Everything Everywhere All At Once: Mapping Lay Beliefs about Self-Control

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Abstract

Lay beliefs about self-control, such as beliefs about whether self-control is a limited or unlimited resource, may affect people's self-control exertion, yet, a systematic understanding of these beliefs is lacking. To comprehensively map these beliefs, we conducted two cross-cultural studies in the United States, the Netherlands, and China. In Study 1 ($N = 150$), we directly asked participants how they viewed self-control, while in Study 2 ($N = 150$), we asked participants to imagine themselves in everyday self-control scenarios and to describe their thoughts during those self-control conflicts. Based on these responses, we identified 14 components of self-control beliefs (Study 1), which were commonly mentioned by people in daily self-control conflicts (Study 2). These beliefs show an emphasis on difficulty, commitment, and discipline of self-control, as compared to the limited resources perspective that is more common in academic understandings of self-control. Findings provide a comprehensive overview of people's lay beliefs about self-control, and stresses the importance of understanding such beliefs.

Keywords: Self-Control; Willpower; Lay Beliefs; Trait Self-Control; Open Questions

Humans need self-control almost every day, from resisting an appealing but unhealthy meal to curbing their urge to watch Netflix episode after episode at midnight. Self-control is generally defined as the ability to override one's inner responses, as well as to interrupt undesired behavioral tendencies (such as impulses) and refrain from acting on them (Hofmann et al., 2014; Tangney et al., 2004). Self-control extends its influence across various domains of life, including school and work performance, health, personal finance, and interpersonal relations, thus affecting people's well-being and success in life (De Ridder et al., 2012; Tangney et al., 2004).

Numerous scholars have focused on uncovering the underpinnings of self-control in the past decades, leading to a rich yet multifaceted array of perspectives on how self-control operates. These perspectives have engendered discussions centered on dimensions such as inhibition versus initiation (Cheung et al., 2014; De Ridder & Gillebaart, 2017; Hofmann et al., 2012), effortful versus effortless exertion (Galla & Duckworth, 2015; Gillebaart & de Ridder, 2015), strategic and "smart" self-control (Duckworth et al., 2016; Fujita et al., 2020; Katzir et al., 2021), and flexibility (Bürgler et al., 2021; Werner & Ford, 2023). As a result, a contemporary perspective of self-control has emerged that allows

for effortful inhibition, initiation, effortless strategies, flexibility, and automatic behavior to all play a role in self-control behavior.

While these viewpoints offer valuable insights into distinct aspects of self-control, they consistently consider self-control as a capacity, focusing on (boundary) conditions under which self-control is successful. This overlooks a relevant and understudied aspect of self-control, that is, how self-control is perceived and believed by people, namely, lay beliefs about self-control. To fill the gap, we posit a belief-approach to the problem of divergent theoretical stances in self-control research. This approach may contribute to our understanding of different perspectives on self-control, as how self-control is experienced, utilized, and exerted may hinge on an individual's beliefs about it. The multiple self-control perspectives may then coexist rather than compete, considering that they may reflect different views of self-control held by people, which, in turn, may influence their self-control exertion. Therefore, the current study seeks to map lay beliefs on self-control as a necessary initial step to foster our understanding of the role of humans' beliefs about self-control.

Lay Beliefs about Self-Control

Lay beliefs, understood as what people believe about the characteristics of things, places, and other people (Dweck &

Leggett, 1988; Ross & Nisbett, 2011), have shown to have considerable effects on guiding people's cognition, affect, motivation, and action (Molden & Dweck, 2006). For instance, people may hold beliefs about whether intelligence (Dweck & Leggett, 1988) and emotion (Tamir et al., 2007) is fixed or malleable. Such beliefs can be impactful for their goal performance, well-being and social adjustment (Dweck & Leggett, 1988; Tamir et al., 2007). People may also hold beliefs about a just world, which motivates them to strive for long-term goals (Lerner, 1980). In our research, we understand self-control beliefs as a broad set of ideas and thoughts people may have about self-control. They can be about the nature of self-control and how self-control operates.

Previous research has already identified several beliefs related to self-control and has shown how they may impact individual's self-control performance. Job and colleagues (2010, 2015), for example, found that the belief in whether self-control is either or not a limited resource, affects self-control performance on demanding tasks, such as exam performance: those endorsing limited self-control beliefs exhibited poorer performance compared to those embracing an unlimited perspective. Similarly, individuals who believe self-control is malleable and unlimited tend to set more

goals, compared to those who think self-control is fixed and limited (Mukhopadhyay & Johar, 2005).

Furthermore, people may hold beliefs regarding emotions and strategies associated with self-control as well as reasons for self-control exertion, which may affect their self-control decisions. Initial evidence suggests that individuals with high trait self-control particularly believe that positive emotions, such as pride and hope, are more useful for self-control success than negative emotions (Tornquist & Miles, 2019). Evidence from a study by Gennara et al. (2023) showed that people tend to believe that a person with high trait self-control has more willpower rather than better self-control strategies. Additionally, De Witt Huberts and colleagues (2012) found that individuals justify future self-control failure by thinking that they had previously foregone indulgence.

These studies suggest that people hold multiple beliefs about self-control concerning diverse aspects, such as the availability, malleability, related emotions, and morality of self-control (Mooijman et al., 2018). Moreover, these studies show that these beliefs may significantly affect people’s self-control performance. However, these beliefs have been explored in isolation in which only one particular belief was examined at a time, seeking confirmation of scholarly notions about self-control. The beliefs

were often manipulated rather than assessed (Garrison et al., 2023; Gennara et al., 2023), giving no information on whether they are indeed widely endorsed by the general public. Hence, we posit that a systematic investigation of self-control beliefs is necessary, particularly from a more ecologically valid bottom-up approach in which people are asked directly about their self-control beliefs.

Cultural Variances in Self-Control Beliefs

Given that beliefs might be shaped by the cultural context in which they emerge, we will map self-control beliefs across cultures. Previous research suggests that a cross-cultural perspective gives a better picture of diverse beliefs held by individuals from various cultural backgrounds. For instance, a comparative study involving Japanese and American children found variations in delayed gratification behaviors, which may be attributed to variances in their beliefs (Yanaoka et al., 2022). Japanese children displayed better self-control in delaying gratification for food, while American children exhibited stronger self-control by delaying gratification for opening gifts. These disparities may stem from distinct cultural habits and norms, suggesting that self-control is driven by ideas about when delay of gratification is appropriate, whether for food or for opening gifts (Yanaoka et al., 2022). Similarly, a study comparing participants from India, the United States, and

Switzerland found that self-control was viewed differently across cultures (Savani & Job, 2017). Americans and the Swiss viewed self-control exertion as an exhausting experience, whereas in India, where cultural values emphasize the virtue of self-control exertion, it was seen as an energizing experience. Importantly, these differences in beliefs about self-control affected people's self-control exertion (Savani & Job, 2017). Therefore, examining beliefs in their cultural context may thus give more opportunities to comprehensively reveal the ideas people hold about self-control.

The Current Study

Based on the above, the primary aim of the current study is to map diverse self-control beliefs people hold, that is, what they think about self-control. As a secondary goal, we looked at how these beliefs might vary contextually and individually by associating them with cultural backgrounds and individual background such as demographics. We also examined associations of self-control beliefs with trait self-control so as to relate the capacity for self-control with understandings of self-control.

Building on potential variances in self-control beliefs among American, Asian, and European cultures (Savani & Job, 2017; Sun et al., 2019; Yanaoka et al., 2022), we recruited participants from three countries representing three continents: the United States,

China, and the Netherlands. People in these three countries have been shown to vary in cultural dimensions related to self-control, such as motivation towards achievement and success, long-term orientation, and indulgence (Hofstede, 2011). We expected that those variances in general cultural dimensions may be reflected in individuals' beliefs regarding self-control.

To achieve our aims, we conducted two studies. In both studies, we took a bottom-up approach to map self-control beliefs. In Study 1, we directly asked participants' beliefs about self-control with open-ended questions, while in the pre-registered Study 2 participants imagined themselves in multiple self-control scenarios presented in vignettes and then reported their thoughts about self-control.

Study 1

Study 1 investigated what beliefs people hold about self-control. To identify a broad range of beliefs people have about self-control, we held no a priori expectations about how many and what kind of beliefs people would report. This study was approved by the local Ethics Review Board. Data are available at OSF (https://osf.io/27jte/?view_only=27c2b5ac799c4f77a25d3f81c63ade8d).

Method

Participants and Procedure

A total of 150 participants from the US, the Netherlands, and China (i.e., 50 from each country), were recruited online on Prolific (for US and NL) and Credamo (for CN). This sample size was deemed adequate to reach data saturation using an open-ended questionnaire (Tran et al., 2016), for gathering a wide range of self-control beliefs.

The total sample's mean age was 31.16 (SD = 9.07) years, with the US, the Netherlands, and China samples reporting mean ages of 34.60, 28.70, and 30.18 years, respectively. Of the whole sample, 45.3% were male (52%, 50%, and 34% in US, NL, and CN, respectively) and 77.3% had graduated from college (54% in US, 78% in NL, and 100% in CN). See Table 1 for demographical details.

Prior to taking part in the study, participants received information about the study and provided informed consent. Next, they proceeded with measures assessing their self-control beliefs and trait self-control and filled out demographics in their native languages (i.e., English, Dutch, or Chinese). No time limit was imposed on participants. Participants were reimbursed with (an equivalent of) $1.26 (for US and NL) for finishing the study. Chinese participant received similar amount of money ($0.28) in

terms of spending capacity and platform's guidelines.

Measures

Self-Control Beliefs. An open-ended questionnaire was used to assess individuals' self-control beliefs in the study. Specifically, participants were asked to provide five words to complete the sentence "In my view, self-control is…" (*cf.* Clifton et al., 2019; also see Kesebir et al., 2019). Prior to this question, participants were invited to recall and write down their previous experiences with self-control dilemmas to prompt their ideas about self-control. Moreover, the term Self-Control was introduced to participants with examples at the beginning of the questionnaire to avoid misunderstanding (e.g., a short-term temptation of eating a chocolate bar versus a long-term goal of a healthy body weight).

The questionnaire was initially created in English and translated into Dutch and Chinese following cross-cultural translation norms (Brislin, 1970). Bilingual experts with fluency in English and/or Dutch and/or Chinese carried out the translation and back-translation procedures.

Trait Self-Control (TSC). The 13-item Brief Self-Control Scale (BSCS) by Tangney et al., (2004) was used to measure trait self-control. The Chinese version of BSCS was from Unger et al. (2016). The scale employs a 5-point Likert scale where 1 represents *not at*

all and 5 represents *very much*. A higher score reflects a higher level of trait self-control. An item example is "*People would say that I have iron self-discipline.*" The scale proved reliable in the study, with Cronbach's alphas of .89, .84, and .94 for American, Dutch, and Chinese participants, respectively.

Finally, demographical information including gender, age, and education was assessed with single questions.

Analysis

We analyzed participants' responses to the question about self-control beliefs by means of open coding (Williams & Moser, 2019), without any a priori assumptions about the number or nature of self-control components. To prepare for the analyses, Dutch and Chinese responses were first translated into English by ChatGPT 3.5 for further comparison and integration.[1] Moreover, responses from the three countries were randomized to blind country information for further analyses. We then conducted our analyses in the following consecutive steps.

Components of Self-Control Beliefs. We first generated an initial list of words used in the responses which we subsequently coded into themes and further coded into components (see Figure 1). We employed NVivo 14, a qualitative analysis and coding tool, to

[1] Twenty responses were selected randomly and translated by both ChatGPT 3.5 and experts fluent in both languages. Results showed over 95% consistency between ChatGPT 3.5 and experts. Besides, translated responses that couldn't be understood well were rechecked by experts in the later analysis.

generate a comprehensive *word frequency list*. Subsequently, the list was condensed by merging forms of words (e.g., “difficulty” and “difficulties”) and synonyms (e.g., “difficulty” and “hardness”), yielding a condensed collection of *word themes*. The word themes were reviewed and revised through discussion by the authors.

Next, authors collaboratively distilled an initial and concise *list of self-control belief components*—explicitly reflected in the word themes. One author independently verified the processes and the generated components. A similar approach was applied in a study by Vugts and colleagues (2020).

Finally, all authors coded all the responses together into the aforementioned self-control belief components over two rounds. Each response was categorized into (only) one related component. Throughout this iterative process, the components underwent further refinement in light of the fact that the initial list of components captured the main themes and may have missed the nuances of each response.

To finalize the coding process, we converted the above coding into numerical data for further analysis by assigning values to the above codes. Specifically, each response (e.g., “self-control is hard”) coded within a certain component (e.g., “difficulty”) was assigned a score of 1 for that component and 0 for all other

components (e.g., “agency”). Since each participant provided five responses, each participant’s scores for each component ranged from 0 (i.e., no response was categorized into the component) to 5 (i.e., all responses were categorized into the component). A higher score indicated that participants reported more responses related to a certain component.

Results

Components of Self-Control Beliefs

In the first step of our analyses, we extracted 409 single words used from all responses by employing NVivo 14, which were subsequently, categorized into 49 word themes. From these word themes, an initial list of self-control belief components was created.

As a result of coding responses into components, 643 responses (85.7% of all responses) were covered and 107 (14.3%) responses were left uncoded for being either hard to categorize or idiosyncratic (e.g., “*Self-control is exercising the body.*”) or ambiguous (e.g., ”*Self-control is self-love.*”). This coding process led to a final list of 14 self-control belief components. Table 2 shows the 14 components, with brief definitions, examples of responses, number of codes, and corresponding percentages.

Variations in Self-Control Beliefs

As shown in Figure 2, self-control beliefs varied among

countries. On average, American participants scored highest on the components “difficulty” (M = .88, SD = .94) and “importance” (M = .88, SD = 1.08) and lowest on the “conflict” component (M = .06, SD = .24). Dutch participants scored highest on “importance” (M = .92, SD = .99) and had the lowest scores on the components “mental” (M = .02, SD = .14) and “motivating” (M = .02, SD = .14). Chinese participants, however, showed more differences; they scored highest on “discipline” (M = 0.96, SD = 1.05) and lowest on “motivating” (M = 0.02, SD = 0.14). Significant cross-country differences were found in the following components, using Kruskal-Wallis one-way ANOVAs with country as a predictor and components scores as dependent variables: “importance” (p < .001), “discipline” (p = .002), “goodness” (p = .002), “commitment” (p = .001), “success” (p < .001), “morality” (p = .002), and “mental” (p = .036).

For relationships between TSC and self-control beliefs, the Spearman correlation test found that only the component “success” displayed a modest yet significant correlation with TSC (r = 0.18, p = .027); the other components were not significantly related to TSC. Furthermore, the self-control belief components did not differ among participants with varying TSC levels, the high level (N = 54, top 34% of participants scored highest on TSC), the middle level (N

= 61, middle 33% of participants), and the low level (N = 35, bottom 33% of participants), according to additional analysis of the Kruskal Wallis test.

Finally, three non-parametic Mann-Whitney U tests were performed to examine variances in self-control beliefs among different genders, age groups, and education levels. A significant gender difference was observed only in the component "importance", Mann-Whitney U = 2131.5, p = .01. The median score for male participants (Mdn = .5) was significantly higher than for females (Mdn = 0). No significant difference was found between younger (18-44 years, N = 137) and elder age groups (45 years and older, N = 13) (The Whoqol Group, 1998). Among education levels, participants' scores differed in components including "importance" (Mann-Whitney U = 1420.5 , p = .005), "commitment" (Mann-Whitney U = 2403, p = .021), "success" (Mann-Whitney U = 2354, p = .015), "morality" (Mann-Whitney U = 1693.5, p = .03), and "mental" (Mann-Whitney U = 1764.5, p = .031). Participants with the highest education level of high school tended to score higher (Mdn = 1) than participants graduated from college (Mdn = 0) in "importance". As for "commitment", "success", "morality", and "mental", despite both groups having the same median score (Mdn = 0), the distribution of scores differed between the groups.

Discussion

The aim of Study 1 was to map people's beliefs about self-control. We used a bottom-up approach to assess the beliefs and found that people hold multiple beliefs about self-control which could be categorized into 14 main components.

Consistent with prior research, participants held beliefs concerning the motivating or depleting nature of self-control (Job et al., 2015), as well as the need for employing strategies (Gennara et al., 2023), albeit less prominent than previous research would suggest. More prominent aspects of self-control beliefs related to components such as "difficulty", "importance", "discipline", "goodness", and "commitment", have received far less attention in previous studies. This indicates that individuals may not overtly consider the strategic aspect or the energizing nature of self-control in their daily lives, but rather associate it with its difficulty, importance and necessity, discipline, and perseverance.

Cross-country comparisons revealed beliefs with similar compositions across different cultural backgrounds, albeit with slight variations in the prevalence of certain beliefs. Notably, American and Dutch participants exhibited a more similar set of beliefs. However, Chinese participants demonstrated more differences, particularly in emphasizing beliefs related to

"discipline", "commitment", and "success". A potential mixing effect of education cannot be fully excluded in these comparisons, given a higher overall education level among Chinese participants compared to their American and Dutch counterparts. Additionally, Americans displayed higher scores in the "morality" component compared to participants from other countries. This may be related to the Protestant history of the United States, which has historically valued work and self-control as part of religion (McCullough & Willoughby, 2009). No clear associations of beliefs with trait self-control emerged, suggesting that people might endorse self-control beliefs regardless their self-rated self-control competence.

Despite of the identified multiple components of self-control beliefs, Study 1 could not reveal whether people employ these beliefs in their personal self-control conflicts. Therefore, we conducted Study 2 to validate these self-control beliefs.

Study 2

Study 2 set out to validate the 14 components of self-control beliefs identified in Study 1 by further examining whether the beliefs appeared in people's daily self-control dilemmas. This study was approved by the local Ethics Review Board. The study was preregistered on OSF (https://osf.io/4j9n8/?

view_only=572c36ffd9a84c87ab09dd14222859ea).

Method

Participants and Procedure

Similar to Study 1, 50 residents of three countries, the United States, the Netherlands, and China, were recruited on Prolific and Credamo, resulting in a final sample size of 150. Overall, participants had a mean (SD) age of 32.22 (10.23) years, with the US, the Netherlands, and China samples reporting mean ages of 33.10, 32.42, and 31.14 years, respectively. Of the whole sample, 48.7% were male (50%, 50%, and 46% in US, NL, and CN, respectively) and 68% had graduated from college (48% in US, 66% in NL, and 90% in CN). Table 1 presents full demographical information.

Participants first completed the task measuring their self-control beliefs. After that, they completed scales measuring their trait self-control and provided their demographics. Informed consent was obtained from participants and information about the study was given before the study started. Participants on Prolific were reimbursed with (an equivalent of) $2.43 and on Credamo for $0.69 for completing the study.

Measures

Self-Control Beliefs. Participants were presented with ten

vignettes of self-control dilemmas,[2] one general dilemma and nine specific dilemmas covering diverse behavior domains in people's daily experiences, including school/work performance, eating, exercising, phone use, interpersonal relations, and financial behavior (De Ridder et al., 2012).

Among the nine specific dilemmas, the first six dilemmas were presented with outcomes (e.g., your friend is faced with a self-control dilemma with both choices and has made a choice), three of which encompassed self-control success and three encompassed self-control failures, so as not to influence beliefs by expectations of success. The other three dilemmas were presented without outcomes (e.g., your friend is faced with a self-control dilemma with both choices). Participants were required to respond to an open-ended question in each dilemma, assessing how they might think in the dilemma. Here is an example of a specific dilemma with the following question[3][4]: "*Your friend is preparing for an important task in two weeks that needs to be finished in a few days but decides to visit the birthday party of a close friend. What would you think if you were in the dilemma?*"

[2] The vignettes were tested for being relatable and understandable in a pilot study of 17 participants, including both Chinese and English speakers.
[3] The questionnaire employed a third-person perspective, framing the scenarios in terms of a friend's experiences. This neutral approach aimed to minimize demand characteristics and self-serving biases, enhancing responses' validity (Schroeder et al., 2017; Waytz et al., 2013).
[4] Although Study 2 asked three questions, including "What did your friend think? What do you think about your friend? What would you think if you were in the dilemma?", we only analyzed responses to the third question to align with the question in Study 1.

Similar to Study 1, the questionnaire was developed in English and translated into Dutch and Chinese.

Trait Self-Control. The same as in Study 1, the Brief Self-Control Scale (Tangney et al., 2004) was applied to measure trait self-control. The scale showed good reliability with Cronbach's alphas of .91, .89, and .92 for American, Dutch, and Chinese participants, respectively.

The study ended with single questions about gender, age, education, and income.

Analysis

We analyzed how individuals utilize their self-control beliefs in daily self-control conflicts. More specifically, participants' responses were categorized into the 14 self-control belief components identified in Study 1. We remained open to responses that did not fit into these components. This allowed for potential refinement of the components, although ultimately no additional components emerged from this process.[5]

Consistent with Study 1, Dutch and Chinese responses were translated into English by employing ChatGPT 3.5 prior to the analysis and subsequently reviewed or revised by bilingual people. The specific analytical procedures are described below.

[5] This mixed approach deviated slightly from our pre-registered analysis plan due to Study 2 being pre-registered before Study 1's analysis was fully completed. Consequently, we updated the analysis approach for Study 2 based on Study 1's findings

To begin with, we selected and coded the first 10 responses from each dilemma (6.7% out of the total responses), to establish an initial codebook encompassing the 14 self-control belief components. One author conducted the initial coding and drafted the codebook. Subsequently, the remaining three authors independently reviewed both the coding and the codebook for reliability. Following this, the coding and codebook were revised based on discussions.

All responses were then systematically coded in accordance with the codebook. The coding process was iterative, involving ongoing discussions and revisions of the codebook, as well as updates to the coding as necessary. Additional coding rules allowed for different fragments of a response to be coded into multiple self-control belief components, thus allowing the presence of multiple beliefs within a single response. However, each component was coded within a response at most once.

To finalize the coding process, we converted the above coding into numerical data for further analysis by assigning values to the above codes. Specifically, each code of a certain component was assigned a score of 1 for that component. Since each participant gave responses to ten self-control conflicts, each participant's scores for each component ranged from 0 (i.e., no response was

categorized into the component) to 10 (i.e., all responses were categorized into the component). A higher score indicated that participants reported more responses related to a certain component.

Results

Self-Control Beliefs

The analysis yielded a total of 1425 codes across 1500 responses. As shown in Table 3, the components “conflict”, “commitment”, “strategy”, “agency”, “difficulty”, and “discipline” emerged as the six most prevalent responses, with 632, 238, 151, 86, 84, and 80 codes respectively. The components “success”, “learnability”, “importance”, and “motivating” were less frequently mentioned, with only 6, 4, 0, and 0 codes, respectively.

Variations in Self-Control Beliefs

As pre-registered, we also examined how the belief components may vary across countries, levels of trait self-control, and different demographics. Among the three countries, “conflict”, “commitment”, and “strategy” were consistently mentioned as the three most commonly coded components, with “conflict” receiving 179, 258, and 195 codes, “commitment” receiving 95, 56, and 87 codes, and “strategy” receiving 47, 56, and 48 codes among US, Dutch, and Chinese participants, respectively. Moreover, Chinese

participants mentioned beliefs related to the “discipline” component almost as much as the “strategy” component, with 43 codes, as shown in Figure 3.

Similar to Study 1, we used Kruskal-Wallis one-way ANOVAs with country as a predictor and components scores as dependent variables and found significant cross-country differences in the following components, including “conflict” ($p < .001$), “commitment” ($p = .017$), “discipline” ($p = .001$), “pleasure” ($p = .012$), “goodness” ($p = .004$), and “learnability” ($p = .017$).

To associate self-control beliefs and TSC, results from a Spearman correlation test found that only two components, “discipline” ($r = .22$, $p = .006$) and “commitment” ($r = .17$, $p = .039$), displayed weak yet significant correlations with TSC; the other components were not significantly related to TSC.

To examine the variances in self-control beliefs among different genders, age groups, and educational levels, three nonparametric Mann-Whitney U tests were performed. Only scores in the component “learnability” were significantly different between genders, Mann-Whitney $U = 2956.5$, $p = .049$. Younger (18-44 years, $N = 128$) and elder (45 years and older , $N = 22$) age groups showed significant differences only in “learnability”, Mann-Whitney $U = 1514$, $p = .044$. Among education levels, participants’ scores

differed in components including “goodness” (Mann-Whitney U = 2113 , p = .034), “morality” (Mann-Whitney U = 2049.5, p = .026), and “pleasure” (Mann-Whitney U = 2043.5, p = .011).

Discussion

Findings from Study 2 confirmed the self-control belief components identified in Study 1, showing that people indeed held these beliefs when confronted with specific daily self-control conflicts. The majority of these components found support through participants' detailed responses in Study 2. However, it was interesting to observe variations in the extent to which individuals considered each component in their imaginary self-control conflicts. Specifically, participants predominantly mentioned beliefs related to “conflicts”, “commitment”, “strategy”, and “discipline”, while they had relatively fewer beliefs regarding components such as “success”, “learnability”, “importance”, and “motivating”. Notably, the most mentioned and the fewest mentioned beliefs were not fully consistent with the frequencies of those beliefs reported in Study 1, implying a gap between people’s general thoughts about self-control and their beliefs in specific self-control conflicts.

Study 2 also corroborates the cross-country findings indicating that individuals across different cultural contexts share a similar

framework of self-control beliefs, though with slight variations in specific beliefs. For example, similar to Study 1, Chinese participants placed a significantly greater emphasis on the “discipline” and “commitment” components, while American participants exhibited a higher prevalence of the “morality” and “pleasure” component, while Dutch participants slightly more emphasized the “difficulty” component, suggesting the cultural nuances in individuals' self-control beliefs. Lastly, as in Study 1, most of the belief components were not related to people’s trait self-control.

General Discussion

Self-control beliefs are gaining attention for their potential effects on people’s self-control performance (Gennara et al., 2023; Job et al., 2010). However, a systematic investigation of these beliefs was still missing. The current studies aimed to comprehensively map self-control beliefs held by people with different cultural backgrounds. In Study 1, fourteen components in what people believe about self-control were identified. Subsequently, most of the components were confirmed to emerge in hypothetical scenarios of self-control conflicts in Study 2.

The present research builds on previous studies on self-control beliefs, that primarily centered upon willpower strategies of self-

control (Gennara et al., 2023) and the malleable (Mukhopadhyay & Johar, 2005) and depleting nature of self-control (Job et al., 2015; Savani & Job, 2017). These beliefs were also identified in our studies but not as the most prevalent. Rather, our findings showed that people placed a priority on self-control's difficulty, importance, commitment, discipline, morality, and pleasure. These foci partially overlap with a recent study by Vaughn & Burkins (2023), where researchers investigated people’s lay beliefs about self-control using linguistic methods. Their research found that people often associated self-control with its values and utility as well as with perceived emotions and feelings, by analyzing words people used to describe their self-control experiences based on a dictionary commonly used in text analysis. However, our approach differs in that we examined self-control beliefs from a more bottom-up approach. We open-coded people’s thoughts about self-control without presupposition, thus revealing a comprehensive set of self-control belief components.

In contrast to previous studies on self-control beliefs that highlight the motivating and/or depleting nature of self-control, the current studies reveal that such notions are not predominant in people’s minds. One possible explanation for this difference is that people rarely consider the resources and the depleting nature of

self-control, no matter when thinking about self-control in general or when faced with specific self-control conflicts. Future studies could further examine whether these latter beliefs were non-existent or less prominent because of the self-report method we employed. It may be that these beliefs exist more implicitly, as previously observed for intelligence (Dweck & Leggett, 1988), emotion (Tamir et al., 2007), and morality (Chiu et al., 1997).

Our results confirm that individuals frequently regard self-control as requiring discipline. This is consistent with a recent study showing that people tend to associate self-control with willpower, rather than with strategy (Gennara et al., 2023). Interestingly, the research field has been moving away from discipline as a core theme and towards strategy use, which seems to be inconsistent with people’s beliefs about self-control. Given that popular scientific books frequently talk about willpower, rather than strategy, one can wonder whether these beliefs are “innate” or (also) the results of (scientific) discourse. As such, a lag effect seems to appear in the influence of psychological research on people's self-views (Herman, 1995).

In addition, the current study also indicates that individuals share a similar set of self-control beliefs across cultures, though they may slightly differ in the prevalence of certain components. As

suggested in previous research, these differences may be an consequence of culture (Li et al., 2018; Sun et al., 2019; Yanaoka et al., 2022). For instance, Chinese participants in both studies highly associated self-control with “discipline” and “commitment”, comparing with American and Dutch participants. This seems to mirror the differences in general cultural components as framed by Hofstede (2011), where China is regarded as a society with a huge attention to success and achievement. This also aligns with specific cultural traditions that discipline and restraint (*Keji*) are especially trained as a code of conduct from one’s childhood in the Confucian society (Yun et al., 2016). Likewise, the high association between self-control and morality among American participants may reflect their Protestant history linking self-control to religious constraints (McCullough & Willoughby, 2009).

Both current studies revealed similar beliefs people hold about self-control. Nevertheless, differences were found in the prevalence of certain belief components. Some components that were frequently mentioned in Study 1, such as the components “success”, “learnability”, and “importance”, were not frequently reported in Study 2. Instead, the proportions of “conflict”, “commitment” and "strategy” increased from Study 1 to Study 2. These differences imply a gap between people’s beliefs about self-

control in general and their self-control beliefs in specific self-control conflicts. For instance, in a specific self-control conflict, people may be less likely to hold beliefs regarding the nature of self-control, and, instead, they might have more thoughts about how self-control operates.

Lastly, evidence from both studies surprisingly shows that people's self-control beliefs seemed not to be related with trait self-control. Previous studies often associate self-control beliefs with trait self-control, however, no clear conclusions have been obtained (Gennara et al., 2023; Hagger et al., 2019). The non-significant relationships found in the current study might result from the bipolar responses in each component. As a consequence, it may be difficult to reveal clear directional relations between the components and trait self-control. Another possibility is that people's beliefs may indeed not relate to trait self-control as beliefs reflect more commonly shared ideas, thoughts, and knowledge, regardless of people's self-control ability.

Strengths and Limitations

The current study successfully uncovered a comprehensive array of lay beliefs that people hold about self-control and confirmed that these beliefs were captured in people's daily self-control conflicts. Distinct from previous research about self-control

beliefs, this study featured a bottom-up approach, which yielded high ecological validity and contributed to the balance of the field.

Nevertheless, we acknowledge certain limitations of our studies. One notable limitation is the small number of responses for some belief components, which constrains further analysis regarding beliefs and other variables. Therefore, we urge caution in interpreting these results. Additionally, unintended bias in educational background across countries may have influenced the cross-country findings. Moreover, the analysis of the current study was based on translated data, which may not be as accurate as the original language due to subtle differences in connotations across languages. We also acknowledge that a certain degree of subjectivity was inevitable in creating coding schemes. Finally, despite efforts to avoid influencing participants' answers, this possibility cannot be entirely eliminated. For instance, the high prevalence of responses related to the components “conflict” and “commitment” in Study 2 might partly be due to the study design focusing on conflicts and goals. In addition, although participants in both studies reported self-control habits and strategies, such as conflict avoidance, it is still possible that the self-control conflict vignettes limited participants to reach their goals to some extent by utilizing more proactive or strategic approaches.

Future Directions

The current study provides a comprehensive understanding of people's beliefs about self-control, identifying fourteen main components of these beliefs. Given the growing attention on various aspects of people's perceptions of self-control, such as lay beliefs and self-control metacognition (Fujita et al., 2024; Hennecke & Bürgler, 2023), we expect future research to explore diverse beliefs further. It would be intriguing to investigate how these beliefs may interact with other cognitive processes and perceptions related to self-control, including metacognition. Furthermore, examining how these lay beliefs influence individuals' actual self-control behaviors and the relations between self-control beliefs and other crucial self-control elements, such as trait self-control, state self-control, as suggested by Job et al. (2015), holds promise for advancing our understanding of self-control.

Moreover, it is crucial to develop an effective tool for comprehensively assessing these self-control beliefs. Existing assessments (Job et al., 2010; Mukhopadhyay & Johar, 2005) often evaluate only a limited number of beliefs. Additionally, these scales may not always meet high standards of quality (Sun et al., 2019).

Drawing from cross-cultural studies, more in-depth investigations across various cultural and social backgrounds could

illuminate how lay beliefs may interact with these contexts. Furthermore, we expect more future studies of high ecological validity. This could include studies employing an experience-sampling design, diary studies, and experiments with diverse stimuli. Such approaches would provide richer insights into the complex dynamics of self-control beliefs in everyday life, for instance, about how lay beliefs may fluctuate before, among, and after self-control conflicts and how the beliefs may appear in real life contexts.

Conclusions

To comprehensively map people's beliefs about self-control, we took a bottom-up approach to investigate, with 14 main components of self-control beliefs identified. This includes difficulty, importance, discipline, goodness, commitment, success, agency, learnability, morality, conflict, pleasure, strategy, mental, and motivating. The components were observed in discussion of self-control across three cultures. Findings contribute to our understanding of how self-control is viewed and believed. Evidence for other aspects of self-control lay theories could help inspire future research.

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Table 1

Demographical Characteristics of Participants

Demographical Characteristics	Study 1				Study 2			
	US	NL	CN	Full Sample	US	NL	CN	Full Sample
Age	34.60	28.70	30.18	31.16 (9.07)	33.10 (11.25)	32.42 (10.70)	31.14 (8.67)	32.22 (10.23)
Gender								
Female	22	25	33	80	25	25	27	77
Male	26	25	17	68	25	25	23	73
Others	2	0	0	2	0	0	0	0
Highest Education								
High School	23 (46%)	11 (22%)	0 (0%)	34 (23%)	26 (52%)	17 (34%)	5 (10%)	48 (32%)
College	27 (54%)	39 (78%)	50 (100%)	116 (77%)	24 (48%)	33 (66%)	45 (90%)	102 (68%)

Note. In both Study 1 and Study 2, $N = 150$ (50 for each of the countries, the United States (US), the Netherlands (NL), and China

(CN); participants' highest education levels differed significantly across the three countries in both studies (Study 1: $p = .005$; Study 2: $p = .18$). Additionally, in Study 1, participants' ages varied significantly across the three countries ($p = .003$).

Table 2

Fourteen Components of Self-Control Beliefs

Component	Brief Definition	Examples of Responses	Codes (*n*)	Percentage (%)
Difficulty	Beliefs about self-control being challenging, requiring effort, or becoming a habit.	difficult, easy, effortless	112	14.93
Importance	Beliefs about the significance and value of self-control.	important, necessary	99	13.20
Discipline	Beliefs about self-control involving discipline, willpower, and the ability to restrain impulses.	discipline, willpower, restrain	97	12.93
Goodness	Beliefs about self-control being regarded as good or bad.	good, positive, healthy, bad	83	11.07
Commitment	Beliefs about long-term commitment and goal of self-control.	commitment, perseverance	79	10.53
Success	Beliefs about success and	success,	36	4.80

Component	Brief Definition	Examples of Responses	Codes (*n*)	Percentage (%)
	achievement of self-control.	useful		
Agency	Beliefs related to an individual's sense of control, rational decision-making, self-awareness, and the ability to justify concerning self-control.	awareness, controllable	25	3.30
Learnability	Beliefs about whether self-control can be learned or developed as a skill, as well as views on inherent aspects of self-control.	trainable, genetic	23	3.07
Morality	Beliefs about the moral judgments of self-control, including whether it is considered a virtue.	virtuous, respectable	21	2.80
Conflict	Beliefs about the conflicts, dilemmas, choices, and ambivalence individuals experience about self-control.	ambivalent, sacrifice, hesitation	20	2.67
Pleasure	Beliefs about self-control	painful,	17	2.27

Component	Brief Definition	Examples of Responses	Codes (*n*)	Percentage (%)
	being regarded as pleasant or unpleasant.	unpleasant, annoying		
Strategy	Beliefs about strategy of self-control such as avoiding temptations, prioritizing, and making realistic plans.	avoidance, strategic	14	1.87
Mental	Beliefs about self-control being related to mind or action.	mental, taking action	11	1.47
Motivating	Beliefs about self-control being motivating or depleting.	motivating, invigorating	6	0.80

Note. Percentage refers to the proportion of responses categorized within each component out of the total 750 responses.

Table 3

Codes of Self-Control Belief Components in Specific Dilemmas.

Examples of Responses	Codes (*n*)	Component
“I will be a little conflicted …” “Trying to weigh the options as objectively as possible …” “I'll spend less next month to make up for it.” “What the sacrifices that need to be made in order to reach said goal.”	632	Conflict
“… that he needs to think more about the future.” “Do things with perseverance …” “… no is no, rules are rules.” “I'll do it later. I have more time on weekends.”	238	Commitment
“I would put my phone away.” “Making a plan to achieve this goal.” “I would set more concrete goals like 'max 3 hours per day'.” “He would probably ask his friends for advice.” “I will set rewards for myself while losing	151	Strategy

weight.”		
“… so that I don't unconsciously end up with my phone in my hands again.”	86	Agency
“… I remind myself that I'm financially struggling, to suppress my temptation.”		
“I will flip a coin. depends on fate.”		
“… he would have a hard time with the decision, …”	84	Difficulty
“… I might find it a bit challenging …”		
“…Sometimes I manage to resist snacks ...”	80	Discipline
“I can discipline myself to choose wisely …”		
“… we must … restrain our desires.”		
“It's the right thing to do.”	44	Morality
“… knowing that I should do something but …”		
“I … wouldn't talk about it because I would be ashamed.”		
“I would be really happy if I was able to resist …”	37	Pleasure
“Anxiety about not being able to reach them …”		
“I would feel really unpleasant if it didn't work out …”		
“… don't have bad or redundant thoughts…”	33	Mental

“… you must do what you say, and you can't just think about it.”		
“That I was making a smart choice not getting the dress.” “Not good.” “Not a wise decision.”	30	Goodness
“I think my work can bring me long-term interests.” “I would think that I am making progress and can change for the better.”	6	Success
“Learn to control your temper.” “I also have to learn to control my emotions.”	4	Learnability

Note. The components “importance” and “motivating” were absent from this table due to no relevant codes.

Figure 1

The Process of Generating Components of Self-Control Beliefs

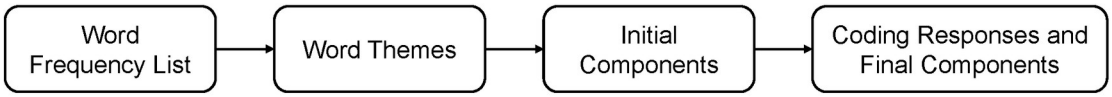
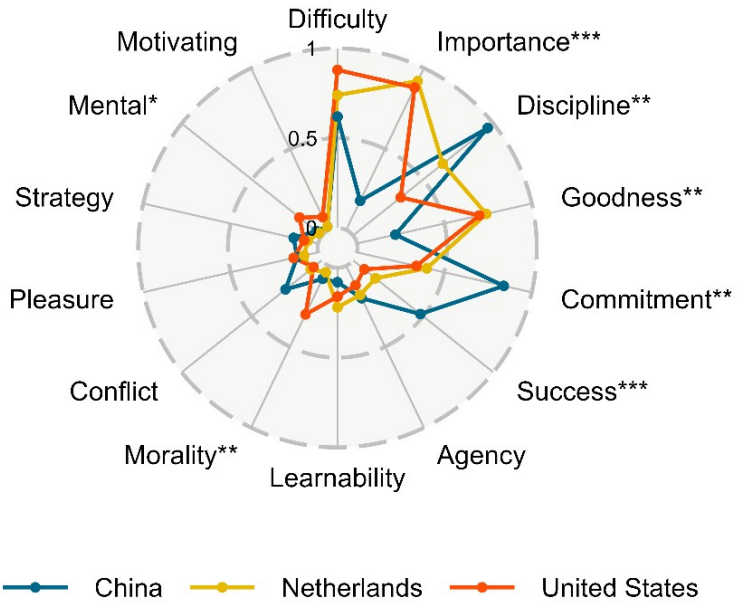


Figure 2

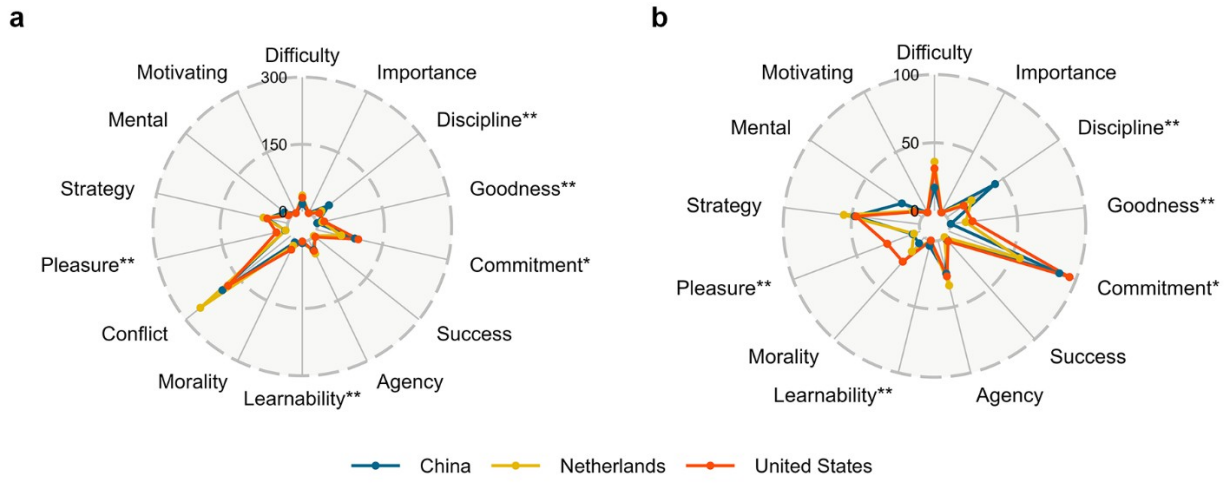
Study 1: Mean Scores of the Fourteen Self-Control Belief Components by Country.



Note. This figure shows differences in the self-control belief component scores across countries, * $p < .05$, ** $p < .01$,*** $p < .001$.

Figure 3

Study 2: The Number of Codes of the Self-Control Belief Components by Country.



Note. This figure shows cross-country differences in the number of codes of (a) all self-control belief components and (b) self-control belief components without "conflict", * $p < .05$, ** $p < .01$.