



ELSEVIER

Review

Beliefs about self-control

Jinyao Li, Marleen Gillebaart¹ and Tim van Timmeren¹

It is increasingly recognized that successful self-control is not only determined by sheer willpower, but also by people's *beliefs about self-control*. While early research has provided evidence that people's implicit theories can moderate their subsequent self-control performance, recent research considers the role of metacognition in self-control more comprehensively. In this review, we present an overview of recent advances in the field, emphasizing self-control beliefs and their potential impact on self-control outcomes. We also stress lay beliefs about self-control as an overlooked topic and promising avenue for future research.

Addresses

Utrecht University, Social, Health, and Organisational Psychology, Heidelberglaan 1, 3584CS Utrecht, the Netherlands

Corresponding author: Li, Jinyao (J.Li7@uu.nl)

Email address: M.Gillebaart@uu.nl (M. Gillebaart), t.vantimmeren@uu.nl (T. van Timmeren)

¹ Authors contributed equally.

Keywords

Self-Control, Lay Beliefs, Implicit Theory, Metacognition.

After a long and strenuous day at work, one may find oneself faced with several options: indulging in cake or chips, lounging on the couch watching Netflix, or exercising to stay fit. What will they choose? While some people tend to resist the immediate temptations and opt for healthier foods and physical activities after a demanding day, others may not. Recent work suggests that it is not only self-regulatory capacity that determines these outcomes, but that these differences in self-control performance may be dependent on individuals' *beliefs about self-control*.

People's decisions and actions are often shaped by their beliefs. For example, beliefs about emotions, rumination

and intelligence can significantly influence how people approach challenges and make decisions [1]. Individuals hold a variety of lay beliefs about the nature of the world and various aspects of their lives, including about self-control. These beliefs may play a crucial role in guiding their behaviors and reactions in situations requiring self-control. Earlier research on beliefs about willpower and self-control reveals that these beliefs can significantly impact self-control exertion and goal-directed behaviors [2,3].

In this short review, we highlight the importance of beliefs about self-control in determining self-control performance by discussing recent research findings in the field. We begin by introducing a framework that summarizes the emerging research on the role of metacognition, including metacognitive beliefs, in self-control. This is followed by a section on recent evidence, both correlational and causal, regarding the prominent belief in 'willpower' as a limited resource. We then delve into new approaches to investigate other self-control beliefs concerning strategy and emotions. We conclude with a discussion of open questions and potential future directions for studying self-control beliefs.

Metacognition and self-control

Beliefs about self-control can be considered a form of 'metacognition' – higher-level cognitions about cognitive processes. As such, the emerging approach to metacognition in self-control [4] provides a starting point for interpreting research on beliefs. Inspired by research on metacognitive processes in education [5], this approach evaluates the various ways in which people may reflect upon, understand and control their own self-control capabilities.

As outlined in their integrative framework [4], Bürgler & Hennecke distinguish between metacognitive *regulation*, which entails reflective processes such as anticipation and planning and the use of strategies to prevent, regulate and monitor conflict situations, and metacognitive *knowledge*. This latter level, which describes the general knowledge and beliefs people have about self-control, is of main interest to the current review. Metacognitive knowledge can be further separated into *declarative* knowledge, which includes knowledge of strategies, self-knowledge, metamotivational knowledge, and implicit theories (see below); *conditional* knowledge, which relates to knowledge about types of

Current Opinion in Psychology 2024, 60:101898

This review comes from a themed issue on Self-Control and Self-Regulation (2025)

Edited by Bob Fennis and Denise de Ridder

For complete overview about the section, refer [Generation COVID: Coming of Age Amid the Pandemic \(2024\)](#)

Available online 13 September 2024

<https://doi.org/10.1016/j.copsyc.2024.101898>

2352-250X/© 2024 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

situational or personal influences on self-control (e.g. insight into when to use a certain strategy); and *procedural* knowledge, which refers to knowledge about how to deal with specific situations (e.g. how to properly implement the right strategy). Recent experience sampling studies show that metacognitive knowledge predicts success in managing daily self-control conflicts and trait self-control [6,7], highlighting the relevance of metacognition for understanding self-control.

Building on this framework, we will discuss research on beliefs about self-control. Specifically, we will outline recent findings regarding implicit theories of self-control, and regarding lay beliefs, i.e. the types of beliefs, and contents thereof, that people may hold about self-control. While implicit theories are considered as declarative metacognitive knowledge, ‘lay beliefs’ about how self-control operates is a yet underexplored area of research that is not discussed prominently in the metacognitive framework, and may overlap as well as have distinctive features from metacognitive elements (see Figure 1).

Implicit theories of self-control

People may have various beliefs about how self-control operates, for example, whether it is a limited or unlimited resource, or easy or hard. One way to assess how people think about self-control is by asking them to indicate how strongly they agree with specific (theory-driven) scenarios outlining how self-control may function. This allows for testing *implicit* opinions, in the sense that people are often unaware of these theories – but may nevertheless differ individually. Over the past decade, research has focused on two types of implicit theories: the idea that self-control capabilities are malleable (vs fixed) over time, and that self-control is a

limited (vs unlimited) resource. Here, we will focus mostly on the latter.

Inspired by research on mindsets, which showed that believing that human capacities can be developed over time (vs are fixed) positively affects motivation and achievement [2], initial work by Job et al. [2] has led to much research in this direction. Some people believe that self-control is an unlimited resource can be constantly exerted (*nonlimited theory*), while others believe that self-control resources are limited and require rest and recharging after use (*limited theory*). Early research has shown that individuals with a nonlimited theory on self-control tend to perform better on cognitive tasks [2] and in school [2,8], and more recent studies have extended the findings to domains such as health behaviors and pro-environmental behaviors. Individuals holding a nonlimited theory exhibit healthier behaviors, such as engaging in more physical activities and less snacking, compared to those with a limited theory belief [9–11]. Moreover, people with a nonlimited theory demonstrate less bedtime procrastination [12] and engage in more pro-environmental behaviors in their daily lives [13]. Implicit theories can also impact romantic and parental relationships. Individuals with a limited theory of self-control report lower social support [14] and relationship satisfaction [15] in romantic relationships, likely due to a perceived lack of self-control resources to support their partners. Implicit theories can even have intergenerational effects, as parents’ theories about self-control (limited versus unlimited; malleable versus fixed) can influence their parenting practices such as decisions about foods and, consequently, their children’s choices of healthy foods [16]. In summary, there is abundant evidence that implicit beliefs about self-control resources are associated with self-control exertions across multiple behavioral domains [but see Refs. 17–19 for criticism].

Figure 1

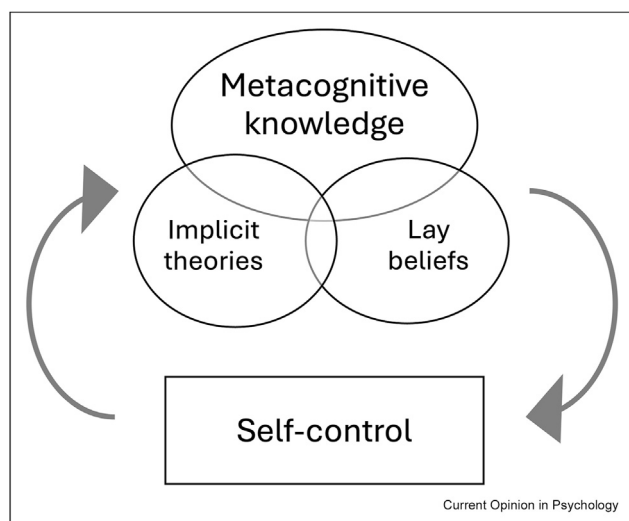


Illustration of the role of metacognitive knowledge, implicit theories and lay beliefs about self-control in determining self-control.

The direction of the association – whether the beliefs affect self-control or experience shapes beliefs – is less clear. One way to investigate this directionality is by experimentally manipulating beliefs to see if it affects subsequent self-control performance. However, research in this direction is limited, and findings are mixed. Seminal work by Job et al. found that when implicit beliefs about willpower are manipulated, these beliefs moderated self-control failure in a subsequent task [4]. Participants who were led to believe that self-control was nonlimited tended to suffer less from self-control performance decrements than participants who were led to believe that self-control was limited. Subsequent studies confirmed the effects of manipulated implicit beliefs on self-control performance [8,20,21] and sustained learning [22]. The experimental manipulation of implicit beliefs was further validated in a cross-cultural study involving Indian and American participants [23].

Surprisingly, further experimental evidence on the causal impact of self-control beliefs on other aspects of self-control outcomes is rare. One study manipulated implicit beliefs about limitedness of self-control to investigate the association between the need for cognition and self-control. Results found [24] that need of cognition for associated with trait self-control, which varies in measurements, and implicit the belief that self-control is unlimited are linked to need of cognition. However, no clear conclusions were made regarding the causal effects of implicit beliefs on self-control performance [24]. Despite numerous correlational studies linking implicit beliefs to various domains of self-control performance (see Ref. [25]), the lack of causal evidence raises questions about the true impact of these beliefs. Particularly, given that the implicit beliefs can be shaped by people's past effortful experiences [26] and perceived autonomy [27], it remains unclear whether self-control performance in areas such as health and relationships is due to holding a limited belief about self-control or if these limited beliefs are consequences of perceived efforts and autonomy in past self-control experiences. This is an important area for future research.

Lay beliefs about self-control

As outlined above, most studies into beliefs that have focused on *implicit* beliefs, inspired by a scholarly perspective on the self-control construct, feeding participants with information based on scientific theory, or assessing pre-existing scholarly beliefs about self-control. However, such an approach does not necessarily capture (all) *lay* beliefs, as it depends on scientific rather than people's own beliefs. Another way to assess what people think about self-control is by asking them to reflect on self-control more openly and explicitly. While limited, recent research has started to look into this. For example, Vaugh and Burkins [28] zoomed in on what lay people consider to be good examples of their own experienced self-control by asking a group of participants to describe an experience "that was about exerting control over yourself". Using text analysis software, words from participants' responses were categorized into linguistic categories which specifically entailed psychological processes. The results indicate that people perceive their self-control experiences as often self-reflective, not necessarily enjoyable, and successful. Furthermore, they consider self-control regarding emotions, success and power, behavioral domains, which is in line with recent work from our lab suggesting that people indeed hold other understudied beliefs regarding multiple components of self-control such as difficulty, success, emotions, and commitment [29]. Although these are the only two studies on lay people's beliefs about self-control, the results suggest that such efforts may provide valuable, novel insights into the human experience of self-control.

The importance of studying lay beliefs about self-control becomes evident when considering

discrepancies between lay beliefs and scientific theory (regardless of which one is 'correct'). One case highlighting this discrepancy is that of self-control strategies. (Smart) strategies for self-control (e.g., situation selection, cognitive reappraisal) are currently considered by scholars as a crucial component of self-control success [30,31] and metacognition [4]. However, lay people may hold contradictory beliefs. For example, people consider the use of these 'smarter' strategies as less indicative of self-control than using sheer willpower [32], despite willpower being effortful, unlikely to be successful from a scholarly perspective, and only one of many. This discrepancy may result in lower 'smart' strategy deployment in conflict situations [32]. Moreover, relying on smarter strategies versus will-power-based self-control is perceived as less trustworthy [33], which may have negative interpersonal consequences on people's impressions of others. These studies make clear that what people think self-control is (not), may differ from current scholarly views on self-control, which in turn can impact their own behavior as well as impressions of others.

Discussion

Over a decade of research stresses the importance of considering the beliefs people hold and their impact on how individuals exert their self-control. While implicit beliefs regarding the limitedness of resources are a key component, additional beliefs exist that extend beyond this, such as those concerning self-control strategies, and whether self-control is enjoyable and successful. Evidence from cross-cultural studies also suggests more variances in self-control beliefs as people's self-control is shaped by their cultural backgrounds [23,34–36]. For instance, Japanese children show more delayed gratification for food than for gifts, compared with American children who delayed gratification for gifts rather than food as a consequence of their varied cultures [36].

Further research is expected to explore which beliefs people may hold and how those affect their self-control exertion, aiming to uncover a comprehensive view of self-control influenced by people's beliefs. Given that trait self-control is relatively stable and difficult to change, developing interventions that focus on changing self-control beliefs may be a promising route to improve people's self-control performance [9,37]. Preliminary research has shown promising results, indicating that changing students' lay theories about self-control can improve their self-regulation in school [38].

In conclusion, while questions remain about the direction of the effect of self-control beliefs on self-control exertion and their relationship with trait self-control, emerging research suggests that self-control is

influenced not only by capacity but also by people's metacognitive and subjective beliefs.

CRedit authorship contribution statement

Jinyao Li: Conceptualization, Writing – original draft, Writing – review & editing. **Marleen Gillebaart:** Conceptualization, Writing – review & editing. **Tim van Timmeren:** Conceptualization, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

References

References of particular interest have been highlighted as:

* of special interest

** of outstanding interest

1. **Dweck CS: *Mindset: the new psychology of success*. Random House; 2006.**
2. Job V, Dweck CS, Walton GM: **Ego depletion—is it all in your head?: implicit theories about willpower affect self-regulation.** *Psychol Sci* 2010, **21**:1686–1693, <https://doi.org/10.1177/0956797610384745>.
3. **Mukhopadhyay A, Johar GV: Where there is a will, is there a way? Effects of lay theories of self-control on setting and keeping resolutions.** *J Consum Res* 2005, **31**:779–786.
4. **Hennecke M, Bürgler S: Metacognition and self-control: an integrative framework.** *Psychol Rev* 2023, **130**:1262–1288, <https://doi.org/10.1037/rev0000406>.
An integrative framework outlining metacognition in self-control. By applying previous knowledge on the concept of metacognition to the domain of self-control, this framework comprehensively integrates previous research to describe multiple pathways through which metacognition promotes self-control, both on the level of individual differences in metacognitive knowledge and awareness and regulatory processes.
5. **Flavell JH: Metacognition and cognitive monitoring: a new area of cognitive–developmental inquiry.** *Am Psychol* 1979, **34**:906–911, <https://doi.org/10.1037/0003-066X.34.10.906>.
6. **Bürgler S, Kleinke K, Hennecke M: The metacognition in self-control scale (MISCS).** *Pers Individ Differ* 2022, **199**, 111841, <https://doi.org/10.1016/j.paid.2022.111841>.
This paper describes the development of the Metacognition in Self-Control Scale (MISCS), a 12-item scale to measure trait-level metacognition in self-control. The self-reported MISCS consists of two subscales: metacognitive knowledge and metacognitive regulation. Also reported are findings from two experience sampling studies, showing that MISCS predicted state-level metacognitive knowledge, planning, monitoring, and evaluation that participants experienced in daily self-control conflicts.
7. **Bürgler S, Hennecke M: Metacognition and polyregulation in daily self-control conflicts.** *Scand J Psychol* 2024, **65**:179–194, <https://doi.org/10.1111/sjop.12964>.
8. **Job V, Walton GM, Bernecker K, Dweck CS: Implicit theories about willpower predict self-regulation and grades in everyday life.** *J Pers Soc Psychol* 2015, **108**:637.
9. **Hagger MS, Gucciardi DF, Turrell AS, Hamilton K: Self-control and health-related behaviour: the role of implicit self-control, trait self-control, and lay beliefs in self-control.** *Br J Health Psychol* 2019, **24**:764–786, <https://doi.org/10.1111/bjhp.12378>.
10. **Di Maio S, Keller J, Job V, Felsenberg D, Ertel W, Schwarzer R, Knoll N: Health demands moderate the link between willpower beliefs and physical activity in patients with knee osteoarthritis.** *Int J Behav Med* 2020, **27**:406–414, <https://doi.org/10.1007/s12529-020-09865-w>.
11. **Francis Z, Mata J, Flückiger L, Job V: Morning resolutions, evening disillusion: theories of willpower affect how health behaviours change across the day.** *Eur J Pers* 2021, **35**:398–415, <https://doi.org/10.1177/0890207020962304>.
12. **Bernecker K, Job V: Too exhausted to go to bed: implicit theories about willpower and stress predict bedtime procrastination.** *Br J Psychol* 2020, **111**:126–147, <https://doi.org/10.1111/bjop.12382>.
13. **Jankowski JM, Job V: The role of lay beliefs about willpower and daily demands in day-to-day pro-environmental behavior.** *J Environ Psychol* 2023, **88**, 102024.
14. **Francis Z, Sieber V, Job V: You seem tired, but so am I: willpower theories and intention to provide support in romantic relationships.** *J Soc Pers Relat* 2020, **37**:738–757, <https://doi.org/10.1177/0265407519877238>.
15. **Francis Z, Weidmann R, Bühler JL, Burriss RP, Wünsche J, Grob A, Job V: My willpower belief and yours: investigating dyadic associations between willpower beliefs, social support, and relationship satisfaction in couples.** *Eur J Pers* 2023, **08902070231220416**, <https://doi.org/10.1177/08902070231220416>.
16. **Cornwell TB, Setten E, Paik S-HW, Pappu R: Parents, products, and the development of preferences: child palate and food choice in an obesogenic environment.** *J Publ Pol Market* 2021, **40**:429–446, <https://doi.org/10.1177/0743915620939581>.
17. **Carruth NP, Ramos JA, Miyake A: Does willpower mindset really moderate the ego-depletion effect? A preregistered replication of Job, Dweck, and Walton (2010).** *PLoS One* 2023, **18**, e0287911, <https://doi.org/10.1371/journal.pone.0287911>.
18. **Miyake A, Carruth NP: On the robustness and replicability of the moderating influence of willpower mindset on the ego-depletion effect: existing evidence is weak at best.** *Front Psychol* 2023, **14**, <https://doi.org/10.3389/fpsyg.2023.1208299>.
19. **Singh RK, Göritz AS: Revisiting ego depletion: moderators and measurement.** *Basic Appl Soc Psychol* 2019, **41**:1–19, <https://doi.org/10.1080/01973533.2018.1530671>.
20. **Job V, Walton GM, Bernecker K, Dweck CS: Beliefs about willpower determine the impact of glucose on self-control.** *Proc Natl Acad Sci USA* 2013, **110**:14837–14842, <https://doi.org/10.1073/pnas.1313475110>.
21. **Vohs KD, Baumeister RF, Schmeichel BJ: Motivation, personal beliefs, and limited resources all contribute to self-control.** *J Exp Soc Psychol* 2012, **48**:943–947, <https://doi.org/10.1016/j.jesp.2012.03.002>.
22. **Miller EM, Walton GM, Dweck CS, Job V, Trzesniewski KH, McClure SM: Theories of willpower affect sustained learning.** *PLoS One* 2012, **7**, e38680, <https://doi.org/10.1371/journal.pone.0038680>.
23. **Savani K, Job V: Reverse ego-depletion: acts of self-control can improve subsequent performance in Indian cultural contexts.** *J Pers Soc Psychol* 2017, **113**:589–607, <https://doi.org/10.1037/pspi0000099>.
24. **Grass J, Scherbaum S, Strobel A: A question of method and subjective beliefs: the association of need for cognition with self-control.** *J Individ Differ* 2023, **44**:67–82, <https://doi.org/10.1027/1614-0001/a000381>.
25. **Francis Z, Job V: Lay theories of willpower.** *Soc Personal Psychol Compass* 2018, **12**, e12381, <https://doi.org/10.1111/spc3.12381>.
26. **Klinger JA, Scholer AA, Hui CM, Molden DC: Effortful experiences of self-control foster lay theories that self-control is**

- limited. *J Exp Soc Psychol* 2018, **78**:1–13, <https://doi.org/10.1016/j.jesp.2018.04.006>.
27. Sieber V, Flückiger L, Mata J, Bernecker K, Job V: **Autonomous goal striving promotes a nonlimited theory about willpower.** *Pers Soc Psychol Bull* 2019, **45**:1295–1307, <https://doi.org/10.1177/0146167218820921>.
 28. Vaughn LA, Burkins PG: **Lay beliefs about self-control: a linguistic analysis.** *Curr Res Behav Sci* 2023, **4**, 100107.
This study investigated lay beliefs about self-control through a linguistic approach. The study asked participants (N = 362) to describe personal self-control experiences. Using text analysis software (Linguistic Inquiry and Word Count), all words from participants' responses were categorized into the dictionary's 81 default linguistic categories and their mean occurrence of words within those categories was then compared to base rates. Results showed that descriptions of self-control situations are more often about emotion (anger, sadness), drives (power, risk, and success), and domains (money, health).
 29. Li J, Gillebaart M, van Timmeren T, Ridder DD: **Everything everywhere all at once: mapping lay beliefs about self-control.** <https://doi.org/10.31219/osf.io/bjdh2>.
This study investigates lay beliefs about self-control by asking participants (N = 150) to describe their ideas about self-control in five words, which were then analyzed and categorized into multiple components of self-control beliefs, such as difficulty, discipline, commitment, pleasure, and morality. These components were also observed in a second study, in which participants were asked to evaluate specific self-control scenarios.
 30. Hennecke M, Bürgler S: **Many roads lead to Rome: Self-regulatory strategies and their effects on self-control.** *Soc Person Psychol Compass* 2020, **14**, e12530, <https://doi.org/10.1111/spc3.12530>.
 31. Milyavskaya M, Saunders B, Inzlicht M: **Self-control in daily life: prevalence and effectiveness of diverse self-control strategies.** *J Pers* 2021, **89**:634–651, <https://doi.org/10.1111/jopy.12604>.
 32. Gennara A, Peetz J, Milyavskaya M: **When more is less: self-control strategies are seen as less indicative of self-control than just willpower.** *J Exp Soc Psychol* 2023, **106**, 104457, <https://doi.org/10.1016/j.jesp.2023.104457>.
- This research compared people's lay beliefs about self-control regarding self-control strategies and willpower. Specifically, across five experiments, this research tested people's lay beliefs about whether willpower or strategies were more central to people's idea of self-control. Results consistently showed that a highly self-controlled person was perceived to rely more on willpower than on strategies, and that people who relied on willpower were perceived to have better self-control than those who relied on strategies.
33. Kristal AS, Zlatev JJ: **Going beyond the "self" in self-control: interpersonal consequences of commitment strategies.** *J Pers Soc Psychol* 2024, <https://doi.org/10.1037/pspa0000385>.
 34. Nguyen T, Togawa T, Scholer AA, Fujita K: **A cross-cultural investigation of metamotivational knowledge of construal level in the United States and Japan.** *Motivation Science* 2020, **6**:386–400, <https://doi.org/10.1037/mot0000178>.
 35. Sun X, Cortina KS, Miller KF, Ning H: **Willpower as cultural construct: do Chinese students believe less in its depletion?** *Front Psychol* 2019, **10**, <https://doi.org/10.3389/fpsyg.2019.00988>.
 36. Yanaoka K, Michaelson LE, Guild RM, Dostart G, Yonehiro J, Saito S, Munakata Y: **Cultures crossing: the power of habit in delaying gratification.** *Psychol Sci* 2022, **33**:1172–1181, <https://doi.org/10.1177/09567976221074650>.
This study examined cross-cultural differences in children's delay of gratification for different rewards (foods and gifts). Results showed that Japanese children exerted better delayed gratification for food than for gifts, while American children were the opposite, delaying longer for gifts than for food. This difference was considered to be the consequence of different cultural habits, with Japanese culture emphasizing more restraint for foods than for gifts, while American culture emphasizes the opposite.
 37. Bernecker K, Herrmann M, Brandstätter V, Job V: **Implicit theories about willpower predict subjective well-being.** *J Pers* 2017, **85**:136–150, <https://doi.org/10.1111/jopy.12225>.
 38. Bernecker K: *Implicit theories about willpower and their consequences for achievement, health, and well-being.* 2016. PhD Thesis, Universität Zürich, <https://phrepo.phbern.ch/id/eprint/7446>.