither selection nor modification is possible. In such contexts, individuals can focus attention on features or mental representations that promote self-control. Although attentional shifting does not alter objective circumstances, it profoundly influences subjective experience (Duckworth et al., 2019). For example, a student concentrates on the teacher or textbook, or a dieter averts their gaze from tempting chocolate.

Fourth, **cognitive change** operates when situations cannot be altered and temptations are unavoidable. This strategy involves modifying cognitive appraisals to strengthen favorable impulses or weaken unfavorable ones (Duckworth et al., 2019). For instance, viewing mathematics study as an essential step toward becoming a doctor rather than a meaningless, tedious task enhances motivation to study.

Finally, **response inhibition** represents the last line of defense. After evaluating potential responses and developing response tendencies that may reach a critical threshold, individuals can directly modulate their responses (Duckworth et al., 2019). For example, a student might force themselves to study or resist checking their phone. Response inhibition is considered the final self-control strategy because relying on willpower to suppress responses often leads to failure (Hofmann & Kotabe, 2012).

2.2 Shortcut Strategies

Beyond stage-specific strategies, plans, personal rules, and habits link anticipated situational cues to desired responses, bypassing the evaluation stage and

effectively shortening the impulse generation cycle. These are termed **shortcut strategies** (Duckworth et al., 2019).

First, **planning** pre-links anticipated situational cues with desired behavioral responses. For example, hours before choosing between studying and playing on a tablet, a student formulates a plan: "After school, I will do my math homework." When goals are pre-planned, entering the anticipated situation immediately triggers goal-directed action without requiring deliberation or choice, thereby protecting against distractions from temptations, bad habits, or competing stimuli (Gollwitzer, 1999). Planning promotes children' s saving behavior (Kamawar et al., 2019), resists distraction from tempting stimuli (Wieber et al., 2011), and increases vegetable and fruit consumption (Zhou et al., 2015). However, some research suggests planning does not always enhance self-control, as contemplating specific implementation plans can cause emotional distress for those with poor goal status, producing negative effects (Townsend & Liu, 2012). Planning also consumes mental resources, and ego depletion significantly reduces planning desire (Sjastad & Baumeister, 2018).

Second, **personal rules** (or internal commitments) involve individuals establishing internal standards based on past behavioral patterns, creating a positive self-image that demands adherence to self-imposed rules (Bénabou & Tirole, 2004). For example, "I always do my homework first after returning home; if I don' t, I' m not a good student." Personal rules help individuals avoid rationalizations like "just this once" and promote goal-consistent behavior. However, research on personal rules as a self-control strategy for academic performance remains limited (Duckworth et al., 2019).

Third, **habits** are mental tendencies formed through repeated performance of the same actions in the same contexts over time, directly linking specific situational cues to behavioral responses (Neal et al., 2013). Like plans, habits bias attention toward triggering cues, completely bypassing the evaluation stage (Neal et al., 2012). As automatically triggered repetitive responses to contextual cues, habits do not rely on limited self-control resources required for more deliberative actions (Gillebaart & de Ridder, 2015). Research indicates that habits mediate the relationship between self-control and goal behavior (Adriaanse et al., 2014; Gillebaart & Adriaanse, 2017). Highly self-controlled individuals develop habits aligned with their long-term goals, showing stronger study habits and healthier eating patterns (Galla & Duckworth, 2015). Beneficial smartphone placement habits correlate with better academic performance among students (Troll et al., 2021).

2.3 Self-Deployed and Other-Deployed Strategies

In a review, Duckworth et al. (2018) summarized 23 methods for reducing self-control failures, distinguishing not only between situational and cognitive strategies but also between **self-deployed** and **other-deployed strategies** (Duckworth et al., 2018). Self-deployed strategies are self-initiated, while

other-deployed strategies are implemented by third parties (e.g., policies, environments, organizational leaders) to reduce self-control failures. This yields four categories: self-deployed situational strategies (precommitment, temptation bundling, situational modification, behavior therapy); self-deployed cognitive strategies (goal setting, planning, mental contrasting with implementation intentions, self-monitoring, psychological distancing, mindfulness, cognitive therapy); other-deployed situational strategies (mandatory measures, micro-environmental interventions, default interventions, active choice, advance choice, planned interruptions); and other-deployed cognitive strategies (social norms, social labeling, future-self connection, joint evaluation, fresh start framing, self-licensing prevention). Duckworth et al. (2019) classified self-deployed strategies within the process model framework: precommitment and temptation bundling as situational strategies; self-monitoring, mental contrasting with implementation intentions, and mindfulness as attentional deployment; psychological distancing as cognitive change (Duckworth et al., 2019).

Relative to self-deployed strategies, other-deployed strategies may be easier to implement and represent a viable approach for preventing self-control failures. However, such external approaches do not cultivate personal self-control capacity (Duckworth et al., 2018). Self-deployed strategies place greater "burden" on individuals but, once mastered, can theoretically be applied across domains (Hertwig & Grune-Yanoff, 2017). Consequently, most self-control strategy research focuses on self-deployed strategies.

2.4 Psychological and Behavioral Strategies

Fujita et al. (2020) divided self-deployed self-control strategies into **psychological** and **behavioral** categories. Psychological strategies modify attentional focus and mental representations of tempting stimuli, while behavioral strategies utilize or manipulate situational features (Fujita et al., 2020).

Psychological strategies include attentional strategies and mental restructuring strategies. Attentional strategies promote self-control by shifting focus in two ways: directing attention to alternative environmental stimuli (e.g., having children choose toys to play with) or altering the focus of one' s thoughts (e.g., prompting children to think about fun ideas). Both approaches enhance children' s self-control (Mischel et al., 1989). Mental restructuring strategies change cognitive representations of stimuli to influence behavior and feelings. For example, activating high-level construal (Fujita & Roberts, 2010; Kross & Ayduk, 2017) and thinking about one' s behavior from a third-person perspective increase psychological distance from stimuli, thereby promoting self-control (Furman et al., 2020). Recent research shows that both physical and perceived distance help resist unhealthy food temptations (Cole et al., 2021). Additionally, altering beliefs about self-control itself constitutes a mental restructuring strategy: individuals who view self-control as fixed or limited struggle more than those who believe it is malleable or unlimited (Job et al., 2015).

Behavioral strategies include precommitment and situational strategies. Precommitment strategies encompass advance choice, self-punishment, and temptation bundling. **Advance choice** involves making decisions before temptation arises. For example, selecting lunch in the morning increases the likelihood of choosing a healthier salad later (Milkman et al., 2008). **Self-punishment** imposes costs for failing to meet goals. Requiring participants to submit assignments by a deadline or face punishment significantly promotes early submission (Ariely & Wertenbroch, 2002). **Temptation bundling** pairs "should" behaviors that promote long-term goals with more pleasant "want" behaviors. Students who could listen to audiobooks while exercising at the gym did so more frequently than control participants (Milkman et al., 2014). **Situational strategies** remove temptations from view by selecting or modifying one' s environment. For instance, instructing students to remove temptations improved their academic performance (Duckworth, Gendler et al., 2016).

Beyond these strategies, numerous others—including goal support (Nielsen & Bauer, 2019), goal setting (Pearson, 2012), and inner speech (Manfra et al., 2014)—contribute to self-control success. However, strategies derived from the process model are considered to encompass the vast majority of everyday self-control strategies (Hennecke et al., 2019; Inzlicht et al., 2021) and represent the most frequently studied strategy types. According to the process model, strategies initiated before the response stage—situational selection, situational modification, attentional deployment, and cognitive change—are **early strategies** because they target pre-response behavioral output and are considered proactive. Strategies initiated at the response stage, particularly response inhibition, are **late strategies** because they focus on altering responses to temptations and are considered reactive (Duckworth, Gendler et al., 2016; Williamson & Wilkowski, 2020).

3.1 General Patterns of Strategy Use

Recent studies have examined self-control strategy use in daily life. When experiencing desires, individuals typically employ at least one strategy to resist, using more than one strategy in 25% of cases. The most frequently used strategies for resisting desires are, in order: goal reminding, delay of gratification, willpower use, attentional distraction, reminding oneself of temptation' s negative consequences, with situational selection being least common (Milyavskaya et al., 2021). Hennecke et al. (2019) used a bottom-up approach, asking participants to list strategies they used to "keep going" during unpleasant or challenging goal-directed activities. Coding participants' descriptions yielded 19 self-control strategies. Further analysis revealed that, when persisting in aversive activities, the most frequently used strategies were, in descending order: focusing on positive consequences, thinking about approaching the end, activity enrichment, focusing on negative consequences, suppressing the urge to quit, emotion regulation, attentional distraction, monitoring goal progress, and goal setting; all remaining strategies were used less than 10% of the time (Hennecke

et al., 2019). Another study investigated self-control strategy use among middle school students (Duckworth, White et al., 2016). Students described everyday events requiring self-control and their actual responses. Results showed that self-control dilemmas occurred primarily in interpersonal relationships, followed by academics, then diet control, physical exercise, and other domains. Among described strategies, cognitive change was most frequently mentioned, followed by response inhibition, situational modification, situational selection, and finally attentional deployment. Research on eating domains found that participants experienced eating desires 34% of the time, using strategies in descending frequency: cognitive strategies, distraction strategies, inhibition strategies, situational or externally-oriented strategies, and other strategies (Lopez et al., 2021).

Collectively, these findings indicate that **cognitive strategies** are most commonly used in daily life, rather than the highly proactive situational strategies proposed by the process model. Theoretically, situational strategies intervene earlier in the temptation generation process and should better resist temptation. However, actual usage patterns show situational strategies are not most common, likely due to their implementation demands. Situational selection requires anticipating future temptation conflicts; without foresight, execution is impossible. Often, individuals cannot modify their current situations, limiting situational modification use. Attentional deployment also faces constraints when tempting stimuli are unavoidable. Cognitive strategies, unconstrained by situational factors, are more convenient, leading to their preferential use. Additionally, contrary to process model predictions that response inhibition would be least effective, findings show response modulation is not the least frequently used strategy.

3.2 Differences in Strategy Use Across Situations and Desire Types

Individuals do not apply uniform strategies across all self-control situations; they select strategies based on context. In situations requiring mental effort, task enrichment or attentional distraction are used less frequently. In boring tasks, individuals more often use task enrichment or attentional distraction and less frequently use goal setting. In mentally demanding contexts, people tend to use goal setting and progress monitoring. In physically demanding situations, they prefer task enrichment and focusing on positive consequences. In emotionally challenging contexts, no single strategy predominates, but task enrichment, focusing on positive outcomes, goal setting, progress monitoring, and envisioning task completion are used less frequently (Hennecke et al., 2019). Research shows students use situational modification more in academic contexts and response modulation more in interpersonal contexts (Duckworth, White et al., 2016). Strategy use also differs between hypothetical and actual situations. In hypothetical academic scenarios, students prefer situational modification at twice the rate observed in actual situations, where cognitive change and attentional deployment are more common. In hypothetical academic situations, students also

favor response modulation more than in actual situations (Duckworth, White et al., 2016). This discrepancy may arise because hypothetical scenarios allow more objective consideration of actions, or because psychological distance from hypothetical situations promotes goal-facilitating action considerations (Fujita, 2011; Fujita et al., 2006).

Beyond situational differences, strategies vary by desire type. When resisting sleep or leisure desires, individuals more frequently use goal reminding and commitment to delayed gratification. When resisting food or social desires, they more often remind themselves why these desires are harmful and less frequently use goal reminding. Willpower is more commonly used to resist sleep or leisure desires and less so for work or study desires. Situational selection is prioritized for resisting sleep/leisure and social desires but rarely used for work/study desires (Milyavskaya et al., 2021). When desires are particularly intense, individuals more often use goal reminding and commitment to delayed gratification and tend to use multiple strategies simultaneously (Milyavskaya et al., 2021).

People prioritize certain strategies based on current self-control contexts and desire types. This preference may stem not from perceived effectiveness but from factors like ease of use or feasibility (Milyavskaya et al., 2021). A study on financial expenditure self-control found that individuals using self-generated strategies reduced spending more effectively than those using expert-provided strategies. Self-generated strategies may better fit individuals' overall lifestyles, offering greater flexibility and adaptability (Peetz & Davydenko, 2021). In some contexts, the likelihood of using certain strategies decreases because they are perceived as difficult or impossible to implement (Hennecke et al., 2019). For example, when resisting social media browsing desires, individuals rarely use theoretically effective strategies that highly restrict access, instead using direct response inhibition more frequently, primarily because highly restrictive strategies are difficult to implement (Brevers & Turel, 2019). In summary, understanding how people decide which strategies to use in different situations requires more extensive research across diverse contexts.

4.1 Effectiveness of Early Strategies

The self-control process model predicts that earlier intervention in the impulse generation cycle is more effective than later intervention. Situational selection and modification should theoretically be most effective, while later-stage strategies like response inhibition should be less effective (Duckworth, Gendler et al., 2016). The rationale is that proactive early strategies (e.g., avoiding the kitchen with fresh cookies) minimize exposure to strong temptations better than reactive strategies applied after fully experiencing impulses and their behavioral consequences (e.g., suppressing cookie cravings). Thus, situational strategies should outperform cognitive change strategies, which should both outperform direct response inhibition (Duckworth et al., 2019). Some research supports this hypothesis. In Duckworth, White et al. (2016), after learning about the five process model strategies, students rated situational selection as more effective than

other strategies for hypothetical academic self-control dilemmas (0-100 scale). An intervention randomly assigning students to situational strategy, response inhibition, or no-intervention groups found that situational strategy users showed higher learning quality than both other groups (Duckworth, White et al., 2016). Research on daily dietary self-control among female college students found that situational-oriented strategies correlated with stronger resistance, less eating, and lower desire enactment likelihood, with greater success when using early versus late strategies (Lopez et al., 2021). Another study examining early versus late strategies in promoting goal progress found that four early strategies—situational selection, situational modification, attentional deployment, and cognitive change—reliably predicted goal progress, demonstrating their effectiveness in facilitating goal attainment. Although all four early strategies promoted goal progress better than response inhibition, no evidence indicated that situational strategies outperformed other early strategies (Williamson & Wilkowski, 2020).

Early strategies' superior effectiveness may stem from their intervention in temptation generation and intensification processes, potentially reducing temptation strength (Williamson & Wilkowski, 2020). Research shows that merely experiencing desires conflicting with important goals feels exhausting regardless of control attempts, suggesting that better self-control involves not strengthening control capacity but eliminating environmental temptations (Milyavskaya & Inzlicht, 2017). Planning appears more strongly related to early strategies (e.g., situational selection and modification) than to late strategies (e.g., response inhibition), suggesting planning is more critical for early strategy implementation (Williamson & Wilkowski, 2020). Early strategies require advance planning to be effective. However, because situational selection requires anticipating temptations, attentional deployment and cognitive change may sometimes be more effective than situational strategies.

4.2 Effectiveness of Late Strategies

The process model posits that late strategies are less effective because longer exposure to impulse generation processes increases temptation strength. Research shows that effortful self-control for desire suppression does not predict daily goal pursuit success (Milyavskaya & Inzlicht, 2017), and students using response modulation showed no academic performance differences from control groups (Duckworth, White et al., 2016). However, recent research indicates that while late strategies are less effective than early ones, they still exert some influence. Response inhibition predicts goal progress (Williamson & Wilkowski, 2020) and helps resist eating desires (Lopez et al., 2021). Furthermore, direct inhibition strategies are more effective than other strategies for resisting social media use desires (Brevers & Turel, 2019). In daily desire resistance, willpower strategies are as effective as situational selection, with both outperforming other strategies (Milyavskaya et al., 2021).

These inconsistent results may partly reflect participants' understanding of strategy use. Given the common conception of self-control as willpower, participants

may attribute self-control success to inhibition (e.g., "I didn' t give in to my desire, so I must have used willpower") (Milyavskaya et al., 2021). Additionally, self-control comprises both active and passive components, and we cannot deny that effortful inhibition is an important element that plays a significant role (Fujita, 2011). Indeed, as previous analyses show, strategy selection and use depend on context and desire type, and in certain situations, late strategies can be more effective.

4.3.1 Situation and Desire Type

Strategy effectiveness varies across contexts. In middle school students'academic self-control conflicts, situational modification is most effective, significantly improving academic performance (Duckworth, White et al., 2016). Remote workers during COVID-19 preferentially used situational modification strategies that altered physical conditions, which were most effective because they were relatively easy to implement at home (Troll et al., 2022). However, situational modification is less effective for students resisting smartphone use (Troll et al., 2021). Process model theory suggests that putting smartphones out of sight should prevent conflicts between long-term academic goals and immediate smartphone rewards, allowing students to focus. Yet silencing phones or restricting use may increase attentional distraction and even smartphone use, as students worry about missing important messages and feel compelled to check notifications (Troll et al., 2021). Similarly, situational strategies are ineffective for resisting social media desires because people cannot easily distance themselves from social media, making such strategies difficult to implement. In these self-control dilemmas, willpower-based direct inhibition strategies prove most effective (Brevers & Turel, 2019).

Strategy effectiveness also varies by desire type (Hennecke & Bürgler, 2020). Research examining six common daily desires—food/drink, sleep/rest, work/study, media, social interaction, and leisure—found that situational selection effectively resisted food/drink and work/study desires but was less effective for leisure desires. Distraction strategies effectively resisted leisure desires but were less effective for sleep/rest desires. Goal reminding effectively resisted leisure desires but had minimal effect on work/study and media desires. Reminding oneself of temptation' s negative consequences effectively resisted social desires but was less effective for work/study desires. Willpower effectively resisted eating desires but was less effective for work/study desires (Milyavskaya et al., 2021). Self-control strategy effectiveness varies across desire conflict types and specific situations, representing an intriguing area for future research.

4.3.2 Personality and Individual Differences

Personality traits influence self-control strategy use, with particular attention to trait self-control level. Individuals high in trait self-control tend to distance themselves from temptations more than those low in trait self-control (Ent et

al., 2015) and prefer situational selection and attentional deployment, which correlate with subjective well-being (Nielsen et al., 2019). When facing unpleasant or challenging tasks, high trait self-control individuals more frequently use three strategies—focusing on positive consequences, thinking about approaching the end, and emotion regulation—which effectively promote self-control success (Hennecke et al., 2019). In entertainment inhibition tasks, cognitive change prevents ego depletion in moderate self-control individuals, while poor self-control individuals show no strategy effects (Wojcik & Necka, 2019). Goal support effectiveness as a self-control strategy also varies by self-control level: high self-control individuals benefit only when others highly support their goals, whereas low self-control individuals benefit from any positive goal support, suggesting high goal support is particularly effective for low self-control individuals (Nielsen & Bauer, 2019).

Beyond trait self-control, other individual differences affect strategy effectiveness. Compulsive versus prudent consumers use different self-control strategies (Horváth et al., 2015). Compulsive buyers prefer return policies and buying cheaper products, but these strategies ineffectively prevent purchases because their goal is not complete abstinence but controlling expenditure to prolong shopping enjoyment. Prudent buyers prefer careful shopping planning, which more effectively controls purchasing. Research on time-consistent, naïve, and sophisticated consumers found that time-consistent consumers (who generally show high self-control) are not significantly affected by precommitment or outcome elaboration strategies. Precommitment helps naïve consumers improve self-control, while outcome elaboration benefits sophisticated consumers more (Mandel et al., 2017). In financial self-control, women use desire-reduction strategies more than men, while men use willpower strategies more than women. Older adults use willpower strategies more than younger adults, and financially secure individuals use desire-reduction strategies less and willpower strategies more than less financially secure individuals (Karlsson, 2003).

4.3.3 Number of Strategies Used

Much previous research examined single strategy effectiveness, but recent studies have addressed the combined effectiveness of multiple strategies. When resisting strong desires, individuals tend to use multiple strategies simultaneously, with better outcomes (Milyavskaya et al., 2021). Research on preschoolers' temptation resistance found that while motor or verbal strategies alone effectively enhanced self-control, combined use of multiple strategies was optimal (Manfra et al., 2014). Another study found that applying additional regulatory strategies during desire episodes produced greater self-regulatory success across multiple indicators: increased strategy use correlated with weaker desire intensity, stronger resistance, lower desire enactment likelihood, and reduced food intake (Lopez et al., 2021). Problem gamblers may use more control strategies out of necessity, as fewer strategies would worsen their gambling problems, suggesting multiple strategy use better resists gambling behavior (Currie et al., 2020).

Simultaneous use of multiple self-control strategies proves more effective than single strategy use in managing self-control conflicts (Bürgler et al., 2021) and resisting temptations (Williamson & Wilkowski, 2020). These findings suggest multiple strategy use better promotes self-control, with effectiveness potentially increasing additively as more strategies are applied. This reaffirms that effective self-control is a multifaceted process in which effortful inhibition is just one effective approach.

5. Summary and Outlook

Research increasingly recognizes the importance of self-control strategies. Understanding mechanisms of everyday strategy use will help individuals achieve self-control success. The self-control process model proposes five strategy categories considered to encompass nearly all self-control strategies. However, this classification is insufficient for analyzing the complex mechanisms underlying everyday strategy use, and the model' s hypothesis that early strategies are more effective than late ones yields inconsistent results. In self-control dilemmas, strategy use and effectiveness are influenced by numerous factors. Therefore, effective self-control may depend not on which strategies are applicable or effective, but on how individuals flexibly select appropriate strategies from their repertoire based on situational demands. Research on self-control strategies is gaining momentum, and future research should consider the following directions:

First, **investigate flexibility and variability in self-control strategy use**. Recent research shows people prioritize certain strategies across contexts, with effectiveness influenced by situational factors. Some argue that any strategy' s effectiveness depends on context, and the ability to flexibly select strategies best suited to personal goals and situational demands represents an important regulatory skill (Aldao et al., 2015; Bonanno & Burton, 2013). Recent studies have examined self-control strategy flexibility and variability using approaches from emotion regulation research (Bürgler et al., 2021; Wenzel et al., 2021). Self-control variability refers to differences in selecting strategies from one' s repertoire across self-control situations or selecting one strategy across multiple situations (Wenzel et al., 2021). Currently, we lack clear understanding of how people select appropriate strategies in self-control conflicts, which strategies are most effective in which conflict situations, and which strategies suit which individuals. Self-control flexibility and variability relate to self-control success, making research on how individuals flexibly select and adjust strategies based on specific contexts an important future direction.

Second, **deeply analyze mechanisms of multiple self-control strategy combination**. Early literature primarily isolated single strategy use, rarely examining how strategies work synergistically. Yet individuals rarely resolve self-control conflicts with a single method. Recent research supports that simultaneous multiple strategy use more effectively resists desires. The concept of using multiple methods within a single regulatory event (e.g., pursuing multiple goals, using multiple strategies, implementing multiple tactics) is termed

polyregulation (Ford et al., 2019). Self-control success may depend on flexibly using multiple strategies to address diverse self-control challenges, suggesting self-control strategy use may constitute a form of polyregulation (Bonanno & Burton, 2013; Fujita, 2011; Scholer et al., 2018). Research on combined strategy mechanisms and whether certain strategy combinations are more effective for different people in different situations is crucial for designing interventions to enhance everyday self-control capacity.

Third, **examine self-control capacity improvement from a strategy perspective**. Although the strength model suggests frequent self-control use depletes capacity, self-control can also improve through repeated practice, like strengthening a muscle (Muraven et al., 1999). For example, two weeks of avoiding sweets or twice-daily handgrip exercises (Muraven, 2010) and two months of regular physical exercise (Oaten & Cheng, 2006) enhance self-control. However, some research shows inhibition training does not affect self-control capacity (Miles et al., 2016). Recent research suggests that regular, long-term practice of self-control tasks improves capacity, with actual engagement in self-control behavior being the mechanism for enhancement (de Ridder et al., 2020). Since people use self-control strategies to promote success, and self-control task practice involves strategy use practice, self-control capacity improvement may relate to strategy use practice. Future research on self-control capacity enhancement should adopt broader perspectives, examining the relationship between strategy use practice and capacity improvement.

Fourth, **strengthen intervention research on self-control strategy use**. Research shows that experimental designs can intervene in strategy use. For example, guiding students to use situational modification or response adjustment promotes academic self-control success (Duckworth, White et al., 2016), and guiding participants to use distancing strategies resists food temptations (Cole et al., 2021). If individuals understand how conflict generation processes operate and know which strategies can regulate their thoughts, feelings, and behaviors, they can apply this knowledge to achieve goals. Teaching or training people to use self-control strategies to attain long-term goals has significant social value, yet intervention research remains limited and requires strengthening.

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Note: Figure translations are in progress. See original paper for figures.